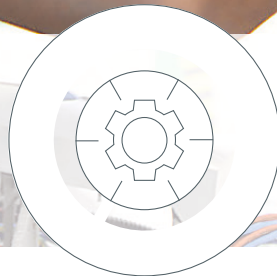


INDUSTRIAL ELECTRONICS.
RAIL MODULES.



GHM-Rail series.

The signal-processing experts.

Editorial.

Specialists by Competence.



'Our new GHM-Rail series with the latest generation of mounting rails is the foundation of a fault-free process sequence. They are designed to be consistently future-proof and as efficient as possible.'

Sebastian Schäfer | Product manager Martens



Dear readers,

Measuring transducers, isolating amplifiers, limit value indicators and limiters are like 'bread and butter' when it comes to the basic equipment for industrial automation. They form the basis for precision and reliability of signal processing for all automated processes. In practice, this entails increasingly smaller spatial requirements with the best mechanical quality for cabinet installation. Quick and easy installation and signal processing independent of environmental influences that is essentially drift-free for the maximum precision, affordability and reproducibility are important criteria that are always taken into account in the development of our products.

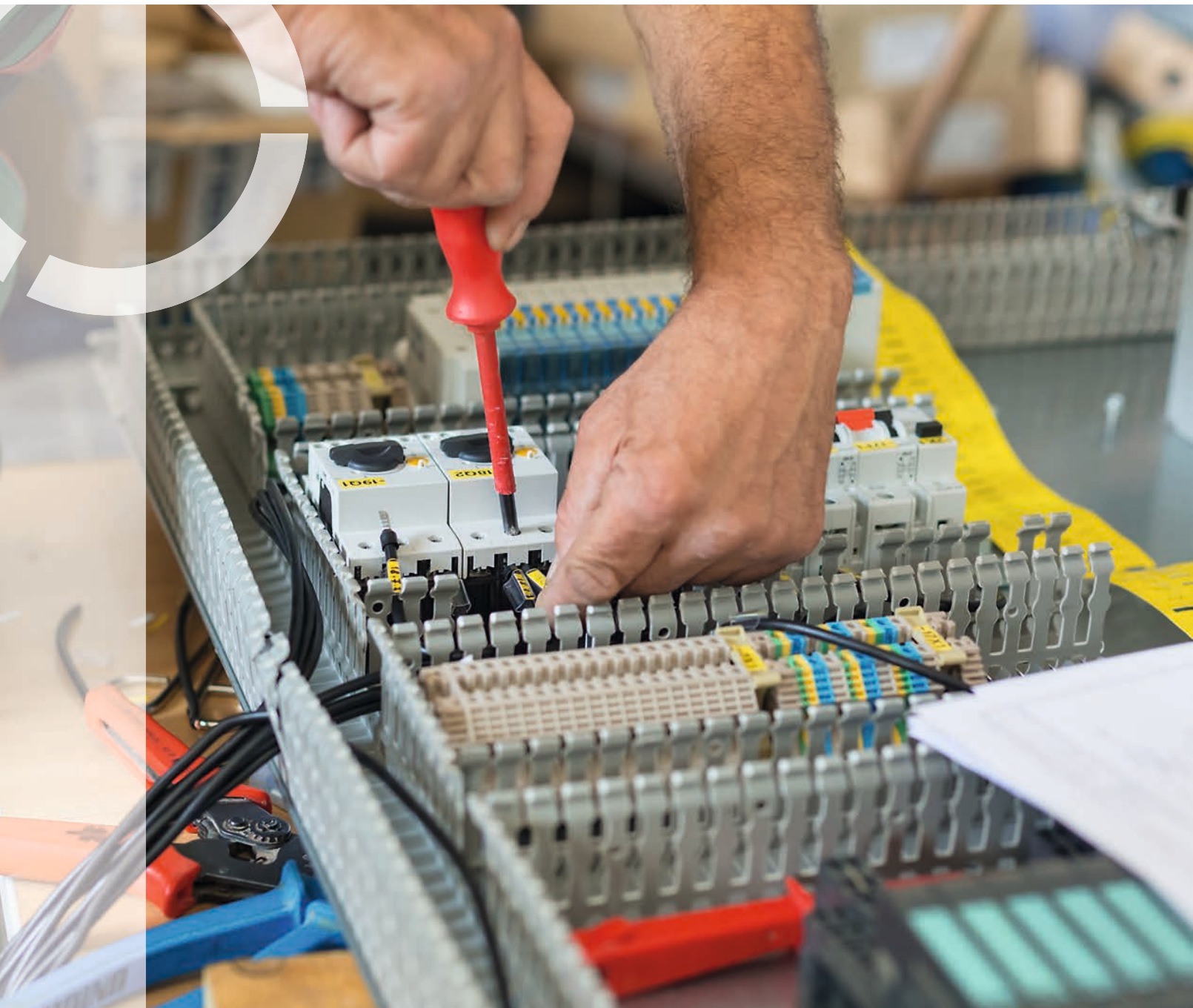
The fewer components in the product assortment, the lower the costs and the higher the availability of stock, which also means faster order processing for original equipment and retrofitting of systems.

