GREISINGER

Member of GHM GROUP

Professional Measurement

Measuring | Controlling | Regulating

Industry catalog 2019

www.greisinger.de

Members of GHM GROUP:

GREISINGER
HONSBERG
Martens
IMTRON
DeltaOHM
VAL.CO

GREISINGER. Specialist for handheld devices.

„For more than thirty-five years, quality measuring devices from Greisinger have effectively met the needs of demanding customers. A mature measuring technology must also be accompanied by the ability to respond sensitively to the market."

Roland Bäuml
Site Director Greisinger | Member of the Managing Board

GREISINGER
Member of GHM GROUP

Further information see our website
https://www.ghm-group.de/en/ghm-group/competence-center/greisinger/

GHM GROUP. Specialists by Competence.

We measure and control it

The GHM GROUP has stood for precision measuring and control technology since 1963. Our customers enjoy the expertise and experience of a corporate group that has been cautiously built from smaller, very successful measuring technology manufacturers from Germany and northern Italy. As a medium-sized corporate group, we unite a depth of added value and knowledge based on 200 years of combined experience. From development of specialized measuring processes to the complete production of sensors and mechanical key elements to data loggers and firmware and software programming, we build measuring devices that cover a wide range of applications. The emphases of our solution are the growth areas of general machine construction, building technology, measurement data recording and communication, as well as the food production industry, meteorology, and general environmental measuring technology.

With a consistently focused customer orientation, modern company structures, and management that can react to market developments more quickly and with a more customer-oriented approach, we combine the expertise and professionalism of our more than 300 employees with the alertness and flexibility of a highly specialized task force.

GHM GROUP – Specialists by Competence.

GHMGROUP

HONSBERG — 1963

Honsberg Instruments, Remscheid, Germany
As a traditional, family-operated company, Honsberg is one of the market leaders in flow measurement technology for cooling lubricant monitoring and other technical oils.

DeltaOHM — 1978

Delta OHM, Padova, Italy
Market leader in Italy for the measurement variable light and noise; one of the world's most important manufacturers of high-precision environmental measuring technology; state-of-the-art calibration and research laboratories

GREISINGER — 1980

Greisinger electronic, Regenstauf, Germany
Manufacturer of durable and extremely cost effective handheld measuring devices, sensors, and electronics; products are used in all areas of industry

VAL.CO — 1982

VAL.CO, Milan, Italy
Manufacturer of industrial sensors for fill, flow rate and temperature applications; specialist in the Italian and European market

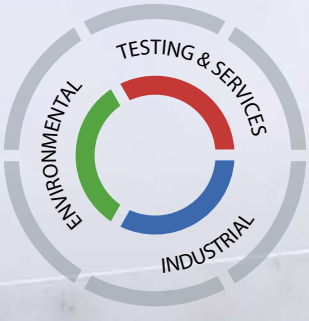
IMTRON — 1984

Imtron Messtechnik, Owingen, Germany
Manufacturer of measurement data recording systems; development of test stands for the automotive industry and energy measurement technology with planned preventative maintenance

Martens — 1988

Martens Elektronik, Hamburg, Germany
Supplier of customer-specific industrial electronics and analysis technology; manufacturer of technologically high-quality measurement technology, also for the international market

Our company develops consistently.
In one direction: towards the future



Innovation with method

The GHM Messtechnik GmbH Group was founded in 2009. However, the history of the traditional brands that are bundled under the umbrella brand goes back much further. In its current formation as the GHM GROUP, the enterprise is still obligated to the shared philosophy of the founders: Absolute customer orientation, speed, and first-class product quality!

Innovation with method: An increasing number of tasks in terms of the global economy and in technology reach the limits of feasibility and beyond. We meet this challenge with a broad-based enterprise structure. The Centers of Competence under the umbrella of the GHM GROUP cover a wide range of market-specific solutions for all important areas of application with their respective areas of expertise.
With the GHM GROUP our customers benefit from over 200 years of combined experience. With this expertise, our engineers at the various "Centers of Competence" are quickly and flexibly in a position to develop solutions that meet the specific requirements of our customers and are in-line with market demand.

It is an advantage of our enterprise, which is unrivalled.

GHMGROUP

1993 — *Subsidiary in CZ – Greisinger s.r.o.*

1994 — *Subsidiary in NL – Honsberg BV*

2009 — *Founding of GHM Messtechnik Group with the companies Greisinger, Honsberg and Martens*

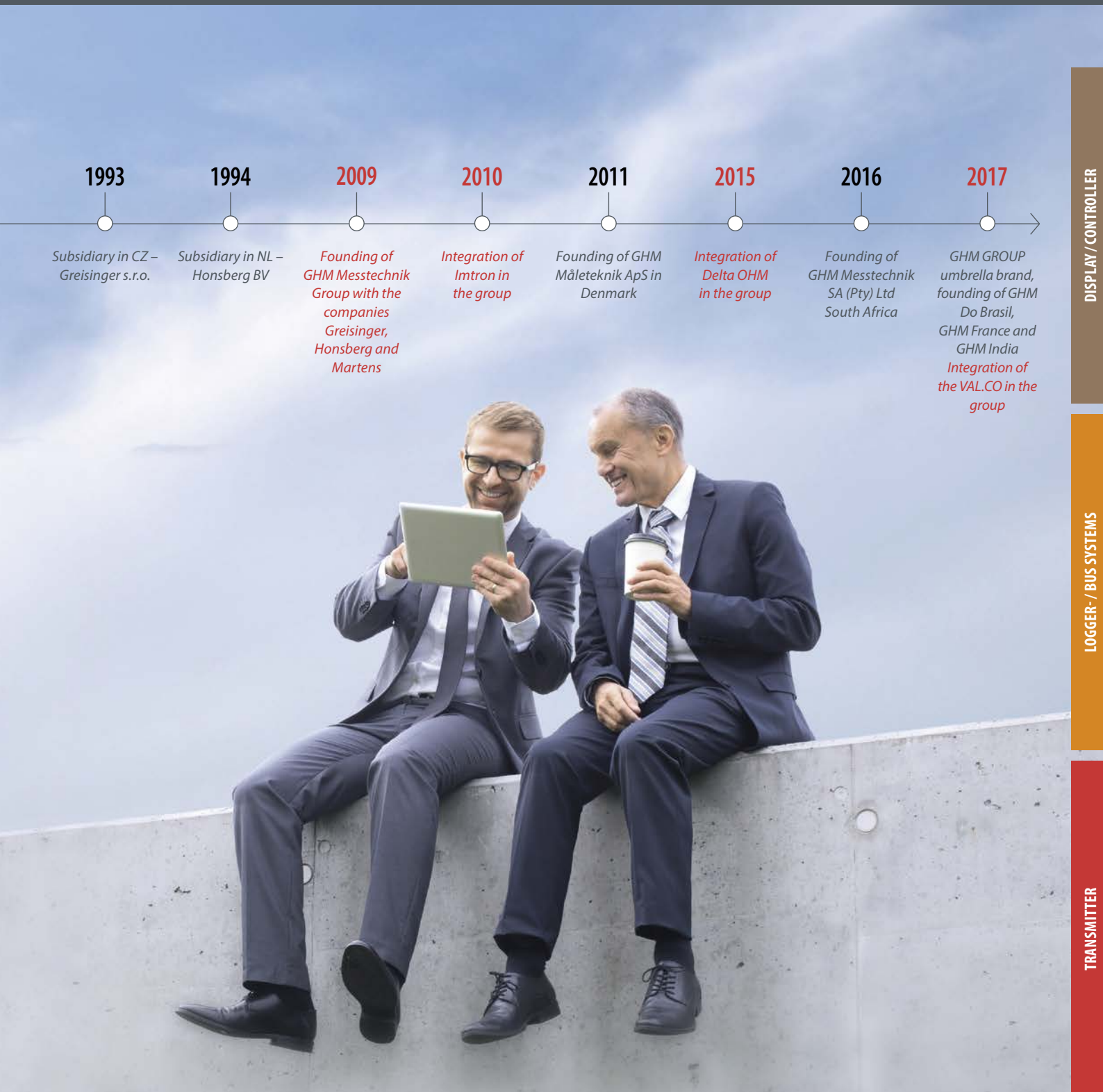
2010 — *Integration of Imtron in the group*

2011 — *Founding of GHM Måleteknik ApS in Denmark*

2015 — *Integration of Delta OHM in the group*

2016 — *Founding of GHM Messtechnik SA (Pty) Ltd South Africa*

2017 — *GHM GROUP umbrella brand, founding of GHM Do Brasil, GHM France and GHM India Integration of the VAL.CO in the group*

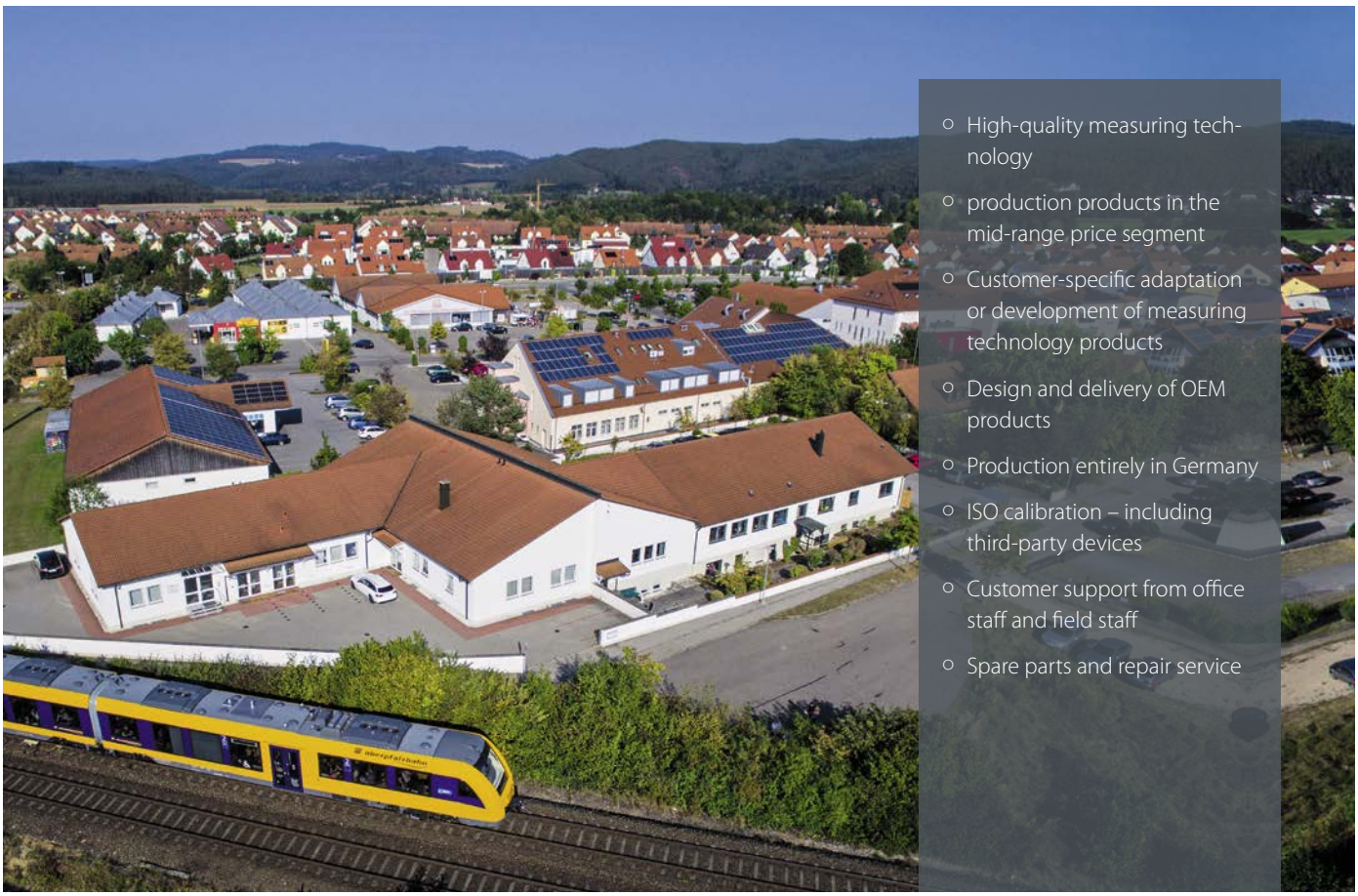


16
WORLDWIDE LOCATIONS

> 40 Mio.
MILLION IN SALES PER YEAR

> 300
HIGHLY QUALIFIED AND AMBITIOUS EMPLOYEES

> 2 000
HIGH-QUALITY DEVICE TYPES



- High-quality measuring technology
- production products in the mid-range price segment
- Customer-specific adaptation or development of measuring technology products
- Design and delivery of OEM products
- Production entirely in Germany
- ISO calibration – including third-party devices
- Customer support from office staff and field staff
- Spare parts and repair service

QUALITY STANDARD AND CERTIFICATION

High-quality technical products at a fair price have made use a permanent fixture in the measuring device market.
We have been on a continuously upward trend for more than 35 years. The use of state of the art machinery and devices with efficient, high-performance production processes enables the high 'Made in Germany' product quality at competitive prices.

All our products are developed and produced in Germany - that is one reason for the high-quality standard of our products. Our quality management system is certified according to ISO 9001:2008 and additionally for potentially explosive atmospheres according to DIN EN 13980:2003.

Conformity with Directive 94/9/EC ('ATEX Directive') has been mandatory for Ex products in the Member States of the EC since 01/07/2003. Our development, manufacturing and sales have been certified in accordance with Directive 94/9/EC since 01/05/2003. Several products have already been tested and approved in accordance with this standard.

MADE IN GERMANY

DNV
Zertifiziertes QM-System
ISO 9001:2008

BVS 13 ATEX ZQS/E234
Zertifiziertes QM-System
CE 0158 Ex

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Teamleader Export

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Language:
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Measurement data made obvious

Greisinger devotes a great deal of effort to compact designs. The specialist for handheld devices combines technology and measurement precision in products with substance.

As a Center of Competence for temperature sensors and handheld measuring devices as well as indicators and regulators, the Greisinger location in Regenstauf bundles the extensive know-how of experienced specialists under one roof. Current market trends are tracked here and taken into account in the development of new technologies.

In this regard, our traditional enterprise can build on more than 35 years of experience. Our first products – at that time the first temperature sensor for monitoring haystacks – precisely met the requirements of the market and formed the basis of our subsequent success. In the meantime, our product portfolio has been significantly extended: In addition to numerous measuring transducers, as well as indicators and the associated sensors, first and foremost we develop and produce high-quality handheld measuring devices.

Originally developed for the harshest and roughest conditions of our industrial customers, we have, however, also made our devices available to a broad clientele via the retail trade. Over one hundred thousand devices delivered yearly and thousands of satisfied customers are our motivation to build ever-better measuring devices.

In our manufacturing and quality control we ensure that all machines and equipment are always state of the art. As part of the GHM GROUP, we participate in the continuous improvement measures to further optimize our processes and procedures. Thus, in the future we will also be capable of offering outstanding "Made in Germany" product quality at competitive prices.

Fields of expertise

- compact, robust, and powerful handheld measurement technology "Made in Germany"
- wide product range for a wide variety of measured values
- application-oriented special measuring devices
- private-label products for customer-specific individualization
- on customer request, factory calibration in our in-house calibration laboratory

PRODUCT OVERVIEW

STATIONARY MEASUREMENT / INDUSTRY

DISPLAY / CONTROLLER 16

Display instruments for control panel mounting 17-24, 26
Controller for control panel mounting 18-25
Plug-in display for standard signals 27-28
Special constructions (housings, mounting plate), power supply, accessories 29-30

DATA LOGGER / BUS SYSTEM 31

Data logger T-Logg 32-33
EASYBus Data logger 34-35
EASYBus sensor modules 36-42
Accessories 43-44
Software 45-47

TRANSMITTERS / SENSORS 48

Temperature / Infrared 49-55
Humidity 56-57
Pressure 58-59
Water level, flowmeter, air speed, CO_2, O_2 60-61
Conductivity, Oxygen, pH, Redox 62-66
Sensor level 66

TEMPERATURE PROBES 67

Thermocouples (Type K, Type N) 68-69, 77
Pt100 / Pt1000 ..... 70-71, 76
Tailored industry probe 72-83
Water proof probes 84
Accessories 85-86

EX-PROTECTION

Displays 17, 27
Transmitters 54
Temperature probes 78-83

OEM / CUSTOMER VERSIONS

We modify our equipment.
According to your wishes and requirements.

Customer-specific developments

If there is no device in our standard product proposal fulfilling your individual requirements, there is the possibility to develop a device according to your specifications.

Please note that the customer versions are associated with a little extra costs or depending on the amount of ordered pieces.

Beispiele für eine Gerätebedruckung

1.

Select housing

You can select a device series that suits their purpose.

Compact series: low cost, ease of use, classic design

1000 series: High quality new handheld instrument combines with water tightnessand display lighting

3000 series: Bestseller, best price-performance in practical housing

5000 series: Best quality and accuracy in the water and impact-resistant casing with display lighting

Device case: Accessories can be printed too

5000 series with silicone protection cover | *3000 series* | *1000 series* | *Compact series* | *Device case*

OEM / CUSTOMER VERSIONS

2.

Choose a color

Choose a color that suits your corporate presentation, logo and can be also match with the later printing.

Overview standard colours:

Housing	black	yellow	red	blue	orange	light grey	basalt grey
1000 series	•	•	•	•		•	
Compact series	•	•	•	•		•	
3000 series	•	•	•	•	•	•	
5000 series			•[1)]	•[1)]		•	•

[1)] Colour of silicone protection cover

3.

Logo placement

Do you wish to have your company logo, name or an image on the device?
Please leave us your data as EPS / TIFF or JPEG, 300 dpi and of sufficient size sent by an email. We work in our printing department a sketch and a proposal over size and positioning. Even high-resolution photo-
quality images can be applied through digital printing process.

4.

Specify type plate and version of the manual.

Should we become an OEM supplier for your brand?
Then we enter your manufacturer information here and assist you with the CE Declaration of Conformity.
Our sales and product manager team supports you in the correct market introduction and conformity evaluation of your product. Alternatively, we can simply remain visible as the manufacturer - which minimises expenses as long as the application and intended use are observed.

LEGEND

Made in Germany

ISO Calibration certificate
available at surcharge

ACCREDIA Calibration certificate
available at surcharge

Min-/Max-Alarm
continuous checking of adjustable alarm boundaries (deactivate-able)
3 alarm settings:
off: alarm inactive
on: alarm via display, internal buzzer and interface
no Sound: alarm only via display and interface
Switching function:
External devices can be switched (on / off) or monitored for alarm in combination with switching module GAM3000 (optionally available)

Auto-Hold
Automatic freezing of a constant measuring value

Automatic Power-Off-Function
- 1 ... 120 min (or deactivated)
- adjustable between 1 ... 120 min or continuous operation
- If Auto-Off-Function is activated, device is automatically switched off after a selected period (0 ... 120 min) if it is meanwhile not used.

AutoRange
The conductivity measurement gets automatically switched to the optimal measuring range. Can be deactivated in the menu.

HACCP (Hazard Analysis and Critical Control Points-Konzept)
suitable for food applications according to HACCP

Background illumination

Hold function
The current measured value gets "frozen" on keystroke.

Logger function
manual: fetch data via buttons or interface
cyclic: fetch data via interface, adjustable cycle time: 1 s ... 1 h
The logger is started or stopped by keypad or interface.
The software GSOFT3050 (see accessories) is available for comfortable read-out of logger data.

Alarm: Freely adjustable alarm boundaries, pulsating alarm sound (depends on measured value)

Min / max value memory
Highest and lowest measured values are saved.

Offset correction (zero point)
The characteristic can be shifted parallel by an adjustable offset value.

Offset and slope correction
A digital offset and slope correction can be adjusted.

Tare function
Displayed value as well as min- and max-values are set to zero.

Real-time clock
Clock with day, month and year

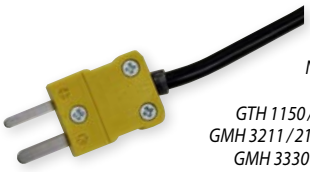
POSSIBLE CONNECTORS

Miniature DIN-type plug
used in:
GMH 3710/50, GMH 3611/51, GMH 3692/95, GMH 3111/51/56

Banana-jack connection
used in:
Temperature inputs of pH devices, GMH 3511/31/51, GMH 5530/50, GPHU 014 MP

BNC-connector
used in:
G 1700, GMH 3831/51, GMH 3511/31/51, GMH 5530/50, GPH 114

7-pol. bajonett connector
used in:
GMH 5130/50/55, GMH 5430/50, GMH 5630/50/90/95



NST1200-connector
used in:
GTH 1150/70, GMH 1150/70, GMH 3211/21/31/51, GIM 3590, GMH 3330/50, GMH 3831/51

S7-connector
used in:
GE 171, GE 108, GE 173, GR 175

4-pol. bajonett connector
used in:
5000er device series

Jack connector 3,5 mm
used in:
GMH 175, GFTB 200, GFTH 200

7-pole diode connector
used in:
GLMU 200/400

M8 plug connector
used in:
EASYLog, T-Logg

M12 plug connector
Used in:
GTF 111/112, GTL (food sensors), GLMU 400MP-Uni

power supply 5.5 x 1.5
used in:
3000er device series

Angle plug
Uses include:
Transmitter

Jack connector 2,5
used in:
discontinued products, e. g. GDH ... AN Serie, GPRT 1400

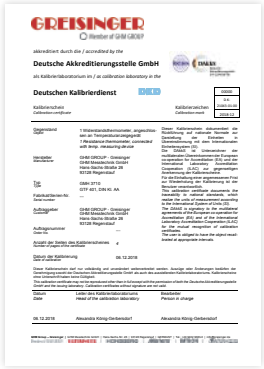
Cinch connector
used in:
discontinued products, e. g. GPH 014, GPRT 1400

CALIBRATION CERTIFICATES

CALIBRATION CERTIFICATES DAKKS

DAkkS calibration certificates are issued for very high-quality calibrations and for calibration of reference devices or when stipulated by standards and regulations. DAkkS-DKD calibration certificates are issued with reference devices which must be traceable through a chain to the Laboratories of the German Calibration Service. DAkkS-DKD calibration certificates can only be issued the calibration laboratories accredited in accordance with the standard DIN EN ISO 17025.
With recurring external certification and re-accreditation, it is ensured that a consistently high quality of calibration is maintained. The cost-intensive and personnel-intensive measures entail higher prices, but ensure the necessary reliability of the measurement results.

Successful DAkkS appraisal of the Greisinger location for the temperature variable.
The calibration laboratory has worked in accordance with DIN EN ISO/IEC 17025 since 2018.


GREISINGER

akkreditiert durch die / accredited by the

Deutsche Akkreditierungsstelle GmbH

als Kalibrierlaboratorium im / as calibration laboratory in the

Deutschen Kalibrierdienst

Kalibrierschein
Calibration certificate

Kalibrierzeichen
Calibration mark

Gegenstand/ Object

Hersteller/ Manufacturer

Typ/ Type

Fabrikat/Serien-Nr./ Serial number

Auftraggeber/ Customer

Auftragsnummer/ Order-No.

Anzahl der Seiten des Kalibrierscheins/ Number of pages of the certificate

Datum der Kalibrierung/ Date of calibration

Datum/ Date

Leiter des Kalibrierlaboratoriums/ Head of the calibration laboratory

Bearbeiter/ Person in charge

Temperature

DAkkS-T
Calibration certificate (incl. 1 measurement point)
(Please specify an inspection point)

further measurement points
(from -100 ... +1400 °C)
(Please specify an inspection point)

additional measurement point
-196 °C

ACCREDITATION APPLIES ONLY FOR THE SCOPE OF ACCREDITATION LISTED IN THE CERTIFICATE D-K-21043-01-00.

DAkkS
Deutsche Akkreditierungsstelle
D-K-21043-01-00

Pressure

DAkkS-P
Art. no. 602731
Calibration certificate over pressure -1 ... 100 bar
(incl. 9 points increasing and decreasing)

DAkkS-PA
Art. no. 602758
Calibration certificate absolute pressure 0 ... 70 bar
(incl. 9 points increasing and decreasing)

Further measuring ranges upon request

Humidity (incl. 1 temperature value)

DAkkS-FE
Art. no. 602871
Calibration certificate for devices with external sensor
(Testing points: 15 % RH and 70 % RH / at 23 °C)

DAkkS-F
Art. no. 602870
Calibration certificate for devices with fixed attached sensor (Testing points: 20 % RH, 50 % RH and 80 % RH / at 23 °C)

Further testing points upon request

Conductivity

DAkkS-LF
incl. 3 points
3 µS / cm - 1000 µS / cm
1 mS / cm - 150 mS / cm
every further point

Further measuring ranges upon request

ACCREDIA

At our Delta Ohm location in Padua, Italy, we can issue calibration certificates which are only available from a small number of recognised laboratories in all of Europe.
The calibration laboratory is equipped with state-of-the-art measuring technology, is accredited in accordance with the standard DIN EN 17025 and is regularly certified by ACCREDIA. On the basis of the worldwide recognition of calibration services by the umbrella organisation ILAC*, the validity of the calibration certificate is guaranteed by the ILAC in Germany and throughout Europe, as well as about 100 other countries. The calibration certificate is issued in German. We offer the listed ACCREDIA calibration certificates for handheld measuring devices marked with the ACCREDIA.

**ILAC (International Laboratory Accreditation Cooperation) has an association for laboratory accreditation for over 40 years which represents its members in over 70 countries and regional organisations. The ILAC MRA recognition arrangement obligates all members to recognise calibration results produced by nationally accredited laboratories (such as DAkkS or ACCREDIA).*

Further information:
http://ilac.org/about-ilac/

Delta Ohm air speed calibration laboratory, Padua

CALIBRATION CERTIFICATES ACCREDIA

Lighting strength

ACCREDIA-B1
Art. no. 611508
7 measuring points from 50 ... 4000 lux

ACCREDIA-B2
Art. no. 611509
Radiometer UV A
10 ... 50 Wm^{-2}

ACCREDIA-B3
Art. no. 611510
Luminance
5 measuring points from 10000 ... 30000 cdm^{-2}

ACCREDIA-B4
Art. no. 611511
Pyranometer (solar radiation strength)
1 measuring point

Air speed

ACCREDIA-G1
Art. no. 611512
Impeller anemometer up to Ø 60 mm and heat wire sensor
1 ... 25 m/s
Measuring points: approx. 1, 2.5, 5, 10, 25 m/s

ACCREDIA-G2
Art. no. 611513
Impeller anemometer Ø 60 mm or greater, ultrasonic and dynamic pressure sensors, shell anemometer
1 ... 25 m/s
Measuring points: approx. 1, 2.5, 5, 10, 25 m/s

Acoustics

Calibration for integrated sound level meter (IEC 61672) and calibrator (IEC 60942)

ACCREDIA-A1
Art. no. 611514
Devices manufactured by Delta Ohm (siehe Page 96 / 97)

ACCREDIA-A2
Art. no. 611693
Any manufacturer

ISO CALIBRATION CERTIFICATES

Lighting strength

ISO-WPB1
Art. no. 611515
ISO certificates
7 measuring points from 50 ... 4000 lux

ISO-WPB2
Art. no. 611516
ISO certificates Radiometer UV A
10 ... 50 Wm^{-2}

ISO-WPB3
Art. no. 611517
ISO certificates Luminance
5 measuring points from 10000 ... 30000 cdm^{-2}

ISO-WPB4
Art. no. 611518
ISO certificates
Pyranometer (solar radiation strength)
1 measuring point

Air speed

ISO-WPG1
Art. no. 611519
ISO certificates Impeller anemometer up to Ø 60 mm and heat wire sensors, 1 ... 25 m/s
Measuring points: approx. 1, 2,5, 5, 10, 25 m/s

ISO-WPG2
Art. no. 611520
ISO certificates
Impeller anemometer Ø 60 mm or greater, ultrasonic and dynamic pressure sensors, shell anemometer
1 ... 25 m/s
Measuring points: approx. 1, 2,5, 5, 10, 25 m/s

Acoustics

Calibration for integrated sound level meter (IEC 61672) and calibrator (IEC 60942)

ISO-WPA1
Art. no. 611521
ISO certificates
Devices manufactured by Delta Ohm (see page 96 / 97)

Octave band filter - third-octave band filter calibration (according to IEC 60942) and microphone calibration (sensitivity, frequency) on request

Due to the wide variety of calibration possibilities, it is not possible to list all possible variations in this catalogue. Please ask us or request a quotation.

For the storage of the devices, we recommend the use of a safe-keeping case.

ISO

ISO CALIBRATION CERTIFICATES

ISO calibration certificates (factory calibration certificates) are issued by GHM Greisinger according to the same measures as DAkkS calibration certificates, but without the expense for external certification, so these certificates can be issued at a reasonable price. In addition, there are measurements for which no accreditation can take place in DAkkS-DKD. In such cases, the ISO calibration is an important alternative. ISO calibration certificates are issued with measurement standards which are subject to regular inspection of measuring and testing equipment, thus ensuring the traceability of the measurement standards used in the process. The calibration includes, if applicable, adjustment of the measurement device (only with Greisinger devices).

Calibration certificates are available for all handheld instruments marked with the symbol ISO.
Also possible for measuring transmitters resp. combinations of display instruments and sensors/transmitters.
Calibration certificates are not included in the scope of delivery of measuring devices.

Temperature

ISO WPT
incl. 1 measurement point -100 ... +1400 °C
(Please specify an inspection point)

additional measurement point
(from -30 ... +500 °C)
(Please specify an inspection point)

additional measurement point
(-100 ... -30 and +500 ... +1300 °C)
(Please specify an inspection point)

additional measurement point
-196 °C

ISO-WPT2A
Art. no. 602583
ISO Certificate of calibration with standard values:
0 °C / +70 °C

ISO-WPT2B
Art. no. 602584
ISO Certificate of calibration with standard values:
0 °C / +37 °C

ISO-WPT3
Art. no. 602596
ISO Certificate of calibration with standard values:
-20 °C / 0 °C / +70 °C

ISO-WPT-IR
Infrared temperature ISO calibration
Infrared base price
-20 ... +4 °C per test point
+5 ... +450 °C per test point

Pressure

ISO-WPD5
Art. no. 602514
ISO certificates: 5 points ascending, 5 points descending
-1 ... +600 bar

ISO-WPD10
Art. no. 602565
ISO certificates:
10 points ascending, 10 points descending

over 600 bar on request

Humidity

ISO-WPF4
Art. no. 602543
ISO certificates incl. standard-measuring values (approx. 20 % / 40 % / 60 % / 80 % RH increasing and decreasing; measurement point Temperature: approx. +23 °C)

ISO-80CL
Art. no. 607734
ISO certificates with standard test values of humidity / temperature / pressure for EASYLOG 80CL (measuring values (approx. 20 / 40 / 60 / 80 % bei 23 °C), pressure 5 points increasing and 5 points decreasing

Atmospheric Oxygen

ISO-WPO3
Art. no. 602816
ISO certificates with 3 points:
0 / 20,9 / 100 % O_2
Note: a replacement of the sensor, before issue the WPO3, is recommended for sensors with an age of one year!

Conductivity

ISO-WPL3
Art. no. 602622
ISO certificates with 3 points:
~147 µS/cm, ~1413 µS/cm, ~12,90 mS/cm

ISO-WPL10
Art. no. 602623
ISO certificates with 10 points from approx. 2 µS, 74 µS, 147 µS, 720 µS, 1413 µS, 2,77 mS, 6,70 mS, 12,90 mS, 24,8 mS, 111,3 mS and approx. 195 mS/cm

Ultrapure Water - Conductivity

ISO-WPL3-RW
Art. no. 602624
ISO certificates with 3 standard-measuring values:
each approx. 2,50 µS/cm; 7,00 µS/cm; 15,00 µS/cm

pH

ISO-WPP3
Art. no. 602767
ISO certificates with 3 standard-measuring values:
4,00 pH, 6,87 pH, 9,18 pH

ISO-WPP10
Art. no. 602768
ISO certificates with 10 points from
1.09 pH ... 12.75 pH

SERVICE OFFERING

Many devices are delivered with a test report. The reports are created automatically during production and do not provide any information about the traceability of the measurement. Alternatively, the following test reports can be created for measurements which do not require traceability.

Test reports

ISO-GCO
Art. no. 603841
Test report for carbon monoxide measuring devices.
Measuring points at 0 ppm CO, 300 ppm CO

ISO-GMH38XX
Art. no. 604463
Test report for material moisture.
Measuring devices GMH 38xx, GMR 100

Our express service is focussed on urgent ISO calibrations to eliminate long down times for measuring devices.
The process is fast and uncomplicated with UPS express delivery throughout Germany. Please contact us at **express@greisinger.de**.

Express (including shipment)

Temperature measuring devices
-90 ... +500 °C, max. 3 devices, 2 work days

Pressure measuring devices
-1 ... +600 bar, max. 3 devices, 2 work days

Humidity measuring devices
approx. 20 % / 40 % / 60 % / 80 % r.F. , max. 3 devices, 3 work days

Larger numbers of devices or additional measurements possible on request.

EXPRESS ORDERS ONLY POSSIBLE AFTER PRIOR ENQUIRY UNDER EXPRESS@GREISINGER.DE

DISPLAY / CONTROLLER






APPLICATION:	GIA ... N	GIA ... N - Ex	GIA 2448	GTH2448/1	GTH2448/2 ../3 ../4 ../5	GIA 2000	GIA 0420 VO(-T) GIA 0420 WK(-T)	GIA 0420 VO-T-EX GIA 0420 WK-T-EX
Dimensions	24 x 48	24 x 48	24 x 48	24 x 48	24 x 48	48 x 96	Special size	
Measuring input normalized signal	•	•	•			•	•	•
Measuring input temperature (Pt100 / Pt1000)					•	•		
Measuring input temperature (thermo elements)				•		•		
Measuring input frequency / impulse, Universal input						•		
Ex-Protection		•						•
DEVICE INFORMATION:								
Catalogue page	**Page 17**	**Page 17**	**Page 18**	**Page 18**	**Page 18**	**Page 23**	**Page 27**	**Page 27**

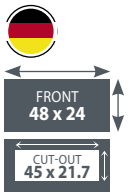







APPLICATION:	GIA 20 EB	GIR 230 ...	GIR 230 DIF...	GIR 300	GIR 360	GIR 2002 / ...PID	GIR 2002 NS / DIF ...	GIR 2000 Pt ...	GRA ... VO	GRA ... WK
Dimensions	24 x 48	24 x 48	24 x 48	36 x 72	36 x 72	48 x 96	48 x 96	48 x 96	Special size	
Measuring input normalized signal		•	•	•		•	•		•	•
Measuring input temperature (Pt100 / Pt1000)		•	•	•		•		•		
Measuring input temperature (thermo elements)		•		•		•				
Temperature (NTC, PTC)		•	•							
Measuring input frequency / impulse		•		•	•	•				
Universal input	•			•		•				
DEVICE INFORMATION:										
Catalogue page	**Page 19**	**Page 20**	**Page 20**	**Page 21**	**Page 22**	**Page 24**	**Page 26**	**Page 26**	**Page 28**	**Page 28**

µP-DISPLAY WITH FREELY ADJUSTABLE SCALE



HIGHLIGHTS:

- Time-saving on-site scaling without any additional auxiliary modules
- Large display range from -1999 to +9999 digits
- Smallest housing dimensions possible
- Monitoring of probe damage, probe short-circuit, values no longer within measuring range.
- Measurands: Moisture, pH, Redox, Oxygen, Conductivity, Gas, Temperature, Pressure, Distance,
- Revolutional Speed, Flow rate, Flow, Fill level, Power

GIA 0420 N

Art. no. 601026

µP-display with freely adjustable scale, without auxiliary energy, design type 4 ... 20 mA

GIA 010 N

Art. no. 601031

µP-display with freely adjustable scale, design type 0 ... 10 V

Specifications:	GIA 0420 N ...	GIA 010 N ...
Input signal:	4 ... 20 mA, 2-wire	0 ... 10 V, 3-wire
Voltage load:	approx. 3.5 V	-
Input resistance:	-	approx. 100 kOhm
Max. input:	25 mA	15 V
Power supply:	-	12 ... 28 V DC
Power consumption:	from current loop	<10 mA
Display:	LCD display, approx. 10 mm high	
Display range:	-1999 ... +9999	
Decimal point:	any position selectable	
Scaling:	scale freely adjustable via 3 keys at the back side of the unit	
Accuracy:	<0.2 % FS ±1 digit (at 25 °C)	
Temperature drift:	<100 ppm / K	
Measuring rate:	approx. 5 measurements / s	
Filter:	adjustable: 0.1 ... 2.0; off	
Storage:	min- / max-value memory selectable via button	
Switching output:	electrically isolated open collector	
Switching capacity:	28 V DC / 50 mA	
Working temperature:	-20 ... +50 °C	
Storage temperature:	-20 ... +70 °C	
Electric connection:	**GIA 0420 N ..:** 2 x 2-pin screw-type/plug-in terminal max. terminal range up to 1.5 mm² **GIA 010 N ..:** 1 x 2-pin., 1 x 3-pin. screw-type/plug-in terminal, max. terminal range up to 1.5 mm²	
Protection rating:	IP 20, with front flush installation IP 54	
Housing:	fibre-reinforced Noryl, front panel: polycarbonate	
Dimensions:	48 x 24 mm (B x H, front dimensions)	
Mounting depth:	approx. 65 mm incl. terminal	
Panel cutout:	$45^{+0,5}$ x $21,7^{+0,5}$ mm (W x H)	
Scope of supply:	Device, manual	

GIA 0420 N-EX

Art. no. 601033

Display, design type 4 ... 20 mA,
with EX-protection for all potentially explosive atmospheres
Ex qualification: Ex II 2G Ex ia/ib IIC/IIB T4
(Further Information please refer to our homepage www.greisinger.de)

GIA 010 N-EX

Art. no. 601034

Display, design type 0 ... 10 V,
with EX-protection for all potentially explosive atmospheres
Ex qualification: Ex II 2G Ex ia/ib IIC/IIB T4
(Further Information please refer to our homepage www.greisinger.de)

Ex-design types:

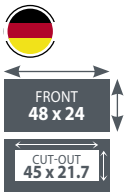
Ex protection: Ex II 2 G Ex ia IIC T4
EC type examination: BVS 11 ATEX 1 333 X

Connection data:
U_{max}: 28 V
I_{max}: 100 mA
P_{max}: 1.2 W (for GIA 0420 N-EX) or 0.95 W (for GIA 010 N-EX)

max. effective internal capacitance:
Ci = 13 nF (for GIA 0420 ...) or 26 nF (for GIA 010 ...)
additionally for the switching output: Ci = 4.5 nF
max. effective internal inductance: negligible small

Please keep in mind for the circuit of the optionally available switching output that the wiring has to be done from the same intrinsically safe circuit as the measuring signal!

