GHMGROUP
Specialists by Competence.

INDUSTRIAL ELECTRONICS
COMPONENTS

Measuring during the running process.

Safe control in industrial production.

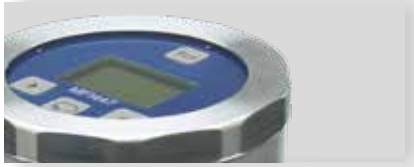
Members of GHM GROUP: GREISINGER | HONSBERG | Martens | DeltaOHM | VAL.CO

Utilising synergies

With the merger of companies, we have expanded our competence considerably and therefore also offer optimal assistance and consultation in all matters relating to measuring, control, and closed-loop control technologies.

We are capable of offering a complete product portfolio for requirements of the broadest range of segments:

Process measurement technology



Laboratory measurement technology

Industrial electronics / closed-loop control technology

Industrial measurement technology

Customer-specific developments

Quality from Germany

All products from GHM Messtechnik are developed and produced in Germany and Italy. Through the consolidation of companies, the product range has expanded significantly.

Our claim – Your benefit

As a specialist and complete measurement technology provider, we develop solutions tailored to our customers and markets which meet the highest demands in the industry.

Our locations


GREISINGER


HONSBERG

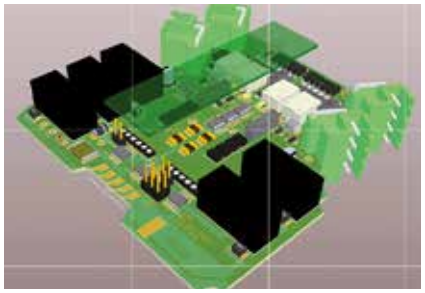

Martens


DeltaOHM


VAL.CO

Flexibility and Innovation

These two terms are an inseparable part of the success of GHM Messtechnik.
In addition to the extensive standard programme, tailored solutions are developed according to customer needs.



Altium 3D circuit board layout

Pressure testing up to 1000 bar

EMC cabins

GHM stands for

☑ Competence

☑ Quality

☑ Service

Expertise in industrial measuring, control, and closed-loop technologies.

"Our measuring, control, and closed-loop products are manufactured according to an ISO-certified production process and meet the highest quality standards. The products also satisfy the required industrial standards for the widest range of applications."

- CE Conformity
- ATEX Guidelines of the European Union
- Functional safety in accordance with IEC 61508/IEC61511
- EN14597 for heat generating systems
- Germanischer Lloyd
- Processing of measurement signals in accordance with NAMUR recommendations

Contents

Industrial electronics

Modern industry places increasingly higher requirements on all systems and components involved in the production process. With modern systems there is an expectation that downtimes are reduced to a minimum and that maximum process efficiency is achieved. Furthermore, the cost savings and associated competitive ability of a new acquisition are important requirements and a major emphasis for every machine modernisation. We meet these requirements with our modern product platform which is produced using state-of-the-art development methods and production processes in our factory.
Industry is facing the upcoming Industry 4.0 future project in the coming years. After the first industrial revolution in the area of mechanisation and mass production, we now have the intelligent factory in the digital revolution. Work should take place in a resource-saving manner with better integration of customer requirements in the value-added chain. In order to achieve this goal, increasingly more process values from the widest variety of production processes will have to be combined without losing the information that is relevant for the users on site.
GHM Messtechnik is also taking on this challenge and, in collaboration with its customers, developing highly efficient devices and systems for the next industrial revolution.

Our products

Our product spectrum in the area of industrial electronics extends from process value detection to signal processing, display, control and regulation, to actuators for intervening in the process. In this connection, our products always pursue the goal of being as efficient as possible in all areas of the product life cycle, and that applies particularly for:

- space-saving assembly
- quick and uncomplicated integration
- short wiring times
- simple commissioning without software, whenever possible
- use of intuitively operated configuration software, wherever it is necessary
- clear process information for operators in order to minimise downtimes
- fulfilment of necessary regulations, such as EN 14597 or SIL
- long service life

The true cost efficiency is evident over the entire period of use, beginning with the integration, followed by commissioning, and then long service times during the operation life. Our products satisfy this demand with solutions ranging from the simple sensor via standard isolating amplifier to the modular automation unit.

Our customers

Our customers come from a wide variety of areas in machinery and plant construction.
The following areas are emphasised:

- Food and beverage
- Plant and machinery construction
- Industrial and laboratory furnace construction
- Gas and oil industry
- Ship construction
- Plastics industry
- Chemical and pharmaceutical industry

This broad spectrum is the basis for an outstanding product assortment which satisfies the widest variety of requirements of numerous sectors. And if we do not have the right product in our portfolio, we are capable of quickly developing and producing the right product for the task on short notice, thanks to our application-based development and in-house production depth.

Industrial furnace construction

Oil

Chemical

Plastics industry

Plant and machinery construction

GHMGROUP

Specialists by Competence.

Ship construction

Building automation

Gas industry

Food and beverage

Pharmaceutical

Content

Industrial control 4.0 with the GHM-ONE plattform

MSR9696H the multi-talent

Industry is currently in the process of a changeover towards Industry 4.0 and the associated necessary changes of production processes. It is the task of control and feedback control technology to support this trend and provide the user with devices and systems to quickly implement the new requirements. The GHM-ONE multifunction platform approaches this challenge with a modern and innovative concept for **measuring, controlling, computing, data recording, and closed-loop control.**
Today's process technicians look for possibilities to be able to quickly and efficiently integrate their process technology ideas into new systems, or for retrofitting older systems without long downtimes. A requirement for this is the implementation of an idea without circuitous routes over multiple systems, for example, or hurdles arising from different programming languages.
The GHM-ONE platform provides process technicians with the possibility of effectively putting their ideas in the area of automation and visualisation into practice without programming knowledge. Therefore, the platform is the ideal basis for applications in areas such as:

- Industrial furnaces
- Laboratory ovens
- Heat treatment plants
- Microbreweries
- Dryers
- Test stands
- Building automation
- Climate control
- Pasteurisation systems

The MSR 9696H – the first in its class

The GHM-ONE platform is the basis for the new generation of multifunction devices. The first multi-function unit of this platform is the MSR 9696H. Fully loaded with innovative hardware and software technologies, the MSR 9696H is our most important development in recent years in the area of multifunction units.
Today's users must be capable of implementing ideas without being deterred by programming languages or battling with limitless depths of visualisation systems.