The GHM GROUP meets these requirements with the GHM-Rail series, the latest generation of compact mounting rail devices. Part of the Martens strategic business area Industrial Sensors and Electronics is the development and production of the comprehensive range of DIN rail devices. The devices are featured by a robust and space-saving design with a grid dimension of only 12.5 mm width.

The GHM-Rail series was designed for rapid commissioning. Adjusting elements on the front of the device and clear status indicators with multi-colour LEDs or displays and a brief description on the side of the device are practical and time-saving aids. The modern electronic design enables significantly lower energy consumption, which also provides long-term stability of measurements and a longer device service life.

In addition to the standard 24VDC voltage supply, the modules can also be supplied via an internal wide-range power supply unit (20..125 VDC/ 20..253 VAC) or via a mounting rail bus as a PowerRail with 24VDC (TS35 EN60715) with clear and space-saving side-by-side cable arrangement, which cuts down on additional installation time and costs. The GHM-Rail series also offers solutions for ATEX (EN60079), functional safety (EN61508), temperature limiting (EN14597) and requirements for enhanced isolation (EN60664, EN61010).

This brochure is a detailed presentation of our new GHM-Rail series. Feel free to contact us for advice on your specific requirements.



GHM-Rail series.

State-of-the-art measurement and control.

When it comes to signal processing and monitoring of processes, we provide you with exactly the right technology. Because the brand Martens is known for robust and reliable components in demanding process and industrial technology.

Overview

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GHM-Rail Serie.

Smart design with maximum efficiency.

Every detail was scrutinised by our developers when designing our new generation of mounting rail modules. Every aspect of the production process was taken into account in order to create an optimal system. Our team of specialists gave the maximum effort with only one requirement in mind: To offer our customer the very best.



The signal-processing experts.

Time- and space-saving.

GHM-Rail series

Plug & play

Accredited



'Clean' measurements and clear status signals from the process are fundamental to a fault-free process sequence.

Our mounting rail devices are also designed with the goal of being as efficient as possible in all areas of the product life cycle

SIL
CC 61508/RC 61511



EN14597



Advantages of the series

- reduced wiring
- error-free wiring with coded and numbered connecting plugs
- low storage costs with wide-range power supply unit
- time-saving installation with front-side controls and configuration instructions printed on the device
- significantly lower spatial requirement in the switch cabinet with narrow 12.5 mm design
- durable housing and innovative circuitry
- avoidance of downtimes with clear error indication
- wiring safety with push-in terminals
- enhanced isolation increases operational safety, EN60664, EN61010
- short delivery times with a large stock programme



Instructions on the side of the device

The configuration instructions on the side of the device help to ensure quick and safe installation.

Advantages

- prevents operator error
- saves time during commissioning
- quick configuration

Technical features

- configuration instructions on the side of the device – quick configuration

Operable on the front side

All important functions can be monitored during operation.

Advantages

- avoidance of downtimes with clear error indication
- immediate, optical checks are possible

Technical features

- operable on the front side – even during operation
- warnings and error messages with a blinking code

Customer benefits at a glance.

Save time and money.

