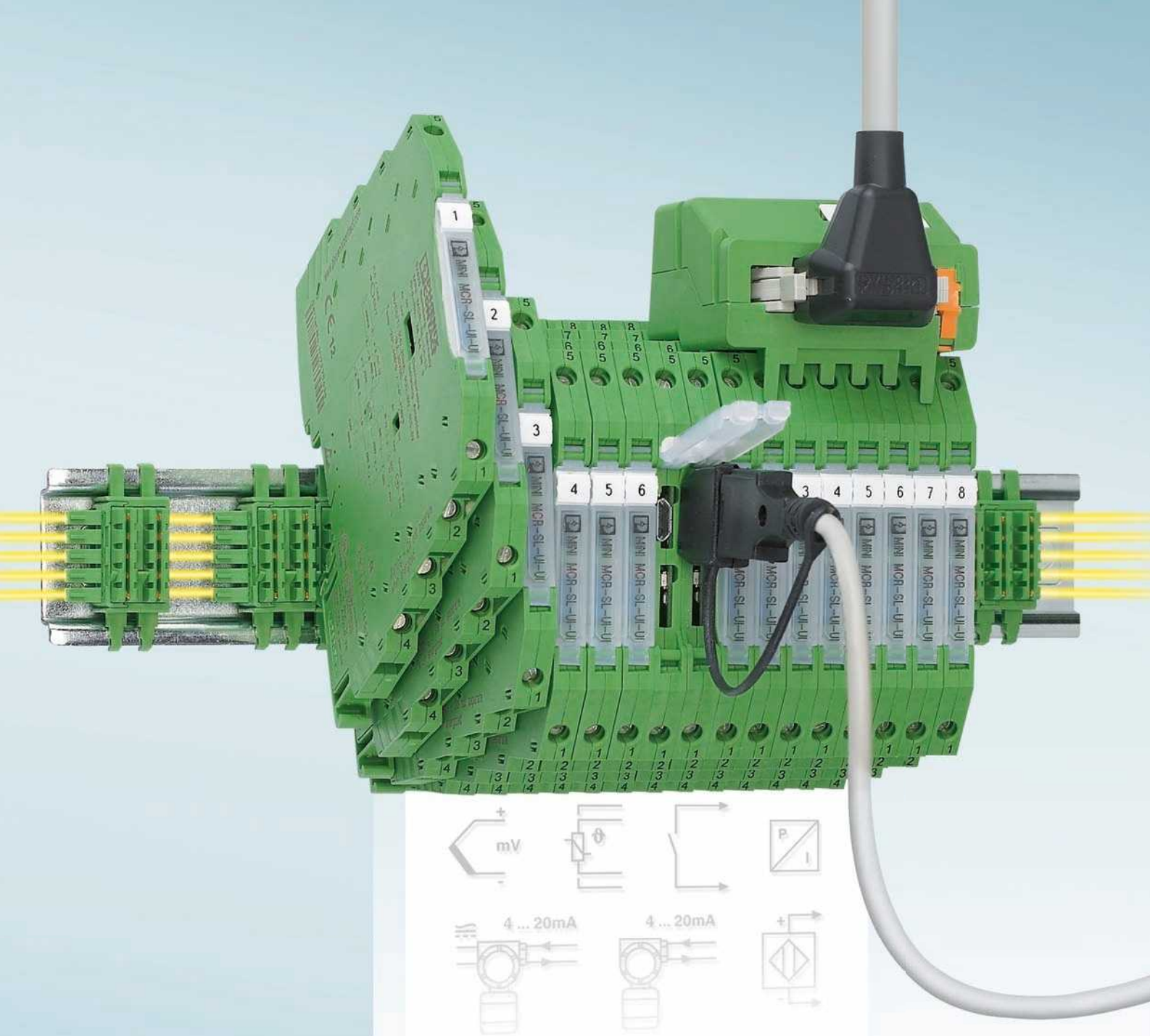


Highly compact signal conditioners

MINI Analog

PHOENIX CONTACT
INSPIRING INNOVATIONS

Highly compact signal conditioners – MINI Analog creates space in your control cabinet