The MSR 9696H stands out from the masses of automation devices and impresses with its possibilities

- **Implementing measurement, control, and closed-loop control concepts and ideas without the requirement of programming skills for the user**
- **Creating operating and monitoring concepts entirely without knowledge in the area of control system or SCADA technology**

The new type of application creation is realised in the MSR 9696H with the new "Configuration and Application Tool" CAT. CAT supports users in the intuitive implementation of their ideas and assures a smooth commissioning process.
With a high-performance modular hardware concept, everything is rounded out with

- **3.5" TFT graphic colour touch display**
- **Standard 1/4DIN housing (96 x 96 mm)**
- **up to 8 internal analogue inputs**
- **up to 4 internal analogue outputs**
- **up to 12 internal digital inputs or outputs**
- **4 relay outputs as standard in the device**

The hardware concept is rounded out with a modular communications card with the possibility of connecting external I/O or other field bus participants using various field bus systems, such as:

- Modbus TCP
- Modbus RTU
- CanOpen

Of course, there are also interfaces available for the PLC and SCADA system level. For this purpose, MSR 9696H offers

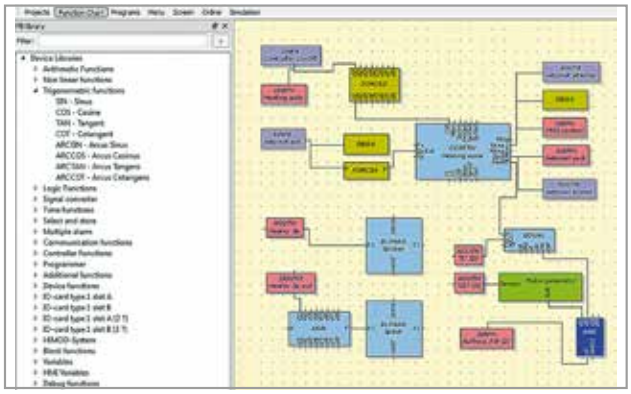
- Profinet
- Profibus DP
- Modbus TCP
- Modbus RTU

as possible connections. With this communications concept and the general layout, the MSR 9696H is ready to face the "Industry 4.0" challenge.

Put ideas into practice quickly and simply

Application creation with the MSR 9696H is child's play. Based on the concept of wiring existing functional blocks, the user quickly creates applications comprising process control, mathematical calculations and process feedback control. For this purpose, the CAT configuration software provides a function library comprising more than 100 tested functions from the areas:

- Input and output signals
- Computing functions
- Logic functions
- Signal conversion
- Time functions
- Buffer functions
- Communications functions
- Profiling functions
- Closed-loop control functions



The application designer in CAT

The user only has to compile and wire these functions in the editor and implement their idea without any programming skills. Testing of the individual functions can be omitted, because they were already available ready for use and were not created by the user. So the user can concentrate entirely on putting their idea into practice. The user is supported in the creating process with both the function library and the CAT configuration tool, which has some additional functions in the editor.

For example, the user can

- structure their application in order to avoid losing an overview when working on larger projects
- create individual function blocks in order to save time with recurring functions
- test sub-areas of their application with simulation functions independently of other project areas

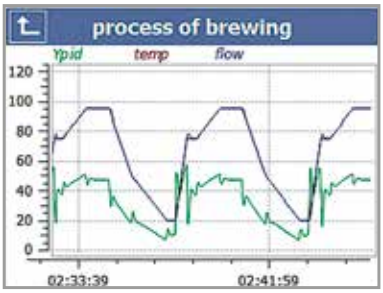
With the consistent use of modern software architectures and functions, CAT make it possible for the user to realise their application without lengthy familiarisation times.

Feedback control technology, profiling, and data recording

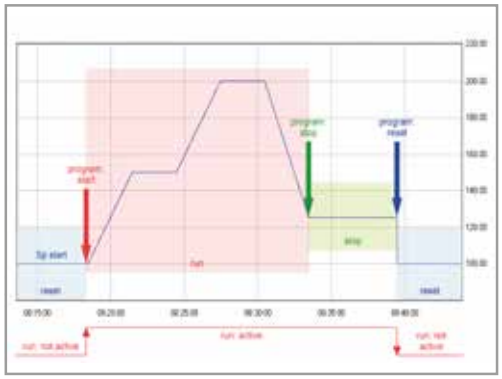
The function library also re-presents the basis for complex structures in the area of closed- loop control technology. As a result, solutions such as

- Cascade regulation
- Limiting control
- Ratio control

and other closed-loop control strategies can be implemented using standard functions. Of course, all regulators have the possibility of self-optimisation. Therefore, the area of closed-loop control technology and process control is not finished yet. The library also provides a profiler, which is often necessary for the control unit to take over certain processes. This is necessary wherever the material structure must be influenced over the course of the process.



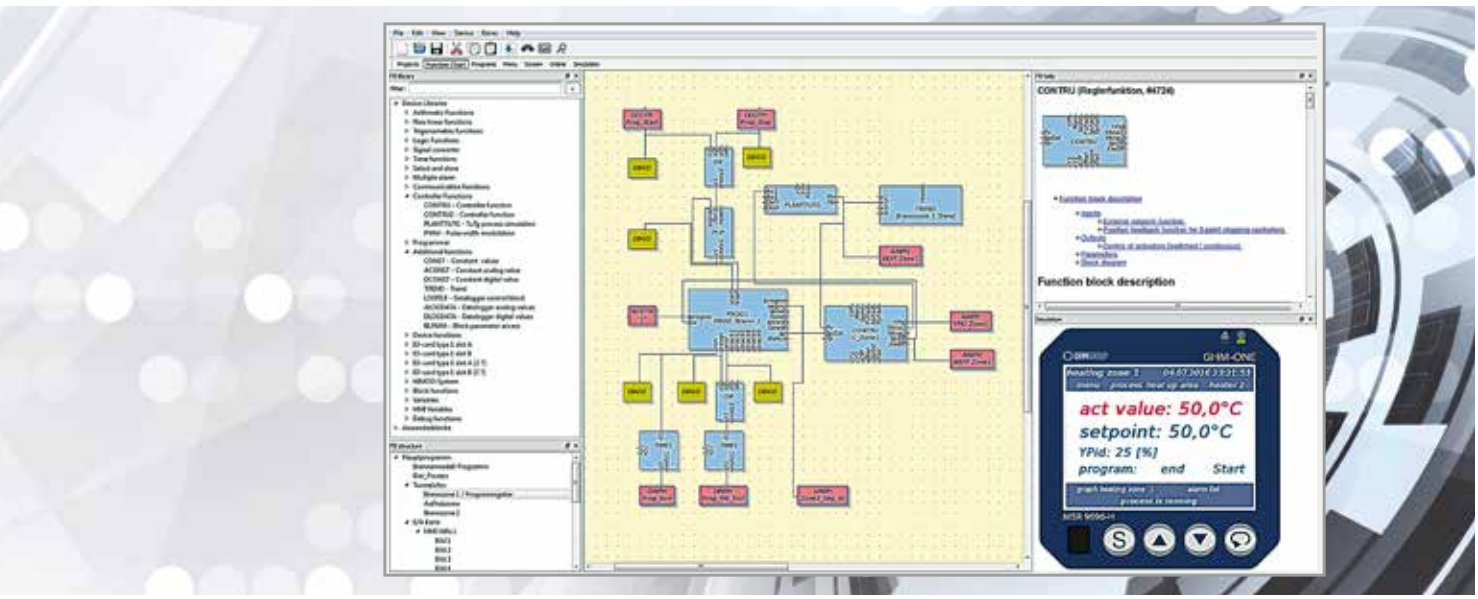
Trend representation on the MSR9696H



Typical process profile

Typical examples of this can be found in the area of:

- Heat treatment shops
- Curing processes
- Sterilisers
- Biological growth processes
- Tempering systems



The editor in CAT allows the testing of individual plant parts

In order to satisfy the requirements in this area, as well as others, it is also necessary to save certain process data and transfer it later to protocol or control systems. The MSR 9696H covers this function with various library elements. For example,

- recording of process values
- creation of batch logs
- transmission of historical data via FTP
- reading of historical data via FTP or USB

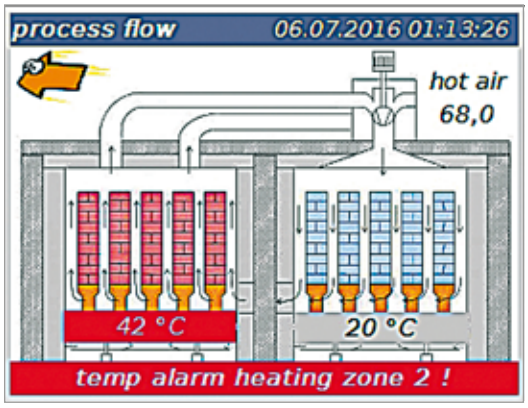
are standard functions which the user only uses and does not have to program.

Individual operating and monitoring concepts

The creation of the pure process control and closed-loop control is not finished yet for modern machine and plant parts. The process technician must give the operator on site the opportunity to effectively monitor and easily operate the plant In addition, the operator must be well informed in the event of an error in order to minimise the downtime of the plant. Standard operating concepts are of little help in this case.
Therefore, the MSR 9696H utilises a concept which makes it possible to individualise the operation and visualisation. For this purpose, the CAT software provides an image editor which makes it possible to realise the widest range of operating and monitoring concepts with a few simple standard functions. In addition to the individual operating pages, there are also standard pages, such as:

- Regulator operation
- Profiler operation
- Trend visualisation
- Parameter dialogue

available in the screen editor. With the combination of standard operating screens and individually designed screens, an efficient interface between operator and process is created very quickly.



Typical process screen

Typical operating screen

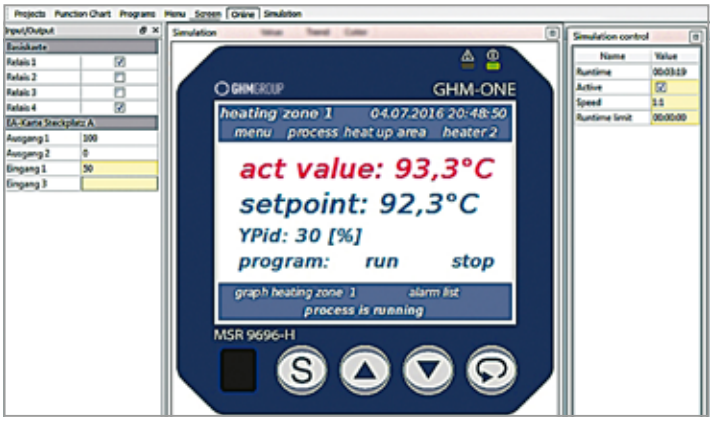
Commissioning and testing made quick and easy

With the creation of an application and its use, the process technician is obviously not finished with their work. The application must still be tested and put into operation at a later time. For this important and often time-consuming phase, the new GHM platform provides various functions which make this phase more efficient.

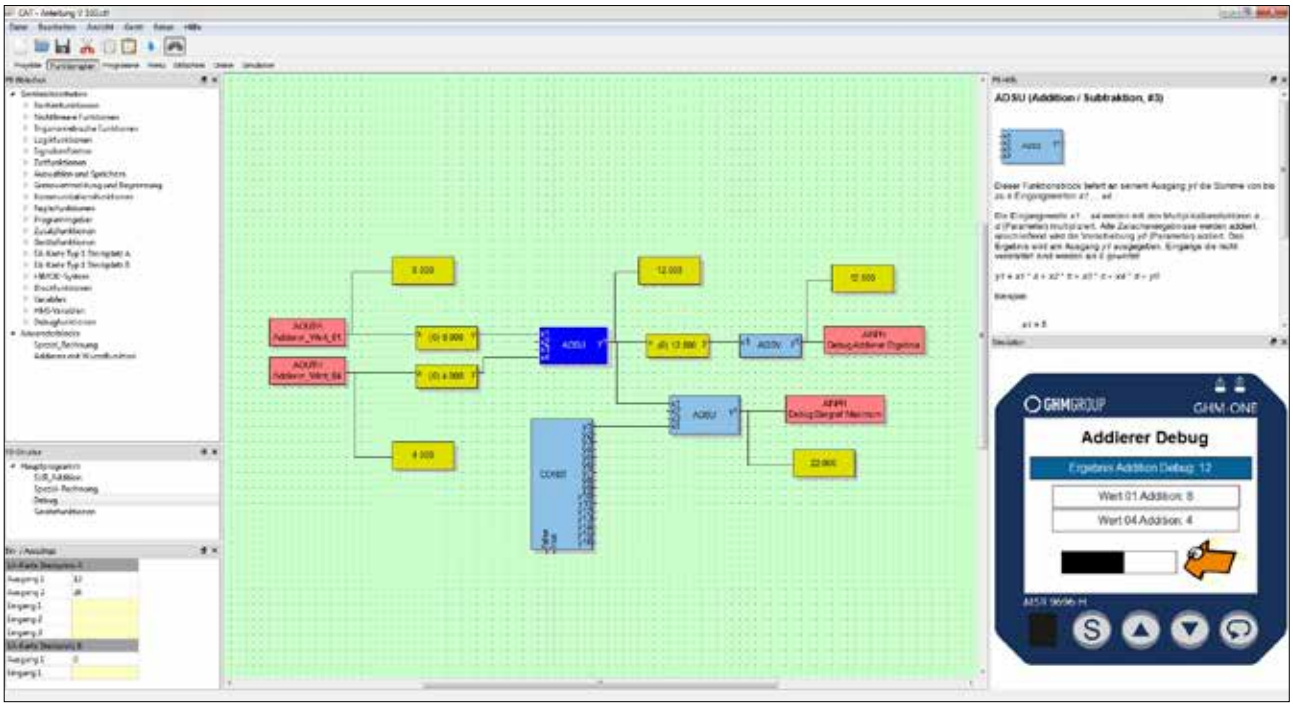
A essential element is the PC simulation of the complete application. The entire application can be tested independently of the actual process on the PC. For this purpose, the CAT software has a simulation environment for the MSR 9696H, as well as for connected I/O assemblies.