GHM-Rail series



Configuration instructions on the side of the device



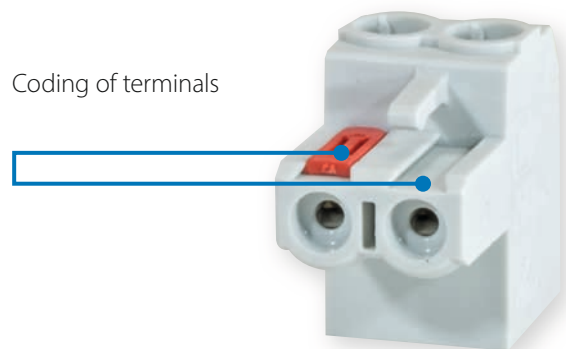
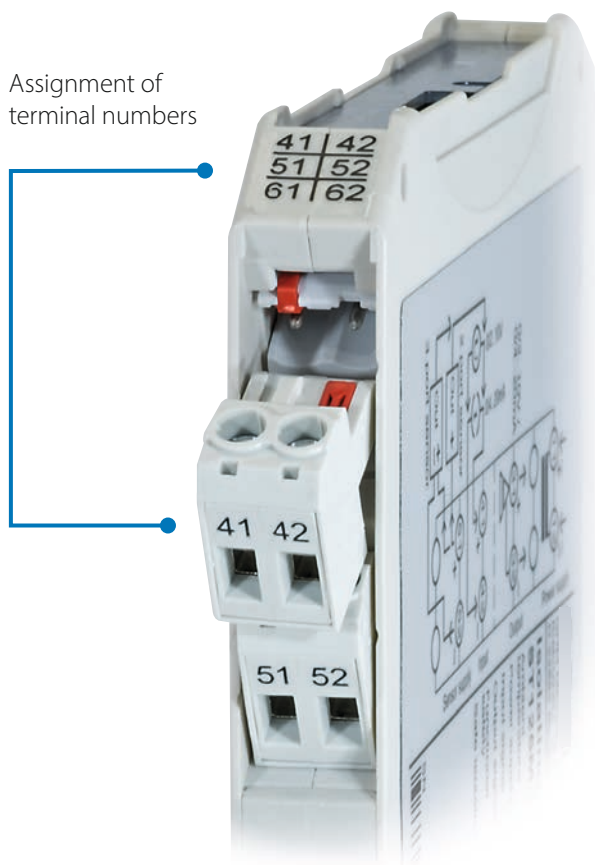
Two-colour LEDs provide the user with direction information about the device status

DIP switches and/or front potentiometers for rapid, uncomplicated configuration

GHM-Rail series.

Save time and money.

Pluggable screw terminals and optional push-in terminals



Advantages

- pluggable terminals – very simple wiring
- assignment of terminal numbers based on the terminal numbers printed on the device
- coding and a simple plug-in function facilitate commissioning considerably

Two-level spring terminal

- optionally enable 2 connections per terminal and simple wiring
- reduced wiring
- simple arrangement of cables with push-in technology
- increased contact safety for applications subject to vibrations

GHM-Rail series.

Time-saving wiring.

PowerRail

Plug & play

PRVK supply terminal
1 unit per system
(separate order position)

Mounting rail bus connector
included in the scope of
supply of the modules

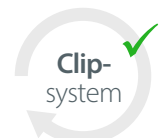
The modules are
simply snapped
in place.

Technical features

- the device types with a 12.5 mm housing width are optionally available with a rear 24VDC supply in the mounting rail bus connection up to 16 A
- flexible in use

Advantages

- extremely easy handling with plug & play
- connection in a matter of seconds
- significantly reduces wiring work
- device replacement during operation, reduced downtimes





Signals – safe and reliable

Galvanic isolation of continuous or switching signals, establishes an immune connection between field devices. Earth loops and connected compensating currents, as well as electromagnetic interfering influences are minimized. Large distances, in particular, pose a challenge for signal transmission.

Supply isolators are used when the measuring transducer should have a galvanically isolated voltage supply. In this case, the ST125M supply isolator supplies the 4-wire measuring transducer reliably.

The possibility of use as a signal repeater or converter makes isolating amplifiers and supply isolators versatile products.