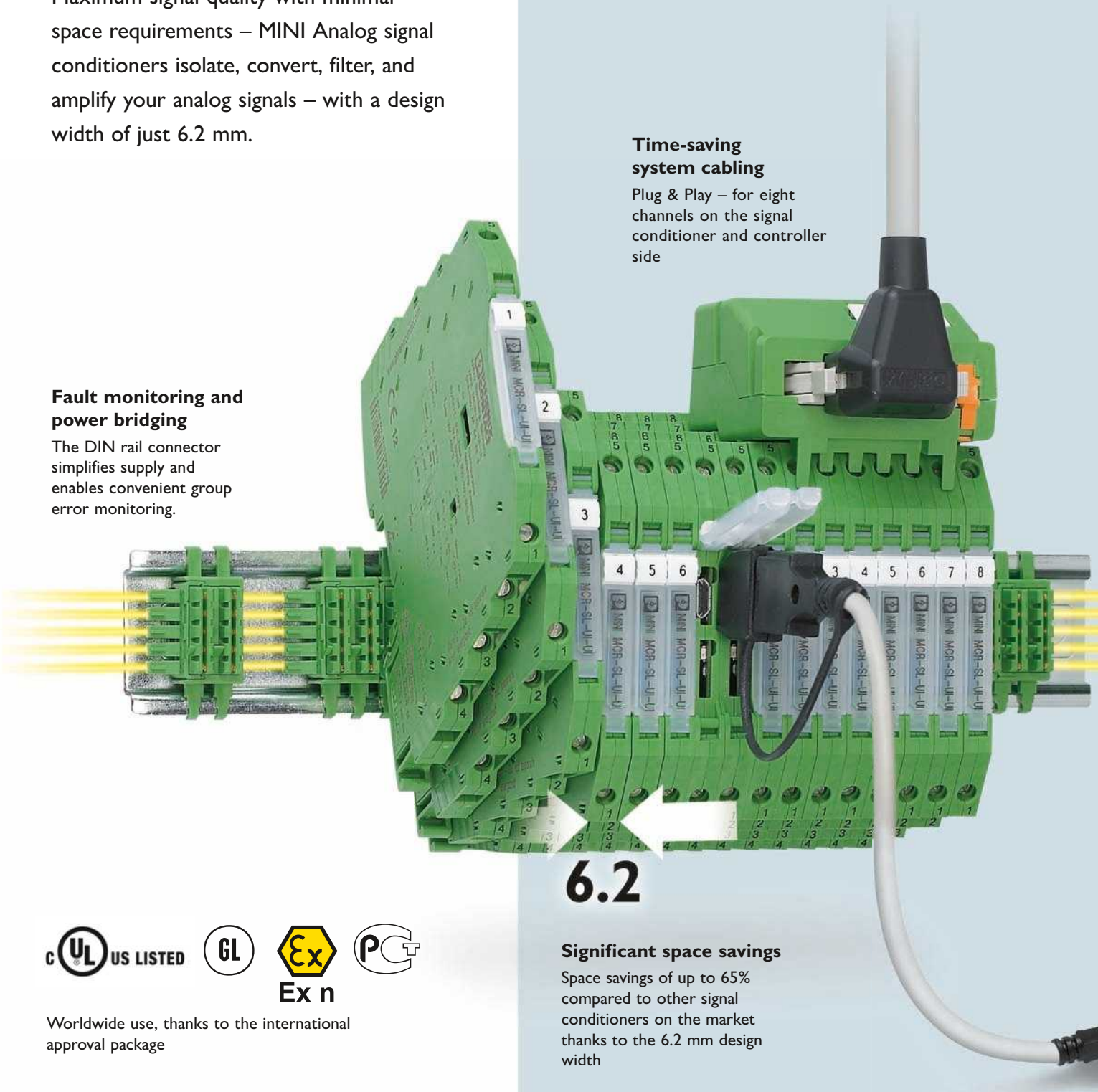
Maximum signal quality with minimal space requirements – MINI Analog signal conditioners isolate, convert, filter, and amplify your analog signals – with a design width of just 6.2 mm.