With this environment, the user is capable of testing the entire application, including operation on the PC, without endangering the plant. Application testing is performed right at the desktop without risk.

Additional testing functions are available to the user for the local commissioning phase at the plant. An essential component is an integrated online trend function which allows the user to view all analogue and digital signals online in a single trend and thus quickly and easily approve the desired functions. Of course, there are also debugging and various forcing functions available for the testing.



The simulation environment in CAT



The debugging environment with test functions for the entire application




Transducers and isolating amplifiers

The most important basis for a fault-free production process is clean measurements and clear status signals from the process. Moreover the unit signals for automation and measurement data recording are indispensable. Regardless of the size of the plant, errors and problems can often be traced back to flawed signals caused by a division of potentials, ground loops, or interference couplings. The remedy for this is usually the realisation of galvanic isolation of the measurement chain by means of an isolating amplifier.
Our isolating amplifiers are available as active and passive devices in 1, 2, or 3-channel versions for DIN rail mounting. They can be universally equipped enabling the galvanic isolation of the measuring signal for nearly all devices, as well as conversion between the various unit signals. Therefore, it is no problem to quickly receive a 0 - 10 V signal from 4 - 20 mA, whereby the entire process is "cleanly" isolated from a harsh process environment. If no standard signal is available, signals such as Pt100, thermocouple, DMS, or resistance can also be converted with our transducers with direct scaling and into standard signals.

The new GHM generation

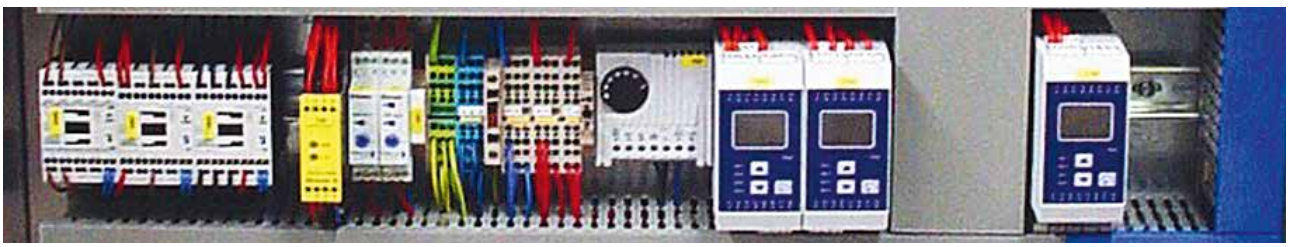
The long-term experience of GHM Messtechnik in a wide range of industrial sectors has given rise to consistent improvement of our isolating amplifiers and transducers. The latest generation of carrier rail mounted devices is provided in a sturdy, space-saving housing which also stands up to harsh environmental conditions. Removable terminals (spring-mounted or screw terminals) enable simple wiring and the easy-to-use DIP switches assure an intuitive, time-saving commissioning. The devices consistently provide high precision and long-term signal stability.
The latest generation of electronics has been consistently designed for energy-efficiency. This leads to energy savings and a reduce generation of heat with a significantly longer service life of the devices.
In operation, the devices distinguish themselves with a simple and useful integrated user interfaces. Depending on the device type, this begins with the simple LED and progresses up to graphic displays. The user interface clearly shows the status of the device and unmistakably displays events in the process.
The concept of our latest generation is precisely geared towards the fulfilment of the cost-efficiency required by modern industry through the entire product life cycle.

Transducer

- Signal conversion
- Scaling
- Linearisation
- Characteristic curve offset
- Voltage
- Current
- Temperature
- Resistance
- Frequency
- Power

Isolating amplifier

- Potential isolator
- Feed isolator
- Switch amplifier
- Isolating amplifier



Switch amplifier

The isolating amplifier and transducer TV125M / ST125M can be used universal

TV125M / ST125 M	NEW
Inputs	Voltage 0(2)..10 V or curent 0(4)..20 mA switchable
Output	Voltage 0(2)..10 V or current 0(4)..20 mA switchable Load < 600 Ohm bzw. >500 Ohm at voltage output
Step response	40 ms
Standard error	< 0,2 % of final value
Auxiliary voltage	85..253 VAC, 20...125 VDC or 24VDC +/-15%
Working temperature	-10..60 °C
Housing dimensions	12,5 x 108 x 114 mm

- Potential isolation and conversion of unit signals
- The universal layout of inputs and the output enable a wide range of uses with just a single device type.
- Safe 3-way galvanic isolation in accordance with the EN61010-1
- Operating display and status messages via two-colour LED
- Removable screw terminals
- wide range power supply AC / DC

Isolating amplifier

The TV125L can be used as a 1-channel universal isolating amplifier

TV125L	
Inputs	Voltage 0..10 V or 2..10 V switchable or current 0..20 mA or 4..20 mA switchable
Output	Current output 0..20 mA or 4..20 mA switchable
Load	< 150 Ohm
Step response	40 ms
Standard error	< 0.2 % of final value
Auxiliary voltage	10 - 30 V DC, < 0,5 V A and 20..250 V AC, (47..63Hz), max.1.5 W
Working temperature	-10..60 °C
Housing dimensions	12,5 x 108 x 114 mm

- Potential isolation and conversion of unit signals
- The universal layout of inputs and the output enable a wide range of uses with just a single device type.
- Safe 3-way galvanic isolation in accordance with the EN61010-1 requirements for amplified isolation
- Operating display and status messages via two-colour LED
- Removable screw terminals

Switch amplifier

The isolating amplifiers TS125 and TS225 are available in 1- and 2-channel versions.