Advantages

- clean signals increase process quality
- protection of high-precision electronics reduces downtimes due to damage from overvoltage

Technical features

- functional safety SIL2 in accordance with EN61508
- for connection of sensors from Zones 0, 1, 2, 20, 21, 22
- device installation in Ex Zone 2 possible
- enhanced isolation according to DIN EN61010-1

Signals – safe and reliable.

Galvanic isolation, conditioning and conversion.

ST125M, TV125M, TV125L, TS125



ST125M
Supply isolator –
supplies EX sensors



TV125M
Isolating amplifier –
flexible and efficient



TV125L
Isolating amplifier –
the affordable solution

TS125
Switch amplifiers –
up to 2 channels or error relay

Safe & protected



Limiting and protection

The applications of electronic limiting devices in automation technology are wide-ranging. They can assume control tasks, monitor limit values or be used as a protective device.

Tasks have a different nature in thermal process systems. When it comes to protecting the process material, personnel or the environment during an application, there are different requirements on the limiting device.

If a GS125 limit switch is adequate in the first case, other product features, such as manual resetting, error tolerance or reliability are required for protective devices.

For this purpose, we developed the TB225 and STL50 which assure process quality with a preliminary alarm in addition to fulfilling the protective function.

Advantages

- safeguarding of product quality
- fulfilment of standard protection specifications
- protection of the system, personnel

Technical features

- up to 2 limit values
- AC or DC auxiliary voltage
- analogue output
- simple configuration
- protection against inadvertent and/or unauthorized reconfiguration
- SIL and EX versions

Shut down processes punctually. Safe risk management.

TB225, STL50, GS125L



TB225
Limiters and measuring transducers



STL50
For safety chains with multiple-error monitoring



GS125L
Measuring transducers and limit value transmitters in the smallest spaces

Signal monitoring.

Minimize production stops.

GS125 limit switch application

Process safety



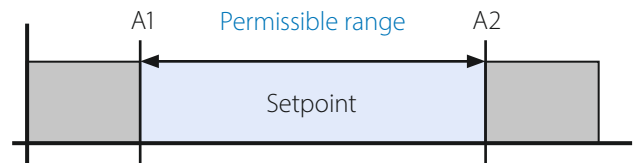
Adjustment scale with automatic colour change



With use of oils as lubricating or temperature transfer media, the operating temperature must be kept within the optimal range. If the temperature is too low, viscosity will be low and the transporting and lubricating capacity will be reduced.

The GS125 has two adjustable limit values and a configurable window function for definition of a temperature control range. Limit contact A1 disconnects the energy supply with the adjusted value is reached. A2 can be used for signalling of overtemperature, disconnection of the energy supply or activation of a cooling element.

The integrated analogue output also converts the temperature signal to the conventional 4...20 mA. This enables visualization of the process value. The GS125 has 2 configurable limit values and measuring transducer functionality, making it a compact, efficient solution for the mounting rail.



Advantages

- up to 2 limit values and measuring transducer functionality offer an unbeatable price/performance ratio in the smallest spaces
- automatic colour indication of the adjustment scale displays the status of the system immediately



EN14597 temperature-limiting application.

Protection of your values.

TB225 temperature limiter



Automatic colour change from blue to red when the limit value is exceeded.



The TB225 is certified according to EN14597 and a verified expert for thermal process technology. It is designed so that an individual error in the electrical circuit triggers a safe shut-down, even if the adjusted limit value has not been breached.

When configured as a temperature monitor, it enables the process again after the limit temperature is no longer violated. When configured as a temperature limiter, the process is locked until the error has been corrected and confirmed with a reset of the correct state of the system. Colour change in the display and plain text error messages inform the operator immediately about the status of the safety chain and possible causes of errors.

Application areas

Safe temperature monitoring in:

- thermal process systems with electrical heating
- heating systems in buildings
- large-format boilers
- galvanic baths
- all temperature applications in which temperature limit violations can cause damage to the system or the process material

Technical features

- recognizes individual errors in the electronic circuit for functional safety
- adjustment of the safety value is password-protected
- separately adjustable pre-contact protects system parts or process material
- analogue output for measurement output
- can be reset via external contact

Advantages

- Rapid, intuitive configuration and operation thanks to the text display
- Safe functions even in case of an error in the safety chain
- Analogue output eliminates the need for a separate measuring transducer
- Separate contact input enables direct execution of the reset function, even outside of the switch cabinet
- A pre-contact enables intervention in the process before the critical temperature is reached



Signal monitoring.