UNIVERSAL DISPLAY FOR STANDARD SIGNALS



GIA 2448
Art. no. 600090 (standard model)
Display for Standard Signals (for self-adjustment)

GIA 2448 WE [1)]
Display for Standard Signals (settings and calibrations by our works)

1) Please specify as follows upon order: Input signal, scaling (lower and upper limits), decimal point and supply voltage.
(Order to read e.g. GIA 2448 WE: 4-20 mA, 4 mA=-50.0, 20 mA = 100.0, 12 VDC)

Specifications:	
Measuring input:	0 ... 20 V, 0 ... 10 V, 0 ... 2 V, 0 ... 1 V, 0 ... 200 mV, 0 ... 20 mA and 4 ... 20 mA (select via soldering jumpers)
Display range:	-1999 ... +1999 digit (adjustable via soldering jumpers and potentiometer)
Decimal point:	any position by means of soldering jumpers (soldering jumpers accessible after removal of front panel)
Accuracy:	±0.2 % ±1 digit (at nominal temperature = 25 °C)
Scan rate:	approx. 3 measurements / s
Display:	3½-digit, red 10 mm high LED display
Working temperature:	0 ... 50 °C (permissible ambient temperature)
Relative humidity:	5 ... 95 % RH (non-condensing)
Storage temperature:	-20 ... +70 °C
Voltage supply:	8 ... 20 V DC or 18 ... 29 V DC (standard) (set via soldering jumper)
Current supply:	max. 20 mA
Panel mounting:	with VA-spring clamp. allowed panel thicknesses from 1 ... approx. 10 mm
Connection terminal:	4-pin screw-type/plug-in terminal for wire cross sections from 0.14 ... 1.5 mm^2
Protection rating:	front side IP54
Housing:	glass fibre reinforced Noryl, front panel PC
Dimensions:	48 x 24 mm (W x H) (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel cutout:	$45^{+0.5}$ x $21{,}7^{+0.5}$ mm (W x H).
Scope of supply:	Device, manual

Option:

VAC
8 ... 20 V AC or 18 ... 27 V AC set via soldering jumper

G12
11 ... 13 V DC, electrically isolated

G24
22 ... 27 V DC, electrically isolated

Accessories and spare parts:

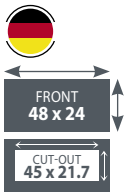
GNG 220/2-12V
Art. no. 600305
power supply for GIA 2448 and GTH 2448
(Input: 230 VAC; output: 2 x 12 VDC regulated, 30 mA each)

GNG 12 / 24
Art. no. 600276
DC/DC-converter to electrically isolate 12 V DC-supply voltages

GNG 24 / 24
Art. no. 600277
DC/DC-converter to electrically isolate 24 V DC-supply voltages

for additional accessories, transmitter, probes p.r.t. chapters transmitter and temperature probe

UNIVERSAL DISPLAY FOR TEMPERATURE



GTH 2448/1
Art. no. 600083
Display for temperature (NiCr-Ni)

GTH 2448/2
Art. no. 600084
Display for temperature (Pt100)

GTH 2448/3
Art. no. 600085
Display for temperature (Pt100)

GTH 2448/4
Art. no. 600086
Display for temperature (Pt1000)

GTH 2448/5
Art. no. 600087
Display for temperature (Pt1000)

Specifications:	
Measuring input, Resolution:	
GTH 2448/1:	-50 ... +1150 °C (NiCr-Ni)
GTH 2448/2:	-200 ... +650 °C (Pt100, 2-wire), 1 °C
GTH 2448/3:	-60.0 ... +199.9 °C (Pt100, 2-wire), 0.1 °C
GTH 2448/4:	-200 ... +650 °C (Pt1000, 2-wire), 1 °C
GTH 2448/5:	-60.0 ... +199.9 °C (Pt1000, 2-wire), 0.1 °C
Accuracy: (at nominal temperature = 25 °C)	
NiCr-Ni:	±1 % ±1 digit (from -20 ...+550 °C and 920 ...1150 °C) ±1.5 % ±1 digit (from 550 ... 920 °C)
Pt100, Pt1000:	±0.5 °C ±1 digit or ±1 °C ±1 digit
Offset compensation: (only for Pt100 and Pt1000)	The zero point offset of the sensor (e.g. due to long cables) can be compensated for by means of the spindle trimmer on the backside of the device.
Display:	3½-digit, red 10 mm high LED display
Scan rate:	approx. 3 measurements / s
Working temperature:	0 ... 50 °C (permissible ambient temperature)
Relative humidity:	5 ... 95 % RH (non-condensing)
Storage temperature:	-20 ... +70 °C
Voltage supply:	8 ... 20 V DC or 18 ... 29 V DC (standard) (set via soldering jumper)
Current supply:	max. 20 mA
Panel mounting:	with VA-spring clamp. allowed panel thicknesses from 1 ... approx. 10 mm
Connection terminal:	4-pin screw-type/plug-in terminal for wire cross sections from 0.14 ... 1.5 mm^2
Protection rating:	front side IP54
Housing:	glass fibre reinforced Noryl, front panel PC
Dimensions:	48 x 24 mm (W x H) (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel cutout:	$45^{+0.5}$ x $21{,}7^{+0.5}$ mm (W x H)
Scope of supply:	Device, manual

System solution - complete packages:

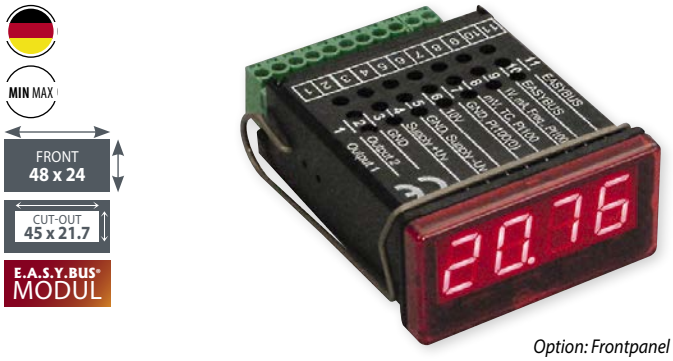
KFZ 2000
Art. no. 603241
Exhaust gas temperature set for measurement of exhaust gas temperatures up to 1000 °C in motor vehicles (e.g. motorsports). The set consists of:

GTH 2448/1 12 V DC:
Art. no. 603242
NiCr-Ni thermometer with additional over-voltage protection

GTF 101-5-30-0150-L03-S:
Art. no. 601317
temperature probe with jacket material: Nimonic 75 (view p.r.t. page 69), Cable length = 3 m, extended cable against upcharge available

GKV 4:
Art. no. 602891
clamping ring screw connection (p.r.t. page 85)

UNIVERSAL DISPLAY AND REGULATING DEVICE



Option: Frontpanel with push buttons
(frontpanel without buttons included in delivery)

HIGHLIGHTS:

- Universal inputs for normalized signals, frequency, Pt100, Pt1000 and thermocouples
- Configurable as display or controller (5 switching functions)
- extensive self-monitoring and diagnostic system
- Limit functions, digital filter, min-/max value memory
- Alarm delay selectable

GIA 20 EB

Art. no. 601832 (Standard model)
Universal display and regulating device

Specifications:	
Measuring input:	universal input for
Normalized signal:	4 ... 20 mA, 0 ... 20 mA, 0 ... 1 V, 0 ... 2 V, 0 ... 10 V, 0 ... 50 mV
Resistance thermometer:	Pt100 (3-wire), Pt1000 (2-wire)
Thermocouples:	Types J, K, N, S, T
Frequency, rotational speed:	TTL-signal, switching contact
Counter up / down:	TTL-signal, switching contact
Serial interface	
Measuring rate:	approx. 100 measurings / s (for normalized signal) resp. approx. 4 measurings / s (for temperature and frequency)
Measuring resp. display ranges, resolution:	
Temperature:	(display unit selectable: °C or °F) **Pt100:** -200 ... +850 °C or -50.0 ... +200.0 °C; **Pt1000:** -200 ... +850 °C; **Type J:** -170 ... +950 °C; **Type K:** -270 ... +1350 °C; **Type N:** -270 ... +1300 °C; **Type S:** -50 ... +1750 °C; **Type T:** -270 ... +400 °C
Normalized signals:	-1999 ... 9999 digit, start and end value and DP freely scaleable
recommended range:	≤2000 digit
Frequency:	0.000 Hz ... 10 kHz, display freely scaleable
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler: 1 ... 1000
Counter up/down:	countervalue remains on power loss 0 ... 9999 (10 Mio. with prescaler), pulse frequency: ≤10 kHz, selectable prescaler: 1 ... 1000
Serial interface:	Displaying and controlling from values coming via the serial interface.
Accuracy: (at nominal temperature = 25 °C)	
Normalized signal:	<0.2 % FS ±1 digit (at 0 ... 50 mV: <0.3 % FS ±1 digit)
Resistance thermometer:	<0.5 % FS ±1 digit
Thermocouples:	<0.3 % FS ±1 digit (at type S: <0.5 % FS ±1 digit)
Point of comparison:	±1 °C
Frequency, rotational speed, counter:	<0.1 % FS ±1 digit
Outputs:	2 switching outputs, not electrically isolated
Switching behavior:	Low-Side, High-Side or Push-Pull (selectable)
Connection data:	Low-Side: 28V/1 A; High-Side: Ub/200 mA
Controller state:	2-point, 3-point, 2-point with alarm, min/max alarm to 1 output, min/max alarm to 2 outputs
Switching point, hysteresis:	freely adjustable
Response time:	≤20 ms with standard signal ≤0.5 s with temperature and frequency
Display:	approx. 10 mm high, 4-digit red LED-display
Service:	with 3 push-buttons (after disassembly of the frontpanel)
Option:	FS3T, frontpanel with 3 push-buttons for comfortable configuration. Trouble-free replacement is possible (refer accessories)
Interface:	serial interface, electrical isolated, EASYBus compatible
Miscellaneous:	constant self-diagnosis, digital filter function, measuring range limiting
Voltage supply:	9 ... 28 V DC (standard)
Option:	electrical isolated voltage supply 11 ... 13 V (G12) or 22 ... 27 V (G24)
Power consumption:	max. 30 mA (without outputs)
Nominal temperature:	25 °C
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % r.F. (nicht betauend)
Storage temperature:	-30 ... +70 °C
Panel mounting:	with VA-spring clamp
Allowed panel thicknesses:	from 1 ... approx. 10 mm
Connection terminal:	screw-type/plug-in terminal: 2-pin for interface and 9-pin for other connections. For wire cross sections from 0.14 ... 1.5 mm².
Protection rating:	front side IP54
Housing:	glass fibre reinforced noryl, front panel polycarbonate
Dimensions:	48 x 24 mm (W x H) (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panelcut-out:	$45^{+0.5}$ x $21{,}7^{+0.5}$ mm (W x H)
Scope of supply:	Device, manual

Standard variants:

GIA 20 EB-G12
Art. no. 604305
Universal display and regulating device with insulated power supply: 11 ... 13 V DC

GIA 20 EB-G24
Art. no. 601983
Universal display and regulating device with insulated power supply: 22 ... 27 V DC

Accessories and spare parts:

FS3T
Art. no. 603215
Frontpanel with 3 push-buttons for comfortable configuration, for adjustments at variable switching points, calling of min- and max-values etc.

GNR 10
Art. no. 603680
Power supply and relay module for one GIA20EB (p.r.t. page 30)
(Input: 230 V AC, Power supply for device + transducer, 2 relay outputs)

Temperature probes **p.r.t. page 67-86**
Transducer **p.r.t. page 48-66**

Special design types:

GIA 20 EB / PK

Art. no. 600968
Universal display and regulating device with individual programmable linearization characteristic.

General:

Even heavily bent sensor characteristics/value curves can be approximated by a straighte-ned curve with 30 freely programmable linearization points.
The adjustment to the measurement is done via the integrated interface with the (free) configuration software. For the connection with a PC, an additional serial converter EBW 1 or EBW 3 will be needed. Therefore only the input values (in mA, V, Ω or Hz) and the corre-sponding displayed values have to be entered.
For detailed information please refer to our homepage www.greisinger.de

THE DISPLAYING AND REGULATING DEVICE FOR 230 V

HIGHLIGHTS:

- 5 input executions for choice:
- 2 integrated switching outputs
- Display or controller
- Comprehensive self-monitoring
- Limit function

GIR 230 NS
Art. no. 600972

GIR 230 Pt
Art. no. 600976

GIR 230 TC
Art. no. 600978

GIR 230 FR
Art. no. 600970

GIR 230 NT
Art. no. 600974

Version GIR 230 NS (normalized signal):	
Measuring input:	4 ... 20 mA, 0 ... 20 mA, 0 ... 10 V
Display range:	-1999 ... 9999 digit, initial value, final value and DP freely adjustable
Recommended range:	≤2000 digit
Accuracy:	<0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 100 measurings / s

Version GIR 230 Pt (resistor):	
Measuring input:	Pt100 (3-wire), Pt1000 (2-wire)
Measuring ranges, resolution:	**Pt100:** -200 ... +850 °C (1°) or -50.0 ... +200.0 °C (0.1°) **Pt1000:** -200 ... +850 °C
Accuracy:	<0.5 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 4 measurings / s

Version GIR 230 TC (thermo couple):	
Measuring input:	Types J, K, N, S, T and 0 ... 50 mV
Measuring ranges, resolution:	**Type J:** -170 ... +950 °C, **Type K:** -270 ... +1350 °C, **Type N:** -270 ... +1300 °C, **Type S:** -50 ... +1750 °C, **Type T:** -270 ... +400 °C
Accuracy:	<0.3 % FS ±1 digit (type S: <0.5 % FS ±1 digit) (at 25 °C)
Point of comparison:	±1 °C
Measuring rate:	approx. 4 measurings / s

Version GIR 230 FR (frequency):	
Measuring input:	frequency
Display range:	-1999 ... 9999 digit, freely scaleable
Accuracy:	<0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Frequency measuring:	0.000 Hz ... 10 kHz
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler (1 ... 1000)
Counter up / down:	0 ... 9999 (10 mio with prescaler)

Version GIR 230 NT (NTC and only 1 relay output):	
Measuring input:	NTC (2-wire)
Measuring ranges:	-40.0 ... +120.0°C
Accuracy:	<0.5 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 4 measurings / s

Accessories and spare parts:	
GTF 230 S *Art. no. 603014*	NTC-temperature probe, -40 ... +120 °C, sensor sleeve made of stainless steel, Ø 5 x 50 mm, approx. 1 m silicone-cable
GTF 230 S-L03 *Art. no. 605910*	see above, approx. 3 m silicone cable
GTF 230 S-L05 *Art. no. 604620*	see above, approx. 5 m silicone cable

GIR 230 DIF-PT...
Art. no. 600982
Difference controller with 2 measuring inputs for Pt1000

GIR 230 DIF-NT...
Art. no. 600984
Difference controller with 2 measuring inputs for NTC

GIR 230 DIF-NS...
Art. no. 600980
Difference controller with 2 measuring inputs for 4 ... 20 mA, 0 ... 20 mA or 0 ... 10 V

Version GIR 230 DIF-PT1000, GIR 230 DIF-NT:	
Measuring inputs:	2 x Pt1000 (2-wire) or 2 x NTC
Measuring ranges, resolution:	**Pt1000:** -200 ... +850 °C, 1 °C **NTC:** -40.0 ... +120.0 °C, 0.1 °C
Display:	difference temperature sensor 1 - sensor 2
Accuracy:	<0.5 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 4 measurings / s

Version GIR 230 DIF-NS - 420 mA, ... - 020 mA, ... - 010 V:	
Measuring inputs:	(2 x) 4 ... 20 mA, (2 x) 0 ... 20 mA or (2 x) 0 ... 10 V specify required input signals by order!
Display range:	-1999 ... 9999 digit, start and end value and DP freely adjustable
Recommended range:	≤2000 digit
Accuracy:	<0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 100 measurings / s

Specifications:	
Relay output:	2 (1) closing contacts (GIR 230 NTC: 1 relay output), 230 V~ switching, switching power: 5 A, 230 V AC
Alarm output:	NPN, open collector, switching power: 30 mA, max. 28 V
Controller states:	2-point, 3-point*, 2-point with alarm, min / max alarm to 1 output, min / max alarm to 2 outputs* *(* = not available at GIR 230 NT)*
Switching points, hysteresis, alarm points:	freely selectable
Display:	approx. 10 mm high, 4-digit red LED-display
Operating conditions:	-20 ... +50 °C, 0 ... 80 % RH (non condensing)
Voltage supply:	230 V, 50 / 60 Hz, approx. 2 VA
Panel mounting:	with VA-spring clamp
Allowed panel thicknesses:	from 1 ... approx. 10 mm
Connection terminal via screw-type/plug-in terminal:	
4-pin (...NTC: 3-pin)	for power supply and relay outputs
4-pin (...NTC: 3-pin)	for measuring input and alarm output
For wire cross selections:	from 0.14 ... 1.5 mm².
Protection rating:	front side IP54
Housing:	glass fibre reinforced noryl, front panel polycarbonate
Dimensions:	48 x 24 mm (W x H) (front frame)
Mounting depth:	approx. 65 mm (incl. screw-type/plug-in terminal)
Panel cut-out:	$45^{+0.5}$ x $21{,}7^{+0.5}$ mm (W x H)
Scope of supply:	Device, manual

Options:	
SA1	Power supply 12 ... 28 V DC, Outputs: 2 (1) relay outputs, +Ub switching
SA2	Power supply 12 ... 24 V AC
SA3	Power supply 12 V DC, electrically isolated
SA4	Power supply 24 V DC, electrically isolated

UNIVERSAL DISPLAYING AND CONTROLLING DEVICE

HIGHLIGHTS:

- Universal input for standard signals, frequency, Pt100, Pt1000 and thermocouples
- 2 integrated switching outputs (electrically isolated)
- Configurable as display or controller (5 switching functions)
- Fast controlling and monitoring
- Comprehensive self-test and diagnostic system

GIR 300

Art. no. 604692 (Standard model)

Universal displaying and controlling device

Specifications:	
Measuring input:	universal input for
Normalized signal:	4 ... 20 mA, 0 ... 20 mA, 0 ... 1 V, 0 ... 2 V, 0 ... 10 V, 0 ... 50 mV
Resistance thermometer:	Pt100 (3-wire), Pt1000 (2-wire)
Thermocouples:	Types J, K, N, S, T
Frequency, rotational speed:	TTL signal, switching contact
Up- / down- counter:	TTL signal, switching contact
Serial interface	
Measuring rate:	approx. 100 measurements / s (standard signal) or approx. 4 measurements / s (temperature and frequency)
Measuring and display range, resolution:	
Temperature: (unit switchable between °C and °F)	**Pt100:** -200 ... +850 °C or -50,0 ... +200,0 °C; **Pt1000:** -200 ... +850 °C; **Type J:** -170 ... +950 °C; **Type K:** -270 ... +1350 °C; **Type N:** -270 ... +1300 °C; **Type S:** -50 ... +1750 °C; **Type T:** -270 ... +400 °C
Standard signals:	-1999 ... 9999 digit, decimal point, start and end value freely selectable
Recommanded range:	≤2000 digit
Frequency:	0.000 Hz ... 10 kHz, display freely scalable
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler: 1 ... 1000
Up- / down-counter:	The counter reading is stored also in power-down state. 0 ... 9999 (10 million with prescaler), pulse frequency: ≤10 kHz, selectable prescaler: 1 ... 1000
Serial interface:	Display and control functions with values obtained via serial interface
Accuracy: (at nominal temperature = 25 °C)	
Normalized signal:	<0.2 % FS ±1 digit (at 0 ... 50 mV: <0.3 % FS ±1 digit)
Resistance thermometer:	<0.5 % FS ±1 digit
Thermocouples:	<0.3 % FS ±1 digit (for type S: <0.5 % FS ±1 digit)
Point of comparison accuracy:	±1 °C
Frequency, rotational speed, counter:	<0.1 % FS ±1 digit
Outputs:	2 volt-free relay switching outputs relay 1: normally-open contact relay 2: normally-closed contact
Switching functions:	2-point, 3-point, 2-point with alarm, combined min-/max-alarm with 1 output, separate min-/max- alarm with 2 outputs
Switching points, switching hysteresis:	freely selectable
Response time:	≤20 ms for standard signals ≤0.5 s for temperature and frequency
Display:	approx. 13 mm high, 4-digit red LED display
Interface:	serial interface, electrically isolated, compatible to EASYBus
Miscellaneous:	continuous self-diagnostics, digital filter function, measuring range limitation
Voltage supply:	9 ... 28 V DC (standard)
Option:	G24: 9 ... 28 V DC, electrically isolated
Power consumption:	max. 70 mA
Nominal temperature:	25 °C
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % r.F. (non condensing)
Storage temperature:	-30 ... +70 °C
Panel mounting:	with fixing clamps
Electric connection:	via screw-type/plug-in terminals cable cross section: 0.14 ... 1.5 mm².
Housing	
Dimensions:	72 x 36 mm (W x H) (front frame)
Mounting depth:	approx. 75 mm (incl. screw-type/plug-in terminals)
Panelcut-out:	$68.5^{+0.5}$ x $32.0^{+0.5}$ mm (W x H)
Scope of supply:	Device, manual

Standard variant:

GIR 300-G24

Art. no. 605203

GIR 300 with electrically isolated supply 9 ... 28 V DC

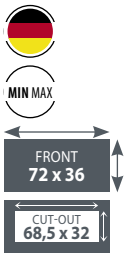
Accessories and spare parts:

APG-7

Art. no. 606825

Housing for surface mounting incl. seal GGD3672

UNIVERSAL COUNTER AND FREQUENCY DEVICE



HIGHLIGHTS:

- 6-digit display
- Assembly, dismantling, sum and difference counter
- 2 integrated switching outputs (galvanically isolated)
- Configurable as display or controller (5 switching functions)
- Extensive self-monitoring and diagnostic system

GIR 360

Art. no. 607953

Freely selectable universal counter and frequency meter

Specifications:	
Inputs	
Input 1:	frequency, rotational speed, counter input A
Input voltage:	0 ... 5 V (0 ... 28 V with dropping resistor)
Input level:	Low <0.5 V; High >2.2 V
NPN:	pullup resistor 7 kohms to 3.3 V
PNP:	pulldown resistor 7 kohms against GND
Min. pulse width:	50 us
Input 2:	count input B, Gate, direction
Input voltage:	0 ... 5 V (0 ... 28 V with dropping resistor)
Input level:	Low <0.5 V; High >2.2 V
NPN:	pullup resistor 7 kohms to 3.3 V
PNP:	pulldown resistor 7 kohms against GND
Min. pulse width:	50 us
Input 3:	reset input
Input level:	Low <1 V; High >8 V
Min. pulse width:	50 ms
Measuring / counting areas	
Frequency:	0 ... 10 kHz
Speed:	max. 10000 U/min, switchable prescaler: 1 ... 1000
Counter:	-2.147.483.647 ... 2.147.483.646
Display area	
Frequency / Speed:	-1999 ... 9999 digit, decimal point freely selectable
Counter:	-199999 ... 999999 digit, decimal point freely selectable
Functions:	Frequency measurement Speed measurement, Up counter, down counter Up / down counter with direction input Totalizer A + B, Difference counter A-B, phase discriminator
Display:	approx. 10 mm high, 6-digit red LED display
Outputs:	2 volt-free relay switching outputs relay 1: normally-open contact relay 2: normally-closed contact
Switching functions:	2-point, 3-point, 2-point with alarm, combined min-/max-alarm with 1 output, separate min-/max- alarm with 2 outputs
Switching points, switching hysteresis:	freely selectable
Interface:	serial interface, electrically isolated, compatible to EASYBus
Miscellaneous:	continuous self-diagnostics, digital filter function, measuring range limitation

Voltage supply:	9 ... 28 V DC (standard)
Option:	G24: 9 ... 28 V DC, electrically isolated
Power consumption:	max. 70 mA
Nominal temperature:	25 °C
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Panel mounting:	with fixing clamps
Electric connection:	via screw-type/plug-in terminals cable cross section: 0.14 ... 1.5 mm².
Housing	
Dimensions:	72 x 36 mm (W x H) (front frame)
Mounting depth:	approx. 75 mm (incl. screw-type/plug-in terminals)
Panelcut-out:	$68{,}5^{+0.5}$ x $32{,}0^{+0.5}$ mm (W x H)
Scope of supply:	Device, manual

Variant:

GIR 360-G24

Art. no. 607954

GIR 360 with electrically isolated supply 9 ... 28 V DC

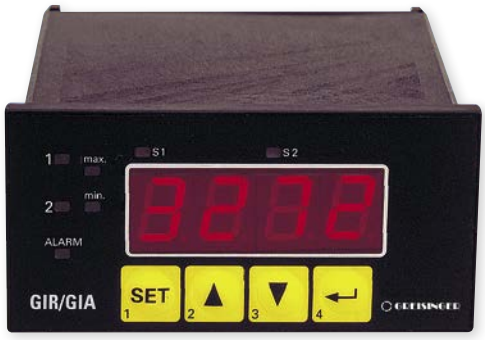
Accessories and spare parts:

APG-7

Art. no. 606825

Housing for surface mounting incl. seal GGD3672

UNIVERSAL DISPLAYING DEVICE



HIGHLIGHTS:

- Universal inputs for normalized signals, frequency, Pt100, Pt1000 and thermocouples, freely adjustable
- Integrated isolated power supply for measuring transducer (24V / 22 mA)
- Extensive self-monitoring and diagnostic system
- Serial interface - EASYBus
- Limit functions, digital filter, min-/max value memory

GIA 2000

Art. no. 600963 (Standard model)

Universal Displaying Device

Specifications:	
Measuring input: universal input (freely adjustable) for	
Normalized signal:	4 ... 20 mA, 0 ... 20 mA, 0 ... 1 V, 0 ... 2 V, 0 ... 10 V, 0 ... 50 mV
Resistance thermometer:	Pt100 (3-wire), Pt1000 (2-wire)
Thermocouples:	Types J, K, N, S, T
Frequency:	TTL-signal, switching contact
Flow, Rotational speed:	TTL-signal, switching contact
Counter up / down:	TTL-signal, switching contact
Serial interface	
Measuring rate:	approx. 100 measurings / s (for normalized signal and frequency) or approx. 4 measurings / s (for temperature)
Measuring resp. display ranges, resolution:	
Temperature: (display unit selectable: °C or °F)	**Pt100:** -200 ... +850 °C or -50.0 ... +200.0 °C; **Pt1000:** -200 ... +850 °C; **Type J:** -170 ... +950 °C or -70.0 ... +300.0 °C; **Type K:** -270 ... +1372 °C or -70.0 ... +250.0 °C; **Type N:** -270 ... +1350 °C or -100.0 ... +300.0 °C; **Type S:** -50 ... +1750 °C; **Type T:** -270 ... +400 °C or -70.0 ... +200.0 °C
Normalized signals:	-1999 ... 9999 digit, decimal point, start and end value freely selectable
Recommended range:	≤2000 digit
Frequency:	0.000 Hz ... 10 kHz, display freely scalable
Rotational speed:	0.000 U/min ... 9999 U/min, selectable prescaler: 1 ... 1000
Flow:	0 ... 9999 l/s, 0 ... 9999 l/min, 0 ... 9999 l/h
Counter up/down:	counter value remains on power loss 0 ... 9999 (10 mio. with prescaler), pulse frequency: ≤10 kHz
Serial interface:	Displaying and controlling from values coming via the serial interface.
Accuracy: (at nominal temperature = 25 °C)	
Normalized signal:	<0.2 % FS ±1 digit (at 0 ... 50 mV: <0.3 % FS ±1 digit)
Resistance thermometer:	<0.3 % FS ±1 digit
Thermocouples:	<0.3 % FS ±1 digit (at type S: <0.5 % FS ±1 digit)
Point of comparison:	±1 °C
Frequency, rotational speed, counter:	<0.1 % FS ±1 digit
Analog output: (option)	freely scalable analogue output 0 ... 20 mA / 4 ... 20 mA or 0 ... 10 V
Display:	approx. 13 mm high, 4-digit red LED-display
Interface:	serial interface, electrical isolated, EASYBus compatible
Power supply for sensor:	integrated isolated power supply for measuring transducer: 24 V DC ±5 %, 22 mA (for DC-supply 18 V DC)
Miscellaneous:	permanent self-monitoring, digital filter function, measuring range boundary (limit)
Voltage supply:	230 V AC, 50/60 Hz (standard)
Power consumption:	approx. 5 VA
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Panel mounting:	with fixing clamps
Electrical connection:	via screw-type/plug-in terminals cable diameters from 0.14 ... 1.5 mm².
Protection rating:	front side IP54, IP65 upon request
Housing:	rack type housing
Dimensions:	96 x 48 mm (W x H) (front frame)
Mounting depth:	approx. 115 mm (incl. screw-type/plug-in terminals)
Panelcut-out:	$90.5^{+0,5}$ x $43.0^{+0,5}$ mm (W x H)
Scope of supply:	Device, 2 fixing clamps, 1 sealing GGD4896, unit stickers EAK 36, screw-type/plug-in terminals, mounting- and operation manual

Variants:

GIA 2000-012D
Art. no. 602103
GIA 2000 with voltage supply: 12 V DC (11 ... 14 V)

GIA 2000-024D
Art. no. 601501
GIA 2000 with voltage supply: 24 V DC (22 ... 27 V)

GIA 2000-115A
Art. no. 604861
GIA 2000 with voltage supply: 115 V AC

GIA 2000-230A-AA
Art. no. 601405
GIA 2000 with analog output 0 ... 20 mA, 4 ... 20 mA (changeable)

GIA 2000-230A-AV
Art. no. 602725
GIA 2000 with analog output 0 ... 10 V

Accessories and spare parts:

GGD 4896
Art. no. 603042
additional sealing for panel mounting IP65

EAK 36
Art. no. 603227
Unit stickers (black with white text) for 36 different units for lettering of display devices.

EBW 3
Art. no. 601137
Interface converter for connection of one EASYBus-module (e. g. EASYLog) to the USB-interface of your PC. (Power supply via USB)

EBS 20M
Art. no. 601158
Software for recording and archiving of the measuring values (p.r.t. page 46).

Temperature probes **p.r.t. page 67-86**

for other accessories p.r.t. page 43-44

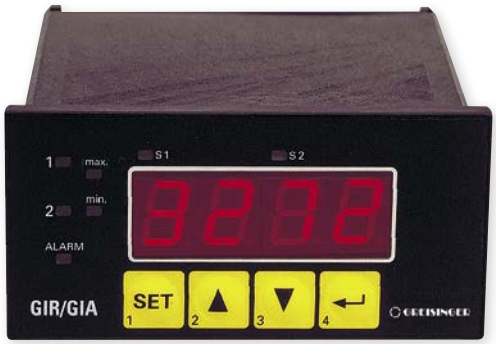
UNIVERSAL DISPLAYING AND REGULATING DEVICE

MIN MAX

FRONT 96 x 48

CUT-OUT 90.5 x 43

E.A.S.Y.BUS® MODUL



HIGHLIGHTS:

- 2 relay switching outputs
- 1 analog output (0(4) ... 20 mA or 0 ... 10 V) (optional)
- 5 programmable switching modes
- electrical isolated power supply for a transmitter (24 V / 22 mA)
- serial interface, bus operation

ADDITIONAL FUNCTIONS GIR 2002 PID:

- P, I, PI, PD or PID control mode
- 3-point motorized valve control
- continuous regulating output (optional)

GIR 2002

Art. no. 600948 (Standard model)

Universal displaying and regulating device with on/off-control mode

GIR 2002 PID

Art. no. 600951 (Standard model)

Universal displaying and regulating device with PID-control mode

General:

The universal controller GIR 2002 is the ideal device for simple control systems (on/off switching, relay outputs, ...), because of its compact construction and its high ease of use. The GIR 2002 PID (basic version) supplies one control output for a 2-point-control the types of control P, I, PI, PD or PID and a second control output for on/off switching. The device can also be configured as a 3-point motorized valve controller or as controller with continuous output (optionally).
Due to the universal input and the various switching functions the controller can be optimally adapted to the requirements of the system. The structured menu navigation allows a straightforward handling and a fast adjustment of the parameters.
A LED switching position display gives information to the user about the current status of the switching outputs. The automatic self-test and diagnostic system ensures maximum operational safety and reports systems errors by conclusive error codes. The parameters are automatically saved, so that all data will be maintained even in case of a power blackout.
Among others most of the Greisinger transmitters, rpm sensors and flow rate sensors can be connected directly to the integrated transmitter power supply (24 VDC / 22 mA) of the controller.
If the device is used as a thermocouple or resistance thermometer, the measuring value can be alternatively displayed in °C or °F. By means of an offset correction the measured value can be scaled i.e. to the resistivity of the wires. The current and voltage inputs can be arbitrarily scaled in the range of -1999 ... +9999.
The GIR 2002 has a serial, bus-compatible interface by default, by which a comfortable adjustment of the parameters as well as recording of measured values is possible. With the optionally available Windows library EASYBUS.dll up to 240 devices can be integrated into own programs.

Application:

- process regulating
- temperature controller
- pressure monitoring
- rotation speed display
- flow counter, etc.

Specifications:

Measuring input:	Measuring / display ranges:	Accuracy (at nominal temperature):
Thermocouples (4 measurings / s)		
FeCu-Ni: (Type J, IEC 584)	-70.0 ... +300.0 °C or -170 ... +950 °C	<0.3 % FS ±1 digit *
NiCr-Ni: (Type K, IEC 584)	-70.0 ... +250.0 °C or -270 ... +1372 °C	<0.3 % FS ±1 digit *
NiCrSi-NiSi: (Type N, IEC 584)	-100.0 ... +300.0 °C or -270 ... +1350 °C	<0.3 % FS ±1 digit *
Pt10Rh-Pt: (Type S, IEC 584)	-50 ... +1750 °C	<0.5 % FS ±1 digit *
Cu-CuNi: (Type T, IEC 584)	-70.0 ... +200.0 °C or -270 ... +400 °C	<0.3 % FS ±1 digit *
	** = Point of comparison: ±1 °C*	
Resistance thermometer (4 measurings / s)		
Pt 100: (3-wire, DIN EN 60751)	-50.0 ... +200.0 °C or -200 ... +850 °C	<0.3 % FS ±1 digit
Pt1000: (2-wire, DIN EN 60751)	-200 ... +850 °C	<0.3 % FS ±1 digit

Action signals / normalized signal (100 measurings / s)		
0 ... 1 V, 0 ... 2 V, 0 ... 10 V:	-1999 ... +9999 digit, scale freely adjustable	<0.2 % FS ±1 digit
0 ... 20 mA, 4 ... 20 mA:	-1999 ... +9999 digit, scale freely adjustable	<0.2 % FS ±1 digit
0 ... 50 mV:	-1999 ... +9999 digit, scale freely adjustable	<0.3 % FS ±1 digit
Frequency		
TTL-Signal:	0.000 Hz ... 10 kHz, scale freely adjustable	<0.1 % FS ±1 digit
Switching contact NPN:	0.000 Hz ... 3 kHz, scale freely adjustable	<0.1 % FS ±1 digit
Switching contact PNP:	0.000 Hz ... 1 kHz, scale freely adjustable	<0.1 % FS ±1 digit
Rotational speed:	0.000 ... 9999 U/min.	selectable prescaler: 1 ... 1000, pulse frequency: max. 600.000 Imp. / min. at TTL
Flow:	0 ... 9999 l/s, 0 ... 9999 l/min or 0 ... 9999 l/h	
Counter up / down		
TTL-signal, switching contact (NPN, PNP):	0 ... 9999 or 0 ... 999 000 (with prescaler) selectable prescaler: 1 ... 1000, pulse frequency: max. 10.000 Imp. / s at TTL	<0.1 % FS ±1 digit
Serial interface:	displaying and controlling from values coming via the serial interface	
Outputs: Please note: Not all options are available for both device types and not all options can be combined with each other. Please see therefore the matrix on next page.		
Ausgang-R1: (Standard model)	voltage free relay output (standard) normally-open contact, switching power: 5 A (ohmic load), 250 V AC	
Optional:	H1: control output for semiconductor relay (6 V DC / 15 mA) AA1: freely scalable analog output 0(4)-20 mA AV1: 0 ... 10 V SA1: continuous output 0(4) ... 20 mA SV1: 0 ... 10 V	
Ausgang-R2: (Standard model)	voltage free relay output (standard) change-over contact, switching power: 10 A (ohmic load), 250 V AC	
Optional:	H2: control output for semiconductor relay (6 V DC / 15 mA)	
Output 3: (not available at standard device type)		
Optional:	R3: voltage free relay output (chance-over contact) switching power: 1 A / 40 V AC or 30 V DC H3: control output for semiconductor relay (14 VDC / 15 mA) N3: electrical isolated NPN-switching contact (max. 1 A / 30 V DC) AA3: freely scalable analog output 0(4) ... 20 mA AV3: 0 ... 10 V SA3: continuous output 0(4) ... 20 mA SV3: continuous output 0 ... 10 V	
Controller states:	5 or 6, selectable (e.g. 2-point regulator, 3-point regulator, ...)	
Switching point, hysteresis:	freely adjustable	
Response time:	≤25 ms at normalized signals, ≤0.5 s at temperature and frequency	
Display:	approx. 13 mm high, 4-digit red LED-display	
Interface:	serial interface, electrical isolated, EASYBus compatible	
Power supply for sensor:	24 V DC ±2 %, 22 mA at 230 V AC power supply 18 V DC ±2 %, 22 mA at 12 V DC or 24 V DC power supply	

UNIVERSAL DISPLAYING AND REGULATING DEVICE

Miscellaneous:	permanent self-monitoring, digital filter function, measuring range boundary (limit)
Voltage supply:	230 V AC, 50/60 Hz (Standard)
Optional:	012D: voltage supply: 12 VDC (11 ... 14 V) 024D: voltage supply: 24 VDC (22 ... 27 V) 115A: voltage supply: 115 VAC ±5 %
Power consumption:	approx. 6 VA
Operating conditions:	-20 ... +50 °C, 0 ... 80 % RH (non condensing)
Panel mounting:	with fixing clamps
Electrical connection:	via screw-type/plug-in terminals cable diameters from 0.14 ... 1.5 mm².
Protection rating:	IP65
Housing:	standard rack type housing
Dimensions:	96 x 48 mm (W x H) (front frame)
Mounting depth:	approx. 115 mm (with fixing clamps)
Panelcut-out:	$90{,}5^{+0.5}$ x $43{,}0^{+0.5}$ mm (W x H)
Scope of supply:	Device, 2 fixing clamps, 1 sealing GGD4896, unit stickers EAK 36, screw-type/plug-in terminals, mounting- and operation manual

Accessories and spare parts:

GGD4896
Art. no. 603042
additional sealing for panel mounting IP65

EAK 36
Art. no. 603227
Unit stickers (black with white text) for 36 different units for lettering of display devices (p.r.t. page 23)

Temperature probes **p.r.t. page 67-86**

for other accessories p.r.t. page 46, 43-44

Matrix:

Outputs	GIR 2002			GIR 2002 PID		
	out 1	out 2	out 3	out 1	out 2	out 3
Standard type:	normally-open contact	chance-over contact	--	normally-open contact	chance-over contact	--
mögliche Ausgangsoptionen						
Output 1 = Control output **H1:**	•			•		
Output 2 = Control output **H2:**		•			•	
Output 3 = Relay (chance-over contact) **R3:**			•			•
Output 3 = Control output **H3:**			•			•
Output 3 = NPN-switching output **N3:**			•			•
Output 1 = Analog output 0(4) ... 20 mA **AA1:**	•		no out3 possible			
Output 1 = Analog output 0 ... 10 V **AV1:**	•					
Output 3 = Analog output 0(4) ... 20 mA **AA3:**			•			•
Output 3 = Analog output 0 ... 10 V **AV3:**			•			•
Ausgang 1 = Continuous output 0(4) ... 20 mA **SA1:**				•		no out3 possible
Ausgang 1 = Continuous output 0 ... 10 V **SV1:**				•		
Ausgang 3 = Continuous output 0(4) ... 20 mA **SA3:**						•
Ausgang 3 = Continuous output 0 ... 10 V **SV3:**						•

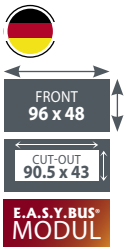
GIR2002 - 1 - 2 - 3 - 4 - 5 - 6

Greisinger		
1.	Factory setting	
	WE	Yes
		no
2.	Voltage supply	
	230A	230 V AC
	012D	12 V DC
	012DA	12 V DC, At analogue output or NPN switching output or REL3 or HLR3
	024D	24 V DC
	024DA	24 V DC, With constant/analogue output or NPN switching output
	115A	115 V AC
3.	Output 1	
	R1	Normally-open contact relay
	H1	Semiconductor relay
	AA1	Analogue output 0/4 ... 20 mA, 3rd output not possible
	AV1	Analogue output 0 ... 10 V, 3rd output not possible
4.	Output 2	
	R2	Changeover contact relay
	H2	Semiconductor relay
	00	No 3rd output
5.	Output 3 (Option)	
	R3	Changeover contact relay
	H3	Semiconductor relay
	AA3	Analogue output 0/4 ... 20 mA
	AV3	Analogue output 0 ... 10 V, Freely scalable, not galvanically isolated
6.	Option	
	00	Without option
	NS/DIF1	Differential controller 2 x 4 ... 20 mA
	NS/DIF2	Differential controller 2 x 0 ... 10 V
	NS/DIF3	Differential controller 2 x 0 ... 20 mA
	SW	Setpoint controller 0 ... 10 V

GIR2002PID - 1 - 2 - 3 - 4 - 5

Greisinger		
1.	Voltage supply	
	230A	230 V AC
	012DA	12 V DC, At analogue output or NPN switching output or REL3 or HLR3
	024DA	24 V DC, With constant/analogue output or NPN switching output
	024D	24 V DC
	115A	115 V AC
2.	Output 1	
	R1	Normally-open contact relay
	H1	Semiconductor relay
	SA1	Continuous output 0/4 ... 20 mA
	SV1	Continuous output 0 ... 10 V
3.	Output 2	
	R2	Changeover contact relay
	H2	Semiconductor relay
4.	Output 3 (Option)	
	00	No 3rd output
	R3	Changeover contact relay
	AA3	Analogue output 0/4 ... 20 mA
	AV3	Analogue output 0 ... 10 V
	SA3	Continuous output 0/4 ... 20 mA
	SV3	Continuous output 0 ... 10 V
5.	Input option	
	00	Without option
	SW	Setpoint controller 0 ... 10 V

2-CHANNEL DIFFERENCE CONTROLLER



GIR 2002 NS / DIF - 020

Art. no. 604871 (Standard model)

2-channel difference controller, input signal (2x) 0 ... 20 mA

GIR 2002 NS / DIF - 420

Art. no. 600960 (Standard model)

2-channel difference controller, input signal (2x) 4 ... 20 mA

GIR 2002 NS / DIF - 010

Art. no. 601846 (Standard model)

2-channel difference controller, input signal (2x) 0 ... 10 V

General:

The GIR 2002 NS / DIF is a display, control and regulating device for difference measurements. The measuring inputs are designed for standard signals. Please state your desired input signal at order transaction.

Application:

- difference controller for 2 channels
- control of delivery and exit air
- detection of leaks
- pressure compensation, etc.