Time-saving system cabling

Plug & Play – for eight channels on the signal conditioner and controller side

Fault monitoring and power bridging

The DIN rail connector simplifies supply and enables convenient group error monitoring.



Ex n

Worldwide use, thanks to the international approval package

Significant space savings

Space savings of up to 65% compared to other signal conditioners on the market thanks to the 6.2 mm design width

Convenient configuration and monitoring

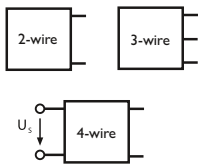
The configurable MINI Analog modules are easy to set with DIP switches – without the need for any software. Alternatively, Phoenix Contact can make the settings based on your individual ordering information.

For enhanced functionality and monitoring, you can also configure the modules with the robust S-Port interface conveniently using a free-of-charge software interface. Here you can choose between three solutions:

1. Standalone ANALOG-CONF software
2. FDT/DTM software package
3. Standalone DTMs, allowing you to use your existing FDT frame application

Product overview

Analog IN/ Analog OUT

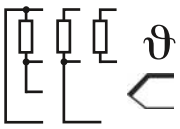


Signal conditioners

- Universal and standard 3-way isolators
- 3-way repeater power supplies
- 4-way signal duplicators
- 2-way passive isolators
- 2-way loop-powered isolators

Page **8**

Temperature

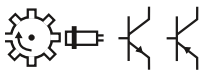


Temperature transducers

- Universal and standard measuring transducers for thermocouples
- Universal and standard measuring transducers for resistance thermometers
- Loop-powered PT100 measuring transducers

Page **10**

Frequency

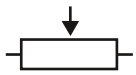


Frequency transducers

- Frequency transducers
- Analog frequency transducers

Page **11**

Potentiometers

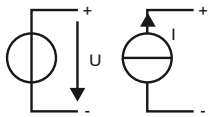


Potentiometer measuring transducers

- with automatic potentiometer detection

Page **11**

Limit values

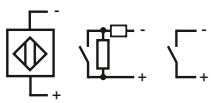


Threshold value switches

- Threshold value switches with PDT relay

Page **11**

Digital IN



NAMUR signal conditioners

- NAMUR signal conditioners with relay output

Page **11**

Accessories

- Supply components
- Fault monitoring module
- System cabling
- Multiplexer
- Labeling material