Minimize production stops.

STL50 safety temperature limiter



Safety first

A safe shut-down must be guaranteed whenever excessively high or low temperatures in thermal process technology cause serious damage to the system or pose a danger to the environment or human life.

With redundant circuits with double error tolerance – which also trip safely in case of component errors in the good range of the temperature – low failure probability and quick reaction speed are also required features.

The STL50 is type-tested according to EN14597 and thus fulfils requirements for redundant electrical configuration for safe disconnection (sensor break, sensor short-circuit, failure of a component in the device, software error, failure or impermissible value of the auxiliary voltage, etc.), and a short reaction time.

With classification according to functional safety SIL2, the STL50 can be used as a safety limiter (protective limiter) as defined by the Machinery Directive for a wide range of systems heated with fossil fuels or electrically.



Advantages

- reliable and safe temperature monitoring in thermal processing systems
- protects systems and people from the consequences of impermissible temperatures
- no separate signal converter necessary, thanks to the integrated measurement output
- rapid error identification with plain text error message to reduce system failure
- universally applicable for thermal process systems with fossil energy production or electric heating
- safety made in Germany

Application areas

- boiler for gaseous fuels
- automatic burners with fan
- gas-fired air heater
- electrically heated pressure tanks (autoclaves)

Technical features

- input for double thermocouple or Pt100 3-wire
- 1 main contact
- 1 pre-alarm
- analogue output
- illuminated graphic LCD display
- type-tested according to EN14597
- SIL2 according to EN61508
- version for EX applications



Easy-to-read display,
simple configuration



From the measurement to the standard signal

Measuring transducers are 'basic' components in switch cabinet installation and automation. Physical variables are converted into unit signals for transmission and duplication, scaling and wire break or short-circuit recognition.

The MU125 and U125 measuring transducers are designed for high flexibility in a small space (12.5 mm wide). Stocking costs for system construction are minimized with a minimum of product diversity and a maximum of input signals, while assembly and commissioning time are reduced in equal measure by means of simple configuration.

With consistent arrangement of the configuration elements, configuration and calibration can also take place in the installed state.

In service mode, downtimes due to sensor failure can be reduced with output value simulation.

Advantages

- numerous input types, minimal variation
- cost-saving configuration and commissioning
- durable design with narrow dimensions
- short downtimes with output simulation
- also configurable and comparable while installed

Technical features

- input signals: Resistance (linear or pot.), Pt100, Pt1000, NTC, current, voltage
- thermocouple J (FeCuNi), K (NiCrNi), S (PtRhPt)
- output signal: 4..20 mA

Signal-Conditioning.

Minimum type diversity, maximum range of applications.

TC125, MU125, UT125

Application areas

- Measurement of low, medium and high temperatures
- Displacement measurement
- Level measurement
- Standard signal conversion
- Temperature measurement in explosive environments
- Simple and sophisticated temperature measurement



Signal conditioning. For demanding applications.

TC125 temperature transducer



Signal transducer

The TC125 temperature transducer is designed for demanding applications in automation technology. These include functional safety requirements as well as safe signal processing in explosive environments. The galvanic 3-way isolation ensures reliable and stable measured values.

The 24 pre-scaled and adaptable measurement ranges and the simultaneous output of current and voltage signals make the TC125 a real specialist for temperature signals (PT100,1000 and thermocouples).

The device was developed according to the principles of functional safety. The FMEA characteristics for a simplified risk assessment are included in the documentation.



Technical features

- TC125M: Wide-range AC/DC or 24V DC power supply
- TC125L: 24V DC versions (DIN rail connection)
- Intrinsically safe inputs (Ex) for use with probes in hazardous areas 0/1/2 (gas, group IIC) and 20/21/22 (dust, group IIIC)
- Possible installation of the unit versions TC125L (Ex) and LP (Ex) in zone 2
- The TC125M versions have been designed in compliance with functional safety requirements

Advantages

- Clean measuring signals due to 3-way isolation
- EN 61508-compliant development with FMEA and intrinsically safe inputs for high reliability
- Fast and intuitive commissioning
- Enables thermocouple measurement with and without measured cold junction
- Voltage and current signals facilitate use in retrofits



Signal-Conditioning.