Specifications:

Measuring inputs:	(2x) 4 ... 20 mA, (2 x) 0 ... 20 mA or (2 x) 0 ... 10 V Please state your desired input signal at order transaction!
Display range:	-1999 ... 9999 digit, decimal point, initial and final values freely selectable
Recommended range:	≤2000 digit
Accuracy:	<0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Measuring rate:	approx. 100 measurings / s
Display / Regulation:	difference: input 1 - input 2
Outputs:	1 normally open contact, 1 change-over contact output options like HLR-control output, analog output or continuous output available - p.r.t. previous page
Controller states:	5 or 6, selectable (e.g. 2-point-regulator, 3-point-regulator, ...)
Limit values:	freely selectable
Display:	approx. 13 mm high, 4-digit red LED-display
Operating conditions:	-20 ... +50 °C, 0 ... 80 % RH (non condensing)
Voltage supply:	230 V AC, 50 / 60 Hz, approx. 6 VA
Panel mounting:	with fixing clamps
Electrical connection:	via screw-type/ plug-in terminals: cable diameters from 0.14 ... 1.5 mm².
Protection rating:	front side IP54, IP65 upon request
Housing:	standard rack type housing
Dimensions:	96 x 48 mm (W x H) (Front)
Mounting depth:	approx. 115 mm (incl. screw-type/ plug-in terminals)
Panelcut-out:	$90{,}5^{+0.5}$ x $43{,}0^{+0.5}$ mm (W x H)
Scope of supply:	Device, 2 fixing clamps, 1 sealing GGD4896, unit stickers EAK 36, screw-type/plug-in terminals, mounting- and operation manual

for further technical date refer to GIR 2002 (page 23)

Option:

Output for control output, analog output and other voltage supply p.r.t. previous page

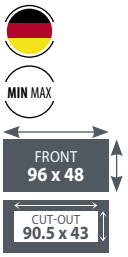
Accessories and spare parts:

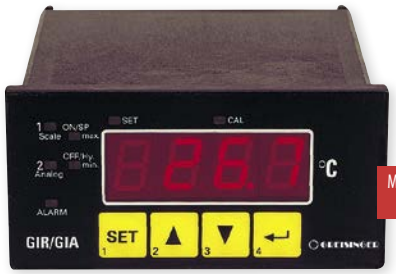
EBW 3
Art. no. 601137
Interface converter for connection of one EASYBus-module to the USB interface of your PC. (Power supply: from the USB port)

EBS 20M
Art. no. 601158
20 channel measurement data acquisition software

GIA 20 EB / GIR 2002 - Configuration-Software
Software for easy configuration of the types GIA 20 EB, GIR 2002, GIR 2002 PID, download under www.greisinger.de

TEMPERATURE REGULATOR





MEASURING INPUT FOR PT100 (3-WIRE)

GIR 2000 Pt

Art. no. 601701 (Standard model)

Temperature regulator complete with sensor

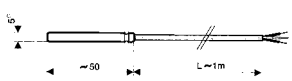
GIR 2000 Pt OF

Art. no. 601703 (Standard model)

Temperature regulator without sensor

Specifications:

Measuring input:	Pt100 (3-wire)
Measuring ranges:	-50.0 ... +200.0 °C
Resolution:	0.1 °C
Measuring rate:	approx. 4 measurings / s
Accuracy:	<0.3 % FS ±1 digit (at nominal temperature = 25 °C)
Temperature probe:	GTF200 Pt100 / 3-wire *Art. no. 600018* Pt100-probe, DIN class B (±0.3 °C at 0 °C), V4A-tube Ø 5 mm 50 mm length, approx. 1 m silicone cable.
Output:	voltage free relays output, change-over-contact, switching power: 10 A (ohmic load), 250 V AC
Controller state:	2-point, min-/max-alarm
Switching point:	Activation and deactivation time freely adjustable
Response time:	≤0.5 s
Display:	approx. 13 mm high, 4-digit red LED-display
Miscellaneous:	permanent self-monitoring, digital zero point and scale adjustment
Voltage supply:	230 V AC, 50/60 Hz (Standard) optionally other supply voltages are possible
Power consumption:	approx. 5 VA
Working temperature:	-20 ... +50 °C
Relative humidity:	0 ... 80 % RH (non condensing)
Storage temperature:	-30 ... +70 °C
Panel mounting:	by fixing clamps
Electrical connection:	via screw-type/plug-in terminals cable diameters from 0.14 ... 1.5 mm².
Protection rating:	front side IP54, IP65 upon request
Housing:	standard rack type housing
Dimensions:	96 x 48 mm (W x H) (front frame)
Mounting depth:	approx. 115 mm (incl. screw-type/plug-in terminals)
Panelcut-out:	$90{,}5^{+0.5}$ x $43{,}0^{+0.5}$ mm (W x H)
Scope of supply:	Device, 2 fixing clamps, 1 sealing GGD4896, unit stickers EAK 36, screw-type/plug-in terminals, mounting- and operation manual, GIR 2000 Pt only: probe



Accessories and spare parts:

GGD4896
Art. no. 603042
additional sealing for panel mounting IP65

APG-4
Art. no. 602827
Housing for surface mounting (incl. seal GGD4896)
Device assembled in housing, Dimensions: 125 x 75 x 127 mm (H x W x D)
(without screw connections), Cable insert: screw connections M12 x 1.5 and M16 x 1.5

additional suitable temperature probes **p.r.t. page 67-86**

Standard variant:

GIR2000-PT-024D
Art. no. 603491
GIR 2000 PT with voltage supply 24 V DC (22 ... 27 V)

GIR2000-PT-OF-024D
Art. no. 602280
GIR 2000 PT OF with voltage supply 24 V DC (22 ... 27 V)

SELF-SUPPLYING PLUG-IN DISPLAY FOR MEASURING TRANSDUCER WITHOUT AUXILIARY ENERGY SOURCE

GIA 0420-VO

GIA 0420-VO-T

HIGHLIGHTS:

- Scale freely adjustable‚on site' within seconds, no auxiliary devices required
- Monitoring for probe damage, probe short circuit, values above/below permissible limit
- Software filters that can be activated/deactivated guarantee stable display even with a sensor signal prone to interference.
- Without auxiliary energy
- Special adapter can be turned to any position
- Display adaptable to 4 positions

GIA 0420-VO

Art. no. 601016

Plug-in display without buttons, 4 ... 20 mA

GIA 0420-VO-T

Art. no. 604152

Plug-in display with buttons, 4 ... 20 mA

Specifications:	
Input signal:	4 ... 20 mA (2-wire)
Voltage load:	approx. 2 V, (approx. 3.5 V at ...-EX)
Supply current:	from current loop
Accuracy:	±0.2 % FS ±1 digit (at nominal temperature = 25 °C)
Display:	10 mm high LCD
Display range:	-1999 ... +9999
Decimal point:	any position
Scale:	freely adjustable via 3 buttons (for „VO“: accessible after cover has been removed)
Measuring rate:	approx. 5 measurements / s
Filter:	adjustable
Limit:	3 limit functions selectable:
LI 0:	Values above/below range permissible
LI 1:	Values above/below range not permissible
LI 2:	When range is exceeded, the refering rail will be displayed
Switching outputs: (only devices with option S1 or S2)	
S1:	1 electrically isolated open collector outputs
S2:	2 electrically isolated open collector outputs, connection via separate M8 jack
Switching point, switching hysteresis:	freely adjustable
max. switching voltage:	28 V
max. switching current:	1 A (option S1: 20 mA)
Reaction time:	≤250 ms
Min./Max. value memory:	memorizing of max. and min. values.
Operation, Configuration:	via 3 keys
Working conditions:	-25 ... +50 °C / 0 ... 80 % RH (non-condensing)
Electric connection:	special-adapter design for cubic plug EN 175301-803/A for simple plug-in wherever required.
Protection rating:	IP65 (when mounted appropriately)
Housing:	ABS, keypad, transparent panel made of polycarbonate
Dimensions:	approx. 48.5 x 48.5 x 35.5 mm (W x H x D) without special adapter, approx. 90 x 50.5 x 39.5 mm (W x H x D) with special adapter
Scope of supply:	Device, 2 screws (68 and 75 mm), manual

Variant:

GIA0420-VO-S2-GE

Art. no. 608220

with 2 electrically isolated switching outputs, delivery incl. 1 m connecting cable for connection of both switching outputs (Option S2 **not** in combination with EX-device available)

GIA 0420-VO-T-EX

Art. no. 601040

Plug-in display 4 ... 20 mA with EX-protection for all potentially explosive atmospheres
Ex qualification: Ⓔx II 2G Ex ia/ib IIC/IIB T4
(Further information please refer to our homepage www.greisinger.de)

Variant:

GIA 0420-VO-T-EX-S1

Art. no. 476881

Device with 1 electrically isolated switching output
(Option S1 just in combination with EX-device available)

GIA 0420-WK-T

Art. no. 601653

Plug-in display with buttons, 4 ... 20 mA

GIA 0420-WK-T-EX

Art. no. 601877

Plug-in display with Ex-protection for all potentially explosive atmospheres, 4 ... 20 mA

Specifications:	
as GIA ... VOT but	
Electric connection:	Connection to any standard signal source 4 ... 20 mA or 0 ... 10 V via 2 m connection cable.
Housing:	with mounting holes can be mounted to any surface

PLUG ON CONTROLLER/DISPLAY NEEDS NO AUXILIARY ENERGY

MIT LED-ANZEIGE

HIGHLIGHTS:

- Fast controlling and supervision (reacting time <20 ms)
- Min./max. value memory
- 3 limit functions, 3 filter stages
- Alarm delay adjustable
- Extensive self check and diagnosis system
- Freely programmable
- Angle connector rotatable to any arbitrary position
- Display adaptable to 4 positions

GRA 0420-VO

Art. no. 601022

Plug on controller/display without auxiliary energy, output 4 ... 20 mA, 1 electrically isolated switching output.

GRA 010-VO

Art. no. 601024

Plug on controller/display without auxiliary energy, output 0 ... 10 V, 1 +Ub-switching output.

Specifications:	GRA 0420 ...	GRA 010 ...
Input signal:	4 ... 20 mA (2-wire)	0 ... 10 Volt (3-wire)
Voltage load:	<5.5 V	--
Input resistance:	--	approx. 30 kOhm
Supply voltage:	--	12 ... 28 V DC
Supply current:	from current loop	<10 mA
Display:	approx. 7 mm high, 4 digit LED	
Display range:	digit, first and last value freely adjustable	
Recommended range:	≤2000 digit	
Decimal point:	any position	
Accuracy:	≤0.2 % FS ±1 digit (at nominal temperature = 25 °C)	
Measuring rate:	>50 measurements / s	
Filter:	selectable in 3 stages	
Limit:	3 limit functions selectable:	
LI 0:	Values above/below range permissible	
LI 1:	Values above/below range not permissible	
LI 2:	When range is exceeded, the refering rail will be displayed	
Switching outputs		
GRA0420VO:	1 electrically isolated open collector output, connection via cubic plug	
GRA010VO:	1 +Ub-switching open collector output, connection via cubic plug	
Switching point, switching hysteresis:	freely adjustable	
max. switching voltage:	28 V	
max. switching current:	20 mA (at option ... -S2: 1 A)	
Reaction time:	≤20 ms	
Switching functions:	2 or 3 point controller, 2 point controller with alarm, min-/ max-alarm	
Operation:	via 3 keys	
Working temperature:	-25 ... +50 °C	
Relative humidity:	0 ... 80 % RH (non-condensing)	
Electric connection:	special-adapter design for cubic plug EN 175301-803/A for simple plug-in wherever required. 2 screws (68 and 75 mm) included in scope of supply.	
Protection rating:	IP65 (when mounted appropriately)	
Housing:	ABS, keypad (resp. transparent panel made of polycarbonate)	
Dimensions:	approx. 48.5 x 48.5 x 35.5 mm (W x H x D) without special adapter, approx. 50.5 x 90 x 39.5 mm (W x H x D) with special adapter	
Scope of supply:	Device, 2 screws (68 and 75 mm), manual	

Variants:

GRA 0420-VO-S2
Art. no. 605920
Design type with 2 electrically isolated switching outputs. Outputs with increased switching current (28 V / 1 A), connection via separate M8 jack (Delivery incl. 1 m connecting cable for connection of both switching outputs)

GRA 0420-VO-OT
Art. no. 605532
design type without pushbuttons in the cover (device`s adjustment is not accessible for users)

GRA 010-VO-S2
Art. no. 607650
Design type with 2 electrically isolated switching outputs. Outputs with increased switching current (28 V / 1 A), connection via separate M8 jack (Delivery incl. 1 m connecting cable for connection of both switching outputs)

GRA 010-VO-OT
Art. no. 607645
design type without pushbuttons in the cover (device`s adjustment is not accessible for users)

GRA 0420-WK

Art. no. 604881

Without auxiliary energy, output 4 ... 20 mA, 1 electrically isolated switching output

GRA 010-WK

Art. no. 604882

Output 0 ... 10 V, 1 electrically isolated switching output

Specifications:	
same as GRA ... VO, but	
Electric connection:	connection to any standard signal source and switching output via 2 m connection cable.
Housing:	with mounting holes can be mounted to any surface whatever

HOUSINGS FOR SURFACE MOUNTING FOR BUILD IN OF DEVICES

	APG-1* *Art. no. 602826* Housing for surface mounting incl. seal GGD2448	APG-2* *Art. no. 603178* Housing for surface mounting incl. seal GGD2448	APG-3* *Art. no. 603462* Housing for surface mounting incl. seal GGD2448
Dimensions:	82 x 80 x 95 mm (W x H x D), without elbow-plug	82 x 80 x 95 mm (W x H x D), without screw connections	82 x 80 x 95 mm (W x H x D), without screw connections
Panelcut-out:	for 1 display at the format 48 x 24 mm	for 1 display at the format 48 x 24 mm	for 2 displays at the format 48 x 24 mm
Connection:	elbow-plug according to EN 175301-803/A, 4-pin	2 x screw connections M12 x 1.5	2 x screw connections M12 x 1.5
Protection class:	IP65	IP65	IP65
Suitable for:	GIA 20 EB / GIR 230 ... / GIA 0420 / GIA 0420 SP / GIA 2448 /WE / GTH2448/1,2,3		

	APG-4* *Art. no. 602827* Housing for surface mounting incl. seal GGD4896	APG-6* *Art. no. 603179* Housing for surface mounting incl. seal GGD4896	APG-7* *Art. no. 606825* Housing for surface mounting incl. seal GGD4896
Dimensions:	125 x 75 x 126 mm (W x H x D), without screw connections	125 x 175 x 126 mm (W x H x D), without screw connections	122 x 72 x 126 mm (W x H x D), without screw connections
Panelcut-out:	for 1 display at the format 96 x 48 mm	for 2 displays at the format 96 x 48 mm	for 1 display at the format 72 x 36 mm
Connection:	screw connections M12 x 1.5 and M16 x 1.5	screw connections M12 x 1.5 and M16 x 1.5	screw connections M12 x 1.5
Protection class:	IP65	IP65	IP65
Suitable for:	GIA 2000 / GIR 2000 PT / GIR 2002 ..., / GTH 83 EG, / GTH 1150 EG		GIR 300, GIR 360

* Note: All housings without installation device and without unit sticker! These (see page 23) have to be ordered separately!
The Installation device will be assembled for free in the housing (on common order) if desired.

ALARM LIGHT WITH BUZZER

GIVES OPTICAL AND ACCOUSTIC ALARM

Application

ALARM 230V

Art. no. 600913

Alarm light with buzzer

General:

Universal alarm device with flashlight and buzzer, which is connected easily to relay outputs and the 230 V grid.

Specifications:	
Color:	red
Sound level:	92 dB
Voltage supply:	230 V AC / 50 Hz
Working temperature:	-20 ... +50 °C
Protection class:	IP 65
Suitable for:	e. g. GIR 2002, GIR 230, GIR 300

POWER SUPPLY

GNG 220

GNG 220 / 2
Art. no. 600282

GNG 220 / 2 - 12 V
Art. no. 600305

GNG 220
Art. no. 603813

Power supply integrated in snap-on housing for top hat rail - for 2 transmitters

Specifications:	
Input voltage:	230 V, 50 / 60 Hz
Output voltage:	**GNG 220 / 2:** 2 x 18 V DC ±5 %, 25 mA each **GNG 220 / 2 - 12 V:** 2 x 12 V DC, 30 mA each **GNG 220:** 1 x 12 V DC, 100 mA, unregulated
Dimensions:	48 x 96 x 52 mm (W x H x D)
Mounting:	snap-on to top hat rail

GNG 12 / 300

GNG 12 / 300
Art. no. 600274

GNG 24 / 150
Art. no. 600275

Power supply integrated in snap-on housing for top hat rail

Specifications:	
Input voltage:	230 V, 50/60 Hz
Output voltage:	**GNG12/300:** 12 V DC ±5 %, 300 mA **GNG24/150:** 24 V DC ±5 %, 150 mA other voltage upon request
Dimensions:	70,4 x 96 x 62 mm (W x H x D)
Mounting:	snap-on to top hat rail

DPP 15

DPP 15
Art. no. 607282

DC Power Supply

Specifications:	
Input voltage:	85 ... 264 V AC, 50 ... 60 Hz or 90 ... 375 V DC
Output voltage:	22.5 ... 28.5 V DC, adjustable by trimmer
max. output current:	0.6 A
Dimensions:	22,8 x 75 x 102 mm (B x H x T)
Mounting:	snap-on to top hat rail

DC/DC-CONVERTER

GNG 12 / 24
Art. no. 600276

GNG 24 / 24
Art. no. 600277

DC/DC-converter to electrically isolate 12 V or 24 V DC-supply voltages

Specifications:	
Input voltage:	**GNG12/24:** 10 ... 18 V DC **GNG24/24:** 19 ... 30 V DC
Output voltage:	24 V DC ±5 %, max. 80 mA, electrically isolated
Insulating voltage:	500 V
Operating temperature:	-20 ... +70 °C
Mounting:	snap on to top hat rail
Maße:	minimum space requirements due to narrow rack housing (module fully encapsulated). Installation width only 22.5 mm.

GNG 12 / 2 x 12
Art. no. 607942

GNG 24 / 2 x 24
Art. no. 605492

DC/DC-converter

Specifications:	
Input voltage:	**GNG 12 / 2 x 12:** 10 ... 18 V DC **GNG 24 / 2 x 24:** 19 ... 30 V DC
Output voltage:	2 x 24 V DC ±5 %, max. 80 mA each, electrically isolated

other data identical to GNG 12/24 resp. GNG 24/24.

POWER SUPPLY AND RELAY MODULE (E.G. FOR GIA 20 EB)

GNR10
Art. no. 603680

Power supply and relay module for top-hat rail, power supply for one GIA 20 EB and one transducer.

Specifications:	
Input voltage:	230 V, 50/60 Hz (others upon request)
Output voltage:	approx. 11 V DC (unregulated) for the supply of a GIA 20 EB 18 V DC ±5 % (regulated), 25 mA for measuring transducer
Relay outputs:	2 volt-free changeover contacts, switching current: max. 10 A ohmic load.
Connection:	screw-type terminal
Dimensions:	48 x 96 x 60 mm (W x H x D)
Mounting:	snap on to top hat rail

GR10
Art. no. 607943

Relay module for top-hat rail for one GIA 20 EB to mounting to a top-hat rail

Specifications:	
Input voltage:	12 V DC (others e.g. 24 V DC upon request)
Relay outputs:	2 volt-free changeover contacts, switching current max. 10 A ohmic load.
Connection:	screw-type terminal
Dimensions:	48 x 96 x 60 mm (W x H x D)
Mounting:	snap on to top hat rail

LOGGER / BUSSYSTEME

E.A.S.Y.BUS DATA LOGGER

APPLICATION:	T-Logg 100 ..	T-Logg 120 ..	T-Logg 160	EASYLog 80K	EASYLog 80CL...	EASYLog 40 NS
Temperature	•		•	•	•	
Humidity			•		•	
Air pressure (abs.)					•	
Standard signal		•				•
Pulse						
State						
Interface		USB 100			EASYBus	EASYBus	EASYBus
EASYBus-load					2	2	2
DEVICE INFORMATION:							
Catalogue page	Seite <AE>32	Seite <AE>33	Seite <AE>33		Seite <AE>34	Seite <AE>35	Seite <AE>35

E.A.S.Y.BUS SENSOR-MODULS

APPLICATION:	EBT	EBHT	EBT-2R	EBHT-2R	EBT-IF	EBN	EBG-CO2-1R
Temperature	•	•	•	•	•		
Humidity		•		•			
Standard signal						•	
CO							
CO_2							•
EASYBus-load	1.5	1.5	1.5	1.5	1.5	2	1
DEVICE INFORMATION:							
Catalogue page	Seite <AE>37	Seite <AE>38	Seite <AE>39	Seite <AE>39	Seite <AE>40	Seite <AE>41	Seite <AE>41

TEMPERATURE DATA LOGGER

INFORMATION

T-Logg data logger (for standalone applications)

ISO
LOGG
0-CORR

- Data logger for temperature, humidity, standard signals
- 16 000 measurements

Data logger for standalone applications
(e.g. directly on the goods during refrigerated transport)
The free MINISoft software (download from www.greisinger.de) and a USB 100 connecting cable (not included in the scope of delivery) are required for configuration and readings.
T-Logg is not compatible with EASYBus, is not bus-capable and is not designed for permanent communication with the software.

T-Logg-100

T-Logg-100-E

DIN EN 12830

T-LOGG
THE LOGGER SERIES FOR STAND-ALONE APPLICATIONS

T-LOGG
THE LOGGER SERIES FOR STAND-ALONE APPLICATIONS

General specifications:	
Display:	LCD-display, 10 mm high
Recording interval:	1 s ... 5 h (T-Logg 160 4 s ... 5 h)
Storage capacity:	16.000 measuring values
Recording time:	166 days (if interval is 15 min.)
Nominal temperature:	25 °C
Working temperature:	-30 ... +60 °C (T-Logg 100... only, otherwise -25 ... +60 °C)
Storage temperature:	-40 ... +70 °C (T-Logg 100... only, otherwise -30 ... +70 °C)
Battery:	CR2032, exchangeable
Battery service life:	over 3 years (if recording interval is 15 min.)
Approvals:	DIN EN 12830
Interface:	3-pole M8 plug for USB 100
Housing:	Housing made of shock resistant plastic, transparent front made of polycarbonate. Splash water-proof: IP 65.
Dimensions:	48.5 x 48.5 x 35.5 mm (W x H x D); Housing without mounting lugs, plug, sensor connection and/or sensor tube

Accessories and spare parts:

USB 100
Art. no. 602051
Interface converter, for direct connection to a PC.

GWH 40K
Art. no. 601166
Wall suspension with lock as protection against theft (picture: see pageSeite <AE>44)

GWH 10
Art. no. 601169
Stainless steel wall suspension (picture: see pageSeite <AE>44)

Ersatz-CR 2032
Art. no. 606080
Spare battery CR 2032 for T-Logg

ISO-WPF4
Art. no. 602543
Certificate of calibration incl. standard-measuring values (approx. 20 % / 40 % / 60 % / 80 % RH increasing and decreasing; measurement point Temperature: approx. +23 °C)

ISO-WPT3
Art. no. 602596
Temperature factory calibration, test points: -20 °C, 0 °C, 70 °C

Note: The T-Logg 100 is neither BUS- nor EASYBus compatible.

T-Logg 100
Art. no. 600563
Temperature-Logger (16 000 measurement values) for any application

Specifications:	
Measuring ranges:	-30.0 ... +60.0 °C (Resolution: 0.1 °C)
Accuracy: (at 25 °C)	±0.5 °C
Sensor:	NTC 10 K
Sensor connection:	integrated in device
Scope of supply:	Device, battery, manual

T-Logg 100-SET
Art. no. 602153
Complete set: T-log incl. USB100 & software

T-Logg 100-E
Art. no. 476833
Temperature-Logger (16.000 measurement values) for any application

Specifications:	
Measuring ranges:	-30.0 ... +120.0 °C (Resolution: 0.1 °C)
Accuracy: (at 25 °C)	±0.2 % of measuring value ±0.5 °C
Sensor:	NTC 10 K in VA sensor tube, Ø 5 mm, approx. 50 mm long
Sensor connection:	approx. 1 m silicone cable, with anti-buckling glanding to housing
Scope of supply:	Device, battery, manual

T-LOGG100 - 1 - 2 - 3 - 4 - 5 - 6

Greisinger		
1.	Version	
	00	Standard
	E	Probe connected with 1 m silicone cable
	E-AFK	Detachable probe cable
2.	Option	
	00	Without option
	SET	T-log incl. USB100 & software
		Indoor and outdoor sensor
3.	Measuring range	
		-30 ... +60 °C
		-30 ... +120 °C, Only with version E
4.	Sensor	
		NTC 10K
5.	Measuring transducer	
		16000 measurements
6.	Working temperature	
		-30 ... +60 °C, 40 K

Note: For configuration or reading out a interface converter USB 100 is needed!

HUMIDITY- / TEMPERATURE-LOGGER

T-LOGG
THE LOGGER SERIES FOR STAND-ALONE APPLICATIONS

T-Logg 160

Art. no. 600887

Humidity / Temperature Logger (16 000 meas. values) for any application

Specifications:	
Measuring ranges:	0.0 ... 100.0 % RH (resolution: 0.1 % RH) -25.0 ... +60.0 °C (resolution: 0.1 °C)
Accuracy (at 25 °C):	±3 % in range 10 ... 90 % ±0.3 °C ±0.017 * (T - 25 °C)
Sensors:	capacitive humidity sensor Silicon temperature sensor in sensor tube with Ø 15 mm and removable plastic protective cap
Sensor connection:	installed directly in the housing
Display:	10 mm high LCD-display
Scope of supply:	Device, battery, manual, free software for download: www.greisinger.de

T-Logg 160 SET

Art. no. 602273

Complete set with T-log incl. USB100 & software

T-LOGG160 - 1

Greisinger		
1.	Option	
	00	Standard
	SET	T-log incl. USB100 & software

STANDARD SIGNAL DATA LOGGER

T-Logg 120-W

T-Logg 120-K

T-LOGG
THE LOGGER SERIES FOR STAND-ALONE APPLICATIONS

T-Logg 120-W-...

Standard signal data logger (16.000 measuring values) for transducers etc.

Specifications:	
Display range:	-1999 ... 9999 digit, freely programmable
Decimal point:	any position
Measuring ranges:	depending on variant
Accuracy (at 25 °C):	±0.5 % FS (at nominal temperature)
Sensor:	16 bit analogue digital converter
Electric connection:	elbow-plug in accordance with EN 175301-803/A for connection to an existing transmitter
Scope of supply:	Device, battery, manual

T-Logg 120-K-...

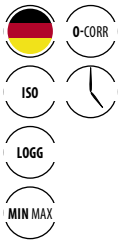
Specifications:	
Measuring ranges:	depending on variant
Accuracy (at 25 °C):	±0.5 % FS (at nominal temperature)
Sensor:	16 bit analogue digital converter
Electric connection:	Silicone cable, approx. 0.5 m long (with anti-kink protection, not removable)
Scope of supply:	Device, battery, manual

T-LOGG120 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8

Greisinger		
1.	Version	
	W	Angle connector EN 175301-803 / A
	K	Cable connection
2.	Cable	
		0.5 m silicone cable
3.	Option	
	00	Without option
	SET	T-log incl. USB100 & software
4.	Input signals	
	E1	4 ... 20 mA
	E2	0 ... 10 V
	E3	0 ... 20 mA
	E4	0 ... 1 V
	E5	0 ... 2 V
	EV030	0 ... 30 V
	E6	-30 ... +30 mV
5.	Display range	
		-1999 ... +9999 digit
6.	Measuring transducer	
		16000 measurements
7.	Working temperature	
		-25 ... +60 °C
8.	Decimal point	
		Arbitrary setting

Note: For configuration or reading out a interface converter USB 100 is needed!

TEMPERATURE LOGGER FOR WATCHING PRODUCTION AND SERVER-ROOMS



E.A.S.Y.Bus-Modul

DIN EN 12830

EASYLOG-80K

EASYLOG-80KH

HIGHLIGHTS:

- as well as cooling chambers according assignation of frozen food 92/1/EWG

EASYLOG 80K

Art. no. 611601

EASYBus temperature-Logger sensor tube are attached on the device

Specifications:	
Measuring ranges:	-30.0 ... +60.0 °C (Resolution: 0.1 °C)
Accuracy (25 °C):	±0.5 °C
Working temperature:	-30 ... +60 °C
Sensor:	Pt1000 (2-wire), DIN cl. AA, in sensor tube made of plastic, Ø 7 mm, approx. 30 mm long, at certificate: stainless steel tube, Ø 5 mm, approx. 60 mm long)
Sensor connection:	Installed directly in the housing

EASYLOG 80KH

Art. no. 611602

EASYBus temperature-Logger, sensor tube are connected via 1 m cable

Specifications:	
Measuring ranges:	-50.0 ... +150.0 °C (Resolution: 0.1 °C)
Accuracy (25 °C):	±0.5 °C ±0.2 % of m.w.
Working temperature:	-25 ... +60 °C
Sensor:	Pt1000 (2-wire), DIN cl. AA, sensor tube made of stainless steel, Ø 5 mm, approx. 50 mm long
Sensor connection:	Silicone cable, approx. 1 m long (with anti-kink protection, not removable)

Specifications:	
Display:	two 4½-digit LCD-displays
Recording interval:	4 s ... 5 h, free programmable via software GSOFT 40K
Storage capacity:	250.000 data sets in max. 64 recording sequences
Recording time:	7 years (if recording interval is 15 min.)
Battery service life:	approx. 5 Jahre (if recording interval is 15 min.)
Storage temperature:	-30 ... +70 °C
Interface:	EASYBus-interface, 3-pin mini-integral plug
Housing:	ABS housing, clear polycarbonate pane. Splash-proof IP65 (excl. protection cap)
Dimensions:	48.5 x 48.5 x 35.5 mm (L x W x D) sensor and plug not included
Scope of supply:	Device, manual

Accessories and spare parts:

ISO-WPT3

Art. no. 602596

Temperature factory calibration, test points: -20 °C, 0 °C, 70 °C (at ...40KH)

ISO-WPT3L

Art. no. 603530

Temperature factory calibration, test points: -20 °C, 0 °C, 60 °C (at ... 40K)

EASYLOG80 - [1] - [2] - [3] - [4]

Greisinger		
1.	Version	
	K	Probe tube, fixed, plastic Ø 7.5 mm, FL= 30 mm
	KK	Probe tube, fixed, stainless steel Ø 5 mm, FL = 60 mm
	KH	Probe connected with cable
	KH-AFK	Detachable probe, connected with cable
	KH-AFK-GL	Detachable probe, without probe, for probes with M8 connector
2.	Cable	
		Silicone cable 1 m
		Silicone cable 2 m
		Silicone cable 3 m
		Silicone cable 4 m
		Silicone cable 5 m
		Teflon cable 1 m
		Teflon cable 2 m
		Teflon cable 3 m
		Teflon cable 4 m
		Teflon cable 5 m
		Glass fibre cable 5m
3.	Measuring range	
		Measuring range -30.0°C ... +60.0°C at 80k plastic probe
		Standard measuring range -50.0°C ... +150.0°C
	SMB1	-50 ... +400 °C
	SMB3	-200 ... +200 °C
	SMB2	-200 ... +600 °C, Mineral insulated element, teflon cable
4.	Option alarm output	
	ALARM	Alarm output
		no
	WD	Waterproof probe

Other probes see page 62-64

Attention: Our software GSOFT40K as well as a level converter (EBW1, EBW3 or EBW64) and connection cable (EBSK 01) are required for all EASYLOG devices for configuration and to read-out logger data. (p.r.t. pages 40 and 35 / 36).

HUMIDITY-/TEMPERATURE-/AIR PRESSURE LOGGER

EASYLOG 80CL

EASYLOG 80CL-E

FOR CLIMATE MONITORING ETC.

E.A.S.Y.BUS® MODUL

EASYLOG 80CL

Art. no. 602773

Humidity-/Temperature-/Air pressure data logger (each 250.000 measured values) for climatic applications.

EASYLOG 80CL-E

Art. no. 606630

Humidity-/Temperature-/Air pressure data logger (each 250.000 measured values) for climatic applications, with external sensor

Specifications:

	Measuring / display range:	Accuracy (at 25 °C):
Humidity:	0.0 ... 100.0 % RH	±2 % in range 10 ... 90 %
Temperature:	-25.0 ... +60.0 °C	±0.3 °C ± 0.017 * (T -25 °C)
Air pressure:	300.0 ... 1100.0 hPa	±1.0 hPa
Additional available display ranges:		
Wet bulb temperature:	-27.0 ... +60.0 °C	
Dewpoint temperature:	-40.0 ... +60.0 °C	
Enthalpy:	-25.0 ... +999.9 kJ/kg	
Atmospheric humidity:	-0.0 ... +640.0 g/kg	
Absolute humidity:	0.0 ... 200.0 g/cm³	
Resolution display and memory:	0.1 °C, 0.1 % r.F. and 0.1 hPa or 1 digit	
Sensors		
Humidity/Temperature:	sensor mounted in sensor tube (sensor is exchangeable), 1 m cable	
Air pressure:	sensor integrated in housing	
Sensor tube:	approx. Ø 15 mm aus Polyamid	
Protection cap:	screw-type plastic protection cap for quick responses	
Display:	two 4½-digit LCD-displays	
Recording interval:	4 s ... 5 h, free programmable via buttons on the device or via the software GSOFT 40K	
Storage capacity:	250.000 data sets (humidity, temperature, air pressure) in max. 64 recording sequences	
Recording time:	7 years (at 15 min. interval)	
Battery service life:	approx. 5 years (at 15 min. interval)	
Working temperature:	-25 ... +60 °C	
Storage temperature:	-30 ... +70 °C	
Interface:	EASYBus-interface 3-pin mini-integral plug	
Housing:	Housing made of shock resistant plastic, transparent front made of polycarbonate. Splash water-proof: IP65 (excl. protection cap)	
Dimensions:	48.5 x 48.5 x 35.5 mm (L x W x H) sensor and plug not included	
Scope of supply:	Device, manual	

Variant:

EASYLOG 80CL-ALARM

Art. no. 475038

Humidity-/Temperature-/Air pressure data logger additional alarm-output, open-collector output via 4-pole miniature mounting connector (IP65) including 1 m cable. Max. switching power: 28 V, 50 mA

Accessories and spare parts:

ISO-80CL

Art. no. 607734

Certificate of calibration humidity (measured points about 20 / 40 / 60 / 80% at 23 ° C) Pressure 5 points increase, 5 points decrease over the entire measuring range

STANDARD SIGNAL LOGGER

EASYLOG 40NS-W

REPLACES FOR EXPENSIVE RECORDERS

E.A.S.Y.BUS® MODUL

EASYLOG 40NS-W-...

Standard Signal Data Logger (48.000 meas. values) for transducers etc. (with elbow type plug)

EASYLOG 40NS-K-...

Standard Signal Data Logger (48.000 meas. values) for transducers etc. (with PG glanding and cable)

Specifications:

Display range:	-1999 ... 9999 digit free programmable
Decimal point:	any position
Input signals:	one signal only! 0 ... 2 V, 0 ... 10 V, 0 ... 20 mA oder 4 ... 20 mA, other input signals upon request (input is not isolated for EASYBus)
Accuracy:	±0.5 % (at nominal temperature)
Display:	10 mm high LCD-display
Recording interval:	2 s ... 5 h, free programmable via software GSOFT 40K
Storage capacity:	48.000 measuring values
Recording time:	500 days (if recording interval is 15 min)
Battery service life:	approx. 6 years (if recording interval is 15 min)
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +70 °C
Interface:	EASYBus-interface 3-pin mini-integral plug
Electric connection: (for input signals)	
... 40NS-W:	elbow-plug in accordance with EN 175301-803/A for connection to an existing transmitter.
... 40NS-K:	approx. 0.5 m connection cable
Housing:	Housing made of shock resistant plastic, transparent front made of polycarbonate. Splash water-proof: IP65
Dimensions:	48.5 x 48.5 x 35.5 mm (W x L x D), with elbow-plug: 50.5 x 90 x 39.5 mm
Scope of supply:	Device, manual

EASYLOG40NS - [1] - [2] - [3] - [4]

Greisinger		
1.	Version	
	K	Approx. 0.5 m connection cable
	W	Angle connector EN 175301-803 / A
2.	Input signal	
	E1	4 ... 20 mA
	E2	0 ... 10 V
	E3	0 ... 20 mA
	E4	0 ... 1 V
	EV05	0 ... 5 V
	EV030	0 ... 30 V
3.	Additional Alarm output	
	ALARM	Yes
	00	no
4.	Double battery capacity	
	DBK	Yes
	00	no

E.A.S.Y.BUS® -SYSTEM

CHARACTERISTICS OF THE EASYBUS SYSTEM

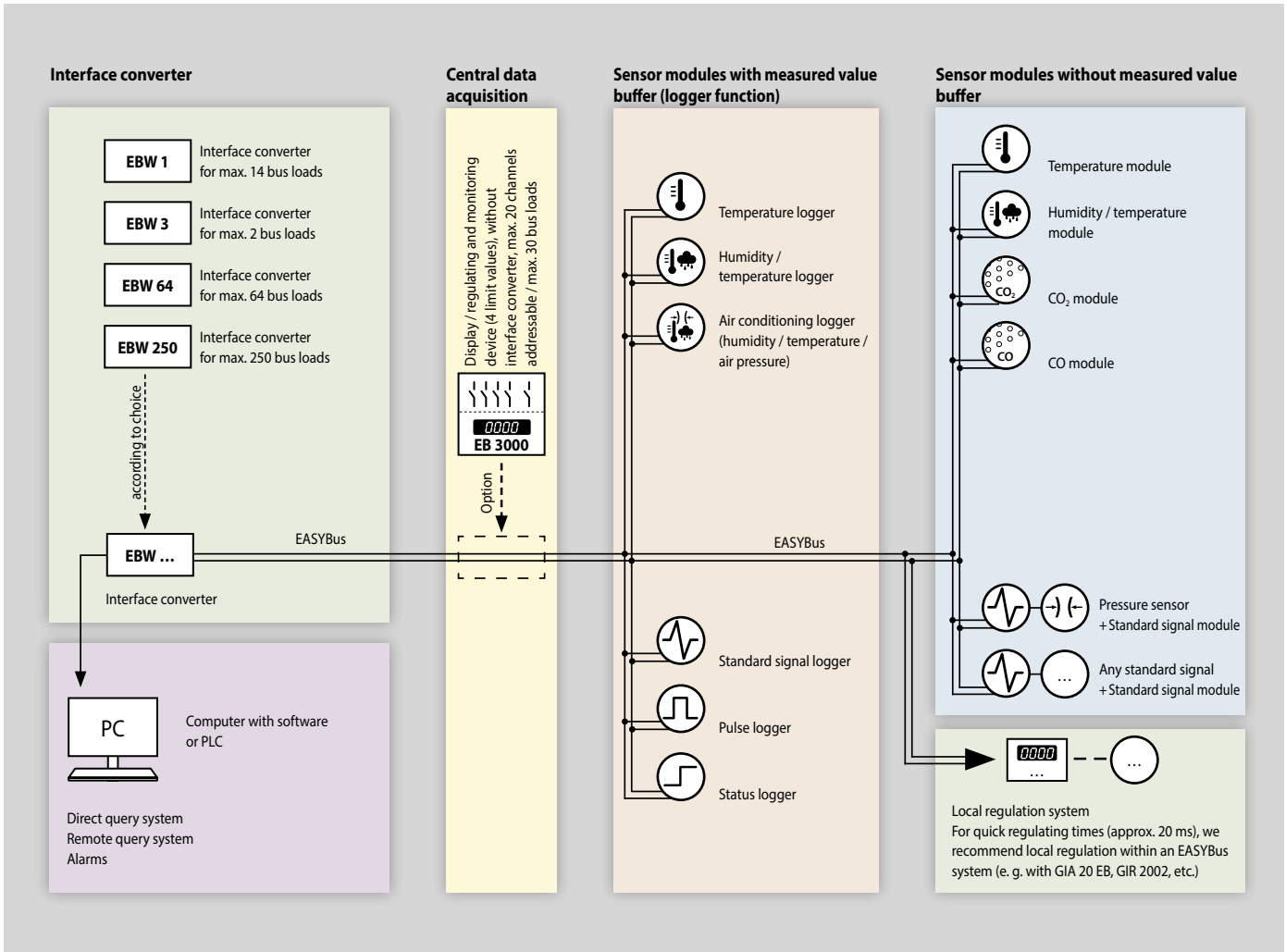
- Low-cost wiring by using a twisted 2-pin connection line in either bus or tree design (polarity-free); can be used in any combination
- Bus line for simultaneous power supply and signal transmission
- Bus length up to 1000 m, extensible by using a repeater
- Fully automatic start-up installation via software
- Sensor modules can be changed, removed or added during operation at any time
- Connection of up to 250 sensor modules
- Optimum transmission reliability by means of CRC check
- Bus system is able to process data up to 20 measuring values per second
- Response time inside the EASYBus-system approx. 1 s; but approx. 20 ms by using a local controlling system

Temperature monitoring and regulation:
Cooling chambers
Laboratory and utility rooms
Storage rooms

Relative humidity / dew point / temperature monitoring:
Storage rooms, Heating systems / air condition, Museums / exhibition rooms / Libraries, Laboratories / utility rooms

Relative humidity / atmospheric pressure, CO_2 monitoring:
Manufacturing rooms / storage rooms, Office rooms (to condition the air of the room), Greenhouses

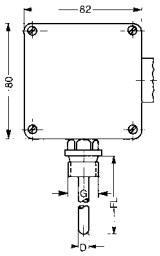
CO monitoring:
Underground garages / Parking garages, Motorcar garage / car repair
Indoor go-kart tracks



EASYBUS-SENSOR MODULES FOR TEMPERATURE

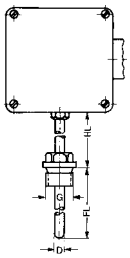
EBT - AP1
waterproof
IP 65

EBT - AP1



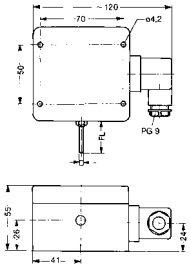
Standard:
G = ½"
FL = 100 mm
D = 6 mm

EBT - AP2



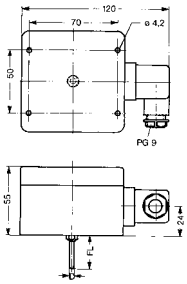
Standard:
G = ½"
HL = 50 mm
FL = 100 mm
D = 6 mm

EBT - AP3



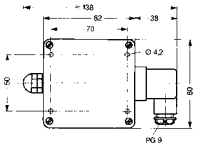
Standard:
FL = 50 mm
D = 3 mm

EBT - AP4



Standard:
FL = 100 mm
D = 6 mm

EBT - AP5



EBT-AP1
EASYBus - sensor modules for temperature (Measuring ranges: -50.0 ... +150.0 °C)

EBT-AP2
EASYBus - sensor modules for temperature (Measuring ranges: -50.0 ... +400.0 °C)

EBT-AP3
EASYBus - sensor modules for temperature (Measuring ranges: -50.0 ... +150.0 °C)

EBT-AP4
EASYBus - sensor modules for temperature (Measuring ranges: -50.0 ... +150.0 °C)

EBT-AP5
EASYBus - sensor modules for temperature (Measuring ranges: -199.9 ... +650.0 °C)

EBT-SHUT
EASYBus - sensor modules for temperature incl. heat absorption hat
(Measuring ranges: -25.0 ... +80.0 °C)

Design types:	
EBT-AP1:	With threaded pin „G" for direct screw connection.
EBT-AP2:	For higher temperatures, threaded pin „G" at a distance from housing. HL = collar tube length.
EBT-AP3:	Indoor or outdoor probe for direct wall mounting (encapsulation of electronics required for outdoor use).
EBT-AP4:	Duct-type probe with probe tube arranged centrally and pointing downwards.
EBT-AP5:	Transducer for existing Pt1000 sensors or for applications where probe and housing need to be separated (e.g. extremely high ambient temperature or due to design reasons).
EBT-SHUT	without illustration; see next page
Other design types upon request - please do not hesitate to contact us!	