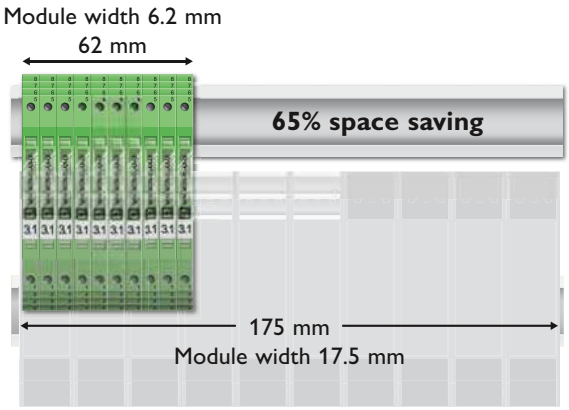
Page **14**

Highly compact MINI Analog signal conditioners – your advantages

The product range provides maximum efficiency in terms of

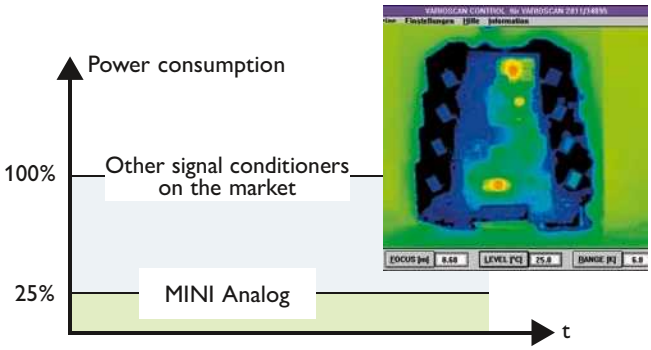
- Space requirements
- Costs
- Power consumption
- Planning and installation
- Configuration

Maximum signal quality with minimal space requirements



With the narrow MINI Analog modules, you can save up to 65% space compared to other signal conditioners on the market that have a design width of 12.5 mm to 22.5 mm.

High energy efficiency and long service life



With MINI Analog, the energy-efficient design of your automation processes starts in the control cabinet:

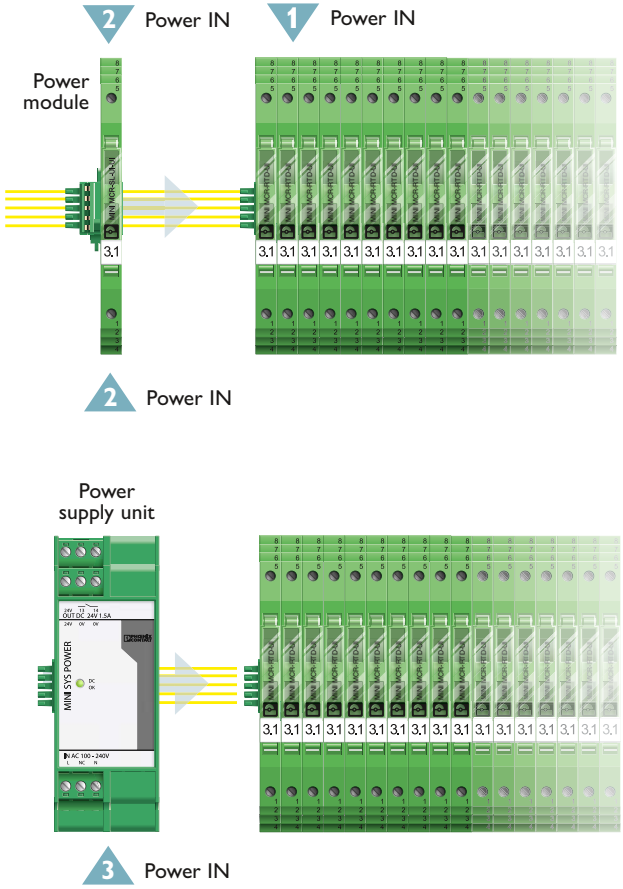
The modules have low power consumption, thanks to their innovative circuit design. As a result the modules heat up less and therefore have a longer life. You can therefore achieve a high level of operational reliability across the entire operating temperature range, even when arranged in series.

Power supply – flexible and easy

MINI Analog signal conditioners offer a system solution for supplying devices: use the DIN rail connector to bridge the DC supply voltage. This simplifies wiring, system expansion or module replacement, even during operation.

The DIN rail connector gives you three device supply options:

1. Direct DC supply at any MINI Analog module:
   - For up to 16 MINI Analog modules
   - No additional accessories required other than the DIN rail connector
2. Via a power module of the same shape:
   - For up to 80 MINI Analog modules
   - Also allows redundant supply and supply monitoring
3. Via the system power supply unit with wide range input 85…264 V AC:
   - If no DC supply is available
   - For up to 60 MINI Analog modules