TS125 / TS225	
Inputs	1 or 2 measuring inputs in accordance with EN60947-5-6 Namur
Outputs	TS125: 1 or 2 relay outputs as **normally closed** TS225: 1 or 2 relay outputs as **transformers** 250V AC <2 A 30V DC <2 A
Switching frequency	Maximum 5 Hz
Auxiliary voltage	24 V DC +/-15% max. 1,5 W or wide range power supply 20..125 V DC and 20..250 V AC, (47..63Hz), max.1.5 W
Working temperature	-10..60 °C
Housing dimensions	TS125: 12.5 x 108 x 114 mm TS225: 22.5 x 108 x 114 mm

- Isolation of digital switching signals
- Functional safety up to SIL2 EN61508
- Optionally with intrinsically safe inputs
- Optionally with wide range power supply unit
- Galvanic isolation in accordance with the requirements for amplified isolation EN60664
- Removable coded screw terminals

Transducer

The PMT50 is available in different variants for cost-efficient adaptation to the process

PMT50	
Input	PMT50-1: 0/2..10 V, 0/4..20 mA PMT50-2: Resistance measurement 0..100 kΩ Potentiometer measurement 1..100 kΩ PMT50-3: Pt100 and thermocouples
Outputs	Maximum 4 relay outputs: 250 V AC < 2 A / 300 V DC < 2 A Analogue output: 0/4..20 mA Load ≤ 500 Ω or 0/2..10 V Load ≤ 500 Ω
Basic precision	< 0,1 % (except for PMT50-2 < 0,2%)
Transmitter feed	24V DC maximum 30 mA (only PMT50-1)
Auxiliary voltage	230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 %
Working temperature	-10..55°C
Housing dimensions	50 x 100 x 110 mm

- PMT50-1 transducer for standard signals, PMT50-2 for resistance measurement, and PMT50-3 for temperature signals
- Signal conversion / linearisation / characteristic curve offset
- Linearisation and/or characteristic curve offset with 32 supporting points
- Graphic LCD display with 128 x 64 pixels
- Automatic error recognition in the measurement circuit
- Optionally with intrinsically safe inputs
- Optionally with Modbus or Profibus DP field bus connection

Transducers

The DMS is the multi-talent for force measurement technology

DMS50	
Input	DMS - bridge sensitivity: 0,100..5,000 mV/V
Outputs	Maximum 4 relay outputs: 250 V AC < 2 A / 300 V DC < 2 A Analogue output: 0/4..20 mA Load ≤ 500 Ω or 0/2..10 V Load ≤ 500 Ω
Basic precision	< 0,025 %
Bridge - feed	2.5 V/5 V/10 V DC, programmable; max. 120 mA
Bridge sensitivity	0,100..5,000 mV/V
Auxiliary voltage	230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 %
Working temperature	-10..55 °C
Housing dimensions	50 x 100 x 110 mm

- The DMS50 converts the output signal from the DMS load cell into a standard signal
- Bridge sensitivity 0,1..5,0 mV/V
- Tare function (internal/external)
- Integrated bridge feed
- Teach-in function for quick configuration
- Automatic error recognition in the measurement circuit
- Optional with intrinsically safe inputs
- Optionally with Modbus or Profibus DP field bus connection

Overview. GHM isolating amplifiers and transducers

Isolating amplifiers


TV501Ex


TW500


TV500Ex


TS500

Transducers


CT500


VT500


WM500


RT500


MU500Ex

Refer to the tables on the following pages for further product details.




Isolating amplifiers

Signal		Input				Output			
Equipment		0/4..20 mA	0/2..10 V DC	Transmitter feed	Switching contact (Namur)	0/4..20 mA	0/2 ..10 V DC	Switching output	Approval
ST500		●	●	●		●	●		
TV500		●	●			●	●		
ST500Ex		●●	●●	●●		●	●		Ex
TV500Ex		●●	●●			●	●		Ex
TV500H		●	●			●	●		
TV500L		●	●			●	●		
TV500P		●	●			●			
TW500		●				●			
TV501Ex		●	●			●●	●●		Ex
TS500					●			●	
TS500Ex					●●			●	Ex
NEW TV125M		●●				●	●		Ex SIL2
NEW ST125M		●●	●●	●●		●	●		Ex SIL2
TV125L		●	●			●			
TS125					●●			●	Ex SIL2
TS225					●●			●	Ex SIL2
Accessories									
Safety barrier 9001		●							Ex

The details for all products can be found online at www.ghm-group.de

● = intrinsically safe

Transducers

Gerätetyp		Input: Voltage	Current	Power	Frequency	Standard signals 0/4..20 mA, 0/2..10 V DC	DMS	Resistance	Profibus	Modbus	Temperature Pt 100	Temperature Thermocouple	Approval
Carrier rail mounted devices													
CT500P			●										
CT500			●										
CVT500		●	●										
VT500		●											
WM500				●									
AF500						●							
FT500					●								
RT500								●					
PMT50						●			●	●	●	●	
PMT50Ex						●			●	●	●	●	Ex
NEW MU125								●			●	●	
NEW UT125		●	●					●			●	●	
MU500L											●		
MU500											●		
MU500Ex											●		Ex
TC500												●	
DMS50							●		●	●			
DMS50Ex							●		●	●			Ex
Head transmitter													
T03 BU/ WE											●		
GITT01		●						●			●	●	

The details for all products can be found online at www.ghm-group.de

Indicators and field measurement devices

The modern world of process visualisation is now frequently countersigned by SCADA systems. However, they are usually far away from the actual processes. Standard indicators are indispensable when it comes to staying on top of processes and keeping an eye on production in terms of quality and the general production process. Visualisation is one of the essential factors for monitoring processes and assuring continuous operation.

The flexible world of GHM indicators

GHM Messtechnik offers indicators for front panel installation or local / field installation. These indicators can process nearly all measurements without converters.
The consistently implemented operating philosophy is the basis for the quick configuration via front buttons or even more easily via DIP switch. The wide range of variants of relays and/or analogue outputs enables a cost-efficient use of indicators. In addition, indicators are also available with protection rating IP65 for use in harsh environments.