The temperature expert.

MU125 measuring transducer

Maximum flexibility

Signal conversion

Whether thermal voltages or resistances, the MU125 converts sensor signals reliably and precisely to the proven 4..20 mA signal.

Type J, K or S thermocouples are adjusted as simply as linear resistors or PT100, Pt1000 or NTC with predefined measuring ranges.

The measuring range limit values can be reduced to 50%, the zero point can vary by $\pm 40\%$ of the measuring range. Therefore, almost all necessary scaling can take place with the 30 measuring ranges selectable via DIP switch.

In service mode, the device can be easily reset to the factory characteristic, a pre-setting of the output characteristic can be adjusted and an arbitrary current value can be simulated.

Simulation of the current value aids in parameterization and testing of downstream evaluation electronics and in the replacement of the sensor element without loss of the process value.

Advantages

- minimizes the number of necessary temperature measuring transducer with various configuration options
- rapid calibration during operation with arrangement of the trim potentiometer on the front

Technical features

- 30 predefined measuring ranges
- zero point adjustable $\pm 40\%$ of the range
- limit value can be reduced 50%
- short-circuit and sensor-break monitoring for Pt100/ Pt1000
- service mode for pre-adjustment of a new output characteristic, check of calibrated factory setting or simulation of an output value



Signal-Conditioning. The efficient standard.

UT125 universal transmitter

One for (almost) everything

Signal conversion

The purpose of the UT125 is to provide an efficient solution for a variety of signals.

Parameterized quickly and easily, standard signals (0..20 mA, 0/2..10 V), PT100, thermocouples J, K, S and potentiometer signals can be converted to 4..20 mA.

The UT125 in combination with PowerRail is especially efficient. Once the supply voltage has been connected, only input and output wiring have to be carried out.

Advantages

- especially economic measuring transducer for the most important process signals
- optional wide-range power supply unit reduces type diversity of stocked devices
- configuration only with DIP switches for speed and efficiency

Technical features

- 16 predefined measuring ranges for standard signals, thermocouples, Pt100 and potentiometers
- Pt100 with sensor-break and short-circuit monitoring
- optional wide-range power supply unit



The GHM-Rail series.

More explosion protection and reliability.

Play it safe

Our types for safe processes

In automation technology, there is a host of dangers which can result in dangerous situations for systems and operators, etc.

These situations can occur due to explosion-prone environments or due to operating error of automated systems or operators.

The GHM-Rail series offers various solutions for this.

- reliability (EN61508, SIL)
- safe and reliable deactivation (EN14597)
- intrinsic safety (EN60079)



TV125M, ST125M, TS125, GS125, STL50





TC125, TV125M, ST125M, TS125, STL50



TB225, STL50



GHM-Rail series.

An overview of the latest generation.

TS125, TV125L, TV125M, ST125M



	TS125	TV125L	TV125M	ST125M
	Isolating switch amplifier	Isolating amplifier / supply isolator		
	1-channel isolating amplifier	Universal isolating amplifier		Supply isolator
Approvals				
DIN EN14597				
SIL	●		●	●
EX	II (1) G [Ex ia Ga] IIC/IIB II (1) D [Ex ia Da] IIIC II 3 G Ex nA [ic] IIB T4 Gc II 3 G Ex nA IIB T4 Gc		II (1) G [Ex ia Ga] IIC/IIB II (1) D [Ex ia Da] IIIC II 3 G Ex nA [ic] IIB T4 Gc II 3 G Ex nA IIB T4 Gc	II (1) G [Ex ia Ga] IIC/IIB II (1) D [Ex ia Da] IIIC II 3 G Ex nA [ic] IIB T4 Gc II 3 G Ex nA IIB T4 Gc
Output signal				
Relay	1 (2)			
0/2..10V			●	●
0/4..20 mA		●	●	●
4..20 mA				
Measuring input				
Optocoupler	●			
Switching contacts	●			
EN60947-5-6 Namur	●			
Transmitter feed				●
0/2..10V		●	●	●
0/4..20 mA		●	●	●
Resistance sensor				
Type S Pt10Rh-Pt				
Type K NiCr-Ni				
Type J Fe-CuNi				
Pt1000				
Pt100				
NTC				
Supply voltage				
24VDC	●	●		
Wide-range power supply unit AC/DC	●		●	●
PowerRail	●	●	●	●

● Standard () Optional Intrinsically safe power circuit



GHM-Rail series.