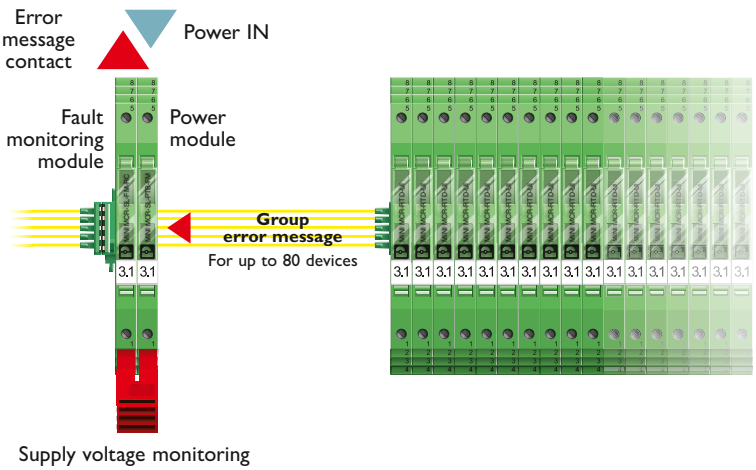


Convenient error evaluation with fault monitoring

Fault monitoring is a modular solution for convenient error evaluation in multi-channel applications. Depending on the module type, the following errors can be indicated by means of a group error message:

- Measuring range overshot
- Measuring range undershot
- Open circuit
- Short circuit
- Module error

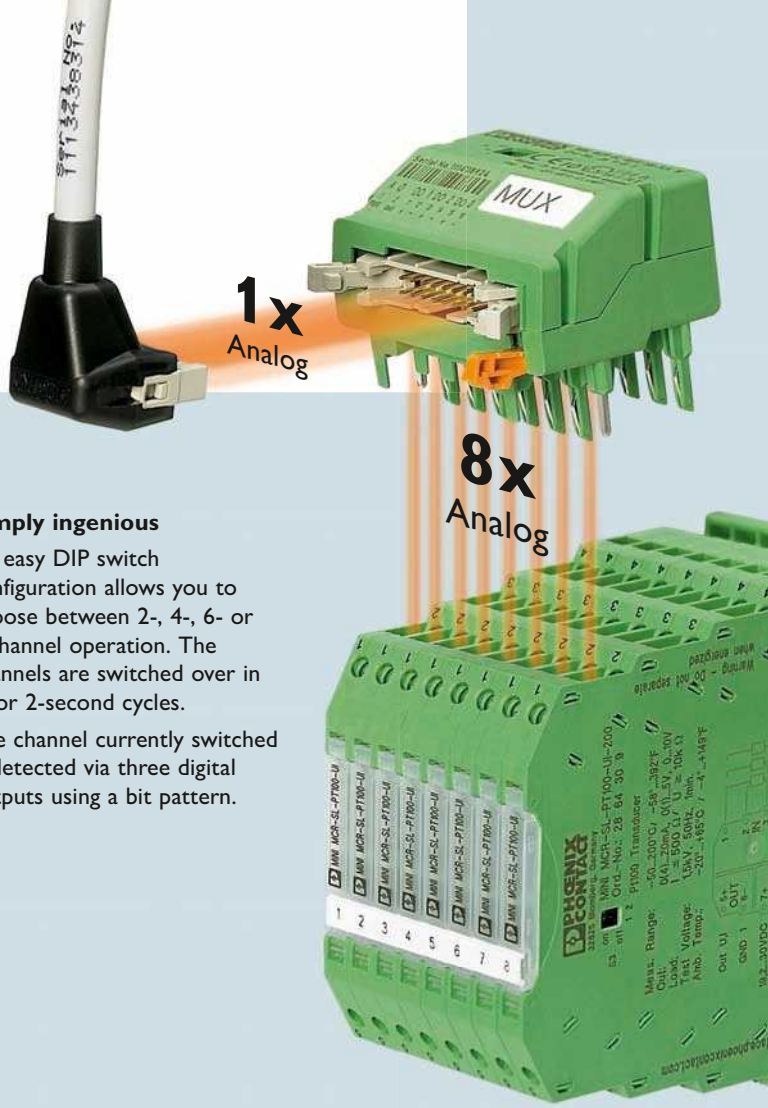
It is also possible to detect and signal the failure of a supply voltage at the power terminal block. The modularity is characterized by the ability to freely adjust the error evaluation, both on the device side and in the evaluation module.