- Speed
- Pressure
- Flow
- Processing time
- conductivity
- Counter
- pH value
- Productivity
- Temperature
- Fill quantity
- Standard signals

Indicators in 24 x 48 format

Compact indicator with multifunctional input

GIA 20 EB	
Input	Standard signals, Pt100, Pt1000, thermocouples or frequency
Outputs	2 switching outputs
Display / display range	4-digit LED display
Precision	Standard signal: < 0,2 % (at 0..50 mV: < 0,3 %) Resistance thermometer: < 0,5 % Thermocouples: < 0,3 % FS (with Type S: < 0,5 % FS ±1Digit) Frequency: < 0,2 %
Protection rating	Front IP54 (optional IP65)
Auxiliary voltage	9..28 V DC
Working temperature	-20..+50 °C
Housing dimensions	24 x 48 x 65 mm

- The GIA 20 EB is a compact display, monitoring, and switching device
- Self-monitoring and diagnostic system
- 10 mm LED display
- Min/Max value buffer
- Removable terminals

Indicators in 36 x 72 format

Compact indicator with multifunctional input

GIR300	NEW
Input	Universal input for standard signal, resistance thermometer, thermocouples, frequency, speed, or counters
Outputs	2 potential-free relay switching outputs, Relay 1: normally open / Relay 2: normally closed
Display / display range	4-digit LED display
Precision	Standard signal: < 0,2 % (at 0..50 mV: < 0,3 %) Resistance thermometer: < 0,5 % Thermocouples: < 0,3 % FS (with Type S: < 0,5 % FS ±1Digit) Frequency: < 0,1 %
Protection rating	Front IP54
Auxiliary voltage	9..28 V DC
Working temperature	-20..+50 °C
Housing dimensions	36 x 72 x 75 mm

- The GIR 300 is a universally applicable display, monitoring, and switching device
- Self-monitoring and diagnostic system
- Limit function
- Digital filter
- Min/Max value buffer
- Alarm delay

Indicators in 96 x 48 format

With its universal design, the Economy Panelmeter EP9648 is suitable for numerous measurement tasks

EP9648	
Input	Current input: 0/4..20 mA Voltage output: 0..10 V Pt100: -100..+400 °C
Outputs	Voltage: 0..10 V DC, linearised, short-circuit-proof max. 5 mA
Display / display range	LED 14,2 mm yellow, green, blue or 20,3mm red
Precision	0,1 % (0,2% Pt100)
Protection rating	Front IP65
Auxiliary voltage	230 / 115 V AC 50/60 Hz ±10 % 24 V DC ± 20 %
Working temperature	-10..+60 °C
Housing dimensions	96 x 48 x 100 mm

- The EP9648 is a cost-optimised indicator for standard signals and Pt100 sensors
- LED display 14.2 mm red, yellow, green or blue, and/or 20.3 mm red
- Freely programmable display range and decimal point
- Optionally available with automatic dimming of display brightness

Indicators in 96 x 48 format

The X9648 indicator series includes a wide spectrum of input variants for individual adaptation to process requirements. The S9648 is shown as an example.

S9648	
Input	Current: 0/4..20 mA Ri = 10 Ω Voltage: 0..10 V Ri = 100 Ω Potentiometer: 0..1 kΩ / 100 kΩ
Outputs	Relay: Changeover contact < 250 V AC < 250 VA < 2 A, < 300 V DC < 50 W < 2 A Transistor: max. 35 V AC / DC max. 100 mA, with electronic current limiting Analogue: 0/4..20 mA Load ≤ 500 Ω; 0/2..10 V
Display / display range	LED red, 14,2 mm with a display scope of ±9999(0) digit with leading zero suppression
Precision	< 0,1 %
Protection rating	Front IP65
Auxiliary voltage	230 V AC ±10 %; 115 V AC ± 10 %, 24 V AC ±10 % or 24 V DC ± 15 %
Working temperature	-10..+55 °C
Housing dimensions	96 x 48 x 100 mm

- The Standard Signal Panelmeter S9648 is designed for the display of measured values which are available as a standard signal
- Maximum of 4 outputs as relay changeover or transistor output
- Integrated transmitter feed
- 4-digit LED display 14.2 mm
- Display range and decimal position are freely selectable
- Additional "0" possible, whereby the display scope is expanded to ±9999(0) digits

Indicator in field housing

The X1010 indicator series includes a wide spectrum of input variants for individual adaptation to process requirements.
The S1010 is shown as an example.

S1010	
Input	Current: 0/4 – 20 mA Ri = 10 Ω Voltage: 0..10 V Ri = 100 Ω Potentiometer: 0..1 kΩ / 100 kΩ
Outputs	Relay: Changeover contact < 250 V AC < 250 VA < 2 A, < 300 V DC < 50 W < 2 A Analogue: 0/4..20 mA Load ≤ 500 Ω; 0/2..10 V
Display / display range	LED red, 14,2 mm with a display scope of ±9999(0) digits with leading zero suppression
Precision	< 0,1 %
Protection rating	IP65
Auxiliary voltage	230 V AC ±10 %; 115 V AC ± 10 %, 24 V AC ±10 % or 24 V DC ± 15 %
Working temperature	-10..+55 °C
Housing dimensions	96 x 48 x 100 mm

- The Standard Signal Panelmeter S1010 is designed for the display of measured values which area available as a standard signal
- Maximum 2 outputs as relay changeover
- 4-digit LED display 14.2 mm
- Display range and decimal position are freely selectable
- Additional "0" possible, whereby the display scope is expanded to ±9999(0) digits
- Field housing with hinged cover


BA4824


BCD4824


DP4824A


DP4848A


DP4824B


SP4824


GIA0420 and GIA 0420 VO


BA7224N


BCD7224


BA9624 and BA9624B


GA9648


SP9648


TA9648


DF9648 and PR9648


A9648


V9648


DR9648


SZ9648


UZ9648


UZ1010


TA1010


DR1010 and PR1010


Integra 1530


migra SC/MC


migan

	Measuring principle / function												
Device type	Monitoring	BCD	Voltage	Current	Power	Resistance	DMS	Tempera-ture	Pulse/ frequency	Speed/ flow	Quantity/ fill level	Metering	0/4..20 mA 0/2..10 V DC
Panelmeter DIN 48x24													
BA4824													●
BCD4824		●											
DP4824A								●					●
DP4824B													●
SP4824													●
GIA0420	●												●
DP4848A								●					●
Panelmeter DIN 72x24													
BA7224													●
BCD7224		●											
Panelmeter DIN 72x36													
GIR300	●							●	●	●		●	●
Panelmeter DIN 96x24													
BA9624													●
BA9624B	●												●
Panelmeter DIN 96x48													
GA9648								●	●	●		●	●
EP9648								●					●
SP9648													●
S9648	●												●
TA9648	●										●		
DF9648	●									●			
A9648	●			●									
V9648	●		●										
DR9648	●								●	●			
PR9648	●								●	●	●		
SZ9648	●								●			●	
UZ9648	●								●			●	
T9648	●							●					
DMS9648	●						●						
LF9648	●					●							
Field housing													
S1010	●												●
TA1010	●										●		
DR1010	●								●	●			
PR1010	●								●	●	●		
UZ1010	●								●			●	
GIA0420 VO													●
LF1010	●					●							
Special devices													
Integra 1530	●		●	●	●								
migra SC/MC									●	●		●	
migan										●			●

The details for all products can be found online at www.ghm-group.de

Switching and monitoring devices

The protection of people, the product, and machinery has been based on a number of necessary risk considerations since long before the introduction of the Machinery Directive. In this connection, there are various approaches to how the necessary protection can be achieved. It begins with simple switching devices which are not subject to any standards, progressing to devices subject to DIN EN 14597, such as temperature limiters, and extends to devices subject to functional safety in accordance with DIN EN 61 508. The owner is responsible for making the appropriate selection in the scope of a risk assessment.
In this connection, the owner of a machine (plant) must take into account that the risk assessment must take place over the entire life cycle of a machine. Therefore, safety issues involved with retrofitting and expansion are also taken into consideration.
GHM Messtechnik offers a variety of devices which could be used. We would be happy to assist with the selection of a suitable device.