Specifications:	
Measuring ranges:	
AP1, AP3, AP4:	-50.0 ... +150.0 °C or -58.0 ... +302.0 °F
AP2:	-50.0 ... +400.0 °C or -58.0 ... +752.0 °F
AP5:	-199.9 ... +650.0 °C or -199.9 ... +999.9 °F
SHUT:	-25.0 ... +80.0 °C or -13.0 ... +176.0 °F
Sensor element:	Resistance thermometer Pt1000 acc. to DIN IEC 751
Resolution:	0.1 °C / 0.1 °F
Accuracy (electronic):	(at nominal temperature = 25 °C) ±0.2 % of meas. value ±0.2 °C
Sensor-Accuracy:	(Pt1000)
Standard:	acc. to DIN cl. B (±0.3 °C at 0 °C)
Option:	DIN cl. AA: ±0.1 °C at 0 °C
Electric connection:	elbow-type plug EN 175301-803/A (IP65), output 2-wire connection, max. 1.5 mm² each, no polarity
Sensor connection:	2-wire connection available (e.g. EBT - AP5)
Ambient temperature (electronic):	-25 ... +70 °C
Mounting position:	any
Fixing:	by means of screw-thread or fixing holes in the housing (accessible after top cover has been removed)
Mounting distance:	50 x 70 mm
Fixing screws:	max. shaft Ø: 4 mm
Sensor mounting:	sensors are electrically insulated as a standard.
Thread sizes G:	1/2" (standard) material V4A
Housing:	Material: ABS, protection class: IP65
Dimensions:	82 x 80 x 55 (L x B x H)
Scope of supply:	Device, manual

EBT - 1 - 2 - 3 - 4 - 5 - 6 - 7

Greisinger		
1.	Version	
	AP1	With thread, without extension tube
	AP2	With thread, with extension tube
	AP3	Indoor and outdoor sensor
	AP4	Channel sensor
	AP5	For external sensor connection
	SHUT	Radiation cap / weather protection incl. „-LACK"
	AP	Circuit board alone
2.	Fitting length EL	
		No installation length, With KABEL / SHUT
	050	50 mm, Standard with AP3
	060	60 mm
	100	100 mm, Standard with AP1, AP2, AP4
	150	150 mm
	250	250 mm
3.	Extension tube length	
	050	50 mm
4.	Probe diameter D	
	03	Ø3 mm, Standard AP3
	04	Ø4 mm
	05	Ø5 mm
	06	Ø6 mm, Standard AP1/2/4
	08	Ø8 mm
5.	Thread	
	G1	G ½
6.	Option	
	LACK	Coated PC Board
	VO	Local display
7.	Measuring range	
		-25 ... +85 °C
	MB1	-50 ... +150 °C
	MB2	-50 ... +400 °C
	MB3	-199.9 ... +650 °C

EASYBUS-SENSOR MODULES FOR HUMIDITY / TEMPERATURE

MIN MAX
0-CORR
E.A.S.Y.BUS® MODUL

EBHT - 1R
incl. option VO

EBHT-1K

EBHT-2K

EBHT-SHUT

EBHT-KABEL

EBHT-1R

Art. no. 602905

EASYBus-sensor modules for humidity / temperature (sensor tube at the side, FL = 50 mm)

EBHT-1K

Art. no. 602904

EASYBus-sensor modules for humidity / temperature (sensor tube at the side, FL = 220 mm)

EBHT-2K

Art. no. 602906

EASYBus-sensor modules for humidity / temperature
(sensor tube pointing downwards, FL = 220 mm)

EBHT-SHUT

Art. no. 605863

EASYBus-sensor modules for humidity / temperature (incl. heat absorption hat)
type incl. option HO and LACK

EBHT-KABEL

Art. no. 605029

EASYBus-sensor modules for humidity / temperature (separated sensor tube)
type incl. option HO

Specifications:	
Measuring ranges	
Humidity:	0.0 ... 100.0 % RH
recommended range (standard):	30 ... 80 % RH
recommended range (option -HO):	5 ... 95 % RH
Temperature:	-40.0 ... +120.0 °C or -40.0 ... +248.0 °F
Display options:	with option UNI an alternative display unit can be shown instead of the humidity measuring value. The unit selection will be done via the interface or at the keyboard (by option VO).
Wet bulb temperature:	-27.0 ... +60.0 °C
Dewpoint temperature:	-40.0 ... +60.0 °C
Enthalpy:	-25.0 ... +999.9 kJ/kg
Atmospheric humidity:	0.0 ... 640.0 g/kg
Absolute humidity:	0.0 ... 200.0 g/m³
Resolution:	0.1 % RH or 0.1 °C / 0.1 °F
Accuracy: (at nominal temperature = 25 °C)	
Humidity:	±2.5 % RH (at recommended range)
Temperature:	±0.4 % of measuring value ±0.2 °C
Electric connection:	elbow-type plug EN 175301-803/A (IP65), output 2-wire connection, max. 1.5 mm² each, no polarity
Ambient temperature	
Electronic, housing:	-25 ... +50 °C
Sensor (sensor tube):	-40 ... +100 °C (for short time up to 120 °C)
Sensor tube:	tube-Ø 14 mm, screwable, protection cap with stainless steel gauze (105 µm). Total length approx 50 or 220 mm (standard)
Version KABEL:	„separated sensor tube", sensor head (Ø 14 x 68 mm) connected to housing via approx. 1 m teflon cable.
Version SHUT:	Radiation cap / weather protection **Applications:** The radiation cap is designed for especially precise exterior dimensions. Powerful solar radiation and rain do not falsify measurements.
	Design: Plastic radiation cap, Ø 110 mm, height approx. 140 mm. The design also includes a stainless steel wall mount with 3 fastening holes for screws with a maximum shaft diameter of 5 mm. Maximum projection 160 mm.
Optional extended length 300, 400 or 500 mm available. (please specify upon order!)	
Option Display:	10 mm high LCD-display The option VO additionally has 3 pushbuttons for calling min./max. values and adjustment of measuring parameters (offset and scale correction)
For outdoor use:	Option „encapsulated PC board" required. We also recommend using a heat absorption hat (weather protection shield) to avoid falsification of measuring data due to sun/rain etc.
Housing:	Material: ABS, Protection rating: IP65
Dimensions:	82 x 80 x 55 (L x B x H)
Scope of supply:	Device, manual

Other types upon request!

Accessories and spare parts:

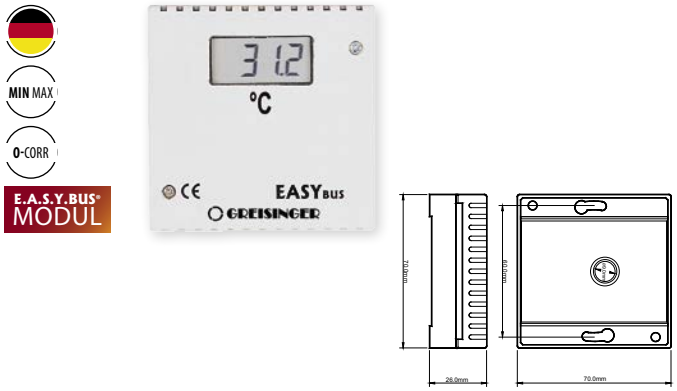
Spare protection cap
Art. no. 603839
Plastic filter cap with stainless steel screen filter insert (105 µ mesh size) - for standard and high humidity use

Bronzefilter
Art. no. 605749
not for use in high humidity use

EBHT - 1 - 2 - 3 - 4

Greisinger		
1.	Version	
	1K	Wall /channel version
	1R	Wall / room version
	2K	Channel version
	KABEL	Wall version with cable, with high humidity sensor
	SHUT	Radiation cap / weather protection incl. „-HO" and „-LACK"
2.	Sensor	
	HO	High humidity sensor
3.	Fitting length EL	
	000	No installation length
	050	50 mm
	220	220 mm
4.	Option	
	VO	Local display
	LACK	Coated PC Board
	UNI	Adjustable humidity display instead of the standard humidity values

EASYBUS - SENSOR MODULES FOR TEMPERATURE



EBT-2R

Art. no. 602864

EASYBus - sensor modules for temperature

EBT-2RE

Art. no. 602866

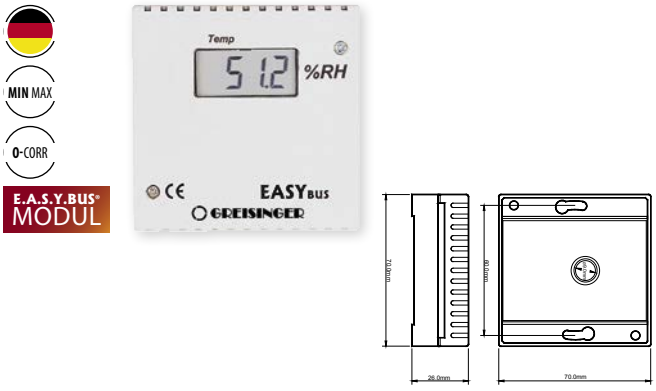
EASYBus - sensor modules for temperature
Type with external sensor for lower or higher temperatures.

Specifications:	
Measuring ranges	
EBT-2R:	-25.0 ... +70.0 °C or -13.0 ... +158.0°F
EBT-2RE:	-50.0 ... +150.0 °C or -58.0 ... +302.0°F
Resolution:	0.1 °C / 0.1 °F
Accuracy:	±0.4 % of meas. value ±0.3 °C (at nominal temperature=25 °C)
Sensor element:	Pt1000 according to DIN IEC 751
Electric connection:	2 pin screw-type terminal, no polarity, max. 1.5 mm²
Working temperature:	-25 ... +50 °C (electronic)
Sensor (EBT-2RE):	V4A-can, 5 mm Ø, 50 mm long, approx. 1 m silicone cable
Option display:	10 mm high LCD-display
Housing:	Attractive surface-mounted housing for indoor installation (fits directly on flush-mounted boxes)
Dimensions:	70 x 70 x 26 mm (L x B x H)
Scope of supply:	Device, manual

EBT - [1] - [2] - [3]

Greisinger		
1.	Version	
	2R	With internal sensor
	2RE	With external probe
2.	Options	
	VO	Local display
3.	Measuring range	
	MB1	-50 ... +150 °C
	MB2	-25 ... +70 °C

EASYBUS - SENSOR MODULES FOR HUMIDITY / TEMPERATURE



EBHT-2R

Art. no. 603476

EASYBus-sensor modules for humidity / temperature

Specifications:	
Measuring ranges	
Humidity:	0.0 ... 100.0 % RH
recommended range (standard):	30 ... 80 % RH
recommended range (option -HO):	5 ... 95 % RH
Temperature:	-25.0 ... +70.0 °C or -13.0 ... +158.0 °F
Display options:	refer to below
Resolution:	0.1 % RH or 0.1 °C / 0.1 °F
Accuracy: (at nominal temperature = 25 °C)	
Humidity:	±2.5 % RH (at recommended range)
Temperature:	±0.4 % of meas. value ±0.3 °C
Electric connection:	2 pin screw-type terminal, no polarity, max. 1.5 mm²
Working temperature:	-25 ... +50 °C
Option display:	10 mm high LCD-display
Housing:	70 x 70 x 26 mm (L x B x H) (fits directly on flush-mounted boxes)
Scope of supply:	Device, manual

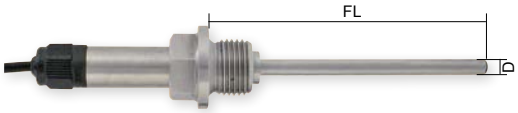
EBHT-2R - [1] - [2]

Greisinger		
1.	Sensor	
	00	Without option
	HO	High humidity sensor
2.	General options	
	00	Without option
	VO	Local display
	UNI	Adjustable humidity display instead of the standard humidity values

EASYBUS - SENSOR MODULES FOR TEMPERATURE

MIN MAX
0-CORR
E.A.S.Y.BUS® MODUL

EBT - IF1
(Standard: FL = 100 mm, D = 6 mm)



EBT - IF2
(Standard: FL = 100 mm, D = 6 mm, G1/2")

EBT - IF3
(Standard: HL = 100 mm, FL = 50 mm, D = 6 mm, G1/2")

EBT-IF1

Art. no. 602797
EASYBus-sensor modules for temperature (-30.0 ... +100.0 °C)

EBT-IF2

Art. no. 602799
EASYBus-sensor modules for temperature (-30.0 ... +100.0 °C)

EBT-IF3

Art. no. 603862
EASYBus-sensor modules for temperature (-70.0 ... +400.0 °C)

Specifications:	
Measuring ranges: The probe length FL has to be chosen long enough, that the allowable temperature range of the electronics situated in the tube sleeve is not exceeded. Other measuring ranges (max. -200 ... +500 °C) upon request	
Measuring probe:	internal Pt1000-sensor
Accuracy: (at nominal temperature = 25 °C)	
Electronic:	±0.2 % of meas. value ±0.2 °C
Measuring probe:	standard: DIN cl. B, optionally higher sensor accuracy available
Interface:	EASYBus-interface attached 2-pole cable, cable-length approx. 1 m
Operating ambient of electronics (in tube sleeve):	
Working temperature:	-25 ... +70 °C
Relative air humidity:	0 ... 100 % RH
Housing:	stainless steel housing
Dimensions:	depending on sensor construction
Tube sleeve:	Ø 15 x 35 mm (without screwing)
Thread:	G1/2" or on customer requirement (available threads M8 x 1, M10 x 1, M14 x 1,5, G1/8", G1/4", G3/8", G3/4")
Scope of supply:	Device, manual

EBT - [1] - [2] - [3] - [4] - [5] - [6] - [7]

Greisinger		
1.	Version	
	IF1	Without thread
	IF2	With thread
	IF3	With thread and extension tube
2.	Measuring range	
	MB1	-30 ... +100 °C, Standard IF1 and IF2
	MB2	-70 ... +400 °C, Standard IF3
3.	Fitting length EL	
	050	50 mm, Standard IF3
	100	100 mm, Standard IF1 and IF2
	400	400 mm
	500	500 mm
	600	600 mm
4.	Extension tube length	
		100 mm
5.	Probe diameter D	
	D4	Ø4 mm
	D5	Ø5 mm
	D6	Ø6 mm
	D8	Ø8 mm
	99	Front offset
6.	Thread	
	G1	G ½, Standard IF3
7.	Accuracy	
		Electronic ±0.2 % of Measurement ±0.2 °C / measuring probe DIN class B
	A	DIN class A

EASYBUS - SENSOR MODULES FOR STANDARDIZED SIGNALS

EBN / W - ...
with elbow-type plug

EBN / K - ...
with connection cable
pic. incl. option VO

EBN / K - ...

Art. no. 602839
EASYBus - sensor modules for standardized signals

EBN / W - ...

Art. no. 609775
EASYBus - sensor modules for standardized signals

General:

All standard signals (0 ... 2 V, 0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, others on request) can be acquired on the EASYBus with its current module. When using a according interface converter an the **EASY**Control net software different transmitters can be connected resp. watched.

Specifications:	
Input signal:	0 ... 2 V, 0 ... 10 V, 0 ... 20 mA or 4 ... 20 mA (input is not isolated for EASYBus)
Measuring ranges:	-1999 ... 9999 digit, Measuring range and decimal point can be set via free available software.
Accuracy:	±0.5 % (at nominal temperature = 25 °C)
Working temperature:	-25 ... +60 °C
Storage temperature:	-30 ... +70 °C
Interface:	EASYBus-interface attached 2-pole cable, cable-length approx. 1 m.
Electric connection:	(for input signals)
EBN / K - ...:	for connection to standardized signal source via 0.5 m connection cable.
EBN / W - ...:	elbow-type plug according to EN 175301-803/A for plug-in into an existing transmitter connection.
Housing:	splash-proof IP65
Dimensions:	48.5 x 48.5 x 35.5 mm (L x W x H) with elbow-plug: 50.5 x 90 x 39.5 mm
Scope of supply:	Device, manual

EBN - 1 - 2 - 3

Greisinger		
1.	Version	
	K	Cable connection
	W	Angle plug
	G	EASYBUS connection, galvanically isolated, cable connection
2.	Input signal	
	E1	0 ... 2 V
	E2	0 ... 10 V
	E3	0 ... 20 mA
	E4	4 ... 20 mA
3.	Options	
	00	Without option
	VO	Local display

EASYBUS-SENSOR MODUL FOR CARBON DIOXIDE (CO_2)

HIGHLIGHTS:

- excellent long-term stability
- auto-calibration procedure
- for surveillance of the recommended CO_2 concentration in ambient air

EBG-CO2-1R

Art. no. 604385
EASYBus-sensor modul for carbon dioxide (CO_2)

General:

Due to the fact, that CO_2 is an important indicator for the quality of air in rooms, it's super important to measure the CO_2 content. The recommended CO_2 limit value for ambient air is 1000 ppm. An exceeding of this limit causes tiredness and a loss of concentration. The high quality and precise CO_2-module works according to the infrared principle (NDIR). An auto-calibration procedure compensates aging effects and is responsible for an excellent long term stability of this CO_2-module. Additionally, there is a local display which shows beside the actual CO_2 concentration, the minimum and maximum values as well as an optical alarm.

Specifications:	
Measuring ranges:	
Standard:	0 ... 2000 ppm CO_2 (carbon dioxide)
Option 5000:	0 ... 5000 ppm CO_2 (carbon dioxide)
Measuring principle:	infrared principle (NDIR)
Accuracy:	
Standard:	±50 ppm ±2 % of meas. value (at 20 °C, 1023 mbar)
Option 5000:	±50 ppm ±3 % of meas. value (at 20 °C, 1023 mbar)
Interface:	EASYBus-interface
Auxiliary energy:	12 ... 30 V DC, max. 600 mA
Display:	approx. 10 mm high, 4-digit LCD-display
Working condition:	-10 ... +50 °C, 5 ... 95 % RH, 850 ... 1100 hPa
Storage condition:	-25 ... +60 °C, 5 ... 95 % RH, 700 ... 1100 hPa
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm
Terminal assignment:	2 x EASYBus, no polarity 2 x auxiliary energy
Mounting:	with fixing holes for wall mounting
Mounting distance:	70 x 50 mm (B x H)
Fixing screws:	max. shaft-Ø 4 mm
Features:	min-/max-value memory, optical alarm, input of offset and scale for adjusting
Housing:	ABS
Dimensions:	82 x 80 x 55 mm (without elbow-type plug)
Weight:	approx. 225 g
Scope of supply:	Device, manual

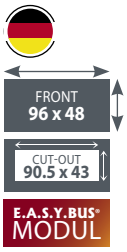
Variant:

EBG-CO2-1R-5000:
Art. no. 605074
Measuring ranges: 0 ... 5000 ppm CO_2

Accessories and spare parts:

GSN 24-750
Art. no. 604387
Plug-in power supply (230 V AC => 24 V DC / 750 mA)

EASYBUS-DISPLAY AND MONITORING DEVICE FOR 20 CHANNELS



EB 3000

Art. no. 600269

EASYBus-display and monitoring device for 20 channels

General:

- Up to 20 sensor-modules can be connected
- 2 further functions for calculation
- 5 relay outputs (4 x controlling, 1 x alarm)
- Controller functions can be assigned to any channel
- Alarm monitoring for all connected EASYBus-moduls
- Up to 1000 m cable-length possible

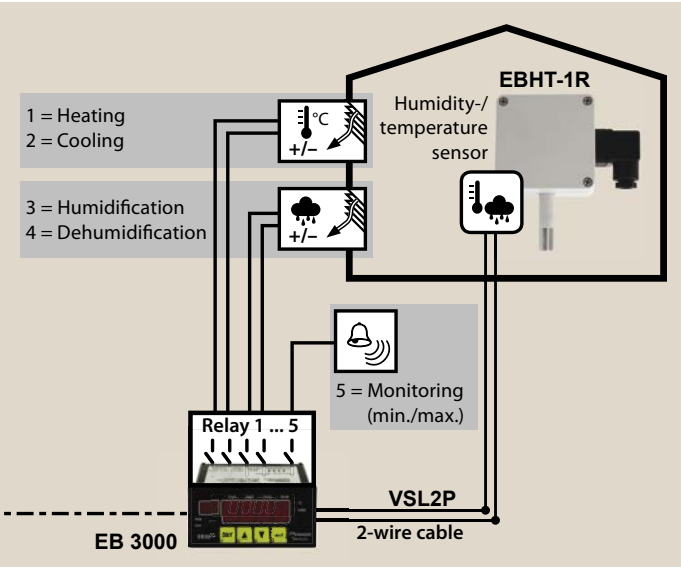
Specifications:

Display range:	-1999 ... +9999 digit
Resolution, Accuracy:	depending on sensor module used
Sensors:	all EASYBus sensor modules
Sensor supply:	via EB 3000
Max. bus load:	30 EASYBus standard loads
Measuring channels:	20
Permitted cable length:	500 m (depending on type of cable and wiring)
Switching outputs:	4 relay outputs (NO), shared input. Outputs can be assigned to any channel
Alarm output:	1 relay output (change-over contacts)
Switching function:	230 V AC, 5 A, ohm resistive load
Configuration:	directly on the device or via additional configuration software (supported converter is needed).
Min./Max. value memory:	from all connected sensor modules the max. and min. value are callable via front-side keypad.
Display:	main display: LED, 4-digit, 13 mm channel display: LED, 2-digit, 7 mm 11 more LEDs for e.g.: switching status and alarm
Interface:	EASYBus-interface
Connection:	2-wire connection in ring-, tree- or star type. No polarity.
Connection terminals:	screw-type/plug-in terminals
Ambient temperature:	-25 ... +50 °C (permissible ambient temperature)
Voltage supply:	230 V AC 50 / 60 Hz
Power consumption:	approx. 9 VA
Housing:	Transparent membrane keyboard IP65. Sealing for housing for installation according to IP65 will have to be ordered separately (option).
Dimensions:	96 x 48 x 100 mm (H x W x D)
Panel cutout:	90.5 x 43 mm (W x H)
Scope of supply:	Device, CD, manual

Option:

IP
Mounting seal to increase the protection class to IP65

MOISTURE / TEMPERATURE CONTROLLING



EB 3000 FTR

Art. no. 605923

Cost effective Set for Moisture / Temperature Controlling

General:

Cost effective monitoring and controlling of temperature and humidity. The humidity- / temperature sensor EBHT-1R will be connected with the EB 3000 via a single 2-wire twisted pair cable (e.g. bell wire). The maximum distance between sensor and controlling device is 500 m.
The components are fully configured. The only remaining work is to connect the modules via a 2-pole twisted wire and input the switching points.

Application:

Refrigeration warehouse, green house, storage room, terrarium, etc.

Specifications:

Scope of supply:	EB 3000: monitoring and controlling device EBHT-1R: humidity / temperature modul (p.r.t. page 38) VSL2P: 10 m twisted pair cable (p.r.t. page 44)

Accessories and spare parts:

EBW 1
Art. no. 601136
Interface converter, for connection of max. 9 EASYBus data loggers to the RS232 interface of your PC. (power supply: 230 V AC / 50 Hz)

EBS 20M
Art. no. 601158
Software for recording and archiving of max. 20 sensor module
further information see page 46

Note:
For configuration of the EB 3000 and recording / reading of connected EASYBus modules, a serial converter EBW 1 and software EBS 20M are needed.

ASSESSORIES

EBW 1

Art. no. 601136
Interface converter

General:

for connection of max. 7 EASYBus-modules to the RS232-interface (9-pin Dsub) of your PC.

Specifications:	
Voltage supply:	230 V AC / 50 Hz, 12 / 24 V DC on request
Power consumption:	approx. 5 W
Max. permissible sensor modules:	7 (depending on type of the used sensor modules)
Permissible cable length:	200 m (depending on type of cable and wiring)
Baud rate:	4800 Baud
Serial connection:	RS232
Electrical isolated:	yes
Overload display:	no
Short-circuit proof:	limited (approx. 30 s)
Operating temperature:	0 ... 50 °C
Humidity:	20 ... 80 % RH, non-condensing
Storage temperature:	-20 ... +70 °C
Dimensions:	112 x 80 x 45 mm (L x B x H)
Bit-Recovery	no
Scope of supply:	interface converter, 9-pin Dsub extension cable

EBW 64

Art. no. 601139
Interface converter

General:

For connection of max. 64 EASYBus-modules to the RS232-interface of your PC.

Specifications:	
Voltage supply:	230 V AC / 50 Hz
Power consumption:	approx. 15 W
Max. permissible sensor modules:	64 (depending on type of the used sensor modules)
Permissible cable length:	1000 m (depending on type of cable and wiring)
Baud rate:	4800 Baud
Serial connection:	RS232
Electrical isolated:	yes
Overload display:	yes
Short-circuit proof:	yes (passiv)
Operating temperature:	0 ... 50 °C
Humidity:	20 ... 80 % RH, non-condensing
Storage temperature:	-20 ...+70 °C
Dimensions:	100 x 75 x 110 mm (H x W x D)
Bit-Recovery	yes
Scope of supply:	interface converter, 9-pin Dsub extension cable

EBW 3

Art. no. 601137
Interface converter

General:

for connection of one EASYBus-module (e.g. EASYLOG) to the USB-interface of your PC. (Power supply: via USB)

Specifications:	
Voltage supply:	not necessary
Power consumption:	max. 0.5 W
Max. permissible sensor modules:	1 (depending on type of the used sensor modules)
Permissible cable length:	10 m (depending on type of cable and wiring)
Baud rate:	4800 Baud
Serial connection:	USB
Electrical isolated:	yes
Overload display:	no
Short-circuit proof:	no
Operating temperature:	-25 ... +50 °C
Humidity:	20 ... 80 % RH, non-condensing
Storage temperature:	-25 ... +70 °C
Dimensions:	56 x 31 x 24 mm (L x B x H)
Bit-Recovery	no
Scope of supply:	interface converter, driver CD, manual

EBW 250

Art. no. 609308
Interface converter

General:

For connection of up to 250 sensor modules via RS232, USB or network. For use as a repeater in an existing EASYBus system.

Specifications:	
Voltage supply:	110 ... 250 V AC
Power consumption:	max. 100 V
Max. permissible sensor modules:	250 (depending on type of the used sensor modules)
Permissible cable length:	1000 m (depending on type of cable and wiring)
Baud rate:	300 ... 38400 Baud
Serial connection:	RS 232, USB, network, EASYBus input (repeater function)
Electrical isolated:	yes
Overload display:	yes
Short-circuit proof:	yes (activ)
Operating temperature:	0 ... 45 °C
Humidity:	30 ... 80 % RH
Storage temperature:	-20 ... +70 °C
Dimensions:	229 x 204 x 76 (H x W x D)
Bit-Recovery	yes
Scope of supply:	interface converter, driver CD, manual

Assessories:

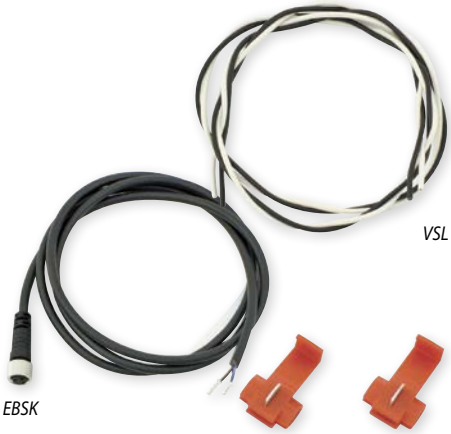
USB-Adapter
Art. no. 601109
Adapter for connection of a RS232-interface converter to USB-interface

ASSESSORIES

GWH 40K *GWH 10*

GWH 40K
Art. no. 601166
Wall suspension with lock as protection against theft suitable for all EASYLog (except EASYLog 40NS W), EBN/K - ..., GIA 0420 WK and GRA 0420 WK

GWH 10
Art. no. 601169
simple wall suspension, made of stainless steel, suitable for all EASYLog (except EASYLog 40NS W).



VSL

EBSK *AKL 1P*

EBSK 01
Art. no. 601173
Special plug with approx. 1 m of cable for connection of one EASYLog, to the EASYBus

EBSK 03
Art. no. 601175
Special plug with approx. 3 m of cable for connection of one EASYLog, to the EASYBus

EBSK 10
Art. no. 601177
Special plug with approx.10 m of cable for connection of one EASYLog, to the EASYBus
(Note: the EASYLOG will be supplied without connection cable. The GSOFT40K includes a connection cable EBSK01. Please order EBSK01, EBSK03 resp. EBSK10 as required in case of permanent bus connection!)

VSL 2P
Art. no. 601178
Twisted special cable for EASYBus-system, cross section 2 x 0.75 mm²

AKL 1P
Art. no. 601185
Special branch terminal for connection to VSL 2P, 2 pieces

USB-Adapter
Art. no. 601109
Adapter for connection of a RS232-interface converter to USB-interface

ALARM MONITORING

GNR 232 A

GNG 12-LE
Art. no. 604730
Plug-in power supply (220/240V, 50/60Hz)

GNR 232 A
Art. no. 604719
Mains adaptor / relay circuit board, For EBUW 232A

Specifications:	
Voltage supply:	230 V, 50 / 60 Hz
Output voltage:	12 V DC ±5 % (regulated) 25 mA
Relay output:	volt-free changeover contacts, switching current max. 10 A ohmic load
Connection:	screw-type terminal
Dimensions:	96 x 61 x 60 mm (H x W x D)

EB 3000
Art. no. 600269
EASYBus-display, regulating and monitoring device for 20 channels p.r.t. page 42

REMOTE OPERATION

LAN 3200

WLAN 3200

LAN 3200
Art. no. 609253
Gigabit-Ethernet for USB converter

General:

For inquiring EASYBus modules, GMH handheld devices with interface or GDUSB 1000 via network. 2 USB ports for direct connection of EBW 3, USB 3100 N or GDUSB 1000 (up to 15 with USB hub). Connection of EBW 1, EBW 64 or EBW 240 via USB adapter (included to scope of supply)
Scope of supply: LAN 3200, power supply unit, USB adapter, manual, driver CD

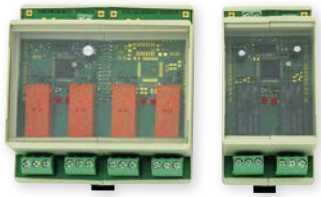
WLAN 3200
Art. no. 610289
Gigabit-Ethernet/W-LAN for USB converter

General:

For accessing EASYBus modules, GMH handheld devices with interface or GDUSB 1000 via local network or via WiFi. With 1 USB port for direct connection of one or more EBW 3, USB 3100N or GDUSB 1000 (up to 15 with an USB hub). With an USB to serial converter for connection of an EBW 1, EBW 64 or EBW 240.
Weight: 118 g
Dimensions: 100 x 100 x 25.5 mm (W x D x H)
Scope of supply: WLAN 3200, power supply unit, USB adapter, manual, CD

SWITCHING MODULES

E.A.S.Y.BUS® MODUL



EBB 2 OUT / BP
Art. no. 603105
EASYBus switching module, 2 relays, bus-powered

EBB 2 OUT / 12V
Art. no. 603348
EASYBus switching module, 2 relays

EBB 4 OUT / BP
Art. no. 603141
EASYBus switching module, 4 relays, bus-powered

EBB 4 OUT / 12V
Art. no. 609776
EASYBus switching module, 4 relays

General:

The EBB ... OUT / ... are switching modules for the EASYBus that can be arbitrarily placed on a location in the bus system. The control of the modules' relays is realized by an alarm monitoring module EBUW 232A or by PC-software (e.g. EASYControlnet).
There are 2 different design types of the switching modules:
... / BP: Bus Power - no external auxiliary supply needed
... / 12V: external 12 V-supply needed - this allows faster switching and a higher operating reliability due to adjustable preferred relay states in case of a system failure. (Power supply unit not in scope of supply)

Specifications:	EBB 2 OUT / BP	EBB 4 OUT / BP
Power supply:	Powered by the EASYBus	
Switching outputs:	2 changers	4 changers
Switching reaction:	<1 s	<2 s
Switching power:	max. 250 V AC / 16 A ohmic load	
Connection:	screw type terminal	
Dimensions:	96 x 48 x 60 mm	96 x 94 x 60 mm

Specifications:	EBB 2 OUT / 12V	EBB 4 OUT / 12V
Power supply:	12 V DC ±10 % / 150 mA	
Switching outputs:	2 changers	4 changers
Switching reaction:	<0.1 s	<0.1 s
Switching power:	max. 250 V AC / 16 A ohmic load	
Connection:	screw type terminal	
Dimensions:	96 x 48 x 60 mm	96 x 94 x 60 mm

EBB 4IN-BP
Art. no. 603477
EasyBus Switching module / sensor module, Module with 4 digital inputs

General:

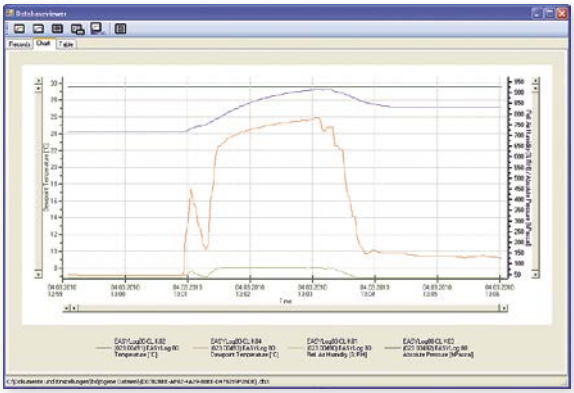
The statuses of 4 potential-free switch contacts can be detected with the digital input via the EASYBus.

Specifications:	
Power supply:	The device power is supplied from the EASYBus
Input:	4 digital inputs (for a potential-free switch contact)
Connection:	screw type terminal
Dimensions:	approx. 22.5 x 75 x 98 mm

APPLICATION:	EBS 20M EBS 60M	EASYControl net	GSOFT 40K
GMH 3xxx and GMH 5xxx	•	•	•
EASYBus and EASYLog	•	•	
T-Logg			
GDUSB 1000			
Several interfaces usable at the same time	• *	• *	
Live measuring value recoding and displaying	•	•	
Number of data points (recommendation)	up to 1 Mio.	up to 1 Mio.	
Stop logger and delete memory			•
Read-out logger			•
Change alarm boundaries		•	
Change correction (offset, slope)			•
Change label		•	
Network compatible (Simultaneous access to data by several PCs)		•	
Access via SQL queries possible		•	
Pilot EBB Out		• **	
Subject to a charge	•	•	•
Application	Lab, test rig	Long-term monitoring	Read-out data logger

* Arbitrarily combined interfaces, GMH 3xxx/5xxx and EASYBus can be used simultaneously.
** Interface-spanning, alarm of GMH 3xxx/5xxx can be assigned to EBB-Out of EASYBus.
*** Recommended up to 5 GDUSB 1000 at full measuring speed, depending on CPU performance.

SOFTWARE FOR MEASUREMENT DATA ACQUISITION



HIGHLIGHTS:

- Real time monitoring of measuring data
- Simultaneous use of several serial interfaces

EBS 20M

Art. no. 601158

Measuring data acquisition software for EASYBus & GMH, 20 channel

EBS 60M

Art. no. 601160

Measuring data acquisition software for EASYBus & GMH, 60 channel

General:

This software makes up a low-price and comfortable multi-channel acquisition program for measuring data. The program is suitable for recording, monitoring, visualization and documentation.

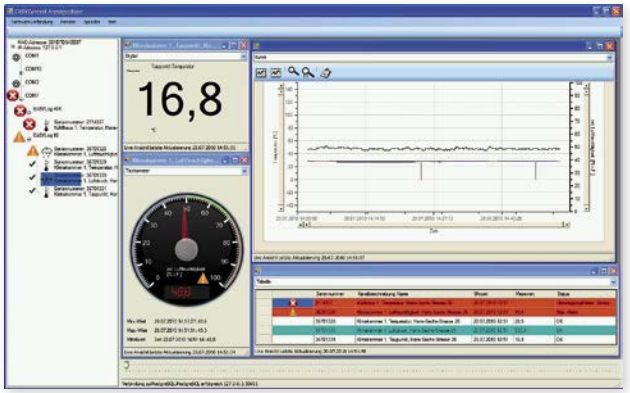
Application:

- On-site recording
- Process and system control, monitoring of climate and buildings
- Real time monitoring of measuring data i.e for data evaluation and logging for cost listings, overview of consumption, optimisation of processes, and other statistics

Specifications:

Program version:	Application with user interface
Data backup:	File (SQLite)
Export formats:	*.csv
Languages:	German English
Access control:	-
Remote access:	-
Alarms:	optical in the interface
Devices:	EASYBus devices (via EASYBus level converter) GMH 3000 series (via GRS 3100 or USB 3100N) GMH 5000 series (via USB 5100) GDUSB 1000 (in standard mode)
Several interfaces:	usable at the same time
Recording interval:	from 0.5 s
Live display:	Yes
Reading of data loggers:	No
System requirements:	Microsoft Windows 7 SP1 (32 or 64 Bit) Not executable with Windows RT, Windows 10 im S Modus, ARM or Intel Itanium based Windows systems
Scope of supply:	DVD, manual

EASYBUS-SOFTWARE



HIGHLIGHTS:

- Visualisation via LAN
- User accounts
- Simultaneous use of several serial interfaces
- Create reports from measured data

EASYControl net

Art. no. 601152

Network-compatible measurement data detection

General:

This software allows cost-efficient network-compatible data logging and monitoring systems. The visualization can be done by any computer in the network.

Application:

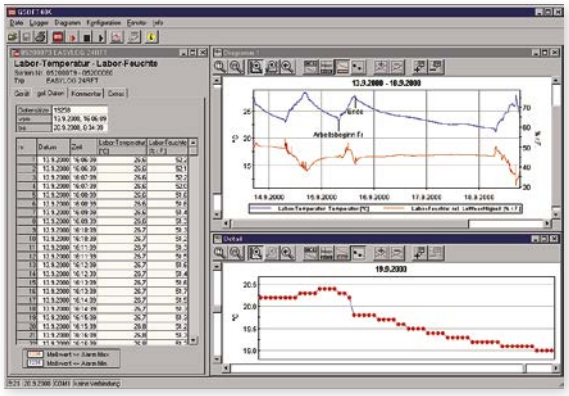
Long-term monitoring of climate cabinets and cooling cabinets.
When a visualisation of distributed measuring points should take place.

Specifications:

Program version:	Application with user interface
Data backup:	Database (PostgreSQL)
Export formats:	*.doc (Word) *.xls (Excel) *.pdf (Adobe Reader)
Languages:	German English
Access control:	Dedicated user login
Remote access:	In the local network
Alarms:	optical in the interface Relay control via EBB Out
Devices:	EASYBus devices (via EASYBus level converter) GMH 3000 series* (via GRS 3100 or USB 3100N) GMH 5000 series* (via USB 5100)
Several interfaces:	usable at the same time
Recording interval:	from 5 s
Live display:	Yes
Reading of data loggers:	No
System requirements:	Microsoft Windows 7 SP1 (32 or 64 Bit) Not executable with Windows RT, Windows 10 im S Modus, ARM or Intel Itanium based Windows systems
Scope of supply:	DVD, manual

** Only devices with a unique serial number (printed on the type plate)*

LOGGER SOFTWARE



HIGHLIGHTS:

- Automatic reading
- Operation of the logger function
- Diagram display
- Export function

GSOFT 40K

Art. no. 601145

Windows-software for EASYLog and T-Logg with logger

General:

Software for starting, stopping and reading of EASYLog devices.
The data can be visualised, saved and prepared for further processing.

Application:

Incoming goods control and cooling chain, test stand and laboratory equipment monitoring.