An overview of the latest generation.

GS125, TB225, STL50, TC125, MU125, UT125,



	GS125	TB225	STL50	TC125	MU125	UT125
	Limit switch/ limiter/ monitor			Measuring transducer		
	Limit switch	Temperature limiter	Safety temperature limiter	Temperature measuring transducer	Temperature measuring transducer	Universal measuring transducer
Approvals						
DIN EN14597		●	●			
SIL	●	(●)	●	FMEA		
EX			II (1) G [Ex ia] IIC/IIB II (1) D [Ex iaD]	II (1) G [Ex ia Ga] IIC II (1) D [Ex ia Da] IIIC II 3 G Ex nA nC [ic] IIB T4 Gc II 3 G Ex nA IIB T4 Gc		
Output signal						
Relay	1 (2)	2	2			
0/2 .. 10V		●	●	●		
0/4 .. 20 mA	(●)	●	●	●	●	●
Measuring input						
Optocoupler						
Switching contacts						
EN60947-5-6 Namur						
Transmitter feed						
0/2 .. 10V	●	●				●
0/4 .. 20 mA	●	●				●
Resistance sensor	● Potentiometer				● Linear	● Potentiometer
Type S Pt10Rh-Pt	●	●	●	●	●	●
Type K NiCr-Ni	●	●	●	●	●	●
Type J Fe-CuNi	●	●	●	●	●	●
Type N NiCrSi-NiSi			●			
Pt1000				●	●	
Pt100	●	●	●	●	●	●
NTC					●	
Supply voltage						
24VDC	●			●	●	●
Wide-range power supply unit AC/DC	●	●	230/115/24 V AC 24 V DC	●	●	●
PowerRail	●			●	●	●

● Standard (●) Optional Intrinsicly safe power circuit



On site internationally.

We are right at home in your world.

While consulting our customers, reliability and quality are just as important to us as the fast and on-time processing of your requests. We measure ourselves not only by the technical quality of our products, but above all by the business success of our customers.



**With our sales team in Germany,
our distribution partners and qualified trading partners
all over the world, you are always well supported.**

Our inspiration are your ideas and wishes.

Challenge us.

The GHM Messtechnik GmbH group of companies was founded in 2009. However, the history of the traditional brands bundled under the umbrella brand goes back even further. Even in its current form as the GHM GROUP, the company is committed to the philosophy shared by its founders: absolute customer orientation, speed and first-class product quality.

Innovation with method: Not only in the globalized economy, but also in technology, more and more tasks are being taken to the limits of what is feasible and well

beyond. We are meeting this challenge with a widely diversified corporate structure. The umbrella brand GHM GROUP comprises various brands that, with their respective expertise, cover a broad field of application-specific solutions for an extensive range of applications. Our customers benefit from more than 200 years of bundled experience. With their many years of expertise, our engineers in the various development centers are able to develop solutions quickly and flexibly to meet the individual requirements of our customers. This is an unparalleled advantage of our company.

Business units



Portable

- Compact, robust and powerful hand-held measuring devices for a wide range of measuring tasks
- Application-oriented special measuring devices
- Private label products for customer-specific individualization
- Factory calibration at customer's request in our own calibration laboratory

GREISINGER
DeltaOHM



Industry

- Sensors for a variety of process variables such as temperature, flow, level and pressure
- Transmitters and isolators for various input/output devices
- Indicators and controllers in a wide variety of formats
- Customized sensors and electronics

HONSBERG
Martens
VAL.CO



Environmental

- Measuring stations for climate and environmental data with connection to cloud systems
- Mobile measurement technology for climate, water and gas analysis
- Sensors for solar radiation monitoring in the photovoltaic sector
- Indoor climate measurements "comfort measurement", as well as sound and vibration measurements

DeltaOHM

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