The GHM answer to safety issues

GHM switching and monitoring devices guarantee the safe operation of a plant. Beginning with simple limit value switches, the programme also includes isolation monitors and safety temperature limiters with SIL2 classification, as well as temperature limiters in accordance with DIN EN 14597. Monitoring in Ex areas is also necessary, and so our devices also accommodate the connection of signals from the Ex area. The devices are freely configurable with a membrane keypad and display and are freely adaptable in their function. In order to guarantee the specific standards and regulations, GHM also offers the matching sensors for the monitoring devices.

- Limit value switch
- Isolation monitor
- Network monitoring
- Safety temperature limiter
- Temperature limiter

Limit value switch

Der GS125 is designed as a standard limit value switch, 16 selectable measuring ranges switchable via DIP switches, 2 limit value adustable with setting wheels on the front side.

GS125	
Input	0/4..20 mA, 0/2..10 V DC, Poti, Pt100, thermocouple
Outputs	max. 2 relay outputs: 250 V AC < 2 A / 125 V DC < 2 A Analogue output: 0/4..20 mA, Load ≤ 500 Ω or
Display range	2-colored illuminated scales, colour changing of the scale lighting depending of the switch status
Auxiliary voltage	20..125 VDC, 20..253 VAC or 24 VDC +/- 15%
Working temperature	-10..+60 °C
Housing dimensions	12,5 x 114 x 108 mm

- The GS125 limit value switch is designed for the monitoring of measured values free from any standard
- Universal input
- Maximum 2 alarm outputs in universal connection
- Illuminated scales (green/red)

Limit value switch

The MR50 is designed as a standard limit value switch. With its fully graphic display, units and other information can be shown in plain text

MR50	
Input	0/4..20 mA or 0/2..10 V
Outputs	Maximum 4 relay outputs: 250 V AC < 2 A / 300 V DC < 2 A Analogue output: 0/4..20 mA Load ≤ 500 Ω or 0/2..10 V Load ≤ 500 Ω
Display / display range	Graphic LCD display with 128 x 64 pixels, with white background lighting
Precision	0,2 %
Protection rating	IP30
Auxiliary voltage	230 V AC ±10 %, 115 V AC ±10 % 24 V DC ±15 %
Working temperature	-10..+55 °C
Housing dimensions	50 x 100 x 110 mm

- The MR50 limit value switch is designed for the monitoring of measured values free from any standard
- Input for standard signals
- Maximum 4 alarm outputs as changeover relay
- Fully graphic display
- Galvanically isolated analogue output
- Optionally available with intrinsically safe inputs (only 2 relay outputs possible)
- Integrated transmitter feed

Temperature limiter

The TB225 can be used as a temperature limiter or temperature monitor according to EN14597.

TB225	
Input	0/4..20 mA oder 0/2..10 V DC or 1 Pt100 or double thermocouple Digital input for reset function
Outputs	2 relay changeovers: < 250 V AC < 500 VA < 2 A / < 30 V DC < 60W < 2 A Analogue output: 0/4..20 mA or 0/2..10 V
Display / display range	Graphic LC display with 32 x 90 pixels, with white/red background lighting
Precision	< 0,3 %
Protection rating	IP20
Auxiliary voltage	18..230 V AC/DC
Working temperature	-10..+55 °C
Housing dimensions	22.5 x 108 x 114 mm

- The TB225 temperature limiter is used wherever thermal processes must be monitored and the plant must be brought to a safe operating state in case of a fault.

- Fully graphic display
- "White / Red" display colour change in case of alarm
- 3-way isolation
- Wide range power supply unit

Safety temperature limiter

The STL50 conforms to the requirements in accordance with EN14597 and SIL 2

STL50	
Input	1 Pt100 or double thermocouple Digital input for reset function
Outputs	Relay: Changeover contact <250 V AC <200 VA <2 A / <250 VDC <80 W <2 A
Display / display range	Graphic LC display with 128 x 64 pixels, with white background lighting
Precision	< 0,5 %
Protection rating	IP20
Auxiliary voltage	230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 %
Working temperature	-10..+55 °C
Housing dimensions	50 x 100 x 110 mm

- The STL50 safety temperature limiter is used wherever there is an increased requirement of the safety of a plant.
- Certified according to DIN EN 14597 SIL 2
- Optionally with intrinsically safe inputs

- Fully graphic display
- Cause of error in plain text
- Additional LEDs for alarm
- Self-diagnosis function

Isolation monitor

The IW1000

IW1000	
Input	0..690 V AC/DC; from UN >400 V with terminal cover
Rated frequency	16 2/3..400 Hz
Switching hysteresis	10..100 % of the switching point configurable
System leakage capacitance	max. 500 µF
Outputs	Relay: Changeover contact 250V AC < 250VA < 5A 300V DC < 50W < 2A
Display / display range	LCD dot matrix, 2 lines of 8 characters each, Character height 5 mm, background lighting
Precision	± 5 % ± 1 kΩ in the range 1 kΩ..5 MΩ
Protection rating	IP20
Auxiliary voltage	230 V AC 115 V AC 24 V AC ±10 % 16,8..33,6 V DC 10,8..15,6 V DC
Working temperature	-10..+55 °C
Housing dimensions	55 x 75 x 110 mm

- The IW1000 isolation monitor is designed for isolation monitoring in systems with unearthed voltage supply
- Monitoring of AC and DC systems

- Optional in variants for railway vehicles and medical technology
- Time-optimised pulse measurement process
- Automated and manual self test
- Acoustic alarm in case of device fault