Specifications:	
Program version:	Application with user interface
Data backup:	File (binary)
Export formats:	*.csv
Languages:	German English French Czech
Access control:	-
Remote access:	-
Alarms:	-
Devices:	EASYLog (via EASYBus level converter) T-Log (via USB 100)
Several interfaces:	Can be used in succession
Recording interval:	Depending on the data logger
Live display:	No
Reading of data loggers:	Yes
System requirements:	Microsoft Windows 7 SP1 (32 or 64 Bit) Not executable with Windows RT, Windows 10 im S Modus, ARM or Intel Itanium based Windows systems
Scope of supply:	DVD, manual

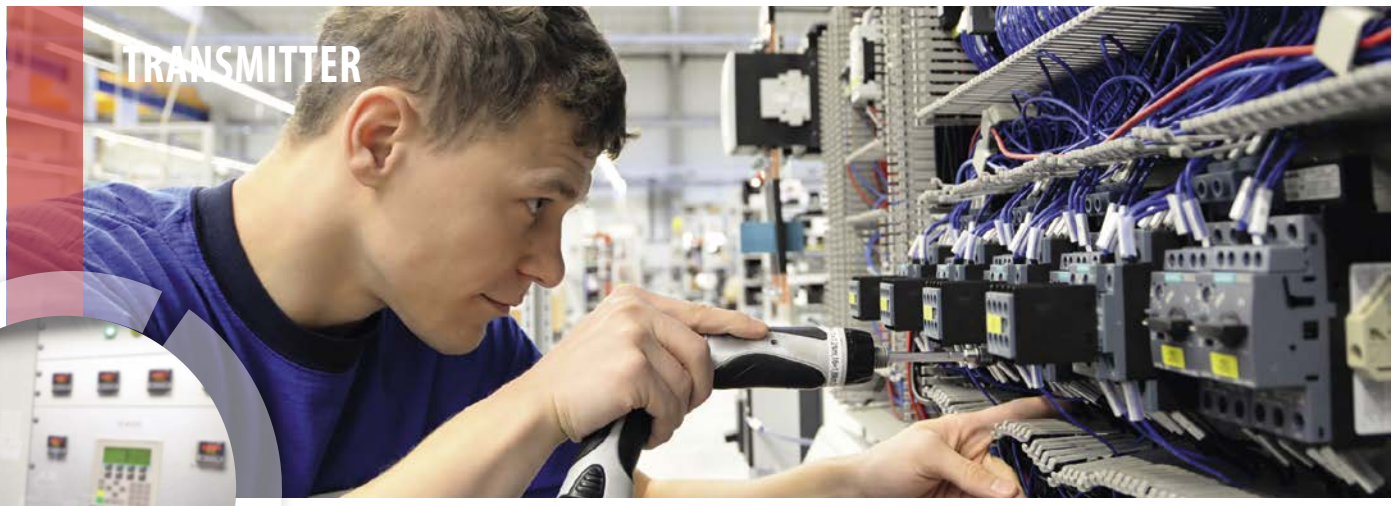
SOFTWARE CONNECTION

	GMH 3000-DLL (windows library)	inray - inMOVE GPL-Router-Plug-in (www.inray.de) (not shown)	Protocol description (www.greisinger.de) (w/o picture)
EASYBus and EASYLog	•	•	•
TLogg	•		•
Start, stop, delete, read-out logger	•		
Program examples	Visual Studio, Excel VBA		
subject to costs	•	•	

EASYBUS.dll

Art. no. 609174

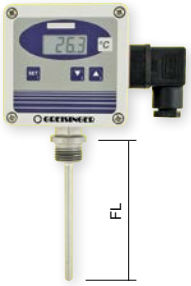
Windows function library for communication with EASYBus devices



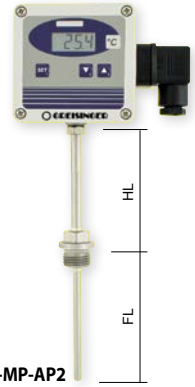
APPLICATION:	GTMU-MP... GTMU ...	GTP-SG	GTMU - IF ..	T03 BU ..	RT420 ..	GTT01 ..	IR-CT 20	GRHU ..MP	GHTU ..MP
Temperature	•	•	•	•	•	•	•		•
Air humidity								•	•
Ex-Protection						•			
DEVICE INFORMATION:									
Catalogue page	49 / 50	51	51	52	53	54	55	56	57

APPLICATION:	GMUD-MP-..	A-10 / S-10 .. / S-11 .. / S-20 ..	GT10-CO2-1R	GBS ..	LC...	OXY 36 ..MP	GPHU .. / GRMU ..	GLMU ..MP	GODOX 200-...
Pressure	•	•							
Carbon monoxide / -dioxide			•						
Level				•	•				
Oxygen						•			•
pH / Redox							•		
Conductivity								•	
Ex-Protection				•					
DEVICE INFORMATION:									
Catalogue page	58	59	60	60	66	61 / 64	65	62	64

FREELY SCALEABLE TEMPERATURE TRANSDUCER PT1000



GTMU-MP-AP1
for direct screw connection
Standard type:
G = ½", FL = 100 mm, D = 6 mm



GTMU-MP-AP2
for high temperatures
Standard type:
G = ½", HL = 100 mm,
FL = 100 mm, D = 6 mm

GTMU-MP-AP3
indoor / outdoor probe
for direct wall mounting
Standard type:
FL = 50 mm, D = 3 mm

GTMU-MP-AP4
duct probe
Standard type:
FL = 100 mm, D = 6 mm

GTMU-MP-SHUT
with heat-
protective shield

GTMU-MP-AP1
Art. no. 607145

GTMU-MP-AP2
Art. no. 602820

GTMU-MP-AP3
Art. no. 602214

GTMU-MP-AP4
Art. no. 606675

GTMU-MP-SHUT
Art. no. 605012

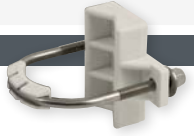
General:

Temperature transducer (measuring range of -50 ... +400 °C) for:
- nearly all kinds of applications
- on site temperature display
- output signal freely scalable
- user-adjustment possible

Specifications:

Measuring range:	-50.0 ... +400.0 °C, free scaleable *(The probe length FL has to be chosen long enough, that the allowable temperature of the case and the electronics of 70 °C is not exceeded!)*
Accuracy: (bei 25 °C)	
Temperature display:	±0.4 % of measuring value ±0.2 °C
Output signal:	±0.2 % FS (compared to display)
Probe:	Pt1000, 2-wire, DIN class B
Output signal:	4 ... 20 mA (2-wire), freely scaleable
Auxiliary energy:	12 ... 30 VDC or 18 ... 30 VDC (for output: 0- ... V)
Reverse voltage protection:	50 V, permanently
Permissible impedance (at 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12V) / 0.02 A
Permissible load (at 0 ... 1(10)V):	R_L [Ω] > 3000 Ω
Display:	approx. 10 mm high, 4-digit LCD-display
Working temperature:	-25 ... +70 °C (electronic)
Storage temperature:	-25 ... +70 °C
Relative humidity (electronic):	0 ... 95 % RH (non-condensing); If there is a risk of condensation due to temperature changes, please use our encapsulated or lacquered types (option).
Type SHUT:	Heat protective shield / weather protective shield; **Application:** for highly precise outdoor measurements, strong solar radiation and rain without measurement falsification; **Design:** Weather protective shield made of plastic, Ø 110 mm, heights approx. 140 mm. Wall mounting panel made of stainless steel with 3 mounting holes for screws with maximal shaft diameter 5 mm. Largest overhang 160 mm.
Housing:	ABS (IP65)
Probe tube:	stainless steel
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Mounting:	4 housing holes for wall mounting or by means of plastic tube clamps for duct mounting
Functions:	min-/max-value memory, offset and slope digital adjustable, output signal freely scalable (without tools)
Scope of supply:	Device, manual

Accessories and spare parts:



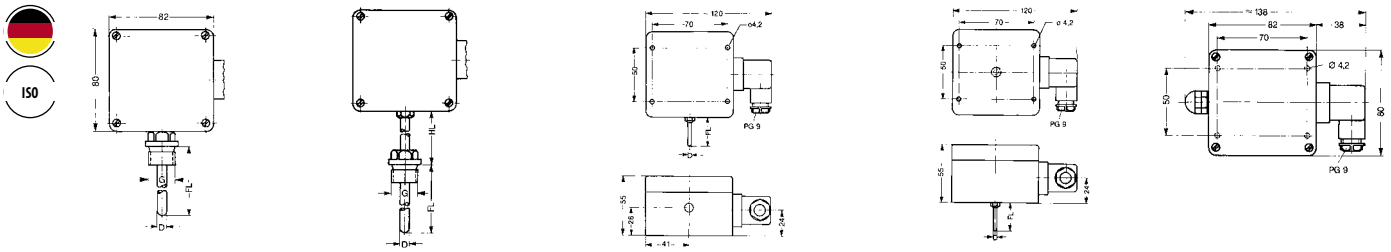
VAW
Art. no. 610765
Mounting clip for VA-angle at „SHUT"

GTMU-MP - 1 - 2 - 3 - 4 - 5 - 6 - 7

Greisinger		
1.	Version	
	AP1	With process connection for direct installation
	AP2	For higher temperatures, with process connection and extension tube
	AP3	Indoor/outdoor temperature sensor for direct wall mounting
	AP4	Channel sensor with probe tube outlet centrally and vertically downward
	SHUT	Radiation cap / weather protection incl. „-LACK"
2.	Output signal	
	AA1	Analogue output 4 ... 20 mA
	AV1	Analogue output 0 ... 10 V
	AV01	Analogue output 0 ... 1 V
3.	Fitting length EL	
	050	50 mm, Standard A3
	100	100 mm, Standard A1, A2, A4 (surcharge per 100 mm started after 100 mm)
	150	150 mm
	200	200 mm
		weitere auf Anfrage
4.	Probe diameter D	
	D03	Ø3 mm, Standard A3
	D04	Ø4 mm
	D05	Ø5 mm
	D06	Ø6 mm, Standard A1, A2, A4
	D08	Ø8 mm
5.	Process connection	
	G1	G ½
	G2	G ¼
	G3	G ⅜
	G4	G ¾ A
	M5	M5
	M6	M6
	M8	M8
	M10	M10
	M12	M12
	N1	NPT ½"
6.	Extension tube length	
	070	70 mm
	100	100 mm, Surcharge per 100 mm started after 100 mm
7.	Options	
	000	Without option
	LACK	Coated PC Board

further upon request

TEMPERATURE TRANSDUCER GTMU COMPLETE WITH PT100 OR TYPE K (NICR-NI)



Design type 1
for direct screw connection

Standard type:
G = ½", FL = 100 mm,
D = 6 mm

Design type 2
for high temperatures

Standard type:
G = ½", HL = 50 mm,
FL = 100 mm, D = 6 mm

Design type 3
indoor / outdoor probe
for direct wall mounting

Standard type:
FL = 50 mm, D = 3 mm

Design type 4
duct probe

Standard type:
FL = 100 mm, D = 6 mm

Design type 5
for external probes

upon request

GTMU-AP1
GTMU-AP2
GTMU-AP3
GTMU-AP4
GTMU-AP5

General:

The types 1 – 4 are supplied complete with Pt100 sensor, measuring transducer etc., calibrated and thus ready for use. Type 5 does not include sensor which is either already existing at your works or will have to be ordered separately according to your specifications. All versions have printed circuit lacquered on both sides for outdoor applications.

Specifications:

Sensor element:	
Resistance thermometer:	Pt100 class B, potential-free
Max. measuring ranges: (not available for every design type)	
Pt100:	-200 ... +800 °C
Standard measuring ranges:	
Pt100:	0 ... 100 °C, 0 ... 200 °C, -50 ... +50 °C, -50 ... +150 °C
Accuracy electronics:	<0.1 % of the current signal
Output signal:	
Standard:	4 ... 20 mA (2-wire)
Auxiliary energy:	Uv = 12 ... 30 V DC (at 0 ... 10 V: Uv = 18 ... 30 V DC); (for special types GTMU/GITT and GTMU/RT420: 8 ... 30 V)
Reverse voltage protection:	50 V permanently
Allowable burden (for 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A (for special types GITT and RT420 refer to this pages)
Allowable load (for 0-__Volt):	R_L >3000 Ω
Ambient temperature electronics:	0 ... +70 °C (-40 ... +85 °C at .../RT420 and .../GITT)
Temperature coefficient	
Pt100:	0.01 % / °C
Storage temperature:	-20 ... +70 °C
Housing:	ABS (IP65)
Probe tube:	stainless steel
Mounting:	with holes for wall mounting
Electric connection:	elbow plug acc. to EN 175301-803/A (IP65)
Scope of supply:	Device, manual

GTMU - [1] - [2] - [3] - [4] - [5] - [6] - [7] - [8]

Greisinger		
1.	Version	
	AP1	Channel /duct design with thread
	AP2	For higher temperatures, with process connection and extension tube
	AP3	Indoor / outdoor sensor
	AP4	Channel sensor
	AP5	For external sensor connection
	SHUT	Heat protective hat
2.	Output signal	
	A1	4 ... 20 mA
	V2	0 ... 10 V
3.	Sensor element	
	P-T0	Resistance thermometer Pt100
	P-RT	Resistance thermometer Pt100
	P-GI	Resistance thermometer Pt100
	T	Resistance thermometer Pt1000
	K	Type K (NiCr-Ni)
4.	Measuring range	
	MB1	0 ... 100 °C
	MB2	-50 ... +150 °C
	MB3	0 ... 200 °C
	MB4	-50 ... +50 °C
5.	Installation length	
	050	50 mm, Standard A3
	075	75 mm
	100	100 mm, Standard A1, A2, A4 (surcharge per 100 mm started after 100 mm)
	150	150 mm
	165	165 mm
	200	200 mm
	215	215 mm
	250	250 mm
	300	300 mm
	335	335 mm
	400	400 mm
	500	500 mm
	1800	1800 mm
6.	Probe diameter	
	3	Ø3 mm
	4	Ø4 mm
	5	Ø5 mm
	6	Ø6 mm
	8	Ø8 mm
7.	Process connection	
	G1	G ½
	G2	G ¼
	G3	G ¾
		G ⅜
8.	Extension tube length	
	050	50 mm
	080	80 mm
	100	100 mm
	250	250 mm

TEMPERATURE-MEASURING TRANSMITTER IN SNAP-ON HOUSING

GTP-SG

Temperature-measuring transmitter in snap-on housing

General:

Design-type: PC board completely ready for operation (sensor not included) with any measuring range and any output. 3-pin connection terminal for Pt 100 in 2 or 3-wire technology. Connection terminal for output in 2-, 3-, or 4-wire technology - depending on type desired.

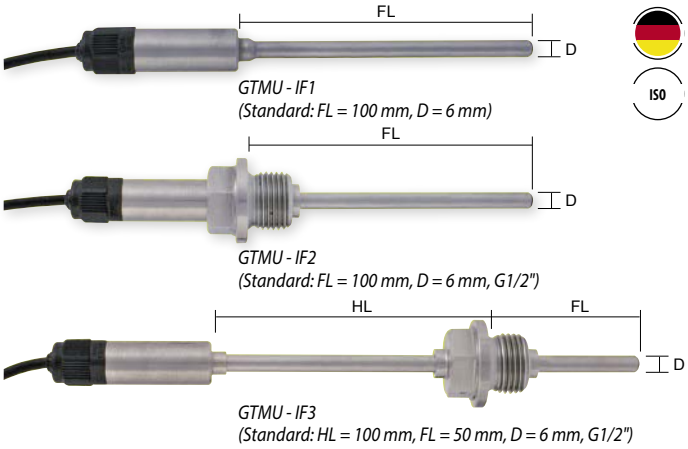
Specifications:

Sensor element:	for Pt 100 resistance thermometer acc. to DIN IEC 751. *Suitable sensors can be supplied custom-designed according to your specifications or in standard design from stock (p.r.t. chapter temperature probes).*
Sensor connection:	2- or 3-wire connection. Automatic line resistance compensation for 3-wire connection.
Auxiliary energy:	Uv = 12 ... 30 V DC (at 0 ... 10 V: Uv = 18 ... 30 V DC)
Reverse voltage protection:	50 V permanent
Permissible impedance (at 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A
Operating temperature electronics:	0 ... +70 °C
Accuracy electronics:	±0.2 % FS
Temperature coefficient:	0.01 % / °C
Storage temperature:	-20 ... +70 °C
Relative humidity:	0 ... 80 % RH, non-condensing (standard)
Design type:	for top-hat rail (panel mounting), Width of housing (pitch) 22.5 mm
Mounting:	4 holes, 3.5 mm Ø each
Mounting distance:	43.5 x 58 mm (W x H)
Miscellaneous:	Potentiometer for zero point and scale
Electric connection:	screw-type terminals with wire protection and drill holes for testing pin, wire Ø max. 1.5 mm². Option: screw-type/plug-in terminal

GTP - [1] - [2] - [3] - [4] - [5]

Greisinger		
1.	Version	
	SG	Temperature measuring transducer in snap-on housing
2.	Sensor element	
	P	Pt100
	T	PT1000
3.	Sensor connection	
	3L	3-wire (can be wired for 2-wire operation)
	2L	2-wire, Special design
	4L	4-wire, Special design
4.	Measuring range	
	0100	0 ... 100 °C
	0200	0 ... 200 °C
	5050	-50 ... +50 °C
	5015	-50 ... +150 °C
5.	Output signal	
	AA1	4 ... 20 mA
	AV02	0 ... 2 V
	AV05	0 ... 5 V
	AV010	0 ... 10 V

TEMPERATURE TRANSMITTER PT 1000



GTMU-IF1

Art. no. 602688

Temperature transmitter

GTMU-IF2

Art. no. 604409

Temperature transmitter

GTMU-IF3

Art. no. 603774

Temperature transmitter

General:

High precision transmitter with compact design.

Specifications:

Measuring range:	The probe length FL has to be chosen long enough, that the allowable temperature range of the electronics situated in the tube sleeve is not exceeded.
GTMU-IF1 (Standard):	-30.0 ... +100.0 °C
GTMU-IF2 (Standard):	-30.0 ... +100.0 °C
GTMU-IF3 (Standard):	-70.0 ... +400.0 °C
	other measuring ranges (max. -200 ... +500 °C) upon request
Measuring probe:	internal Pt1000-sensor, DIN class B
Accuracy: (at nominal temperature = 25 °C)	
Electronic:	±0.2 % of measuring value ±0.2 °C
Measuring probe:	standard: DIN class B optionally higher sensor accuracy available
Output signal:	4 ... 20 mA (2-wire)
Auxiliary energy:	Uv = 10 ... 30 V DC
Permissible burden:	$R_A \leq (U_V - 10\,V) / 0.022\,A$ [R_A in Ohm, U_V in V]
Working temperature of electronic (in tube sleeve):	-25 ... +60 °C
Housing:	stainless steel housing
Dimensions:	depending on sensor construction
Tube sleeve:	Ø 15 x 35 mm (without screwing)
Electric connection:	approx. 1 m long 4-pin cable (2 x current loop, 2 x interface)

Option:

FL=...:
longer tube

HL=...:
longer collar tube

D=...:
other tube diameter

G=...:
other thread

MB=...:
other measuring ranges, set by factory

M12:
electric connection: M12 plug

ANALOG PT100-TRANSMITTER

T03BU/WE

Analog Pt100-transmitter (transmitter 0 ... 10 V, set by our works)

General:

These transmitter are designed for industrial applications and are used to measure the temperature through Pt100 resistance thermometers in 2-/3-wire circuits connections. The 0 ... 10 V output signal is linear with temperature. The advantages of a continuous analog signal path and those of digital adjustment have been combined in the realization of this transmitter series.

Specifications:

Measurement input:	Pt100 (DIN EN60751)
Measuring range:	-200 ... +850 °C
Measuring span:	40 ... 1050 K
Zero shift:	at span <75 K: -40, -20, 0, +20 or +40 °C at span =75 K: ±50 °C at span >75 K: ±(span * 0.2 + 35 °C)
Sensor connection:	2- or 3-wire connection
Measuring current:	<0.5 mA
Max. perm. line resistance (3-wire):	11 Ohm per conductor
Sampling time:	continuous because of analog signal path
Output signal:	0 ... 10 Volt, 3-wire technology
Setting time on a temperature change:	≤10 ms
Transfer characteristic:	linear with temperature
Transfer accuracy:	±0.2 % FS
Calibration accuracy:	≤±0.2 °C or ±0.2 % of measuring span
Supply voltage: U_B	15 ... 30 V DC
Supply voltage error:	±0.01 % FS / V
Permissible load R_L:	R_L ≥10 kOhm
Load error:	≤ ±0.1 % FS
Operating temperature:	-40 ... +85 °C
Relative humidity:	0 ... 95 % RH (non condensing)
Storage temperature:	-40 ... +100 °C
Electric connection:	via terminals, cross section of connection terminals max. 1.75 mm²
Housing:	PC-housing, suitable for installation in connection head acc. to DIN 43729 form B.
Operating position:	unrestricted
Dimensions:	Ø 44 mm x 21 mm
Protection rating:	Housing: IP54, connection terminals: IP00
Weight:	approx. 45 g

Accessories and spare parts:

Hutschienenadapter
Art. no. 603659
Hat rail adapter for snap-on the T03 BU to top-hat rail

T03BU/WE - [1] - [2]

Greisinger		
	Sensor connection	
	P2	Pt100 (2-wire)
	P3	Pt100 (3-wire)
	Measuring range	
	MBS	-20 ... +20 °C
	MBS	20 ... 60 °C
	MBS	30 ... 60 °C
	MBS	-50 ... +50 °C
	MBS	-40 ... +100 °C
	MBS	0 ... 100 °C
	MBS	-10 ... +110 °C
	MBS	0 ... 120 °C
	MBS	0 ... 180 °C
	MBS	0 ... 200 °C
	MBS	-50 ... +100 °C
	MBS	-50 ... +200 °C
	MBS	50 ... 250 °C
	MBS	0 ... 250 °C
	MBS	0 ... 300 °C
	MBS	0 ... 600 °C
	MBS	-200 ... +850 °C

TEMPERATURE-MEASURING TRANSDUCER 4 ... 20 MA, PT100, 2- / 3- OR 4-WIRE

FOR HEAD AND RAIL CASE MOUNTING

RT420 with rail adapter

HIGHLIGHTS:

- low-price and robust (complete sealed - no pots, therefore vibration resistant and long time stable)
- selectable probe connection as 2- / 3- or 4-wire
- high accuracy (0.1 %)
- large ambient temperature range (-40 ... +85 °C)
- error message in case of sensor damage or sensor short-circuit
- functional warranty 5 years

RT420-00/WE

Head transmitter, set by our works

RT420-SG/WE

Set by our works and mounted in snap-on rail housing

Specifications:	
Measuring range:	-200 ... +850 °C
Measuring span:	25 ... 1050 K
Zero shift:	-200 ... +825 °C
Resolution:	14 bit
Sensor connection:	2-, 3- or 4-wire connection
Measuring current:	<0.3 mA
Permitted resistance of connection cable:	max. 20 Ohm / wire
Compensation for cable error:	±0.02 K / Ohm (at 3-wire)
Sensor monitoring:	monitoring for sensor damage and short-circuit
Measuring cycle:	<700 ms
Linearisation:	linear to temperature acc. to IEC/DIN/EN 60 751-2
Accuracy:	±0.25 °C or ±0.1 % of measuring span
Temperature effect:	<±0.01 % / 1 K
Analog output:	4 ... 20 mA, 2-wire technology
Accuracy output:	<0.1 % of signal span
Auxiliary energy: U_B	8 ... 35 V DC (max. ripple factor: 3 Vss @ 50 / 60 Hz)
Permitted burden R_A:	$R_A \leq (U_B - 8\ V) / 0.023\ A$ [R_A in Ohm, U_B in V]
Effect of auxiliary energy:	±0.01 % / V
Power-on time:	10 s
Damping:	adjustable from 0 ... 30 s
Output limits:	3.5 mA, 23 mA
Signal for sensor damage:	3.5 mA or 23 mA
Operating temperature:	-40 ... +85 °C
Relative humidity:	0 ... 98 % RH (non condensing)
Storage temperature:	-55 ... +90 °C
Housing:	housing suitable for head mounting
Dimensions:	Ø 44 mm x 19 mm
Protection rating:	Housing: IP40, connection terminals: IP10
Electric connection:	via screw-type terminals
Weight:	approx. 35 g

Accessories and spare parts:

Hutschienenadapter
Art. no. 603659
Hat rail adapter for snap-on the RT420 to top-hat rail

RT420 - [1] - [2] - [3] - [4]

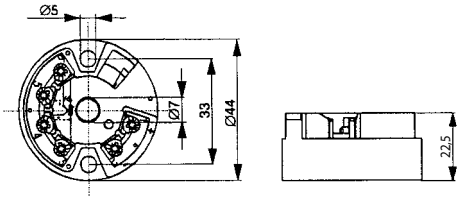
Greisinger		
1.	Version	
	00/WE	Head transmitter
	SG/WE	Head transmitter in snap-on housing
2.	Sensor connection	
	P2	Pt100 (2-wire)
	P3	Pt100 (3-wire)
	P4	Pt100 (4-wire)
3.	Measuring range	
		-200 ... +850 °C
	MBS	0 ... 25 °C
	MBS	0 ... 40 °C
	MBS	10 ... 42 °C
	MBS	0 ... +50 °C
	MBS	-50 ... +50 °C
	MBS	-200 ... +50 °C
	MBS	-50 ... +100 °C
	MBS	0 ... 100 °C
	MBS	-30 ... +100 °C
	MBS	0 ... 120 °C
	MBS	0 ... 150 °C
	MBS	-50 ... +150 °C
	MBS	0 ... 160 °C
	MBS	0 ... 170 °C
	MBS	0 ... 180 °C
	MBS	-50 ... +200 °C
	MBS	-50 ... +230 °C
	MBS	-50 ... +400 °C
	MBS	0 ... 200 °C
	MBS	0 ... 300 °C
4.	Probe break signal	
	FBU	3.5 mA
	FBO	> 23 mA

PROGRAMMABLE, ELECTRICALLY ISOLATED, 4 ... 20 MA UNIVERSAL TRANSMITTER GITT01

HIGHLIGHTS:

- electrically isolated
- output linear to temperatur
- high accuracy for the entire ambient temperature range (-40 ... +85 °C)
- also intrinsically safe, available with Ex-protection

RESISTANCE THERMOMETERS / THERMOCOUPLES / RESISTANCE SENSOR / VOLTAGE SENSOR



GITT01/WE

Electrically isolated, 4 ... 20 mA universal transmitter (set by our works)

GITT01-EX

Electrically isolated, 4 ... 20 mA universal transmitter
(Ex-protection: ATEX II 1G Ex ia IIC T6/T5/T4)

Specifications:			
Input signal: can be universally programmed to			
Resistance thermometer:		max. meas. range	min. meas. span
Pt100	acc. to IEC 751	-200 ... +850 °C	10 K
Pt500	acc. to IEC 751	-200 ... +250 °C	10 K
Pt1000	acc. to IEC 751	-200 ... +250 °C	10 K
Ni100	acc. to DIN 43760	-60 ... +250 °C	10 K
Ni500	acc. to DIN 43760	-60 ... +150 °C	10 K
Ni1000	acc. to DIN 43760	-60 ... +150 °C	10 K
Thermocouples:		max. meas. range	min. meas. span
Type B	PtRh30-PtRh6	0 ... +1820 °C	500 K
Type C	W5Re-W26Re (ASTME 988)	0 ... +2320 °C	500 K
Type D	W3Re-W25Re (ASTME 988)	0 ... +2495 °C	500 K
Type E	NiCr-CuNi	-270 ... +1000 °C	50 K
Type J	Fe-CuNi (acc. to IEC 584)	-210 ... +1200 °C	50 K
Type K	NiCr-Ni	-270 ... +1372 °C	50 K
Type L	Fe-CuNi (acc. to DIN 43710)	-200 ... + 900 °C	50 K
Type N	NiCrSi-NiSi	-270 ... +1300 °C	50 K
Type R	Pt13Rh-Pt	-50 ... +1768 °C	500 K
Type S	Pt10Rh-Pt	-50 ... +1768 °C	500 K
Type T	Cu-CuNi (acc. to IEC 584)	-270 ... + 400 °C	50 K
Type U	Cu-CuNi (acc. to DIN 43710)	-200 ... + 600 °C	50 K
	MoRe5-MoRe41	0 ... +2000 °C	500 K
Resistance-type sensor:		max. meas. range	min. meas. span
Resistance		10 ... 400 Ohm	10 Ohm
Resistance		10 ... 2000 Ohm	10 Ohm
Voltage sensor:		max. meas. range	min. meas. span
Voltage		-10 ... 100 mV	5 mV

Resistance thermometer:	
Sensor connection:	2-, 3- or 4-wire connection
Meas. current:	<0.6 mA
Max. perm. line resistance:	11 Ohm / line
Accuracy:	
Pt100, Ni100:	±0.2 °C or ±0.08 % of measuring span
Pt500, Ni500:	±0.4 °C or ±0.16 % of measuring span
Pt1000, Ni1000:	±0.2 °C or ±0.08 % of measuring span
Temperature effect:	Td = ±(15 ppm/K * max. meas. range + 50 ppm/K * meas. span)

Thermocouples:	
Sensor connection:	2-wire connection
Sensor current:	<350 nA
Accuracy (typ.):	±0.5 K (Type: K, J, E, L, U), ±1.0 K (Type: N, C, D), ±2.0 K (Type: S, B, R, MoRe5-MoRe41)
CJC:	Pt100 internal or external (0 ... 80 °C)
CJC accuracy:	±1 °C
Temperature effect:	Td = ±(50 ppm/K * max. meas. range + 50 ppm/K * meas. span)
Output signal:	4 ... 20 mA or 20 ... 4 mA, 2-wire technology
Linearisation:	temperature linear, resistance linear or voltage linear
Auxiliary energy: U_B	8 ... 30 V DC (max. ripple factor: 5 Vss for Ub>13 V)
Electr. isolation (E/O):	Ueff = 2 KV AC
Permitted load R_A:	$R_A \leq (U_B - 8\,V) / 0.022\,A$ [R_A in Ohm, U_B in V]
Supply effects:	≤±0.01 % / V deviation from 24 V
Load effect:	≤±0.02 % / 100 Ohm
Digital filter:	0 ... 60 s, configurable
Switch-on delay:	approx. 4 s
Response time:	1 s
Output limits:	3.8 ... 20.5 mA
Signal in case of sensor damage:	3.6 mA or ≥21.0 mA, configurable
Operating temperature:	-40 ... +85 °C
Climate class:	acc. to EN 60654-1, class C; condensation permissible
Vibration strength:	4 g / 2 ... 150 Hz acc. to IEC 60 068-2-6
Electric connection:	via terminals, cross section of connection terminals max. 1.75 mm²
Housing:	PC-housing, suitable for installation in connection head acc. to DIN 43729 form B.
Dimensions:	Ø 44 mm x 22.5 mm
IP-rating:	Housing: IP54, connection terminals: IP00
Weight:	approx. 40 g
Ex-approved:	ATEX II 1G Ex ia IIC T6/T5/T4
Power suplly set:	Ui ≤ 30 V DC, Ii ≤ 100 mA, Pi ≤ 750 mW Ci, Li = negligibly small
Measuring circuit:	Uo ≤ 8,2 V DC, Io ≤ 4,6 mA, Po ≤ 9.35 mW
Max. connection values:	Lo = 4,5 mH (ia IIC), 8.5 mH (ia IIB) Co = 974 nF (ia IIC), 1900 nF (ia IIB)

Accessories and spare parts:

Hutschienenadapter
Art. no. 603659
Hat rail adapter for snap-on the GITT01 to top-hat rail

INFRARED-MEASURING TRANSDUCER

NON-CONTACT TEMPERATURE MEASURING FROM -50 ... +975 °C

HIGHLIGHTS:

- small infrared sensor heads with 22:1 optical resolution
- rugged and applicable without cooling up to 180 °C ambient
- adjustable emission factor
- freely scaleable analogue output
- illuminated liquid crystal display

IRCT20

Art. no. 602832

Precision infrared transducer, -50 ... +975 °C, optic 22:1

Application:

Glass, paper, plastic industries, automotive industry, metal industry,quality assurance / maintenance

Specifications:

Measuring range:	-50 ... +975 °C freely scaleable via programming keys
Spectral sensitivity:	8 ... 14 µm
Optic resolution:	22:1 (precision glass optics)
System accuracy:	±1 % or ±1 °C (higher value applicable)
Reproducibility:	±0.5 % or ±0.5 °C (higher value applicable)
Nominal temperature:	23 ±5 °C
Temperature coefficient:	0.05 % or 0.05 °C/K (higher value applicable)
Temperature resolution:	0.1 °C
Response time:	150 ms (95 %)
Emission-, transmission factor:	adjustable from 0.100 ... 1.100
Output signals:	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V thermocouple type J or K
Output impedance	
mA:	max. 500 Ohm (at 8 ... 36 V DC)
V:	min. 100 kOhm load resistance
Thermo couple:	20 Ohm
Voltage supply:	8 ... 36 VDC
Power consumption:	max. 100 mA
Cable length:	1 m (standard), 3 m, 15 m
Protection rating:	IP65 (NEMA-4)
Ambient temperature	
Measuring head:	-20 ... +180 °C
Electronic box:	0 ... +65 °C
Storage temperature	
Measuring head:	-40 ... +180 °C
Electronic box:	-40 ... +85 °C
Relative humidity:	10 ... 95 %, non condensing
Vibration (meas. head):	
IEC 68-2-6:	3G, 11 ... 200 Hz, each axis
Shock (meas. head):	
IEC 68-2-27:	50G, 11 ms, each axis
Weight (meas. head / elec. box):	40 g / 420 g
Dimensions electronic box:	120 x 70 x 30 mm
Scope of supply:	electronics-box with LCD, stainless steel sensor head (M12) incl. screw nut, 1 m high temperature sensor head cable, manual

Options:

CB3
3 m sensor head cable

CB15
15 m sensor head cable

CF
Auxiliary lens for measuring of smallest objects
measuring zone dia 0.6 mm @10 mm, in long distance 1.5:1

Accessories and spare parts:

MW
Art. no. 604567
Mounting bracket, fixed,

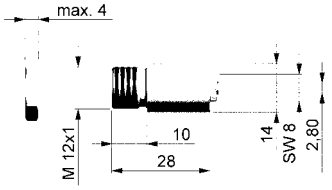
MB
Art. no. 604568
Mounting bolts with M12x1 housing

MG
Art. no. 603711
Mounting fork, adjustable in 2 axis with M 12x1 mount

FVS
Art. no. 603138
Standard air purge collar

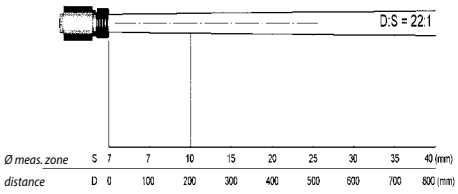
FVL
Art. no. 603712
Laminar blow clear header

ISO-WPS-IRCT
Art. no. 604967
Calibration certificate 23 °C, 110 °C, 510 °C

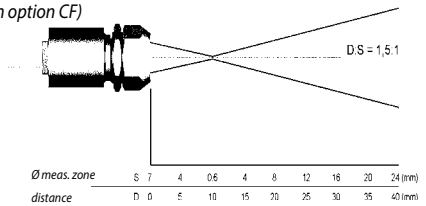


Further special design types (e.g. for metal processing, or with other optics) up on request

Optic resolution (standard)



Optic resolution (with option CF)

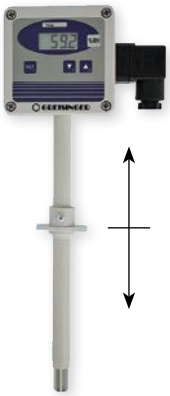


HUMIDITY TRANSDUCER

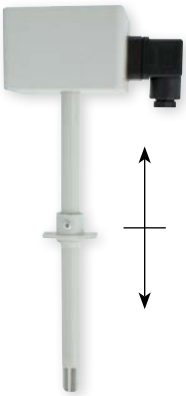
ISO
MIN MAX

HUMIDITY TRANSDUCER

GRHU-1R-MP
Wall version
Standard type:
Probe length: 50 mm



GRHU-1K-MP
Wall / channel version
Standard type:
Probe length: 220 mm



GRHU-2K-MP
Channel version
Standard type:
Probe length: 220 mm

GRHU-SHUT-MP
absorption hat / weather protection

GRHU-KABEL-MP
wall version with cable and high humidity sensor

GRHU-1R-MP
Art. no. 602938

GRHU-1K-MP
Art. no. 602941

GRHU-2K-MP
Art. no. 602943

GRHU-SHUT-MP
Art. no. 603953

GRHU-KABEL-MP
Art. no. 608043

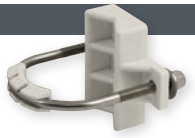
General:

The humidity transducer offers even greater possibilities to compensate the special sensor characteristics due to the newest microprocessor technology. Regarding precision, temperature stability and functionality a new dimension is entered. The transducer can be used for almost all applications due to the different types (e.g. wall or channel mount, with separated probe or with heat absorption hat) and the wide temperature range (electronic: -25 °C ... +50 °C; sensor: -40 ... +120 °C).

Specifications:

Measuring ranges:	
Humidity:	0.0 ... 100.0 % RH (temperature compensated)
Temperature:	-40.0 ... +120.0 °C or -40.0 ... +248 °F
Recommended humidity range:	20,0 ... 80,0 % RH (standard) 5.0 ... 95.0 % RH (with option high humidtiy)
Display options:	with option UNI an alternative display unit can be shown instead of the humidity measuring value. The unit selection will be done via keyboard.
Wet bulb temperature:	-27.0 ... +60.0 °C
Dewpoint temperature:	-40.0 ... +60.0 °C
Enthalpy:	-25.0 ... 999.9 kJ/kg
Atmospheric humidity:	0.0 ... 640.0 g/kg
Absolute humidity:	0.0 ... 200.0 g/m³
Accuracy: (at 25 °C and in recommended range)	
Display:	humidity: ±2.5 % RH temperature: ±0.4 % of measuring value ±0.2 °C
Output signal:	±0.2 % FS
Temperature compensation:	automatically
Auxiliary energy:	12 ... 30 VDC or 18 ... 30 VDC (for output: 0 ... 10 V)
Reverse voltage protection:	50 V, permanently
Perm. impedance (at 4 ... 20 mA):	RA [Ω] ≤ (Uv [V] - 12V) / 0.02 A
Permissible load (at 0 ... 1(10)V):	RL [Ω] > 3000 Ω
Display:	approx. 10 mm high, 4-digit LCD-display, alternating humidity and temperature display
Working temperature:	-25 ... +50 °C (electronics)
Sensor head and tube:	-40 ... +100 °C - for short time up to +120 °C
Storage temperature:	-25 ... +70 °C
Relative humidity (electronic):	0 ... 95 % RH (non-condensing); If there is a risk of condensation due to temperature changes, please use our encapsulated or lacquered types (optionally available).
Housing:	ABS (IP65)
Sensor tube:	tube 14 mm Ø, with screw-type protection cap
Design type KABEL:	with separated sensor tube, sensor head (Ø14 x 68 mm) connected to device via 1 m teflon cable. Inclusive option high-humidty sensor
Design type SHUT:	Heat protective shield / weather protective shield; **Application:** for highly precise outdoor measurements, strong solar radiation and rain; **Design:** Weather protective shield made of plastic, Ø 110 mm, heights approx. 140 mm. Wall mounting panel made of stainless steel with 3 mounting holes for screws with maximal shaft diameter 5 mm. Largest overhang 160 mm.
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Mounting:	4 housing holes for wall mounting or by means of plastic tube clamps for duct mounting
Functions:	min-/max-value memory, offset and slope adjustable, output signal scaleable

Accessories and spare parts:



VAW
Art. no. 610765
Mounting clip for VA-angle at SHUT

GRHU - [1] - [2] - [3] - [4] - [5] - [6]

Greisinger		
1.	Version	
	1R-MP	Wall / room version
	1K-MP	Wall /channel version
	2K-MP	Channel version
	KABEL-MP	Wall version with cable, and high humidity sensor, Incl. HO
	SHUT-MP	Radiation cap / weather protection incl. „-HO“ and „-LACK“
2.	Fitting length EL	
		No installation length, With KABEL / SHUT
	050	50 mm, Standard with 1R
	220	220 mm, Standard with 1K / 2K
	300	300 mm
	500	500 mm
3.	Output signal	
		4 ... 20 mA
	AV01	Analogue output 0 ... 1 V
	AV10	Analogue output 0 ... 10 V, 3rd output not possible
4.	Sensor	
		Standard sensor
	HO	High humidity sensor
	HO	High humidity sensor, free of charge
5.	Option	
	UNI	Adjustable humidity display instead of the standard humidity values
	LACK	Coated PC Board
6.	Cable length	
		1 m (standard)
	2M	2 m

HUMIDITY- AND TEMPERATURE TRANSDUCER

2-CHANNEL HUMIDITY/ TEMPERATURE TRANSDUCER

GHTU-1R-MP
Wall version
Standard type:
Probe length: 50 mm

GHTU-1K-MP
Wall / channel version
Standard type:
Probe length: 220 mm

GHTU-2K-MP
Channel version
Standard type:
Probe length: 220 mm

GHTU-SHUT-MP
absorption hat / weather protection

GHTU-KABEL-MP
wall version with cable and high humidity sensor

GHTU-1R-MP
Art. no. 602585

GHTU-1K-MP
Art. no. 602587

GHTU-2K-MP
Art. no. 602592

GHTU-SHUT-MP
Art. no. 603896

GHTU-KABEL-MP
Art. no. 604436

General:

The humidity & temperature transducer offers even greater possibilities to compensate the special sensor characteristics due to the newest microprocessor technology. Regarding precision, temperature stability and functionality a new dimension is entered. The transducer can be used for almost all applications due to the different types (e.g. wall or channel mount, with separated probe or with heat absorption hat) and the wide temperature range (electronic: -25 °C ... +50 °C; sensor: -40 ... +120 °C), 2 standard signal outputs.

Specifications:

Measuring ranges:	
Humidity:	0.0 ... 100.0 % RH (temperature compensated)
Temperature:	-40.0 ... +120.0 °C or -40.0 ... +248 °F
Recommended humidity range:	20.0 ... 80.0 % RH (standard) 5.0 ... 95.0 % RH (with option high humidtiy)
Display options:	with option UNI an alternative display unit can be shown instead of the humidity measuring value. The unit selection will be done via keyboard.
Wet bulb temperature:	-27.0 ... +60.0 °C
Dewpoint temperature:	-40.0 ... +60.0 °C
Enthalpy:	-25.0 ... +999.9 kJ/kg
Atmospheric humidity:	0.0 ... 640.0 g/kg
Absolute humidity:	0.0 ... 200.0 g/m³
Accuracy: (at 25 °C and in recommended range)	
Display:	humidity: ±2.5 % RH temperature: ±0.4 % of measuring value ±0.2 °C
Output signal:	humidity ±0.2 % FS, temperature ±0.2 % FS
Temperature compensation:	automatically
Auxiliary energy:	12 ... 30 V DC or 18 ... 30 V DC (for output: 0 ... 10 V)
Reverse voltage protection:	50 V, permanently
Perm. impedance (at 4 ... 20 mA): RA [Ω] ≤ (Uv [V] - 12 V) / 0.02 A	
Permissible load (at 0 ... 1(10)V): RL [Ω] > 3000 Ω	
Display:	approx. 10 mm high, 4-digit LCD-display, alternating humidity and temperature display
Working temperature:	-25 ... +50 °C (electronics)
Sensor head and tube:	-40 ... +100 °C - for short time up to 120 °C
Storage temperature:	-25 ... +70 °C
Relative humidity (electronic):	0 ... 95 % RH (non-condensing); If there is a risk of condensation due to temperature changes, please use our encapsulated or lacquered types (optionally available).
Housing:	ABS (IP65)
Sensor tube:	tube 14 mm Ø, with screw-type protection cap
Design type KABEL:	with separated sensor tube, sensor head (Ø 14 x 68 mm) connected to device via 1 m teflon cable. Inclusive option high-humidty sensor
Design type SHUT:	Heat protective shield / weather protective shield **Application:** for highly precise outdoor measurements, strong solar radiation and rain **Design:** Weather protective shield made of plastic, Ø 110 mm, heights approx. 140 mm. Wall mounting panel made of stainless steel with 3 mounting holes for screws with maximal shaft diameter 5 mm. Largest overhang 160 mm.
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Mounting:	4 housing holes for wall mounting or by means of plastic tube clamps for duct mounting
Functions:	min-/max-value memory, offset and slope adjustable, output signal scaleable

Accessories and spare parts:

VAW
Art. no. 610765
Mounting clip for VA-angle at SHUT

GHTU - 1 - 2 - 3 - 4 - 5 - 6

Greisinger		
1.	Version	
	1R-MP	Wall / room version
	1K-MP	Wall /channel version
	2K-MP	Channel version
	KABEL-MP	Wall version with cable, and high humidity sensor, Incl. HO
	SHUT-MP	Radiation cap / weather protection incl. „-HO" and „-LACK"
2.	Fitting length EL	
		No installation length, With KABEL / SHUT
	050	50 mm, Standard with 1R
	220	220 mm, Standard with 1K / 2K
	300	300 mm
	400	400 mm
	500	500 mm
3.	Output signal	
		2 x 4 ... 20 mA, galvanically isolated
	AV01	2 x 0 ... 1 V
	AV10	2 x 0 ... 10 V
	AV01G	2 x 0 ... 1 V, galvanically isolated, 2 angle connector
	AV10G	2 x 0 ... 10 V, galvanically isolated, 2 angle connector
4.	Sensor	
		Standard sensor, Standard with 1R, 1K and 2K. Recommended measuring range: 20 ... 80%
	HO	High humidity sensor, Recommended measuring range: 5 ... 95%
5.	Option	
	UNI	Adjustable humidity display instead of the standard humidity values
	LACK	Coated PC Board
6.	Cable length	
		1 m (standard)

FREELY SCALABLE PRESSURE MEASURING TRANSDUCER FOR ABSOLUTE PRESSURE OR OVER / UNDER PRESSURE AND PRESSURE DIFFERENCE

FREELY SCALABLE

absolute pressure connection

HIGHLIGHTS:

- Change between 4 ... 20 mA / 0 ... 10 V
- With display
- Switching output
- Configuration protected by code lock

GMUD-MP-S

Freely scalable pressure measuring transducer for pressure difference or absolute pressure (pressure range >25 mbar)

GMUD-MP-F

Freely scalable pressure measuring transducer for pressure difference (fine pressure range ≤25 mbar)

General:

Microprocessor controlled, digital pressure transducer with display and operation via 3 buttons. With freely scalable analog output that can be switched between 4 ... 20 mA and 0 ... 10 V. Code lock for input, after code input parameters can be changed (code permanently stored).