Reduction in analog inputs at controllers

The MINI Analog multiplexer enables you to reduce up to eight analog signals to a single 4...20 mA signal.

Straightforward configuration via DIP switch



Simply ingenious

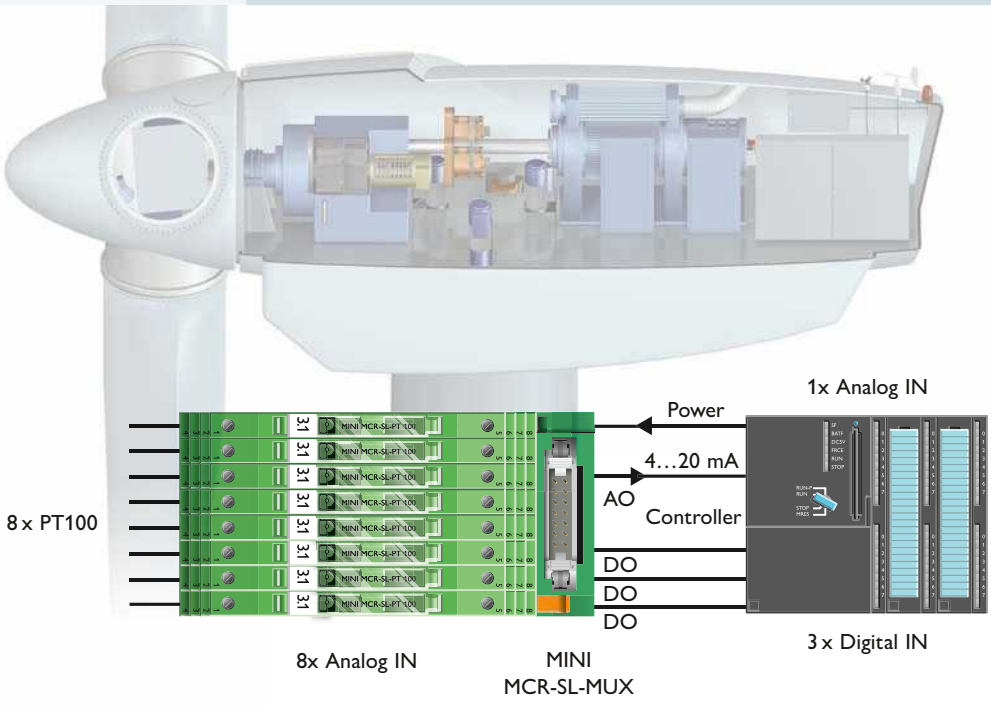
An easy DIP switch configuration allows you to choose between 2-, 4-, 6- or 8-channel operation. The channels are switched over in 1- or 2-second cycles.

The channel currently switched is detected via three digital outputs using a bit pattern.

Temperature measurement in wind power plants

A wide range of temperatures are measured in wind power plants. As a general rule, at least 6 measuring points are monitored. The MINI Analog multiplexer reduces these signals to just one and thereby lowers the number of analog inputs at the central acquisition point.