Switching and monitoring devices

Device type	Function	Input	Measurement / display range
MR50	Limit value switch, 4 alarm outputs, Analogue output	0/4..20 mA, 0/2..10 V DC	±9999 Digit
MR50Ex	Limit value switch, 2 alarm outputs, Analogue output	0/4..20 mA, 0/2..10 V DC	±9999 Digit
TG50	Limit value switch, 4 alarm outputs, Analogue output	Pt100, Pt1000, Thermoelement Type: J, K, N, S	-100...+600°C , -100...+300°C, -150...+1600°C
TG50Ex	Limit value switch, 2 alarm outputs, Analogue output	Pt100, Pt1000, Thermocouple Type: J, K, N, S	-100...+600°C , -100...+300°C, -150...+1600°C
BW500	Battery monitor, 1 alarm output	12, 24, 48, 60 V DC	11..14 V 22..28 V 44..56 V 55..70 V
GS125	Limit value switch, max. 2 alarm outputs, Analogue output	0/4..20 mA, 0/2..10 V DC, Poti, Pt100 Thermocouple J, K, S	16 selectable measuring ranges, z.B. 0..100 %; -50..50°C; 0...1500°C
GS500	Limit value switch, 1 alarm output	0/4..20 mA, 0/2..10 V DC	0..100 %
GS1000	Limit value switch, 2 alarm outputs, Analogue output	0/4..20 mA, 0/2..10 V DC Pt100 Thermocouple J, K, S	0..100 % -50..600°C 0...1600°C
CVG500	Limit value switch, 1 alarm output	0..1 A AC / 0..5 A AC 0..125 V AC / 0..250 V AC	0..100 %
STL50	Safety temperature limiter/ monitor, 1 alarm output	Pt100, Thermocouple J, K, N, S	-100..600 °C -100..1600 °C
STL50Ex	Safety temperature limiter/ monitor, 1 alarm output	Pt100, Thermocouple J, K, N, S	-100..600 °C -100..1600 °C
IW1000	Isolation monitor	Isolation resistance	1 kΩ..5,5 MΩ
TB225	Temperature limiter/ monitor, 2 alarm outputs, Analogue output	0/4..20 mA, 0/2..10 V DC Pt100, Thermocouple J, K, N, S	0..100 % -100..600 °C -100..1600 °C

The details for all products can be found online at www.ghm-group.de

GS1000
Limit value switch,
2 alarm outputs,
Analogue output

BW500
Battery monitor,
1 alarm output

CVG500
Limit value switch,
1 alarm output

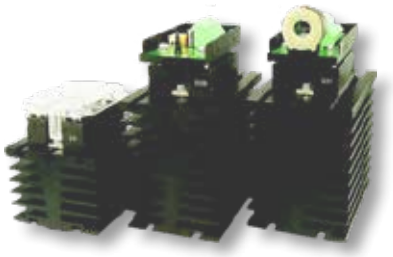
GS500
Limit value switch,
1 alarm output

MR50Ex
Limit value switch,
2 alarm outputs,
Analogue output

Power electronics

The power electronics as a converter of electrical energy is assuming an increasingly central role in every switch cabinet. Direct current supplies with high-quality and faultlessly switching actuators close the circuit of feedback control processes and guarantee stable processes. We offer effective power modules ranging from short-circuit-proof power supply units to 3-phase thyristor power controllers enable the "contact-free" intelligent switching of high currents.

Power modules



The LM series of power modules can switch loads of up to 80 amperes

	LM series
Control circuit	3-32 DC
Load circuit	24V AC to 530 V AC
Load currents	20, 40, and 80 A
Test voltage	4 kVeff
Approval	CE, UL and CSA
Installation	Carrier rail mounting TS35
Dimensions	Type-dependent

- Input / output galvanic isolation
- Zero-voltage switch
- Suitable for loads of up to cosφ 0.5
- Isolated housing
- Aluminium cooling element in block design

Current monitoring

With a current measurement range of 1..80 A, the H2CM covers a broad spectrum.

Heat current monitoring module	H2CM
Metering range	1..80 A, 50/60 Hz
Alarm output	PNP transistor open collector
Alarm delay	0..60 seconds adjustable
Control input	From < 1 V DC, On 3..28 V DC
Auxiliary voltage	10..30 V DC
Working temperature	-10..+60 °C
Dimensions	46 x 75 x 32 mm

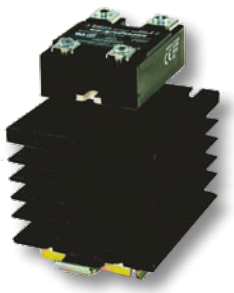
- H2CM heat current monitoring modules designed for quality assurance in process engineering
- Input / output galvanic isolation
- Bistable control circuit

3 ~ SSR relay

1 ~ SSR relay

CMRD

CKRD2430



Cooling element K20, K40

Device overview

Device type	Function	Input	Measurement / display range
Power supplies			
NG1000	Power supply	24..230 V AC/DC	5..24 V max.2 A
DR	Power supply	115/230 V AC	24 V DC, max. 10 A
Moduls			
LM	contactless power modules	driver circuit 3..28 V DC	load circuit 48..530 V AC, max. 80 A
CKRD2340	contactless power modules	driver circuit 4,5..32V DC	load circuit 24..280 V AC, max. 65 A
CMRD	contactless power modules	driver circuit 4,5..32 V DC	load circuit 48..660 V AC, max. 30 A
D2425	SSR-Relay	driver circuit 3..32 V DC	load circuit 24..280 V AC, max. 25 A
D2450	SSR-Relay	driver circuit 3..32 V DC	load circuit 24..280 V AC, max. 45 A
HD4850	SSR-Relay	driver circuit 3..32 V DC	load circuit 48..530 V AC, max. 50 A
SC869110	SSR-Relay	driver circuit 3..32 V DC	load circuit 48..530 V AC, max. 125 A
D53TP50D	SSR-Relay	driver circuit 3..32 V DC	load circuit 48..530 V AC, max. 50 A
H2CM	heating current - monitoring module	driver circuit 3..28 V DC	dependent from SSR-Relay
STM40	control module for SSR-Relay	driver circuit 0/4..20 mA, 0..10 V Potentiometer	dependent from SSR-Relay
STU500	control module for SSR-Relay DIN-rail housing	driver circuit 0/4..20 mA, 0..10 V Potentiometer	dependent from SSR-Relay
DC30-D3	SSR-Relay for inductive loads	driver circuit 3..24 V DC	load circuit max. 30 V DC, 3 A
K20, K40	cooling element for SSR-Relays		
Switching relays			
RT424	coupling Relay	24 V DC, 24 V..230 V AC	2 Relay changer max. 8 A
PT570	coupling Relay	24 V DC, 24 V..230V AC	4 Relay changer max. 8 A
Current transformer			
ASW	moulded	50..1000 A AC	1/5 A AC
WSW	winding current transformers	1..40 A AC	1/5 A AC

The details for all products can be found online at www.ghm-group.de

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.

Our brands.

GHMGROUP

GREISINGER	HONSBERG	Martens	DeltaOHM	VAL.CO
Portable Instruments	Industrial Sensors	Industrial Electronics	Environmental Technology	Industrial Sensors

Our strategic business areas.

Portable Instruments

- 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

Industrial Sensors & Electronics

- 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

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

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