Application:

For air and non-aggressive gases
Area of application: controlling, measuring and monitoring, climate and ventilation, environmental and medical technology

Messbereiche:

Differenz-Feinstdruckbereich:

GMUD MP-F-MR0: *Art. no. 602483*	**Measuring range:** 0.000 ... 1.000 mbar **Overload:** 250 mbar, **Burst pressure:** 500 mbar
GMUD MP-F-MR1: *Art. no. 602485*	**Measuring range:** 0.00 ... 10.00 mbar **Overload:** 150 mbar, **Burst pressure:** 200 mbar
GMUD MP-F-MR2: *Art. no. 602487*	**Measuring range:** 0.00 ... 20.00 mbar **Overload:** 150 mbar, **Burst pressure:** 200 mbar
GMUD-MP-F-MR3: *Art. no. 605958*	**Measuring range:** -1.999 ... +2.500 mbar **Overload:** 250 mbar, **Burst pressure:** 500 mbar
GMUD-MP-F-MR31: *Art. no. 602970*	**Measuring range:** -10.00 ... +10.00 mbar **Overload:** 150 mbar, **Burst pressure:** 200 mbar
GMUD-MP-F-MR4: *Art. no. 604355*	**Measuring range:** -19.99 ... +20.00 mbar **Overload:** 150 mbar, **Burst pressure:** 200 mbar

Differenzdruckbereich:

GMUD MP-S-MR0: *Art. no. 602482*	**Measuring range:** 0.0 ... 100.0 mbar **Overload:** 1000 mbar, **Burst pressure:** 1500 mbar
GMUD MP-S-MR1: *Art. no. 602491*	**Measuring range:** 0.0 ... 500.0 mbar **Overload:** 1000 mbar, **Burst pressure:** 1500 mbar
GMUD MP-S-MR2: *Art. no. 602493*	**Measuring range:** 0 ... 1000 mbar **Overload:** 2000 mbar, **Burst pressure:** 3000 mbar
GMUD MP-S-MR3: *Art. no. 602495*	**Measuring range:** 0 ... 2000 mbar **Overload:** 4000 mbar, **Burst pressure:** 6000 mbar
GMUD MP-S-MR4: *Art. no. 602497*	**Measuring range:** 0 ... 5000 mbar **Overload:** 7000 mbar, **Burst pressure:** 7000 mbar
GMUD MP-S-MR50: *Art. no. 608650*	**Measuring range:** -50.0 ... +50.0 mbar **Overload:** 150 mbar, **Burst pressure:** 200 mbar
GMUD-MP-S-MR5: *Art. no. 607278*	**Measuring range:** -100.0 ... +100.0 mbar **Overload:** 1000 mbar, **Burst pressure:** 1500 mbar
GMUD-MP-S-MR6: *Art. no. 607925*	**Measuring range:** -500 ... +500 mbar **Overload:** 1000 mbar, **Burst pressure:** 1500 mbar
GMUD-MP-S-MR7: *Art. no. 607252*	**Measuring range:** -1000 ... +1000 mbar **Overload:** 2000 mbar, **Burst pressure:** 3000 mbar

Absolutdruckbereich:

GMUD MP-S-MA0: *Art. no. 602499*	**Measuring range:** 0 ... 1100 mbar abs. **Overload:** 4000 mbar, **Burst pressure:** 6000 mbar
GMUD MP-S-MA1: *Art. no. 602501*	**Measuring range:** 0 ... 2000 mbar abs. **Overload:** 4000 mbar, **Burst pressure:** 6000 mbar
GMUD MP-S-MA2: *Art. no. 602490*	**Measuring range:** 600 ... 1100 mbar abs. **Overload:** 2000 mbar, **Burst pressure:** 3000 mbar

Types of pressure:

Absolute pressure is the pressure related to vacuum (zero pressure). When no pressure is applied (pressure port open), the ambient pressure is displayed.
Examples: meteorological measurements (eg 1013 hPa abs), vacuum processes
Differential pressure is the pressure difference between 2 press. Mostly both pressures are connected to a respective side of the measuring membrane, the sensor must have two pressure connections.
Examples: ventilation technology / filters, dynamic pressure measurements
The **relative pressure** is the pressure difference between a pressure / vacuum and the ambient pressure. For relative pressure measurement with a differential pressure sensor (2 pressure ports) one of the terminals is left open.
Examples: pneumatic, tire pressure, hydraulic

Specifications:

Sensor element:	piezoresistive pressure sensor with integrated temperature
Typ. accuracy:	depends on type (see manual) ±0.15 % (linearity) ±0.6 % FS (hysteresis and temperature 0 ... 70 °C)
Output signal:	4 ... 20 mA / 0 ... 10 V (selectable in menu)
Auxiliary energy:	only needed if 0 ... 10 V output signal is selected (18 ... 30 V DC)
Permissible burden:	(4 ... 20 mA): $R_A[\Omega] \leq (Uv [V] - 12 [V]) / 0.02$ A
Permissible load:	(0 ... 10 V): ≥3000 Ω
Operating temperature:	-20 ... +70 °C
Storage temperature:	-40 ... +70 °C
Display / Operation:	4-digit 7-segment display and 3 buttons
Display range:	-1999 ... 9999 digit
Pressure connection:	universal pressure connecting pieces for 6 x 1 mm or 8 x 1 mm plastic tubes (4 or 6 mm inner pipe diameter)
Mounting position:	any position (small influence of mounting position for low ranges)
Housing:	ABS (IP65): with fixing holes for wall mounting (accessible after cover has been removed)
Dimensions:	Housing 80 x 82 x 55 mm (without elbow-plug and pressure connecting pieces)
Electric connection:	Elbow-type plug acc. to EN 175301-803/A (IP65) max. wire cross section: 1.5 mm², wire / cable Ø: 4.5 ... 7 mm
Scope of supply:	Device, calibration protocol, manual

Option:

LACK
card coated on both sides for outdoor application

OUT
Switching output (max 28 V, 40 mA), switches if meas. Value falls below or exceeds limit value connection via 2nd elbow-type plug

WE
Default settings according to customer's specifications, includes: output signal, measuring range, default state in case of error (without upcharge if together with MBF / MBS)

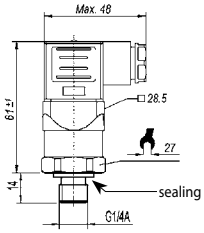
MBF
Option any fine pressure range ≤25 mbar, please state desired measuring range

MBS
Option any pressure range >25 mbar ... 5000 mbar, please state desired measuring range

Accessories and spare parts:

Tube and accessories: see product catalog (handheld instruments).

PRESSURE TRANSMITTER



A 10

Pressure transmitter (relative pressure, zero output at atmospheric pressure)

Application:

Suitable for all applications in machine and systems engineering, automotive technology as well as cooling and air conditioning technology.

Specifications:

Measuring range (MR), Overload limit (OL), Burst pressure (BP):								
MB:	1, 40,	1.6, 60,	2.5, 100,	4, 160,	6, 250,	10, 400,	16, 600	25,
ÜL:	2 80	3.2 120	5 200	8 320	12 500	20 800	32 1200	50
BD:	5 400	10 550	10 800	17 1000	34 1200	34 1700	100 2400	100

Output signal:	4 ... 20 mA, 2-wire, R_A [Ω] < (Uv [V] - 8V) / 0.02 A 0 ... 10 V, 3-wire, R_L > 10 kΩ (other output signals upon request)
Auxiliary energy Uv:	8 ... 30 V DC (for output 4 ... 20 mA) 14 ... 30 V DC (for output 0 ... 10 V)
Accuracy: *	≤1.0 % FS (optional: ≤0.5 % FS) * = including non-linearity, hysteresis, zero point and scale error. Corresponds to error of measurement per IEC 61298-2. Sensor adjusted in vertical mounting position with lower pressure connection.
Non-Linearity:	≤0.5 % FS (optional: ≤0.25 % FS)
Zero Offset:	≤0.5 % FS (typ.), ≤0.8 % FS (max.), (Optional: ≤0.15 % FS (typ.), ≤0.4 % FS (max.))
Hysteresis:	≤0.16 % FS
Repeatability:	≤0.1 % FS
Long-term drift:	≤0.1 % FS (according to IEC 61298-3)
Response time: T_{90}	≤4 ms
Permitted temperature of measurement media:	0 ... +80 °C (optional: -30 ... +100 °C)
Ambient temperature:	0 ... +80 °C (optional: -20 ... +100 °C)
Storage temperature:	-20 ... +80 °C
Temperature compensated area:	0 ... +80 °C
Temperature error in compensated area:	≤1.0 % FS (typ.), ≤2.5 % FS (max.)
Material:	Parts coming into contact with pres. media
Pressure connection:	316 L
Pressure sensor:	316 L (as of 10 bar rel. 13 ... 8 PH)
Housing:	316 L
Pressure connection:	G ¼ A, DIN 3852-E with NBR sealing
Protection rating:	IP65 or IP67 with cable
Electric connection:	elbow-type plug acc. to EN 175301-803/A or connection cable, cable length 2 m
Electric protections:	reverse voltage and short-circuit protection
Weight:	approx. 80 g

Options:

Absolute pressure: (0 ... 1 bar abs. to 0 ... 25 bar abs.)

Under pressure: (-1.0 ... +1.5 bar, -1.0 ... +3.0 bar, -1.0 ... +9.0 bar)

G2: Higher sensor accuracy (class 0.5)

T2: Extended temperature range: -30 ... +100 °C

V2: Output signal 0 ... 10 V

Fixed connecting cable:
2 m with bend protection (instead of elbow-type plug, protection rating: IP67)

PRESSURE MEASURING TRANSDUCER FOR OVER/UNDER AND ABSOLUTE PRESSURE

S 10

S 11

S 20

S 10 REL

Pressure measuring transducer (Standard, zero output at ambient pressure)

S 11 REL

Pressure measuring transducer (Flush, zero output at ambient pressure)

S 20 REL

Pressure measuring transducer (Standard, zero output at ambient pressure)

S 10 ABS

Pressure measuring transducer (Standard, absolute, zero output at vacuum)

S 11 ABS

Pressure measuring transducer (Flush, absolute, zero output at vacuum)

S 20 ABS

Pressure measuring transducer (Standard, absolute, zero output at vacuum)

General:

Piezoresistive pressure sensor with temperature compensation. Completely welded and stainless steel design, filled food safe (up to 16 bar), thin film strain (above 25 bar).

Specifications:

Measuring ranges:	in bar (other values upon request)
S 10 / S 11 REL: **S 11 / S 20 REL:**	0.1, 0.16, 0.25, 0.4, 0.6, 1, 1.6, 2.5, 4, 6, 10, 16, 25, 40, 60, 100, 160, 250, 400, 600, **S 20 REL only:** 1000, 1600
S 10 / S 11 ABS: **S 11 / S 20 ABS:** **S 10 ABS:**	0.25, 0.4, 0.6, 1, 1.6, 2.5, 4, 6, 10, 16, **S 20 ABS only:** 20, 40 0.8 ... 1.2,
Available overload pressure limits:	3-fold at measuring range <10 bar (150 psi) 2-fold at measuring range ≥10 bar (150 psi)
Output signal:	4 ... 20 mA (0 ... 10 V - refer to options; others upon request)
Permissible impedance:	R_A [Ω] ≤ (Uv [V] - 10 V) / 0.02 A (for output 4 ... 20 mA)
Permissible load:	R_L > 10 kOhm (for output 0 ... 10 V)
Auxiliary energy:	10 ... 30 V DC (14 ... 30 V DC for output 0 ... 10 V)
Accuracy:	
deviation from parameter (% of span):	≤0.5 (setting of cut-off point) ≤0.25 (setting of tolerance band, BFSL)
Repeatability (% of Span):	≤0.1 %
Stability/year (% of Span):	≤0.2 (at reference conditions)
Hysteresis (% of Span):	≤0.1
Permissible temperature of media:	-30 ... +100 °C (refer to options)
Operating temperature ambient:	-30 ... +100 °C
Compensated temperature range:	0 ... +80 °C
Temperature coefficient:	≤0.02 % FS / K (or ≤0.04 % FS for MB ≤0.25 bar)
Housing:	stainless steel 1.4435 (IP65)
Pressure connection:	(other upon request)
Type S 10 / 20... :	G ½ B, other upon request
Type S 11... :	G 1 B (up to 1.6 bar), G ½ B (from 2.5 ... 600 bar)
Mounting position:	any
Electric connection:	standard via elbow-type plug EN 175301-803/A
Electric protections:	reverse voltage protection, over voltage and short-circuit

Options:

Special measuring range

Media temperature: -40 ... +125 °C (S 10 / 20 only)

Media temperature: -30 ... +125 °C (S 11 only)

Media temperature: -20 ... +150°C (S-11 only with cooling section)

Output signal 0 ... 10 V (other upon request)

Ex-protection upon request

WATER LEVEL / WELL PROBE TANK CONTENTS MEASURING PROBE

FOR SIMPLE AND INEXPENSIVE APPLICATIONS

GBS 01

Art. no. 603059

Water level / well probe

Application:

Suitable for permanent level measuring in tanks, rivers, lakes, drinking-water wells, drilling holes, waste water plants...

GBS 02

Art. no. 603146

Tank contents measuring probe for difficult measuring conditions

General:

Piezoresistive pressure sensor with temperature compensation. Welded, non-corrosive design with integral and additionally sealed water-proof connecting cable. The pressure compensation is done via a cable-integrated air path to the atmosphere. A special feature of GBS 02 is the lateral flow resistance, which prevents media ingress.

Application:

For measuring the level of fuel and other aggressive media. The sensor is highly precise, insensitive to lateral flow and offers optionally lightning protection and other output signals (e.g. 0 ... 10 V). For measuring of gasoline please order Ex-design.

Specifications:	
Measuring ranges:	0.1 bar (100 mbar) ... 10 bar = 1 ... 100 m water column
Available ranges:	0.1 (GBS 02 only), 0.25, 0.4, 0.6, 1, 1.6, 2.5, 4, 6, 10
Overload (bar):	1 2 2 3 5 8 8 10 10 10
Output signal:	4 ... 20 mA (Option: 0 ... 10 V only for GBS 02)
Permissible impedance:	4 ... 20 mA: R_A [Ω] < (Uv [V] -10 V) / 0.02 A
Permissible load:	0 ... 10 V: R_L [Ω] > 100 kOhm
Auxiliary energy:	10 ... 30 V DC (14 ... 30 V DC at 0 ... 10 V)
Accuracy:	accuracy (% of span):
GBS 01:	≤0.5 setting of cut-off point) resp. ≤0.25 (BFSL)
GBS 02:	accuracy (% of span): ≤0.25 (setting of cut-off point) resp. ≤0.125 (BFSL); (at 0.1 bar: ≤0.5 setting of cut-off point) resp. ≤0.25 (BFSL))
Hysteresis (% of span):	≤0.1
Repeatabilty (% of span):	≤0.05
Stability per year (% of span):	≤0.2 (at reference conditions)
Operating temperature:	-10 ... +50 °C (GBS 01) or -10 ... +85 °C (GBS 02)
Temperature coefficient (% of span):	≤0.02 / K (for meas. range >0.4 bar)
Filling:	KN77, food safe
Housing:	Chromium-nickel alloy 1.4571. Male thread G 1/2" accessible after removal of plastic protection cap.
Probe dimensions:	Ø 27 mm, length of metal body: approx. 100 mm (GBS 01), approx. 147 mm (GBS 02), cable Ø approx. 7.5 mm
Connection:	10 m stationary casted PUR cable (GBS 01) resp. FEP-cable (GBS 02), loose ends. Glass-fibre screen protects cable against tearing. (Extra long cable against upcharge - please specify when ordering)

Options GBS 01:

extra long connection cable (PUR)
till max. 300 m

Options GBS 02:

extra long connection cable (FEP, teflon)
till max. 100 m

Output signal 0 ... 10 V

Lightning protection, Ex-protection, meas. range 16 and 25 bar

CO_2-TRANSDUCER

MAXALARM

MIN MAX

HIGHLIGHTS:

- excellent long term stability
- auto-calibration procedure
- for surveillance of the recommended CO_2 concentration in ambient air
- output signal free scaleable

GT10-CO2-1R

Art. no. 602599

CO_2-Transducer

General:

Due to the fact, that CO_2 is an important indicator for the quality of air in rooms, it's super important to measure the CO_2 content. The recommended CO_2 limit value for ambient air is 1000 ppm. An exceeding of this limit causes tiredness and a loss of concentration.
The high quality and precise CO_2-transducer works according to the infrared principle (NDIR). An auto-calibration procedure compensates aging effects and is responsible for an excellent long term stability of this CO_2 transducer.
Due to the freely adjustable output signal the transmitter could be used for nearly each existing controller input etc. Additionally, there is a local display which shows beside the actual CO_2 concentration, the minimum and maximum values as well as an optical alarm.

Specifications:	
Measuring range:	Standard: 0 ... 2000 ppm CO_2 (carbon dioxide) Optional: 0 ... 5000 ppm CO_2 (carbon dioxide)
Measuring principle:	infrared principle (NDIR)
Accuracy:	standard: ±50 ppm ±2 % of meas. value (at 20 °C, 1023 mbar) opt. /5000: ±50 ppm ±3 % of meas. value (at 20 °C, 1023 mbar)
Output signal:	4 ... 20 mA (3-wire), standard 0 ... 1 V or 0 ... 10 V (3-wire), upon upcharge
Output scaling:	free scaleable, by entering display range
Auxiliary energy:	12 ... 30 V DC, max. 600 mA (at option 0 ... 10 V: 18 ... 30 V DC, max. 600 mA)
Permissible burdon (at 4 ... 20 mA):	R_A <200 Ω
Perm. load (at 0-...Volt):	R_L >3000 Ω
Display:	approx. 10 mm hohe, 4-digit LC-display
Working condition:	-10 ... +50 °C, 5 ... 95 % RH, 850 ... 1100 hPa
Storage condition:	-25 ... +60 °C, 5 ... 95 % RH, 700 ... 1100 hPa
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm
Housing:	ABS, 82 x 80 x 55 mm (without elbow-type plug)
Mounting:	with fixing holes for wall mounting
Mounting distance:	70 x 50 mm (W x H)
Fixing screws:	max. shaft-Ø 4 mm
Weight:	approx. 225 g
Features:	min-/max-value memory, optical alarm, input of offset and scale for adjusting via keys possible

Option:

MB2: Measuring range: 0 ... 5000 ppm CO_2

AV01: Output signal 0 ... 1 V

AV010: Output signal 0 ... 10 V

Accessories and spare parts:

GSN 24-750

Art. no. 604387

Plug-in power supply (230 V AC => 24 V DC / 750 mA)

AIR OXYGEN MEASURING TRANSDUCER

pic. sensor GGO

pic. sensor GOO

OXY 3690 MP

Art. no. 602027

Air oxygen measuring transducer incl. sensor; For protective gases with a high O_2 concentration and oxygen content <35 vol.% O_2 (GOEL 370)

OXY 3690 MP-LO

Art. no. 611786

Air oxygen measuring transducer incl. sensor; For protective gases in general, precise even with very low measurements (e.g. <0.5 vol. % O2) and above 35 vol.% O2 (GOEL 381)

THE DEVICE IS ONLY INTENDED FOR CONTROL. IT IS NOT A REPLACEMENT FOR A MONITORING DEVICE SUBJECT TO AUTHORISATION!

Specifications:	
Measuring ranges:	
Oxygen concentration:	0.0 ... 100.0 % O_2 (gaseous) **OXY 3690 MP:** recommended range 0.2 ... 35.0 vol.% O_2 (reduced precision outside) **OXY 3690 MP-LO:** also suitable for values ≤0.2 vol.% O_2
Temperature:	-20.0 ... 50.0 °C
Accuracy device (at nominal temperature 25 °C):	
Oxygen:	±0.1 % ±1 digit
Temperature:	±0.1 °C ±1 digit
Output signal (O_2 only):	4 ... 20 mA (2-wire - standard), 0 ... 10 V (3-wire - option)
Electric isolation:	input electrically isolated
Auxiliary energy:	12 ... 30 V DC (at output 4 ... 20 mA) 18 ... 30 V DC (at output 0 ... 10 V - option)
Perm. impedance (at 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A
Permissible load (at 0 ... 10 Volt):	R_L >3000 Ω
Working condition:	0 ... +50 °C, 0 ... 95 % RH (non-condensing)
Storage temperature:	-20 ... +70 °C
Reverse voltage protection:	50 V permanently
Display:	approx. 10 mm high, 4-digit LCD-display
Housing:	ABS (IP65 - with the exception of sensor plug)
Dimensions:	82 x 80 x 55 mm (without elbow-type plug and sensor plug)
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm
Sensor connection:	5-pin jack connector, screwable
Calibration:	1-point calibration in atmospheric air
Air pressure compensation:	500 ... 2000 hPa abs., manually input

Oxygen sensor:	
Type:	depending on the version, see above
Measuring range:	0.0 ... 100.0 % O_2
Response time T_{90}:	<10 s, depending on temperature
Warranty:	12 months (assuming appropriate usage according to the manual)
Application area:	suitable for air and pure oxygen, protective gases
Temperature compensation:	integrated in sensor housing
Connection cable:	approx. 1.3 m, with 5-pin plug, screwable
Operating pressure:	500 ... 2000 hPa (static)
For air and gas-stream use the option GOO.../MU.	
Working condition:	0 ... +45 °C, 0 ... +95 % RH (non-condensing)
Storage temperature:	-15 ... +60 °C
Dimensions of housing:	approx. Ø 40 x 103 mm (153 mm incl. anti-buckling glanding), housing with M16x1-screw thread (sensor can be connected to line tubes by means of an included adapter piece)
Weight:	approx. 135 g

Option:

AV010: Output signal 0 ... 10 V

GOO:
Oxygen sensor, open sensor type, suitable for air and gas-stream.

KL10: Sensor connection cable 10 m

LO:
Design type for fast measurements of low oxygen contents (0 ... 25 %) with sensor element GOEL 381

Accessories and spare parts:

GOEL 370
Art. no. 601490
Spares sensor element

GOEL 381
Art. no. 610035
Spares sensor element

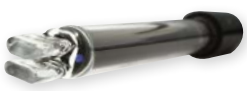
OXY3690MP - 1 - 2 - 3 - 4 - 5

Greisinger		
1.	O_2 sensor element	
	0	GOEL 370, protection gases with higher CO_2 concentrations and O_2 below < 35 vol. % O_2
	2	GOEL 381, precise measuring at low O_2 (e.g. <=0.2 vol. % O_2 or > 35 vol. % O_2)
2.	Version	
	GGO	Closed sensor version
	GOO	Open sensor design
3.	Output signal	
	A1	4 ... 20 mA (2-wire), Standard
	V2	0 ... 10 V
4.	Measuring range	
		0 ... 100 % Vol. O_2, recommended 0.2 ... 35 % vol. O_2 (beyond reduced precision)
	LO	0 ... 100 % vol. O_2 (also for values <=0.2 % Vol. O_2)
5.	Cable length	
	L01	1.3 m
	L04	4 m
	L10	10 m
		further lengths on request

CONDUCTIVITY MEASURING TRANSDUCER

HIGHLIGHTS:

- Compact measuring cells
- Freely scalable
- Adjustable cell constant
- Local display
- Integrated temperature compensation
- Measuring cell included, pre-adjusted

	Optional PG (with PG 13.5 thread) up to 6 bar (@ 22 °C) Standard cable length: 1 m	Laboratory measuring cells best value Standard cable length: 1 m	Professional, field installation M12, G 1/2 A fitting, max. 16 bar (@ 22 °C) Standard cable length: 5 m
GLMU 200 MP-TR Conductivity measuring transducer, incl. 2-pole measuring cell **General:** 2-pole measuring cells, suitable for use in clean / potable / fresh water Recommended usage range: up to 2000 µS / cm 4 Measuring ranges: 0.1 µS/cm ... 200.0 mS/cm	 **GLMU 200 MP-TR** *Art. no. 607814* Ø 12 mm 2-pole measuring cell LFE 202 Graphite, C=1.0; -5 ... +80 °C	PG 13.5 THREAD  **GLMU 200 MP-TR-PG** *Art. no. 607815* Ø 12 mm 2-pole measuring cell LFE 202-PG; Graphite, C=1.0; -5 ... +80 °C	 PROFESSIONAL **GLMU 200 MP-TRP*)** *Art. no. 607816* Ø 16 mm 2-pole measuring cell LFE 230 Graphite, C=0.9; 0 ... +60 °C (higher available on request)
GLMU 400 MP-SW Conductivity measuring transducer, incl. 4-pole measuring cell **General:** 4-pole measuring cells, especially well-suited for use above 2000 µS/cm, applications susceptible to contamination, sea water, etc. 5 Measuring ranges: 0.1 µS/cm ... 500 mS/cm	 **GLMU 400 MP-SW** *Art. no. 607819* Ø 12 mm 4-pole measuring cell LFE 400 Graphite, C=0.55; -5 ... +80 °C	PG 13.5 THREAD  **GLMU 400 MP-SW-PG** *Art. no. 607820* Ø 12 mm 4-pole measuring cell LFE 400-PG Graphite, C=0.55; -5 ... +80 °C	 PROFESSIONAL **GLMU 400 MP-SWP*)** *Art. no. 607821* Ø 16 mm 4-pole measuring cell LFE 430 Graphite, C=0.4; 0 ... +60 °C (higher available on request)
GLMU 200 MP-RW Clean/cleanest water measuring system **General:** 2-pole measuring cells, recommended usage range up to 200 µS/cm Usage range up to 200 µS/cm 2 measuring ranges: 0.01 ... 200.0 µS/cm	 **GLMU 200 MP-RW** *Art. no. 607817* Ø 12 mm 2-pole measuring cell LFE 240 stainless steel/ PEEK; C=0.1, -5 ... +80 °C		PROFESSIONAL  **GLMU 200 MP-RWP*)** *Art. no. 607818* Ø 12 mm 2-pole measuring cell LFE 220 stainless steel/ PEEK; C=0.1; -10 ... +100 °C
GLMU 200 MP-LTG Measuring transducer with 2-pin electrode **General:** 2-pole measuring cells, suitable for use in organic substances (alcohol, benzine, diesel) Usage range up to 1000 µS/cm 2 Measuring ranges: 0.1 µS/cm ... 2000 µS/cm	 **GLMU 200 MP-LTG** *Art. no. 607641* Ø 12 mm 2-pole measuring cell LFE 210 Platinum glass; C=1.0		

**) Attention:*
A special cable is supplied with the professional version.
The measuring cell can be unscrewed locally without having to change the wiring!

CONDUCTIVITY MEASURING TRANSDUCER

General:

Cheap conductivity measurement in drinking water, sea water, process water and wastewater, operational.

Specifications:	GLMU 400 MP	GLMU 200 MP	GLMU 200 MP-RW
Measuring ranges: (customer-selectable)			
Conductivity:	0.0 ... 200.0 µS / cm 0 ... 2000 µS / cm 0.00 ... 20.00 mS / cm 0.0 ... 200.0 mS / cm 0 ... 500 mS / cm	0.0 ... 200.0 µS / cm 0 ... 2000 µS / cm 0.00 ... 20.00 mS / cm 0.0 ... 200.0 mS / cm	0.0 ... 200.0 µS / cm 0.00 ...20.00 µS / cm
Specific resistance:	0.0 ... 200.0 kOhm*cm 0.00 ... 20.00 kOhm*cm 1 ... 5000 Ohm*cm 1.0 ... 500.0 Ohm*cm 1.00 ... 50.00 Ohm*cm	5.0 ... 100.0 kOhm*cm 0.50 ... 10.00 kOhm*cm 50 ... 1000 Ohm*cm 5.0 ... 100.0 Ohm*cm	0 ... 200 kOhm*cm 0 ... 2000 kOhm*cm
TDS:	0.0 ... 200.0 mg / l 0 ... 500.0 mg / l. 0 ... 2000 mg / l 0.0 ... 20.0 g / l. 0 ... 200 g / l	0.0 ... 200.0 mg / l 0 ... 2000 mg / l	0.0 ... 200.0 mg / l 0.00 ... 20.00 mg / l
Salinity:	0.0 ... 70.0 (PSU)	0.0 ... 70.0 (PSU)	
Temperature measurement: -5.0 ... +140.0 ° C (device) - permissible temperature of the measuring cell note!			
Measuring cell:	4-pole measuring cell	2-pole measuring cell	2-pole measuring cell
Standard measuring cell:	conductivity measuring cell with integrated temperature sensor. Cell constant determined from the factory and preset.		
Accuracy: (at nominal temperature = 25 °C)			
Conductivity:	0.5 % of m.v. ± 0.3 % FS (-RW: ±1 % of m.v. ±0.3 % FS)		
Temperature measurement:	±0.2 °C ±1 digit		
Cells connection:	7-pin DIN socket		
Cell constant:	K = 0.30 ... 1.20, adjustable (-RW: 0.03 ... 0.12)		
Temperature compensation: (customer-selectable)	off: no compensation Lin: linear compensation (of 0.3 ... 3.0 % / K) nLF: non-linear function of natural water according toEN27888 (ISO 7888) in salinity: automatically after IOT		
Display:	approx. 10 mm high, 4-digit LCD display		
Output signal:	4 ... 20 mA (2-wire), standard, 0 ... 1 V or 0 ... 10 V (3-wire), surcharge		
Galvanic isolation:	input electrically isolated		
Power supply:	12 ... 30 V DC (for option 0 ... 10 V: 18 ... 30 V DC)		
Reverse polarity:	50 V continuous		
perm. burden (at 4 ... 20 mA): R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A			
perm. load (at 0 ... 10 Volt): R_L > 3000 Ω			
Working temperature:	-25 ... +50 °C (transmitter), 0 ... +80 °C (measuring cell)		
Storage temperature:	-25 ... +70 °C		
Electrical connection:	Angle connector according to EN 175301-803/A (IP65)		
Housing:	ABS (IP65) except electrode connection sockets		
Dimensions:	82 x 80 x 55 mm, without angle plug and socket		
Warranty:	12 months		
Mounting:	with fixing holes for wall mounting, mounting distance: 70 x 50 mm (W x H)		
Scope of supply:	Device, measuring cell, manual		

Options:

AV010: Output signal 0 ... 10 V

AV01: Output signal 0 ... 1 V

KL=..:
longer measuring cell cable (recommended max. 5 m)

M12:
M12 connector, 4-pin

Accessories and spare parts:

LFE 202
Art. no. 604344
2-pole spare measuring cell (for GLMU 200 MP-TR)

LFE 202-PG
Art. no. 603594
2-pole spare measuring cell (for GLMU 200 MP-TR-PG)

LFE 230
Art. no. 607825
2-pole spare measuring cell (for GLMU 200 MP-TRP)

LFE 400
Art. no. 604635
4-pole spare measuring cell (for GLMU 400 MP)

LFE 400-PG
Art. no. 603565
4-pole spare measuring cell (for GLMU 400 MP-PG)

LFE 430
Art. no. 607827
4-pole spare measuring cell (for GLMU 400 MP-SWP)

LFE 240
Art. no. 607828
2-pole spare measuring cell (for GLMU 200 MP-RW)

LFE 220
Art. no. 607829
2-pole spare measuring cell (for GLMU 200 MP-RW-RWP)

LFE 210
Art. no. 606991
2-pole spare measuring cell (for GLMU 200 MP-LTG)

PG 13.5
Art. no. 603205
Plug on thread adapter for pressureless use, for electrodes with 12 mm shank diameter

GWA1Z
Art. no. 602914
Thread adapter PG13.5 to G1", plastics

GKL 100
Art. no. 601396
Conductivity control solution
100 ml bottle with 1413 µs / cm, according to DIN EN 27888

GKL 101
Art. no. 601398
Conductivity control solution
(250 ml bottle with 84 µs / cm)

GKL 102
Art. no. 601400
Conductivity control solution
(100 ml bottle containing 50 mS / cm)

VKMU-M12
Art. no. 609306
Connection cable, 5 m long

Universal measuring transducers for measuring cells of your choice:

GLMU 400 MP-UNI-AV010
Art. no. 608006
GLMU 400 MP-UNI-AV01
Art. no. 608053
GLMU 400 MP-UNI-A1
Art. no. 608052
Transmitter without measuring cell, suitable for 2- and 4-pole measuring cells to create your own conductivity measuring system with special measuring cells.
Different standard systems:
- Area selection of cell constant 0.01; 0.1; 1.0; 10, for example, 1.0 corresponds to 0.300 ... 1.200, 0.1 corresponds to 0.0300 ... 0.1200
- Depending on this measuring range selection without limitations (5 regions)
- Selection of temperature input Pt1000 or NTC10 k

Note: The measuring accuracy of the overall system strongly from the measuring cell used and the dependent on the area of application

Option:

M12:
M12 connection socket, 8-pole,
e.g. for connecting cable A SK8M

HIGHLIGHTS:

- For the installation of up to 3 electrochemical transducers with an installation length of 120 mm and PG 13,5 process connection
- Side connections with G1/2 thread
- Flow direction reversible by reinserting the filling tube

DFG70

Art. no. 104095
Flow-Thru Vessel

General:

The flow vessel DFG70 is used for the installation of electrochemical transducers (e.g. ph and redox electrodes, glass conductivity sensors, compensation thermometers etc.) with PG13, 5-screw-in thread and an installation length of 120 mm. It protects the built-in sensors from breakage and ensures a correct flow of the sensor to prevent measurement errors. Up to 3 transducers can be installed. Unneeded openings are sealed with sealing plugs (2 pieces included). The flow vessel is mounted inline or in a bypass.

Specifications:	
Container:	PC Polycarbonate, crystal clear, color less, 250 ml
Connector block:	PVC-U with mounting holes for 6 mm screw
O-Ring seals:	EPDM
Storage vessel hose connection:	PP polypropylene, outside/inside diameter 6/4 mm
Working temperature:	0 ... 60 °C
Operating pressure:	6 bar at 20°C; 0.2 bar at 60°C
Line connection:	2 x female G1/2 thread, sidewise
Sensor connection:	3 x female PG 13.5 thread, topwise (2 with sealing plugs)

OXYGEN MEASURING TRANSDUCER FOR DISSOLVED OXYGEN IN LIQUIDS

OXY 3610 MP

Art. no. 602029

Oxygen measuring transducer incl. sensor

Specifications:	
Measuring ranges:	
Oxygen concentration:	0.00 ... 25.00 mg / l (dissolved)
Temperature:	0.0 ... 50.0 °C
Accuracy (at nominal temperature 25 °C):	
Oxygen:	±1.5 % of m.v. ±0.2 mg / l
Temperature:	±0.1 °C ±1 digit
Output signal (only O_2):	4 ... 20 mA (2-wire - standard), 0 ... 10 V (3-wire - option)
Electric isolation:	input electrically isolated
Auxiliary energy:	12 ... 30 V DC (at output 4 ... 20 mA) 18 ... 30 V DC (at output 0 ... 10 V - Option)
Perm. impedance (at 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A
Permissible load (at 0 ... 10 Volt):	R_L >3000 Ω
Working condition:	0 ... +50 °C, 0 ... +95 % RH (non-condensing)
Storage temperature:	-20 ... +70 °C
Reverse voltage protection:	50 V permanently
Display:	approx. 10 mm high, 4-digit LCD-display
Housing:	ABS (IP65 - with the exception of sensor plug)
Dimensions:	82 x 80 x 55 mm (without elbow-type plug and sensor plug)
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65), max. wire cross section: 1.5 mm², wire diameter from 4.5 ... 7 mm
Sensor connection:	5-pin jack connector, screwable
Calibration:	1-point calibration: simple quick calibration in atmospheric air

Oxygen sensor:	
Type:	active membrane type, with integrated NTC-resistor
Response time:	95 % in 10 s, depending on temperature
Operation life:	3 years or more, depending on maintenance
Operating pressure:	max. 3 bar
Flow rate:	min. 30 cm / s
Build in diameter:	Ø 12.0 ±0.2 mm (suitable for ½" screw connection)
Overall length:	approx. 220 mm (with anti-buckling glanding)
Build in length:	approx. 110 mm
Connection cable:	approx. 4 m, with 5-pin plug, screwable
Warranty:	12 months
Working temperature:	0 ... +40 °C
Scope of supply:	device incl. electrode, GWOK 01 and KOH 100

Variant:

OXY3610MP-V2
Art. no. 602720
Output signal 0 ... 10 V

Accessories and spare parts:

GWO 3600-L04-MU
Art. no. 607198
Spare electrode with 4 m cable

GWO 3600-L10-MU
Art. no. 610382
Spare electrode with 10 m cable

GWO 3600-L30-MU
Art. no. 610171
Spare electrode with 30 m cable

GSKA 3600
Art. no. 601414
protection cap for depth measuring

GAS 3600
Art. no. 603497
Working set (consisting of 3 spare diaphragm heads and 100 ml KOH-electrolyte)

GWOK 01
Art. no. 601411
spare diaphragm head

KOH 100
Art. no. 603356
spare electrolyte KOH, 100 ml-bottle

GCAL 3610
Art. no. 611371
Calibration bottle

M12-CONNECTION CABLE

KM4P-G02
Art. no. 606224
Straight connector, 4-pole, 2 m cable

KM4P-G10
Art. no. 604518
Straight connector, 4-pole, 10 m cable

KM4P-W02
Art. no. 604104
90° connector, 4-pole, 2 m cable

KM4P-W10
Art. no. 607963
90° connector, 4-pole, 10 m cable

KM4P-GL
Art. no. 607964
Connector for self-tailoring, 4-pole

General:

Screened PUR-connection cable with moulded M12x1-connector (and loose ends). Available in straight and angular design.

OPTICAL OXYGEN CONVERTER FOR DISSOLVED OXYGEN

HIGHLIGHTS:

- Two 4 ... 20 mA (or 0 ... 5 V) outputs: concentration and saturation
- Fully pressure and temperature compensated
- Calibration in many applications once per year!
- No flow required

LOW MAINTENANCE & ROBUST

GODOX 200-ST

Art. no. 608019

Optical oxygen transmitter for universal applications, stainless steel

GODOX 200-PS

Art. no. 608020

Optical oxygen transmitter for continuous measurements in salt water

General:

The oxygen transmitter GODOX-200 is a robust measuring system for the low-maintenance continuous use. Compared to electrochemical sensors, it comes without electrolyte, measured with a fluorescence-maturity method. Together with the complete data preparation including automatic ambient pressure and temperature compensation it provides a free package for continuous measurements. Measurement in depth up to 30 m is possible. The life of the replaceable measuring membrane is generally 2 years.

Specifications:

Measuring ranges (both can be used simultaneously)	
Oxygen concentration:	0 ... 20 mg/l (=ppm)
Oxygen saturation:	0 ... 200 % O_2
Output signal:	4 ... 20 mA or 0 ... 5 V respectively (changeable)
Accuracy:	±0.1 mg/l less than 1 mg/l, ±0.2 mg/l more than 1 mg/l
Response time T_{90}:	<30 s
Operating temperature:	0 ... 65 °C
Supply:	5 ... 15 V DC, approx. 160 mA
Material	
Housing:	PVC / stainless steel, option „marine“: PVC
Membrane:	PET
Dimensions sensor	
Length:	225 mm Länge
Mounting length:	70.5 mm
Diameter:	42.1 mm
Mounting diameter:	28.0 mm
Process connection:	1" NPT front / rear (others on request)
Connection	
Loose cable ends:	No color description 1 red supply + 2 black supply - 3 green output O_2 concentration 4 white output O_2 saturation
Cable length:	5 m
Scope of supply:	Transmitter (consisting of sensor body and evaluation, connected via cable), storage cap

Option:

Cable length 10 m

Cable length 15 m

Cable length 30 m

Accessories and spare parts:

GSKA 200
Art. no. 607992
Metal cap steel (Mechanical protection / browsing protection)

EMS 200
Art. no. 607990
Spare membrane head-set

GNG 12/300
Art. no. 600274
Power Supply

PH-MEASURING TRANSDUCER WITH ON SITE DISPLAY

HIGHLIGHTS:

- automatically and manually temperatur compensation
- external Pt1000-temperature probe connectable

WITH ELECTRICALLY ISOLATION

GPHU 014 MP-BNC

Art. no. 601985

pH-measuring transducer with on site display without electrode, BNC-connection

Specifications:

Measuring range:	0.00 ... 14.00 pH
Accuracy:	0.02 pH ±1 digit (at nominal temperature = 25 °C)
Output signal:	4 ... 20 mA (2-wire), standard; 0 ... 10 V (3-wire), upon upcharge
Electric isolation:	input electrically isolated
Auxiliary energy:	12 ... 30 V DC (for option 0 ... 10 V: 18 ... 30 V DC)
Perm. impedance (at 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A
Permissible load (at 0 ... 10 Volt):	R_L >3000 Ω
Electrode:	any standard pH electrode is suitable (not in scope of supply)
Input resistance:	10^{12} Ohm
Electrode socket:	BNC-socket
Temperature compensation:	-30 ... +150 °C, manually via keys or automatically via external Pt1000 sensor, banana plug
Adjustment:	via 3 keys and integrated LCD, 2-point-calibration
Temp. sensor socket:	2 x banana socket Ø 4 mm, for Pt1000 probe
Display:	approx. 10 mm high, 4-digit LCD-display
Working temperature:	0 ... +50 °C (electronic)
Storage temperature:	-20 ... +70 °C
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Housing:	ABS (IP65) with the exception of electrode and temperature connection sockets. (cpl. IP65 upon request)
Dimensions:	82 x 80 x 55 mm (H x W x D)
Mounting:	with fixing holes for wall mounting (accessible after removal of cover), Mounting distance: 70 x 50 mm (W x H), Fixing screws: max. shaft-Ø 4 mm

Option:

V2: Output signal 0 ... 10 V

MB...: limited measuring range (please state the desired range) (i.e.: 2.00 ... 10.00 pH)

Accessories and spare parts:

GTF 2000-B-WD
Art. no. 601884
Water proof Pt1000-temperature probe, with 2 banana plugs Ø 4 mm

GE 100-BNC
Art. no. 600704
Standard electrode, BNC-plug (thread adapter PG 13.5 optional available)

GE 117-BNC
Art. no. 600730
pH electrode with integrated Pt1000-sensor, 1 x BNC-plug and 1 x banana plug Ø 4 mm, thread PG13.5, pressure resistant up to 6 bar

GE 126-BNC
Art. no. 610987
pH electrode, low-maintenance, BNC plug

GE 173-BNC
Art. no. 600735
Process electrode for continuous operation, with thread PG 13.5, pressure resistant up to 6 bar, BNC-plug

GAK 1400
Art. no. 603523
working and calibration set

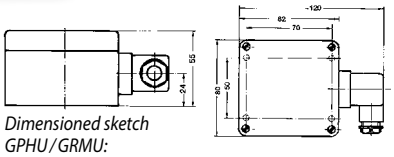
HD-9609
Art. no. 700046
pH- und mV-Simulator, (see product catalogue)

DFG70
Art. no. 104095
Flow-thru vessel (p.r.t. page 63)

For add. electrodes, probes and accessories see product catalogue, Pt1000 probes p.r.t. page 69

REDOX-MEASURING TRANSDUCER

WITH ELECTRICALLY ISOLATION



Dimensioned sketch GPHU / GRMU:

GRMU 2000 MP-BNC

Art. no. 602019
Redox-measuring transducer without electrode, BNC-connection

GRMU 2000 MP-Cinch

Art. no. 602021
Redox-measuring transducer without electrode, Cinch-connection

Specifications:	
Measuring range:	±2000 mV or special limited measuring ranges acc. to customer specification!
Accuracy:	0.2 % FS (at nominal temperature = 25 °C)
Output signal:	4 ... 20 mA (2-wire), standard 0 ... 10 V (3-wire), upon upcharge
Electric isolation:	input electrically isolated
Auxiliary energy:	12 ... 30 V DC (for option 0 ... 10 V: 18 ... 30 V DC)
Perm. impedance (at 4 ... 20 mA):	R_A [Ω] ≤ (Uv [V] - 12 V) / 0.02 A
Permissible load (at 0 ... 10 Volt):	R_L >3000 Ω
Input resistance:	10^{12} Ohm
Electrode socket:	BNC-socket or Cinch-socket
Option: on site display	approx. 10 mm high, 4-digit LCD-display
Working temperature:	0 ... +50 °C (electronic)
Storage temperature:	-20 ... +70 °C
Electric connection:	elbow-type plug acc. to EN 175301-803/A (IP65)
Housing:	ABS (IP65) with the exception of electrode connection sockets. (cpl. IP65 upon request)
Dimensions:	82 x 80 x 55 mm (H x W x D)
Mounting:	with fixing holes for wall mounting (accessible after removal of cover), Mounting distance: 70 x 50 mm (W x H), Fixing screws: max. shaft-Ø 4 mm

Option:

VO: On site display

V2: Output signal 0 ... 10 V

MB...: Limited measuring range (please state the desired range)

Ordering example:

GRMU 2000 MP-BNC-VO:
Redox-measuring transducer with BNC electrode socket and on site display

Accessories and spare parts:

GR 105-Cinch
Art. no. 607797
Redox electrode with cinch-plug

GR 105-BNC
Art. no. 607798
Redox electrode with BNC-plug

GR 175-BNC
Art. no. 607801
Redox electrode with BNC-plug

PG 13,5
Art. no. 603205
Thread Adapter, pluggable, Pg 13,5 for sensors with shaft Ø 12 mm
For pressureless insert

GRP 100
Art. no. 601424
Redox test solution 220 mV, 100 ml

For additional electrodes and accessories see product catalogue

LEVEL TRANSMITTER

LC-S45HM...