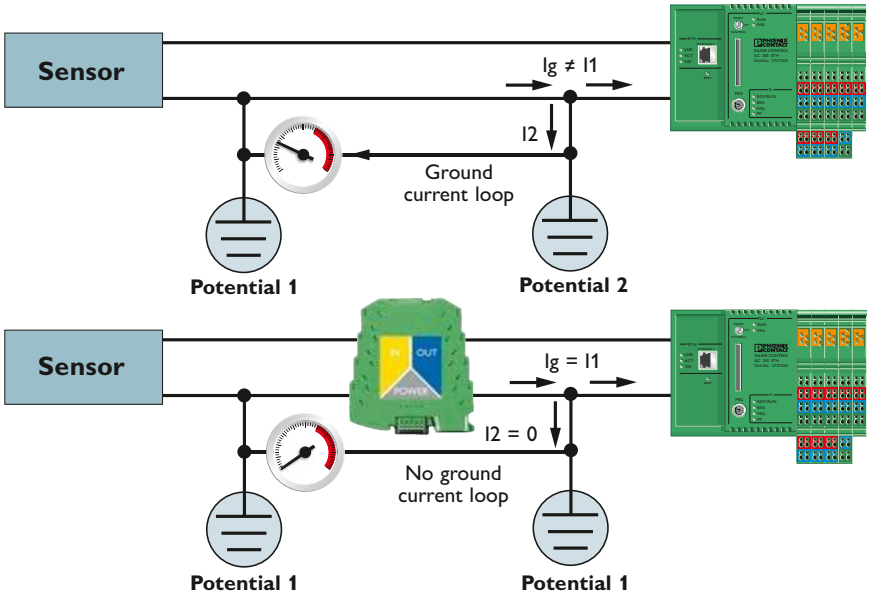
At the same time, the amount of cabling can be significantly reduced, for example, directly at the generator. The signal is then directly converted on-site to a 4...20 mA signal, electrically isolated and amplified.



Isolating, converting, filtering, and amplifying – the functions at a glance

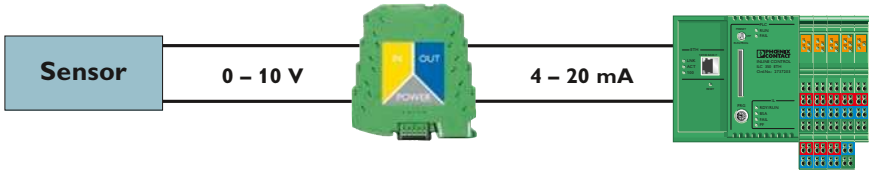
Electrical isolation

The most important task of a signal conditioner is the electrical isolation of signals. MINI Analog offers consistent isolation of input, output, and supply. As such, ground current loops can be prevented in the event of potential differences, which would otherwise lead to a distortion of the measured process values.



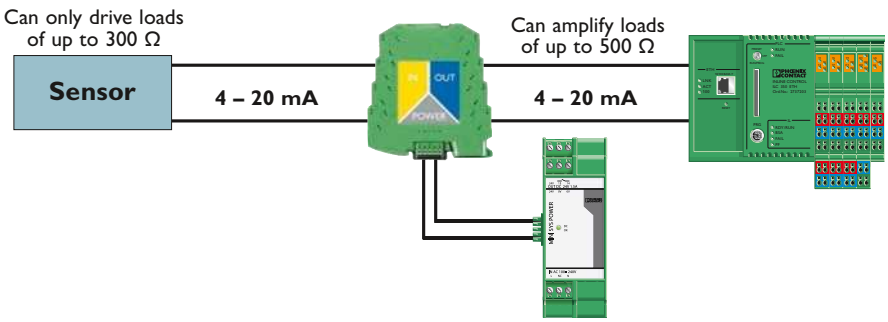
Converting signals

An advantage of signal conversion is the conversion of sensor signals into a signal that can be read by the controller, such as PT100 in 4...20 mA. In addition, failure-prone signals such as 0 - 10 V, for example, can be converted into non-prone current signals.