Level transmitter (brass)

LC-S44HM...

Level transmitter (brass)

LC-K52HK...

Level transmitter (stainless steel)

General:

A magnet equipped float activates a reed chain inside a tube which is connected to resistors comparable to a potentiometer. The gapless positioning of the sensors provides a continuous signal with good resolution (up to 10 ... 20 mm) and repeatability.
• top assembly
• selectable material combinations
• optional: with user-specific characteristic (for adjustment to tank design)

Application:

Sensor suitable for: Water, oil, aggressive substances (only LC-K52K...)

Specifications:						
Tube length:	250 mm, 500 mm, 750 mm, 1000 mm, 1500 mm and 2000 mm					
Float travel:	**...0250**	**...0500**	**...0750**	**...1000**	**...1500**	**...2000**
LC-S45M... :	190 mm	440 mm	690 mm	940 mm		
LC-S44M... :				930 mm	1430 mm	1930 mm
LC-K52K... :	160 mm	410 mm	660 mm	910 mm	1410 mm	1910 mm
Division (resolution):	10 mm (LC-S45..., LC-K52K0250) or 20 mm					
Output signal:	4 ... 20 mA (2-wire) (see option)					
Optional:	0 ... 10 V (3-wire) (see option)					
Auxiliary energy:	10 ... 30 V DC (at option Flex: 18 ... 30 V DC)					
Electrical connection:	elbow-type plug acc. to DIN 43650-A / ISO 4400 (at option Flex: 4-pole locked plug M12 x 1)					
Working temperature:	0 ... 85 °C					
Working pressure:	max. 20 bar (LC-S...), max. 40 bar (LC-K...)					
Density medium:	>0.34 g / cm^3 (LC-S45...), >0.44 g / cm^3 (LC-S44...), >0.66 g / cm^3 (LC-K52...)					
Mounting position:	vertical, float pointing downwards					
Protection rating:	IP 65					
Dimensions:	**LC-S45...**		**LC-S44...**		**LC-K52...**	
Sensor head:	~50 x 50 x 78 mm		~60 x 58 x 78 mm		Ø 69 x 78 mm	
Tube length:	according to design type					
Mounting SW:	SW 40		SW 46		SW 46	
Screw-in threat:	G1 A		G1 1/2 A		G2 A	
Float:	Ø 30 x 45 mm		Ø 44 x 50 mm		Ø 52 x 70 mm	
Materials						
Housing:	Ms58		Ms58		stainl. steel 1.4571	
Switching tube:	Ms58		Ms58		stainl. steel 1.4571	
Float:	Spansil		Spansil		stainl. steel 1.4571	

Option:

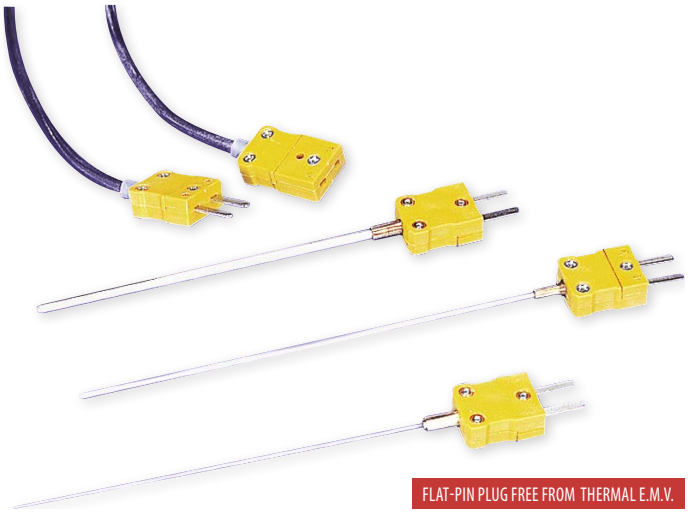
Output signals 4 ... 20 mA (2- or 3-wire), 0 ... 10 V

Design types:						
Tube length:	**..0250**	**..0500**	**..0750**	**..1000**	**..1500**	**..2000**
LC-S45HM...	•	•	•	•		
LC-S44HM...				•	•	•
LC-K52HK...	•	•	•	•	•	•

APPLICATION:	GTT ..	GTF 101-5...	GTF 101-N...	GTF 101...	GTF 102 ...	GTF 103 ...	GTF 10x-EX	GTF 111	GTF 112	GTF 11x-EX	TF 101 ...
NiCr-Ni (Type K)	•	•		•	•	•	•				•
NiCrSi-NiSi (Type N)			•								
Pt100				•	•	•	•	•	•	•	•
Pt1000				•	•	•	•	•	•	•	•
Miniature flat-pin plug	•	•	•	•	•						•
Loose ends	•	•	•	•	•		•				•
M12-plug, 4-pol.								•	•	•	
Sensor head						•	•				
Ex-Protection							•			•	
Sheath thermocouple	•	•									
Permanent high temperatures			•								
Industrial probes, process connection without thread	•	•	•	•		•	•	•		•	
Industrial probes, process connection with thread					•	•	•		•	•	
Hermetically sealed probe											•
Self-adhesive probes											
Additional information	The protection rating is basically IP65; a higher or lower rating is possible depending on the variant										
DEVICE INFORMATION:											
Catalogue page	Page 68	Page 69	Page 77	Page 72	Page 74	Page 75	Page 80	Page 76	Page 76	Page 83	Page 84

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

STANDARD - JACKET THERMO ELEMENTS TYPE K (NICR-NI)

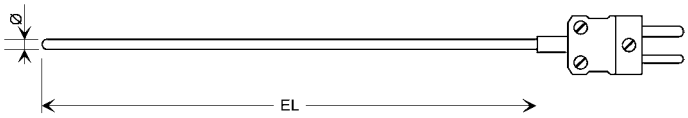


FLAT-PIN PLUG FREE FROM THERMAL E.M.V.

HIGHLIGHTS:

- Same material for contacts and thermo elements
- No incorrect temperature values due to different materials
- Polarity cannot be mixed up
- One plug size for Ø from 0.5 ... 6.0 mm
- Any extension possible (extension cable VKA-1m or length per customers' requests)
- Sensor elements can be exchanged easily

ALSO IN TYPE N AVAILABLE



GTT-xx-xxxx

Jacket thermo elements type K (NiCr-Ni) complete with miniature flat-pin plug NST1200 (free from thermal e.m.f.)

Specifications:	
Jacket material:	Inconel 600, flexible - other materials upon request
Insulation:	highly compressed pure MgO
Thermo wires:	NiCr-Ni, DIN IEC 584, welding insulated (volt-free)
Accuracy:	optimum accuracy (cl. 1) = ±1.5 °C or ±0.4 % of measuring value (Almost double accuracy as compared to class 2. As a comparison with class 2: ±2.5 °C or ±0.75 % of measuring value)
Temperature application range:	-200 ... +1150 °C (Probe tip and front part; wire outlet: max. 200 °C) (Accuracy class 1 applicable from -40 ... +1000 °C)

Recommended upper temperature limit for continuous use:			
Ø	0.5	1.0	1.5
°C	700	700	920

Accessories and spare parts:

NKU 1200-K
Art. no. 602737
Coupling free from thermal e.m.f., Type K

NKU 1200-K-O
Art. no. 602738
Coupling with ears for housing installation (max. 120 °C)

VKA-1m
Art. no. 602909
plug-in extension cable
further lengths upon request

Special sizes upon request.

All thermo elements accuracy class 1
(Almost double accuracy than class 2!)

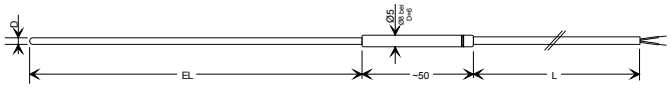
Type:		Ø mm	EL mm
GTT-05-0150	*Art. no. 607542*	0,5	150
GTT-05-0250	*Art. no. 607543*		250
GTT-05-0500	*Art. no. 607544*		500
GTT-05-1000	*Art. no. 607545*		1000
GTT-05-1500	*Art. no. 607546*		1500
GTT-10-0150	*Art. no. 607547*	1,0	150
GTT-10-0250	*Art. no. 607548*		250
GTT-10-0500	*Art. no. 607549*		500
GTT-10-1000	*Art. no. 607550*		1000
GTT-10-1500	*Art. no. 607551*		1500
GTT-15-0150	*Art. no. 607552*	1,5	150
GTT-15-0250	*Art. no. 607553*		250
GTT-15-0500	*Art. no. 607554*		500
GTT-15-1000	*Art. no. 607555*		1000
GTT-15-1500	*Art. no. 607556*		1500
GTT-30-0150	*Art. no. 607557*	3,0	150
GTT-30-0250	*Art. no. 607558*		250
GTT-30-0500	*Art. no. 607559*		500
GTT-30-1000	*Art. no. 607560*		1000
GTT-30-1500	*Art. no. 607561*		1500
GTT-60-0150	*Art. no. 607562*	6,0	150
GTT-60-0250	*Art. no. 607563*		250
GTT-60-0500	*Art. no. 607564*		500
GTT-60-1000	*Art. no. 607565*		1000
GTT-60-1500	*Art. no. 607566*		1500

STANDARD - JACKET THERMO ELEMENTS TYPE K (NICR-NI)

MECHANICALLY ROBUST

HIGHLIGHTS:

- Can be subjected to high temperatures and pressures
- Resistant to aggressive atmospheres
- Minimum dimensions, therefore short response times
- Flexible (the smaller the diameter the smaller the bending radii)
- Potential-free (thermoelement wires have no connection to the outer jacket)
- Optimum accuracy acc. to DIN IEC584 class 1



L = 1 m, for other cable length or other accessories p.r.t. accessories

GTF101-5-xx-xxxx

Jacket thermo elements NiCr-Ni (type K) complete with cable sleeve and 1 m silicone cable (compensation line), loose wire ends

Specifications:	
Jacket material:	Inconel 600, flexible (standard)
Insulation:	highly compressed pure MgO
Thermo wires:	NiCr-Ni, DIN IEC 584, welding insulated (volt-free)
Accuracy:	optimum accuracy (cl. 1) = ±1.5 °C or ±0.4 % of measuring value (Almost double accuracy as compared to class 2. As a comparison with class 2: ±2.5 °C or ±0.75 % of meas. value)
Connecting cable:	silicone compensation line, 1 m long (max. 200 °C), loose ends
Temperature application range:	-200 ... +1150 °C (Probe tip and front part; wire outlet: max. 200 °C, for cable p.r.t. accessories) (Accuracy class 1 applicable from -40 ... +1000 °C)

Recommended upper temperature limit for continuous use:			
Ø	0.5	1.0	1.5
°C	700	700	920

Accessories and spare parts:

Clamping screw connection
Ø 1.5, 3.0 or 6.0 mm, see accessories

NST 1200-K
Art. no. 602566
Prefabricated flat connector, Type K

Type:		Ø mm	EL mm
GTF101-5-05-0150	*Art. no. 607596*	0,5	150
GTF101-5-05-0250	*Art. no. 607597*		250
GTF101-5-05-0500	*Art. no. 607598*		500
GTF101-5-05-1000	*Art. no. 607599*		1000
GTF101-5-05-1500	*Art. no. 607600*		1500
GTF101-5-10-0150	*Art. no. 607601*	1,0	150
GTF101-5-10-0250	*Art. no. 607602*		250
GTF101-5-10-0500	*Art. no. 607603*		500
GTF101-5-10-1000	*Art. no. 607604*		1000
GTF101-5-10-1500	*Art. no. 607605*		1500
GTF101-5-15-0150	*Art. no. 607606*	1,5	150
GTF101-5-15-0250	*Art. no. 607607*		250
GTF101-5-15-0500	*Art. no. 607608*		500
GTF101-5-15-1000	*Art. no. 607609*		1000
GTF101-5-15-1500	*Art. no. 607610*		1500
GTF101-5-30-0150	*Art. no. 607611*	3,0	150
GTF101-5-30-0250	*Art. no. 607612*		250
GTF101-5-30-0500	*Art. no. 607613*		500
GTF101-5-30-1000	*Art. no. 607614*		1000
GTF101-5-30-1500	*Art. no. 607615*		1500
GTF101-5-60-0150	*Art. no. 607616*	6,0	150
GTF101-5-60-0250	*Art. no. 607617*		250
GTF101-5-60-0500	*Art. no. 607618*		500
GTF101-5-60-1000	*Art. no. 607619*		1000
GTF101-5-60-1500	*Art. no. 607620*		1500

Special sizes and other connection cables see industry temperature probe type GTF 101 K

All thermo elements accuracy class 1 (Almost double accuracy than class 2!)

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRY-TEMPERATURE PROBE PT

GTF 101 P

Temperature probe

General:

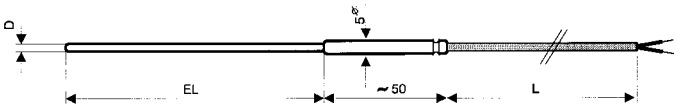
The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with resistance temperature sensors (Pt100 or Pt1000)

Specifications:

Probe diameter D:	3 mm, 4 mm, 5 mm, 6 mm, 8 mm, other diameters upon request
Cable sleeve:	for probe diameters D 3 mm, 4 mm, 5 mm, 6 mm, 8 mm: there is a cable sleeve Ø 5 mm x 50 mm in addition to the fitting length. for probe diameters D 6 mm and MB3 or MB4: there is a cable sleeve Ø 8 mm x 35 mm with taper to Ø 5 mm x 17 mm in addition to the fitting length **Note:** The temperature of the cable sleeve must not exceed the permitted temperature of the cable.
Accuracy:	DIN class B, DIN class A, DIN class AA (1/3 DIN class B), 1/10 DIN class B
Tube material:	V4A stainless steel (1.4404)

GTF101P - [1] - [2] - [3] - [4] - [5] - [6] - [7] - [8] - [9] - [10]

Greisinger		
1.	Sensor element	
	P	Pt100
	T	PT1000
2.	Connection sensor element	
	2L	2-wire
	3L	3-wire
	4L	4-wire
3.	Accuracy	
	A	DIN class A
	B	DIN class B
	D	DIN class AA (1/3 DIN class B)
	Z	1/10 DIN cl. B
4.	Measuring range	
	MB1	-50 ... +400 °C
	MB3	-70 ... +600 °C
	MB4	-50 ... +850 °C
	MB2	-200 ... +400 °C
5.	Probe diameter Ø	
	D16	Ø1.6 mm rigid, Measuring range max. 250 °C
	D16M	Ø1.6 mm jacket element (rigid approx. 30 mm, then bendable), Measuring range -50 ... +600 °C
	D30	3 mm
	D30M	3 mm jacket element (rigid approx. 30 mm, then bendable), Measuring range -70 / -50 ... +600 °C
	D30M	3 mm jacket element (rigid approx. 30 mm, then bendable), Measuring range -50 ... +850 °C
	D30M	3 mm jacket element (rigid approx. 30 mm, then bendable), Measuring range -200 ... +600 °C
	D30M	3 mm mineral insulated element, rigid (inflexible), With short versions < 50 mm, measuring range max. -70 / -50 ... +600 °C
	D40	4 mm
	D50	5 mm
	D60	6 mm
	D60M	6 mm mineral insulated element (flexible), Measuring range -70 / -50 ... +600 °C
	D60M	6 mm mineral insulated element (flexible), Measuring range -50 ... +850 °C
	D80	8 mm
6.	Installation length	
	0050	50 mm
	0100	100 mm
	0150	150 mm
	0250	250 mm
	0500	500 mm
	1000	1000 mm
7.	Cable and length	
	L01-S	1 m silicone cable, -50 ... +200 °C
		Each further meter
	L01-T	1 m Teflon cable, -200 ... +250 °C
		Each further meter
	L01-G	1 m glass fibre, -50 ... +400 °C
		Each further meter
	L01-P	1 m PVC cable, -20 ... +105 °C
		Each further meter
	L01-P	1 m PVC cable, -20 ... +70 °C
		Each further meter
8.	Connection	
	MD	Mini-DIN plug 4pole
	M8B	M8 socket (for EASYLOG option AFK)
	KS	Jack connector Ø3.5 mm
		Loose ends
	BNC	BNC plug
9.	Probe tube	
	TU	Teflon covered probe, Fl max. 200 mm, acid & salt water, max. 250 °C
	WD	Cable transition water proof covered, Only with PVC cable -20 ... +105 °C, without stainless stell bending protection
10.	Option	
	M12	M12 connector, 4-pin



Shown without kink guard

Special lengths, special sheath materials, etc. upon request.

INDUSTRIE-TEMPERATURFÜHLER-PT

Shown without kink guard

Shown with kink guard

GTF 101 P-OKH

Temperature probe, without cable sleeve

General:

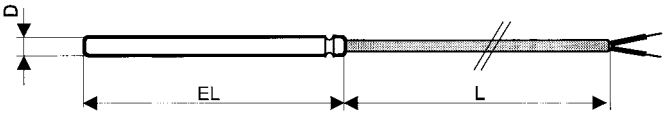
The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with resistance temperature sensors (Pt100 or Pt1000)

Specifications:

Probe diameter D:	3 mm, 4 mm, 5 mm, 6 mm, 8 mm, other diameters upon request
Accuracy:	DIN cl. B, DIN cl. A, DIN cl. AA (1/3 DIN cl. B), 1/10 DIN cl. B
Tube material:	V4A stainless steel (1.4404 or 1.4571)
	Probe with Ø>3 mm and EL ≥50 mm incl. stainless steel kink guard

GTF101P-OKH - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

Greisinger		
1.	Sensor element	
	P	Pt100
	T	PT1000
2.	Connection sensor element	
	2L	2-wire
	3L	3-wire
	4L	4-wire
3.	Accuracy	
	A	DIN class A
	B	DIN class B
	D	DIN class AA (1/3 DIN class B)
	Z	1/10 DIN cl. B
4.	Measuring range	
	MB1	-50 ... +200 °C
	MB2	-50 ... +250 °C
	MB3	-50 ... +400 °C (with glassfibre insulated cable)
	MB4	-200 ... +200 °C (with silicon cable)
	MB4	-200 ... +250 °C
	MB5	-20 ... +105 °C
5.	Probe diameter Ø	
	D30	3 mm
	D40	4 mm
	D50	5 mm
	D60	6 mm
	D80	8 mm
6.	Fitting length EL	
	0050	50 mm
	0100	100 mm
	0150	150 mm
	0250	250 mm
	1000	1000 mm
7.	Cable and length	
	L01-T	1 m Teflon cable, -200 ... +250 °C
		Each further meter
	L01-S	1 m silicone cable, -50 ... +200 °C
		Each further meter
	L01-P	1 m PVC cable, -20 ... +105 °C
		Each further meter
	L01-G	1 m glass fibre, -50 ... +400 °C
		Each further meter
8.	Connection	
	MD	Mini-DIN plug 4pole
	KS	Jack connector Ø3.5 mm, Pt100 / Pt1000
	M8B	M8 socket (for EASYLOG option AFK), M8 socket mounted on probe cable
	BNC	BNC plug
		Loose ends
9.	Probe tube	
	TU	Teflon covered probe
	WD	Cable transition water proof covered, Only with PVC cable -20 ... +105 °C, without stainless stell bending protection
	GF	Perforated tube
10.	Option	
	SF	Spiral spring (kink protection)



Shown without kink guard

Sondermaße, spezielle Mantelmaterialien, etc. auf Anfrage.

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRY-TEMPERATURE PROBE TYPE K

GTF 101 K

Temperature probe type K

General:

The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with thermocouple wires (NiCr-Ni).

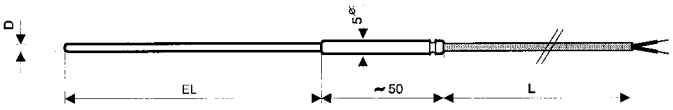
Specifications:

Sensor element:	Type K (NiCr-Ni)
Measuring ranges:	-200 ... +1150 °C
	Recommended upper temperature limit for continuous use: **Ø** 0.5 1.0 1.5 **°C** 700 700 920
Probe diameter D:	1.5 mm, 3 mm, 6 mm other diameters upon request
Cable sleeve:	for probe diameters D 0.5 mm, 1 mm, 1.5 mm, 3 mm: there is a cable sleeve Ø 5 mm x 50 mm in addition to the fitting length for probe diameters D 6 mm: there is a cable sleeve Ø 8 mm x 35 mm with taper to Ø 5 mm x 17 mm in addition to the fitting length **Note:** The temperature of the cable sleeve must not exceed the permitted temperature of the cable.
Accuracy:	class 1
Tube material:	Inconel 600

GTF101K - [1] - [2] - [3] - [4] - [5] - [6]

Greisinger		
1.	Probe diameter Ø	
	D40	4 mm, Probe tube V4A, rigid, not bendable, measuring range, max. 850 °C
	D10	1 mm, max. 700 °C
	D05	0.5 mm, max. 700 °C
	D15	1.5 mm, max. 920 °C
	D22	2.2 mm, Probe tube V4A, rigid, not bendable, measuring range, max. 850 °C
	D30	3 mm
	D50	5 mm, Probe tube V4A, rigid, not bendable, measuring range, max. 850 °C
	D60	6 mm
	D80	8 mm, Probe tube V4A, rigid, not bendable, measuring range, max. 850 °C
	D90	9 mm rigid, Probe tube V4A, rigid, not bendable, measuring range, max. 850 °C
2.	Fitting length EL	
	0100	100 mm
	0150	150 mm
	0250	250 mm
	0500	500 mm
	1000	1000 mm
3.	Measuring range	
		-200 ... +1150 °C
	MB0	-200 ... +1000 °C, NiCr-Ni
	MB0	-50 ... +1000 °C, NiCr-Ni
	MB1	-50 ... +400 °C
	MB2	-50 ... +250 °C
	MB4	-50 ... +800 °C
		temperature limits due to construction to be considered
4.	Cable and length	
	L01-G	1 m glass fibre, -50 ... +400 °C
		Each further meter
	L01-S	1 m silicone cable, -50 ... +200 °C
		Each further meter
	L01-T	1 m Teflon cable, -200 ... +250 °C
		Each further meter
	L01-P	1 m PVC cable, -20 ... +105 °C
5.	Connection	
	NT	NST1200 flat-pin plug
	NTG	Thermo-miniature-plug, green
		Loose ends
6.	Probe tube	
	WD	Cable transition water proof covered, Only with PVC cable -20 ... +105 °C, without stainless stell bending protection
	TU	Teflon covered probe, Fl max. 200 mm, acid & salt water, max. 250 °C

Standard types see standard jacket thermo element GTF 101-5-xx-xxxx.



Shown without kink guard

Special dimensions, special jacket materials, etc. available on request.

INDUSTRY-TEMPERATURE PROBE TYPE K

Shown with kink guard

GTF 101 K-OKH

Temperature probe type K, without cable sleeve

General:

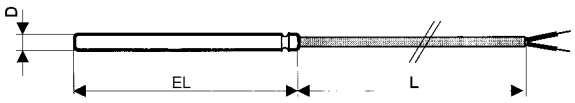
The GTF 101 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 101 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids. The temperature is measured with thermocouple wires (NiCr-Ni).

Specifications:

Sensor element:	Type K (NiCr-Ni)
Probe diameter D:	3 mm, 5 mm, 6 mm, other diameters upon request
Accuracy:	class 1
Tube material:	V4A stainless steel (1.4404 or 1.4571)
	Probe with Ø>3 mm and EL ≥50 mm incl. stainless steel kink guard

GTF101K-OKH - 1 - 2 - 3 - 4 - 5 - 6

Greisinger		
1.	Probe diameter	
	D30	3 mm
	D40	4 mm
	D50	5 mm
	D60	6 mm
	D80	8 mm
2.	Fitting length EL	
	0030	30 mm
	0040	40 mm
	0050	50 mm
	0060	60 mm
	0080	80 mm
	0100	100 mm
	0150	150 mm
	1000	1000 mm
3.	Measuring range	
	MB1	-50 ... +200 °C
	MB2	-50 ... +250 °C
	MB3	-50 ... +400 °C
	MB5	-20 ... +105 °C
4.	Cable and length	
	L01-T	1 m Teflon cable, -200 ... +250 °C
		Each further meter
	L01-G	1 m glass fibre, -50 ... +400 °C
		Each further meter
	L01-S	1 m silicone cable, -50 ... +200 °C
		Each further meter
	L01-P	1 m PVC cable, -20 ... +70 °C
		Each further meter
5.	Connection	
	NT	NST1200 flat-pin plug
		Loose ends
6.	Probe tube	
	WD	Cable transition water proof covered, Only with PVC cable -20 ... +105 °C, without stainless stell bending protection



Shown without kink guard

Special dimensions, special jacket materials, etc. available on request.

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRY-TEMPERATURE PROBE

HIGHLIGHTS:

- Pt100, Pt1000, NiCr-Ni (type K)
- complete with thread and cable (loose ends)
- very robust

GTF 102

Einschraub-Temperaturfühler

General:

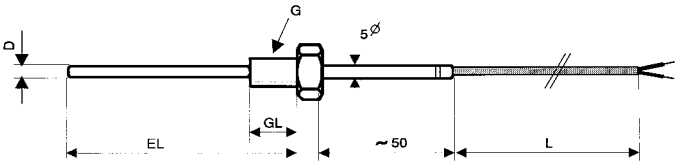
The GTF 102 is a temperature probe that can be fully tailored according to customers' requirements. The robust GTF 102 is especially suited for applications at high permanent temperatures and pressures in air, gases or liquids.
The temperature is measured with either thermocouple (NiCr-Ni) or resistance temperature sensors (Pt100 / Pt1000). The probe is provided by default with tread, cable sleeve and 1 m silicone cable (compensation line with loose ends).

Specifications:	
Sensor element:	Pt100 (2- / 3- or 4- wire), Pt1000 (2- / 3- or 4- wire) NiCr-Ni
Accuracy (standard):	Pt100 / Pt1000: DIN class B, NiCr-Ni: class 1
Tube material:	V4A (1.4404)
Thread material:	stainless steel
Connection cable:	standard: silicone compensation line, loose ends, length: 1 m (up to max. 200) incl. stainless steel kink guard

GTF102 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8

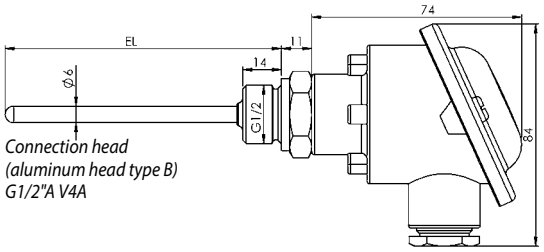
Greisinger		
1.	Sensor element	
	P2	Pt100 (2-wire)
	P3	Pt100 (3-wire)
	P4	Pt100 (4-wire)
	T2	Pt1000 (2-wire)
	T3	Pt1000 (3-wire)
	T4	Pt1000 (4-wire)
	K	Type K (NiCr-Ni)
2.	Accuracy	
	A	DIN class A
	B	DIN class B
	D	DIN class AA (1/3 DIN class B)
	Z	1/10 DIN cl. B
	1	Class 1
3.	Measuring range	
	MB1	-50 ... +200 °C
	MB2	-50 ... +400 °C
	MB3	-50 ... +600 °C
4.	Probe diameter D	
	15	1.5 mm
	22	2.2 mm rigid
	30	3 mm
	30M	3 mm jacket element (rigid approx. 30 mm, then bendable)
	40	4 mm
	50	5 mm
	60	6 mm
	80	8 mm
5.	Fitting length EL	
	0100	100 mm
	0150	150 mm
	0250	250 mm
	0500	500 mm
	1000	1000 mm

6.	Thread	
	G1	G ½
	G2	G ¼
	G3	G ¾
	G4	G 1⁄8
	G5	G 3⁄8
	M5	M5
	M6	M6
	M8	M8
	M08	M8x1
	M0	M10
	M01	M10x1
7.	Cable with length	
	L01-P	1 m PVC cable, -20 ... +105 °C
		Each further meter
	L01-S	1 m silicone cable, -50 ... +200 °C
		Each further meter
	L01-G	1 m glass fibre, -50 ... +400 °C
		Each further meter
	L01-T	1 m Teflon cable, -200 ... +250 °C
		Each further meter
	L01-P	1 m PVC cable, -20 ... +70 °C
		Each further meter
8.	Connection	
	MD	Mini-DIN plug 4pole
	NT	NST1200 flat-pin plug
	NU	NKU1200 coupling
	BS2	2 x banana plug Ø4 mm
		Loose ends
	M8B	M8 socket (for EASYLOG option AFK)
	BNC	BNC plug

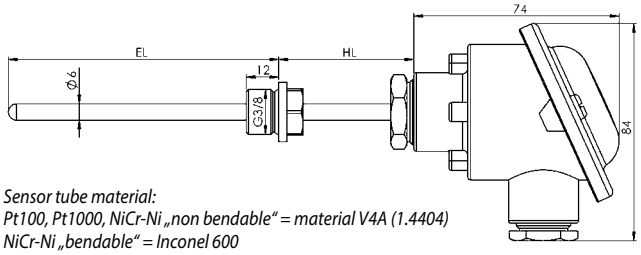


Special dimensions, special jacket materials, etc. available on request.

INDUSTRY-TEMPERATURE PROBE



Connection head
(aluminum head type B)
G1/2"A V4A



Sensor tube material:
Pt100, Pt1000, NiCr-Ni „non bendable" = material V4A (1.4404)
NiCr-Ni „bendable" = Inconel 600

GTF 103
Temperature probe

GTF103 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15

Greisinger		
1.	Standard signal	
	O	Without output signal
	RT	With output signal 4 ... 20 mA, 2-wire, RT420, Only Pt100
	T0	With output signal 0 ... 10 V, 3-wire, T03 BU, Only Pt100
	GI	With output signal 4 ... 20 mA, 2-wire, GITT 01
2.	Sensor element	
	P	Pt100
	P22	Double Pt100, 2 x 2-wire
	P23	Double Pt100, 2 x 3-wire
	T	PT1000
	K	Type K (NiCr-Ni)
	K2	Double type K (NiCr-Ni)
	J	Type J (Fe-CuNi)
3.	Accuracy sensor element	
	B	DIN class B
	A	DIN class A
	D	DIN class AA (1/3 DIN class B)
	Z	1/10 DIN cl. B
	1	Class 1, NiCr-Ni
4.	Connection sensor element	
	2L	2-wire
	3L	3-wire
	4L	4-wire
	22L	2 x 2-wire
	23L	2 x 3-wire
5.	Connection head	
	A	Aluminium sensor head (DIN B head)
	E	Stainless steel sensor head
	K	Probe head made from plastic
	S	Small sensor head (design DE)
6.	Measuring insert	
	0	Measuring insert not interchangeable
	MA	Measure usage interchangeable
	MA	Interchangeable measuring insert (standard with standard signal), Standard with option RT420 / GITT01 / T03.. from Ø4 mm to Ø8 mm
7.	Process connection	
	J	With process connection
	N	Without process connection

8.	Extension tube	
	K	No extension tube, For T<= 100 °C
	M	With extension tube, For T> 100 °C
9.	Process connection	
	G1	G ½
	G2	G ¼
	G3	G ¾
	G5	G ⅜
	M0	M10
	M01	M10x1
	M2	M12
	M18	M18x1.5, D 3 ... 8 mm
	N12	NPT ½"
10.	Environmental temperature	
		-40 ... +85 °C, RT420, GITT01, T03 BU
11.	Length of extension tube HL	
	000	0 mm
	050	50 mm
	100	100 mm
12.	Probe diameter Ø	
	30	3 mm
	40	4 mm
	60	6 mm
	80	8 mm
13.	Fitting length EL	
	0050	50 mm
	0100	100 mm
	0150	150 mm
	0250	250 mm
	0500	500 mm
14.	Mineral insulated element	
	ME	Yes, for temepratures beyond 400°C
	00	no
15.	Measuring range	
	MB2	-50 ... +400 °C
	MB1	-50 ... +200 °C
	MB3	-50 ... +600 °C

Special designs can be ordered only in written form (fax/letter/email) and are excluded from exchange!

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRY-TEMPERATURE PROBE

GTF 111

Temperature probe with M12 connection

General:

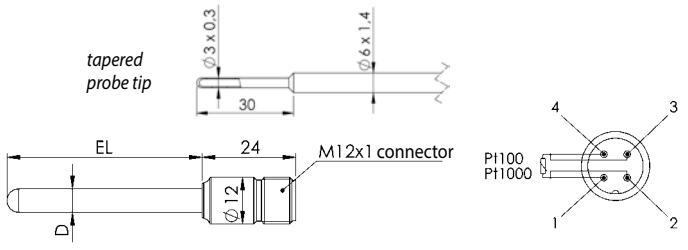
The GTF 111 is a temperature sensor without thread with a practical M12 connector. The measurement is carried out by means of resistance temperature sensors Pt100 or Pt1000.

Specifications:	
Sensor element:	Pt100 or Pt1000 (4-wire)
Temperature range:	-50 ... +250 °C (probe tip)
Accuracy:	Class B, Class A, Class AA, Class 1/10 DIN B
Response time:	FS Ø 3 mm: T_{90} ≤1.5 s FS Ø 6 mm: T_{90} ≤7.4 s
Process pressure:	max. 50 bar
Electrical connection:	M12 connector, 4-pole
Thermowell and tip:	1.4404 (V4A)
Protection:	IP67 / IP69K
Ambient temperature:	-20 ... +85 °C

GTF111 - [1] - [2] - [3] - [4] - [5]

Greisinger		
1.	Sensor element	
	P	Pt100 (4-wire)
	T	Pt1000 (4-wire)
2.	Accuracy	
	B	DIN class B
	A	DIN class A
	D	DIN class AA (1/3 DIN class B)
	Z	1/10 DIN cl. B (only Pt100)
3.	Measuring range	
	MB1	-50 ... +250 °C (M12-connector max. 85 °C), More measuring ranges on request
	MBS	-50 ... +100 °C (M12-connector max. 85 °C)
4.	Installation length	
	0050	50 mm
	0100	100 mm
	0150	150 mm
	0250	250 mm
5.	Probe diameter	
	D60	Ø6 mm, Without taper
	D30	Ø6 mm, and tapered probe tip Ø3 mm L = 30 mm
	D80	Ø8 mm, Without taper

M12 connecting cable see page 64



Special lengths, special sheath materials, etc. upon request.

GTF 112

Temperature probe with M12 connection

General:

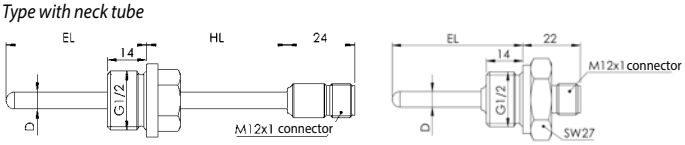
The GTF 112 is a temperature sensor with threaded process with a practical M12 connector. The measurement is performed by means of resistance temperature sensors Pt100 or Pt1000.

Specifications:	
Sensor element:	Pt100 or Pt1000 (4-wire)
Temperature range:	-50 ... +250 °C (probe tip)
Accuracy:	Class B, class A, class AA, class 1/10 DIN B
Response time:	FS Ø 3 mm: T_{90} ≤1.5 s FS Ø 6 mm: T_{90} ≤7.4 s
Process pressure:	max. 50 bar
Electrical connection:	M12 connector, 4-pole
Thermowell and tip:	1.4404 (V4A)
Protection:	IP67 / IP69K
Ambient temperature:	-20 ... +85 °C

GTF112 - [1] - [2] - [3] - [4] - [5] - [6] - [7]

Greisinger		
1.	Sensor element	
	P	Pt100 (4-wire)
	T	Pt1000 (4-wire)
	T2	Pt1000 (2-wire)
2.	Accuracy	
	B	DIN class B
	A	DIN class A
	D	DIN class AA (1/3 DIN class B)
	Z	1/10 DIN cl. B (only Pt100)
3.	Measuring range	
	MB0	-50 ... +100 °C
	MB1	-50 ... +250 °C, Only with extension tube HL = 50 mm
	MBS	-50 ... +300 °C
4.	Fitting length EL	
	0050	50 mm
	0100	100 mm
	0150	150 mm
5.	Probe diameter D	
	D60	Ø6 mm, Without taper
	D30	Ø6 mm, and tapered probe tip Ø3 mm L = 30 mm
	D30	Ø3 mm
	D120	Ø12 mm
6.	Thread	
	G1	G ½
	G2	G ¼
	G4	G ⅛
	M10	M10x1
7.	Extension tube	
	000	No extension tube, Only up to 100 °C -> MB0
	050	50 mm
	100	100 mm

Type with neck tube



INDUSTRIAL PROBES FOR FOOD-, BEVERAGE- AND PHARMA INDUSTRY

GTL ...

Probes according to customer specification

Specifications:	
Measuring ranges:	-40 ... +200 °C (depending on probe construction)
Sensor:	Pt 100
Process connection:	M12 / G1/2" / without thread
Probe head:	probe head Ø 59 mm probe head Ø 18 mm Long (with transmitter) probe head Ø 18 mm Short (without transmitter)
Material:	sensor head: V2A, protection tube and peak: V4A
Probe length:	50, 100, 150, 250 or according to customer specification (in mm)
Diameter:	Ø 6 mm without contraction Ø 4 mm without contraction Ø 6 mm with offset probe peak Ø 3 mm
Response Time:	Ø 6 mm: T_{90} ≤7.4 s Ø 4 mm: T_{90} ≤3.6 s Ø 3 mm: T_{90} ≤1.5 s
Protection rating:	IP69K / IP67

Option:

- **Neck tube**
- **Electr. connection:**
  fixed cable (PG) or M12-plug
- **Transmitter**
- **Higher accuracy (DIN cl. AA or 1/10 DIN cl. B)**
- **Display of temperature**

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TYPE N (NICRSI-NISI) - MEASURING PROBE (CLASS 1)

HIGH TEMPERATURES COST-EFFICIENT MEASUREMENTS

GTF101-N-03-250

Art. no. 602770

Temperature probe NiCrSi Type N, -50 ... +1300 °C, (short-term up to 1330 °C), FL = 250 mm

GTF101-N-03-500

Art. no. 602771

Temperature probe NiCrSi Type N as above, but FL = 500 mm

GTF101-N-03-1000

Art. no. 602772

Temperature probe NiCrSi Type N as above, but FL = 1000 mm

General:

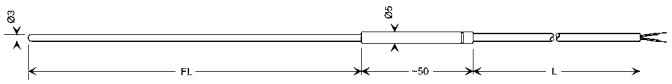
Measuring probe Ø 3 mm
Mantle material: nickel-chromium-based stainless steel with extraordinary resistivity against oxidation at high temperatures and excellent corrosion resistance in chlorine and ammoniacal environments. A protective layer emerges at temperatures of approx. 980 °C and provides improved accuracy compared to other mantle materials.
The temperature can be applied to high temperatures for a longer period without noteworthy drift. The K-effect (near-order effect) is much smaller for type N thermocouples than for type K thermocouples.

Application:

Temperature measurement of exhaust fumes

Specifications:	
Response time T_{90}:	approx. 5 s
Probe tube:	nickel-chromium-based stainless steel Ø 3 mm
Cable:	1 m silicone cable, loose ends

further cable lengths upon request



HIGH TEMPERATURES (PERMANENTLY UP TO 1300 °C) COST-EFFICIENT MEASUREMENTS

GTF101-N-06-250

Art. no. 602769

Temperature probe NiCrSi Type N, -50 ... +1300 °C, (short-term up to 1330°C), FL = 250 mm; more robust design with thicker protective cover

GTF101-N-06-500

Art. no. 607634

Temperature probe NiCrSi Type N as above, but FL = 500 mm

GTF101-N-06-1000

Art. no. 607635

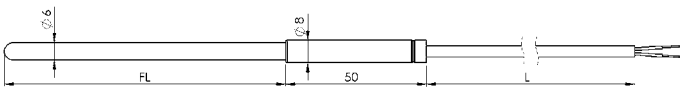
Temperature probe NiCrSi Type N as above, but FL = 1000 mm

General:

Measuring probe Ø 6 mm
Probe for permanently high temperatures, other data as probe Ø 3 mm

Specifications:	
Response time T_{90}:	approx. 10 s
Probe tube:	nickel-chromium-based stainless steel Ø 6 mm
Cable:	1 m silicone cable, loose ends

further cable lengths upon request



Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRIAL TEMPERATURE PROBES

GTF 200 Pt100

Art. no. 600017
-50 ... +200 °C, Pt100, 4-wire

Specifications:	
Sensor:	Pt100, DIN cl. B (±0.3 °C at 0 °C)
Sensor sleeve:	made of stainless steel (1.4571), length 50 mm, diameter 5 mm
Cable:	silicone (4 x 0.14²), approx. 1 m suitable for 2-/ 3- or 4-wire probe

GTF 200 Pt100 WD

Art. no. 600020
-20 ... +105 °C, Pt100, 4-wire, tube enclosed water proof

Specifications:	
Sensor:	Pt100, DIN cl. B (±0.3 °C at 0 °C)
Sensor sleeve:	made of stainless steel
Cable:	PVC (4 x 0.14²), approx. 1 m suitable for 2-/ 3- or 4-wire probe

GRO 200 Pt100

Art. no. 600012
Temperature probes

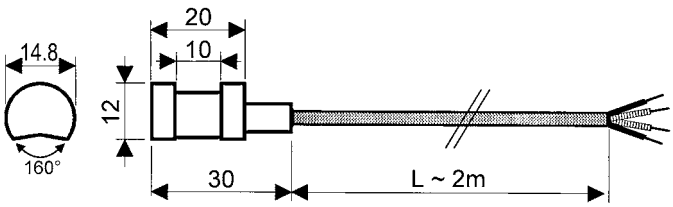
GRO 200 Pt1000

Art. no. 600013
Temperature probes, -50 ... +200 °C, DIN class B, 4-wire

GRO 200 K

Art. no. 600011
Temperature probes, -50 ... +200 °C, Type K (NiCr-Ni)

Specifications:	
Sensor body:	made of aluminium
Probe:	can be mounted with cable clamp or similar constructions to pipes (any diameter)
Cable:	silicone, approx. 2 m
	For faster heat exchange we suggest our **heat-conductive paste GWL10G** *Art. no. 603267*



INDUSTRIAL TEMPERATURE PROBES (ATEX 100)

without neck tube, for temperatures ≤100 °C

with neck tube, for temperatures >100 °C

FOR ALL POTENTIALLY EXPLOSIVE ATMOSPHERES OF THE EQUIPMENT-GROUP II WITH THE PROTECTION (I) OR (E)

GTF 101-EX

-200 °C ... +100 °C (without neck tube)
-200 °C ... +900 °C (with neck tube)

General:

Readily assembled voltage free temperature probe of stainless steel with connection cable. The sensor inset is not exchangeable. Mounting is done via separate clamping ring fittings GKV.

Specifications:

Sensors:
Pt100 / Pt1000; mineral insulated element, 4-wire:
Measuring ranges: -200 °C ... +100 °C (600 °C - with neck tube), DIN class B
Type K; mineral insulated thermocouple:
Measuring ranges: -200 °C ... +100 °C (900 °C - with neck tube), class 1

Probe length:
up to 100mm (without upcharge), upcharge per further starting 100 mm

Neck tube length:
without
upcharge per starting 100 mm

Probe diameter:
3 mm, 4 mm, 5 mm, 6 mm or 8 mm

Cable length (4-wire)

Cable:
silicone cable, Surcharge per additional meter of cable
PVC, teflon (Pt100 / Pt1000 only)

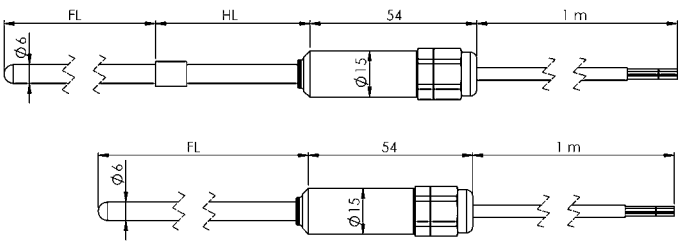
Ambient temperature:
-20 ... +60 °C (protection type „e" and protection type „i" zone 0, 20) or -20 ... +80 °C (+60 °C) (protection type „i" zone 1, 2, 21, 22)

Type of protection:
„i" : intrinsic safety
„e": increased safety (not for zone 0 and 20)

Potentially explosive atmospheres:
suitable for zone 0, zone 1, zone 2, zone 20, zone 21, zone 22

Clamping ring screw connection:
M8x1, M10x1, G1/4" and G1/2" for diameter 3 mm, 6 mm or 8 mm.
Please refer to page 85

To determine exact order name ask for our type list.
Download via homepage possible



Note: Not all execution options are possible in all zones!

INDUSTRIAL TEMPERATURE PROBES (ATEX 100)

Ordering information for GTF 101-Ex ... Probes

Protection type:

e	Gas: increased safety, encapsulation (em) - only permitted for zone 1 and 2 Dust: encapsulation (mb) - only permitted for zone 21 and 22
i	intrinsic safety

Potentially explosive atmospheres:

Gases:	
00	zone 0
01	zone 1 and zone 2
Dusts:	
20	zone 20
21	zone 21 and zone 22

Sensor-element:

P	Pt100
T	Pt1000
K	Thermocouple type K

Neck tube: (length till tube sleeve for depth stop)

K	without neck tube (for -50 °C ≥ T ≤ 100 °C)
M	with neck tube (please refer to note below)

Neck tube length:

xxx	length in mm e.g. 050 (= standard length)

Probe tube diameter:

x	3, 4, 5, 6 or 8 mm Hint: - observe for D = 3 mm: • minimum probe length is 60 mm • the probe diameter is reduced, tube top D = 3 mm (for approx. 30 mm) afterwards D = 6 mm

Probe length (fitting length):

xxxx	length in mm e.g. 0100 (= 100 mm)

Cable length: (4-wire)

x	length in m e.g. 1 (= 1 m)

Cable type:

S	silicone cable	
P	PVC cable	*(only available for sensor = Pt100 / Pt1000)*
T	teflon cable	*(only available for sensor = Pt100 / Pt1000)*

Notify for ambient temperature:

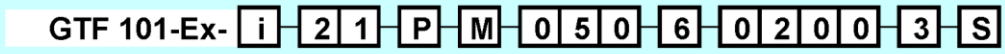
intrinsic safety type	
zone 0, 20:	-20 °C ... +60 °C
zone 1, 2, 21, 22:	-20 °C ... +80 °C (+60 °C bei T6)
type with increased safety	
zone 1, 2, 21, 22:	-20 °C ... +60 °C

Recommended min. neck tube length according max. meas. range:

Neck tube construction:	measuring range: Pt 100 a. type K	Pt 1000
- without neck tube	-50 … +100 °C	-50 … +100 °C
- neck tube above 50 mm	-200 … +250 °C	-70 … +250 °C
- neck tube above 100 mm	-200 … +400 °C	-70 … +400 °C
- neck tube above 200 mm	-200 … +600 °C	-70 … +600 °C

For reference only! The length should be selected so that the max. specified ambient temperature of the cable sleeve is not exceeded in your installation situation.

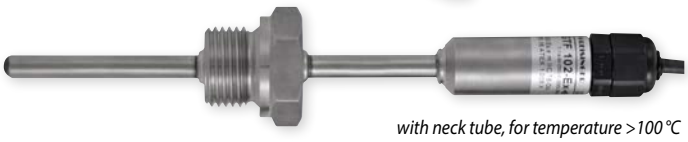
Ordering example: **GTF 101-Ex** for protection type "i", Ex-zone 21, with Pt100, neck tube length: 50 mm, probe diameter: 6 mm, probe length: 200 mm, cable length: 3 m, silicone cable



Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRIAL TEMPERATURE PROBES (ATEX 100)

without neck tube, for temperature ≤100 °C



with neck tube, for temperature >100 °C

FOR ALL POTENTIALLY EXPLOSIVE ATMOSPHERES OF THE EQUIPMENT-GROUP II WITH THE PROTECTION (I) OR (E)

GTF 102-EX

-200 °C ... +100 °C (without neck tube)
-200 °C ... +900 °C (with neck tube)

General:

Readily assembled voltage free temperature probe of stainless steel with connection cable. The sensor inset is not exchangeable. Thread is welded or brazed to the probe.

Specifications:

Sensors:
Pt100 / Pt1000, mineral insulated element, 4-wire:
Measuring ranges: -200 °C ... +100 °C (600 °C - with neck tube), DIN cl. B
Type K; mineral insulated thermocouple:
Measuring ranges: -200 °C ... +100 °C (900 °C - with neck tube), class 1

Probe length:
up to 100 mm, upcharge per further starting 100 mm

Neck tube length:
without
upcharge per starting 100 mm

Probe diameter:
3 mm, 4 mm, 5 mm, 6 mm or 8 mm

Thread:
G1/2", G3/8" (standard)
G1/8", G1/4", G3/4", M8x1, M10x1

Cable length: (4-wire)

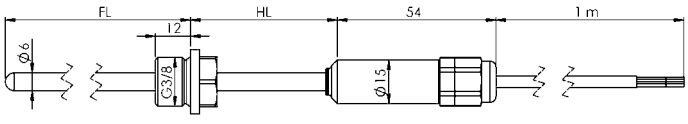
Kabelart:
Silicone cable, Surcharge per additional meter of cable
PVC, teflon (Pt100 / Pt1000 only)

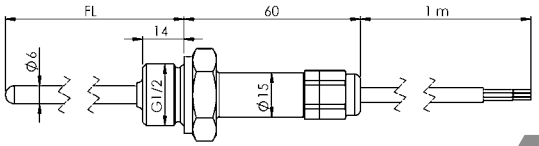
Ambient temperature:
-20 ... +60 °C (protection type „e" and protection type „i" zone 0, 20) or -20 ... +80 °C (+60 °C) (protection type „i" zone 0/1, 1, 2, 20/21,21, 22)

Type of protection:
„i": intrinsic safety
„e": increased safety (not for zone 0 and 20)

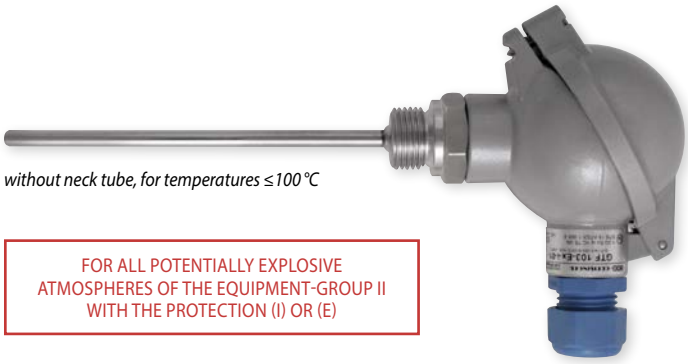
Potentially explosive atmospheres:
suitable for zone 0, zone 0/1, zone 1, zone 2, zone 20, zone 20/21, 21, zone 22

To determine exact order name ask for our type list.
Download via homepage possible





Note: Not all execution options are possible in all zones!



without neck tube, for temperatures ≤100 °C

FOR ALL POTENTIALLY EXPLOSIVE ATMOSPHERES OF THE EQUIPMENT-GROUP II WITH THE PROTECTION (I) OR (E)

GTF 103-EX

-200 °C ... +100 °C (without neck tube)
-200 °C ... +900 °C (with neck tube)

General:

Readily assembled voltage free temperature probe of stainless steel connection head and clamping block. The sensor inset is exchangeable. Thread is welded or brazed to the probe. Mounting is done via clamping ring fitting or thread welded / brazed to the probe tube. The connection head is also suitable to carry a head transmitter.

Specifications:

Sensors:
Pt100 / Pt1000; mineral insulated element, 4-wire:
Measuring ranges: -200 °C ... +100 °C (600 °C - with neck tube), DIN cl. B
Type K; mineral insulated thermocouple (without upcharge):
Measuring ranges: -200 °C ... +100 °C (900 °C - with neck tube), class 1

Probe length:
up to 100 mm, upcharge per further starting 100 mm

Neck tube length Ø 3 mm, 4 mm, 5 mm:
without (without upcharge)
upcharge per starting 100 mm

Probe diameter:
3 mm (the sensor inset is not exchangeable) (without upcharge)
4 mm, 5 mm, 6 mm or 8 mm (the sensor inset exchangeable)

Thread:
G1/2", G3/8" (Standard) or without thread (without upcharge)
G1/8", G1/4", G3/4", M8x1, M10x1

Ambient temperature:
Intrinsically safe version without output signal
zone 0, 20: -20 °C ... +60 °C; zone 0/1, 1, 2, 20/21, 21, 22: -20 °C ... +80 °C (+60 °C)
Intrinsically safe version with output signal 4 ... 20 mA
zone 0, 20: -20 °C ... +40 °C; zone 0/1, 1, 2, 20/21, 21, 22: -20 °C ... +50 °C (+40 °C)
Version with elevated safety: zone 1, 2, 21, 22: -20 °C ... +60 °C

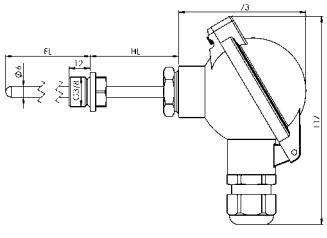
Type of protection:
„i": intrinsic safety (without upcharge)
„e": increased safety (not for zone 0 and 20)

Potentially explosive atmospheres:
suitable for zone 0, zone 0/1, zone 1, zone 2, zone 20, zone 20/21, zone 21, zone 22

Transmitter GITT 01-Ex
(please refer to page 54), output signal 4 ... 20 mA, measuring range on customers demands, protection type „i" intrinsic safety.

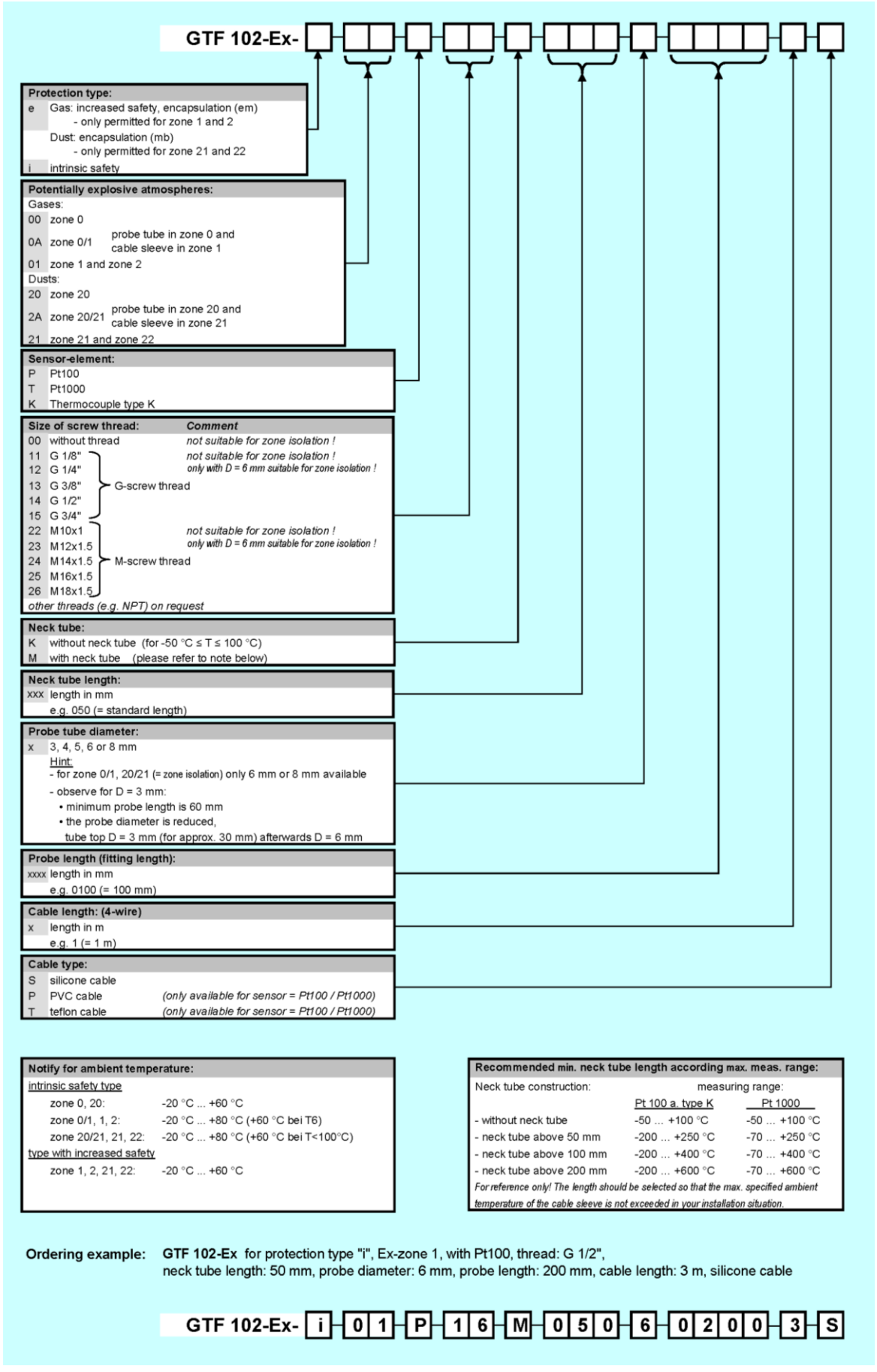
Clamping ring screw connection:
M8x1, M10x1, G1/4" and G1/2" for diameter 3 mm, 6 mm or 8 mm.
Please refer to page 85

To determine exact order name ask for our type list.
Download via homepage possible



Note: Not all execution options are possible in all zones!

INDUSTRIAL TEMPERATURE PROBES (ATEX 100)



Notify for ambient temperature:

intrinsic safety type

zone 0, 20:	-20 °C ... +60 °C
zone 0/1, 1, 2:	-20 °C ... +80 °C (+60 °C bei T6)
zone 20/21, 21, 22:	-20 °C ... +80 °C (+60 °C bei T<100°C)

type with increased safety

zone 1, 2, 21, 22:	-20 °C ... +60 °C

Recommended min. neck tube length according max. meas. range:

Neck tube construction:	measuring range: Pt 100 a. type K	Pt 1000
- without neck tube	-50 ... +100 °C	-50 ... +100 °C
- neck tube above 50 mm	-200 ... +250 °C	-70 ... +250 °C
- neck tube above 100 mm	-200 ... +400 °C	-70 ... +400 °C
- neck tube above 200 mm	-200 ... +600 °C	-70 ... +600 °C

For reference only! The length should be selected so that the max. specified ambient temperature of the cable sleeve is not exceeded in your installation situation.

Ordering example: **GTF 102-Ex** for protection type "i", Ex-zone 1, with Pt100, thread: G 1/2", neck tube length: 50 mm, probe diameter: 6 mm, probe length: 200 mm, cable length: 3 m, silicone cable

GTF 102-Ex- i 0 1 P 1 6 M 0 5 0 6 0 2 0 0 3 S

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

INDUSTRIAL TEMPERATURE PROBES (ATEX 100)

Ordering information for GTF 103-Ex ... Probes

GTF 103-Ex- [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] / [ ]

Protection type:

e	Gas: increased safety (e) - only permitted for zone 1 and 2 Dust: protection by enclosure (tb) - only permitted for zone 21 and 22
i	intrinsic safety

Potentially explosive atmospheres:

Gases:

00	zone 0	
0A	zone 0/1	Measuring circuit (probe tube) in zone 0 and connection head in zone 1
01	zone 1 and zone 2	

Dusts:

20	zone 20	
2A	zone 20/21	Measuring circuit (probe tube) in zone 20 and connection head in zone 21
21	zone 21 and zone 22	

Normalized signal:

O	without normalizid signal output
G	with normalized signal output: 4-20 mA

Sensor-element:

P	Pt100
T	Pt1000
K	Thermocouple type K

Size of screw thread:		***Comment:***
00	without thread	*not suitable for zone isolation !*
11	G 1/8"	*not suitable for zone isolation !*
12	G 1/4"	*only with D = 6 mm suitable for zone isolation !*
13	G 3/8"	G-screw thread
14	G 1/2"	G-screw thread
15	G 3/4"	G-screw thread
22	M10x1	*not suitable for zone isolation !*
23	M12x1.5	*only with D = 6 mm suitable for zone isolation !*
24	M14x1.5	M-screw thread
25	M16x1.5	M-screw thread
26	M18x1.5	M-screw thread
other threads (e.g. NPT) on request		

Neck tube:

K	without neck tube (for -50 °C ≤ T ≤ 100 °C)
M	with neck tube (please refer to note below)
D	with neck tube Ø 14 mm (please refer to note below)

Neck tube length:

xxx	length in mm e.g. 050 (= standard length)

Probe tube diameter:

x	3, 4, 5, 6 or 8 mm Hint: - for zone 0/1, 20/21 (= zone isolation) only 6 mm or 8 mm available - observe for D = 3 mm: • minimum probe length is 60 mm • the probe diameter is reduced, tube top D = 3 mm (for approx. 30 mm) afterwards D = 6 mm • the measuring insert is not changeable

Probe length (fitting length):

xxx	length in mm e.g. 0100 (= 100 mm)

Connection head and Cable gland:

1K	B-head with flap lid, cable entry via cable screw connection
1D	B-head with flap lid, cable entry via clamping screw
2K	B-head , cable entry via cable screw connection
2D	B-head, cable entry via clamping screw
3K	antistatic plastic head, cable entry via cable screw connection
3D	antistatic plastic head, cable entry via clamping screw
	Notes: Types for zone 0 are only possible with the antistatic plastic head. The plastic head are only suitable for protection type "i", zone 0.

Measuring range:

xxx	measuring range of the probe *(necessary for type with integrated transmitter* e.g. -50 ... +100 °C

Notify for ambient temperature:

intrinsic safety type without output signal	
zone 0, 20:	-20 °C ... +60 °C
zone 0/1, 1, 2, 20/21, 21, 22:	-20 °C ... +80 °C (+60 °C bei T6)
intrinsic safety type with 4-20 mA output signal	
zone 0, 20:	-20 °C ... +40 °C
zone 0/1, 1, 2, 20/21, 21, 22:	-20 °C ... +50 °C (+40 °C bei T6)
type with increased safety	
zone 1, 2, 21, 22:	-20 °C ... +60 °C

Recommended min. neck tube length according max. meas. range:

Neck tube construction:	measuring range: Pt 100 a. type K	Pt 1000
- without neck tube	-50 … +100 °C	-50 … +100 °C
- neck tube above 50 mm	-200 … +250 °C	-70 … +250 °C
- neck tube above 100 mm	-200 … +400 °C	-70 … +400 °C
- neck tube above 200 mm	-200 … +600 °C	-70 … +600 °C

For reference only! The length should be selected so that the max. specified ambient temperature of the connection head is not exceeded in your installation situation.

Ordering example: **GTF 103-Ex** for protection type "i", Ex-zone 0, with 4-20 mA output signal, Pt100, thread: G 1/2", neck tube length: 50 mm, probe diameter: 6 mm, probe (fitting) length: 200 mm, B-head with flap lid, cable entry via cable screw connection, measuring range: -50 to +100 °C

GTF 103-Ex- [i][0][0][G][P][1][4][M][0][5][0][6][0][2][0][0][K][P] / [-50 ... +100 °C]

INDUSTRIAL TEMPERATURE PROBES (ATEX 100) WITH M12 PLUG CONNECTOR

FOR ALL POTENTIALLY EXPLOSIVE ATMOSPHERES OF THE EQUIPMENT-GROUP II WITH THE PROTECTION (i) OR (e)

GTF 111-EX

-200 °C ... +100 °C (without neck tube)
-200 °C ... +600 °C (with neck tube)

General:

The GTF 111-Ex temperature probe is designed for use in explosion-prone areas. The probe is very small, which makes it suitable for use in places that are difficult to access. The probe is equipped with an M12 connection.
The probe inserts of the GTF 111-Ex are potted and cannot be replaced. They are available in the following sensor element group: Resistance thermometer: Pt 100 or Pt 1000.
Only jacket resistance thermometers are used as sensor elements. The materials used for the probe parts that come into contact with the medium consist of stainless steel (e.g. 1.4404, 1.4435 or 1.4571). This guarantees high resistance to a wide variety of chemical compounds.

Options:

Sensors:
Pt100 / Pt1000, mineral insulated element, 4-wire:
Measuring ranges: -200 °C ... +100 °C (600 °C - with neck tube), DIN cl. B

Probe length:
up to 100 mm (without upcharge)
upcharge per further starting 100 mm

Neck tube length:
without (without upcharge)
upcharge per starting 100 mm

Probe diameter:
3 mm, 4 mm, 5 mm, 6 mm or 8 mm (without upcharge)

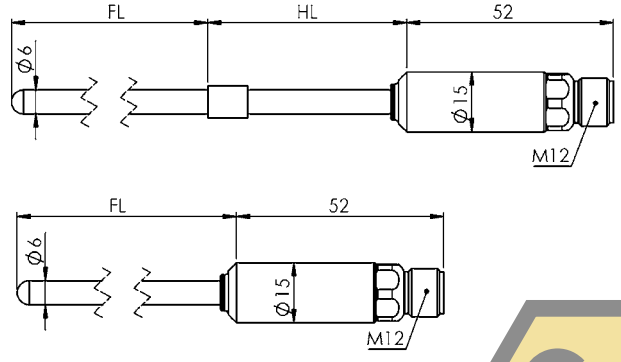
Connection:
M12 plug connector

Ambient temperature:
-20 ... +60 °C (protection type „e“ and protection type „i“ zone 0, 20) or -20 ... +80 °C (+60 °C) (protection type „i“ zone 1, 2, 21, 22)

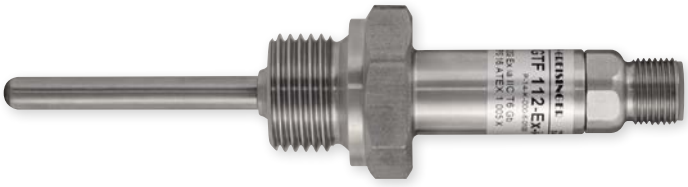
Type of protection:
„i“: intrinsic safety (without upcharge)
„e“: increased safety

Potentially explosive atmospheres:
suitable for zone 0, zone 1, zone 2, zone 20, zone 21, zone 22

To determine exact order name ask for our type list.
Download via homepage possible.



Note: Not all execution options are possible in all zones!



FOR ALL POTENTIALLY EXPLOSIVE ATMOSPHERES OF THE EQUIPMENT-GROUP II WITH THE PROTECTION (i) OR (e)

GTF 112-EX

-200 °C ... +100 °C (without neck tube)
-200 °C ... +600 °C (with neck tube)

General:

The GTF 112-Ex temperature probe is designed for use in explosion-prone areas. The probe is very small, which makes it suitable for use in places that are difficult to access. The probe is equipped with an M12 connection.
The probe inserts of the GTF 112-Ex are potted and cannot be replaced. They are available in the following sensor element group: Resistance thermometer: Pt 100 or Pt 1000.
Only jacket resistance thermometers are used as sensor elements. The materials used for the probe parts that come into contact with the medium consist of stainless steel (e.g. 1.4404, 1.4435 or 1.4571). This guarantees high resistance to a wide variety of chemical compounds.

Options:

Sensors:
Pt100 / Pt1000, mineral insulated element, 4-wire:
Measuring ranges: -200 °C ... +100 °C (600 °C - with neck tube), DIN cl. B

Probe length:
up to 100 mm (without upcharge)
upcharge per further starting 100 mm

Neck tube length:
without (without upcharge)
upcharge per starting 100 mm

Probe diameter:
3 mm, 4 mm, 5 mm, 6 mm or 8 mm (without upcharge)

Thread:
G1/2“, G3/8“ (Standard) (without upcharge)
G1/8“, G1/4“, G3/4“, M8x1, M10x1

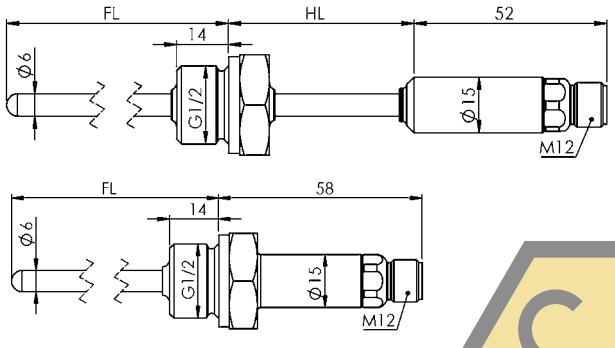
Connection:
M12 plug connector

Ambient temperature:
-20 ... +60 °C (protection type „e“ and protection type „i“ zone 0, 20) or -20 ... +80 °C (+60 °C) (protection type „i“ zone 1, 2, 21, 22)

Type of protection:
„i“: intrinsic safety (without upcharge)
„e“: increased safety

Potentially explosive atmospheres:
suitable for zone 0, zone 0/1, zone 1, zone 2, zone 20, zone 20/21, 21, zone 22

To determine exact order name ask for our type list.
Download via homepage possible.



Note: Not all execution options are possible in all zones!

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

STERILIZABLE, HERMETICALLY SEALED WATER PROOF TEMPERATURE PROBES

HIGHLIGHTS:

- sealed against moisture and corrosion
- easily cleaned and sterilised
- small size provides a fast response
- also available in custom lengths
- optionally with mechanical protection (V4A-sleeve) and with thread or clamping ring screw connection available.

TF 101 P-L01

Art. no. 601687
Design type Pt100, cable length 1 m

TF 101 P-L02

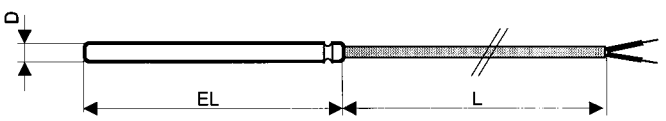
Art. no. 601689
Design type Pt100, cable length 2 m

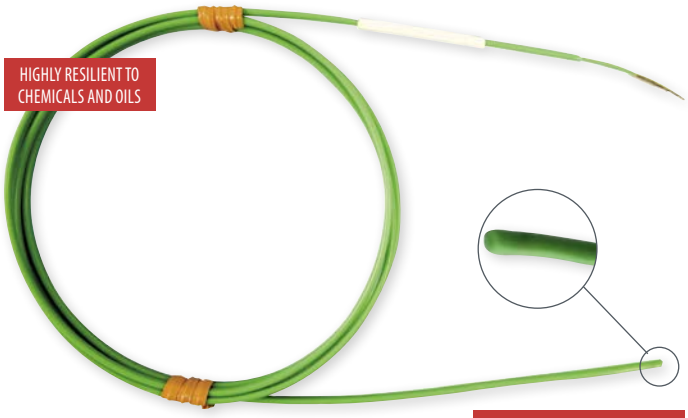
TF 101 P-L03

Art. no. 601691
Design type Pt100, cable length 3 m

Specifications:	
Probe:	flexible sealed PFA Pt100 sensor
Connection:	4-wire-connection (4 x 0.14 mm², nickel-plated copper)
Nominal diameter:	3 mm
Accuracy:	according to DIN class A
Measuring ranges:	-60 ... +250 °C
Response time:	water 0.4 m/s approx. 8 s
	IP68 seal-welded tip
	also available with Pt1000

Variants:
TF 101 P-L01-V4A *Art. no. 605092* Robust design type with robust V4A protective tube Ø 4 mm, EL = 50 mm *Not possible at type K!*
TF 101 P-L02-V4A *Art. no. 602761* Robust design type with robust V4A protective tube Ø 4 mm, EL = 50 mm *Not possible at type K!*
TF 101 P-L03-V4A *Art. no. 604563* Robust design type with robust V4A protective tube Ø 4 mm, EL = 50 mm *Not possible at type K!*





HIGHLIGHTS:

- sealed against moisture and corrosion
- easily cleaned and sterilised
- small size provides a fast response
- also available in custom lengths

TF 101 K-L01

Art. no. 601820
Design type K (NiCr-Ni), cable length 1 m

TF 101 K-L02

Art. no. 601798
Design type K (NiCr-Ni), cable length 2 m

TF 101 K-L03

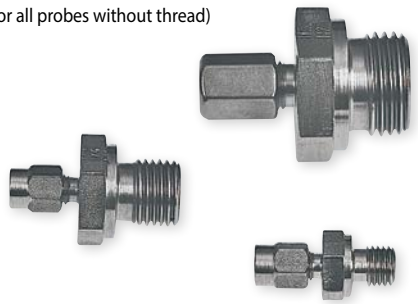
Art. no. 601797
Design type K (NiCr-Ni), cable length 3 m

Specifications:	
Probe:	These PFA insulated thermocouple wire sensors are hermetically seal-welded at the sensor tip to provide continuous PFA protection over the measurement junction.
	stranded NiCr-Ni-thermocouple wire (0.14 mm²)
Nominal cross section:	1.6 mm x 2.5 mm
Measuring ranges:	-270 ... +250 °C
Response time:	water 0.4 m/s approx. 8 s
	IP68 seal-welded tip
	electrically-insulated junction
	also available with thermocouples type J, T and E

ACCESSORIES

CLAMPING RING SCREW CONNECTION GKV... STAINLESS STEEL

(for all probes without thread)



Type:	Outside thread	Clamp. ring-Ø (sensor tube-Ø)	Clamping ring
GKV1 *602888*	M8 x 1	1.5 mm	Teflon
GKV2 *602889*			Stainless steel
GKV3 *602890*		3.0 mm	Teflon
GKV4 *602891*			Stainless steel
GKV5 *602892*	G1/4"	1.5 mm	Teflon
GKV6 *602893*			Stainless steel
GKV7 *602894*		3.0 mm	Teflon
GKV8 *602895*			Stainless steel
GKV11 *602898*		6.0 mm	Teflon
GKV12 *602899*			Stainless steel
GKV9 *602896*	G1/2"	6.0 mm	Teflon
GKV10 *602897*			Stainless steel
GKV13 *602900*		8.0 mm	Teflon
GKV14 *602901*			Stainless steel
GKV15 *602902*		14.0 mm	Teflon
GKV16 *602903*	M10x1	6.0 mm	Stainless steel
GKV-R12 *611175*	R1/2	3.0 mm	Stainless steel

FLAT-PIN CONNECTIONS, FREE FROM THERMAL E.M.F.

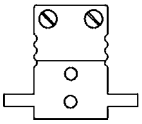
(for type K, N, S)

NST 1200
NST 1300
NST 1700

NST 1200-K
Art. no. 602566
Flat-pin connections, free from thermal e.m.f., type K

NST 1300-N
Art. no. 605762
Flat-pin connections, free from thermal e.m.f., type N

NST 1700-S
Art. no. 603890
Flat-pin connections, free from thermal e.m.f., type S



NKU 1200-K-O

NKU 1200-K-O
Art. no. 602738
U-coupling for installation in front panels (max. 120 °C)

NKU 1200
NKU 1700

NKU 1200-K
Art. no. 602737
Flat-pin connections, free from thermal e.m.f., type K

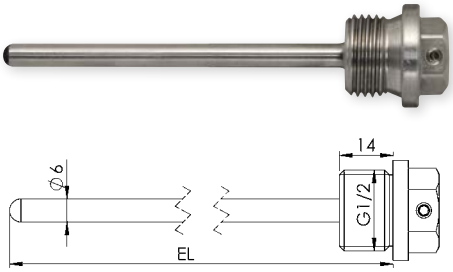
NKU 1300-N
Art. no. 475808
2 pole miniature flat-pin socket, no thermo voltage free, Typ N (NiCrSi-NiSi)

NKU 1700-S
Art. no. 603535
Flat-pin connections, free from thermal e.m.f., type S

For higher temperatures use ceramic plug and coupling

IMMERSION SLEEVE OF STAINLESS STEEL

Immersion sleeve for probes without thread

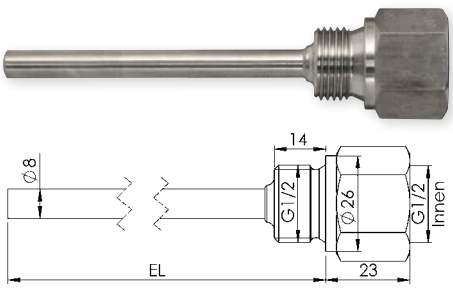


EST01
Art. no. 602868
Immersion sleeve with clamping for probes without thread for 100 mm

Specifications:

Thread: G1/2 (external thread)
Outer diameter immersion sleeve: Ø 6 mm
(for probes with outer diameter Ø 5 mm)
length: L = 100 mm (suitable for e.g. GTF101 with FL = 105 mm, Ø 5 mm)
Special lengths, diameters or threads upon request

Immersion sleeve for all probes with a G1/2"-thread



EST02
Art. no. 603362
Immersion sleeve for probe with G1/2 thread for 85 mm

Specifications:

Thread: G1/2 (internal/external)
Outer diameter immersion sleeve: Ø 8 mm
(for probes with outer diameter Ø 6 mm)
L = 85 mm (suitable for e.g. GTF 103 with FL = 100 mm, Ø 6 mm)
L = 100 mm (suitable for e.g. GTF 103 with FL = 115 mm, Ø 6 mm)
Special lengths, diameters or threads upon request

GWL10G
Art. no. 603267
heat-conductive paste 10 g, in plastic gun, for faster heat exchange

Note: Handheld instrument probes can be found in chapter handheld instruments and the appropriate devices

ACCESSORIES

CABLES AND LINES

Silicone cable (-50 ... +200 °C) with teflon screened wires

S2P
Art. no. 604296
silicone cable, 2-pole (2 x 0.25 mm²), highly flexible,
external diameter approx. 3.8 mm, price per meter

S4P
Art. no. 603708
silicone cable, 4-pole, 4 x 0.14 mm² cross section (insulation 2 x blue, 2 x white)
(can also used as 3-wire), external diameter approx. 4 mm, price per meter

Glass silk insulated cable (-50 ... +400 °C) with stainless steel braiding

G4P
Art. no. 603698
glass silk insulated cable, 4-pole (4 x 0.22 mm²),
external diameter approx. 4 mm, price per meter

Teflon insulated cable (-200 ... +250 °C) with individual teflon insulated wires

T2P
Art. no. 604962
Teflon insulated cable, 2-pole (2 x 0.14 mm²), with additional cable screen,
external diameter approx. 2.3 mm, price per meter

T4P
Art. no. 603985
Teflon insulated cable, 4-pole (4 x 0.14 mm²), with additional cable screen
external diameter approx. 4 mm, price per meter

PVC-lines (-20 ... +70 °C)

P2P
Art. no. 604140
PVC cable, 2-pole (2 x 0.14 mm²), external diameter approx. 3.5 mm, price per meter

P4P
Art. no. 605035
PVC cable, 4-pole (4 x 0.14 mm²), external diameter approx. 3.9 mm, price per meter

Extension cable for Type K (NiCr-Ni)

VKA 1m
Art. no. 602909
1 m Silicon-Compensation lines with DIN plug and DIN coupler
Upcharge per meter

Compensation lines for NiCr-Ni (type K), 2-wire

AGL1
Art. no. 600356
Silicone cable (2 x 0.22 mm²) (max. 200 °C), external diameter approx. 3.8 mm,
price per meter

AGL3
Art. no. 600359
Thermo wire (can also be used as thermo couple) glass silk (2 x 0.5 mm²) (max. 400 °C),
external diameter approx. 4 mm, price per meter

AGL4
Art. no. 600360
Teflon screened twisted thermo wire without joint outer sheath, wire Ø 0.2 mm
(max. 250 °C), external diameter approx. 1.4 mm, price per meter

AGL5
Art. no. 600361
Thermo wire, with glass silk braiding, wire-Ø 0.2 mm (max. 400 °C),
external diameter 0.8 x 1.2 mm, price per meter

AGL6
Art. no. 600365
Teflon cable, screened - can also be used as thermo couple (2 x 0.22 mm²) (max. 250 °C),
with additional cable screen, external diameter approx. 4 mm, price per meter

Compensation lines for Type S (Pt10RH-Pt), 2-wire

AGL S2
Art. no. 607130
Silicone cable (max. 200 °C), external diameter approx. 3.9 mm, price per meter

Compensation lines for Type N (NiCrSi-NiSi), 2-wire

AGL N2
Art. no. 600373
Silicone cable (max. 200 °C), external diameter approx. 3.9 mm, price per meter

SENSOR ELEMENTS (PT100 / 1000, NTC, PTC)

Pt100/1
Art. no. 602989
Ceramic lamina, 2 x 2.3 x 0.6 mm, -70 ... +500 °C, accuracy class F 0.3
(DIN class B)

Pt100/2
Art. no. 602990
Ceramic lamina, 2.5 x 2.0 x 1.3 mm, -50 ... +500 °C, accuracy class F 0.1
(DIN class AA (1/3 class B))

Pt100/3
Art. no. 602991
Ceramic lamina, 2 x 5 x 0.9 mm, -196 ... +500 °C, accuracy class F 0.3 (DIN class B)

Pt100/4
Art. no. 602993
Wound design, Ø 2 x 20 mm, -200 ... +600 °C, accuracy class W 0.3 (DIN class B)

Pt100/5
Art. no. 602994
TO92-housing, -50 ... +150 °C, accuracy class F 0.3 (DIN class B)

Pt100/6
Art. no. 602995
Ceramic lamina, 1 x 3 x 0.6 mm, -50 ... +500 °C, accuracy class F 0.3
(DIN class B)

Pt1000/1
Art. no. 606368
Ceramic lamina, 2.1 x 4 x 0.9 mm, -70 ... +500 °C, accuracy class F 0.1
(DIN class AA (1/3 class B)

Pt1000/2
Art. no. 602997
TO92-housing, -50 ... +150 °C, accuracy class F 0.3 (DIN class B)

Pt1000/3
Art. no. 602998
Ceramic lamina, 1 x 3 x 0.6 mm, -50 ... +500 °C, accuracy class F 0.3 (DIN class B)

KTY 81-210
Art. no. 607894
Replacement for KTY 11-6, -20 ... +110 °C

KTY 81-121
Art. no. 607895
1 kOhm (25 °C), TO92-housing, -50 ... +150 °C

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