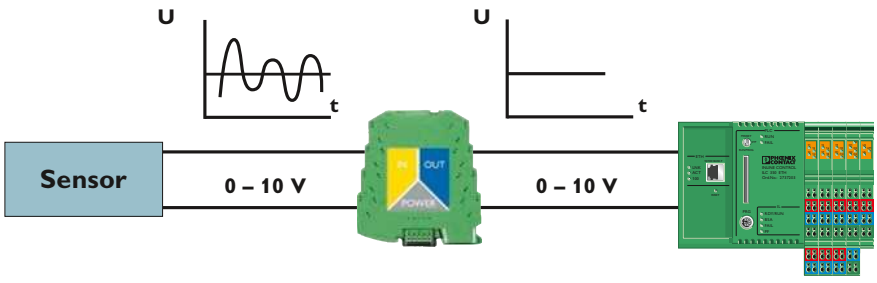
Amplifying signals

Signals always need to be amplified in the event that cables are long or if high loads are to be driven. It is here where the signal conditioners of the MINI Analog range provide a high output power at a low input power.

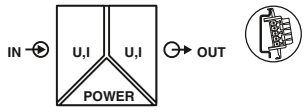
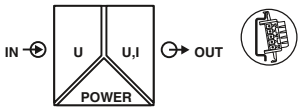
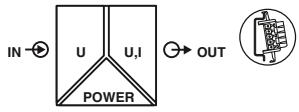


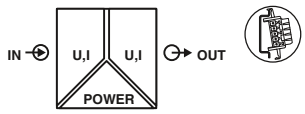
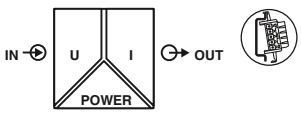
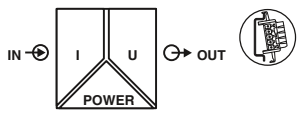
Filtering signals

In industrial environments, interference often occurs as a result of high-frequency signals. The input filters of the MINI Analog signal conditioners therefore reliably filter out such interfering signals.



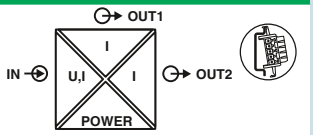
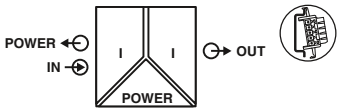
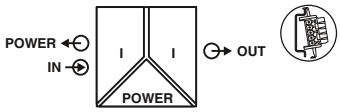
MINI Analog – the complete range

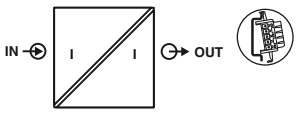
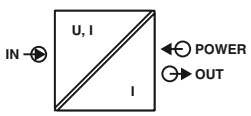
	Analog IN/Analog OUT	Analog IN/Analog OUT	Analog IN/Analog OUT
	 3-way signal conditioner, Configurable	 3-way signal conditioner, Configurable	 3-way signal conditioner, Configurable
IN	0 … 20 mA/4 … 20 mA 0 … 5 V/1 … 5 V 0 … 10 V/2 … 10 V Can be set via DIP switch	Unipolar/bipolar: 0 … 50 mV/0 … 60 mV/0 … 75 mV/0 … 80 mV/ 0 … 100 mV/0 … 120 mV/0 … 150 mV/ 0 … 200 mV/0 … 240 mV/0 … 300 mV/ 0 … 500 mV/0 … 600 mV/0 … 750 mV/ 0 … 800 mV/0 … 1 V/0 … 1.2 V/0 … 1.5 V/ 0 … 2 V/0 … 2.4 V/0 … 3 V Can be set via DIP switch	0 … 24 V/0 … 30 V Can be set via DIP switch
OUT	0 … 20 mA/4 … 20 mA 0 … 5 V/1 … 5 V 0 … 10 V/2 … 10 V Can be set via DIP switch	0 ... 20 mA/4 ... 20 mA 0 ... 5 V/1 ... 5 V 0 ... 10 V/2 ... 10 V -5 ... 5 V/-10 ... 10 V Can be set via DIP switch	0 ... 20 mA/4 ... 20 mA 0 ... 5 V/1 ... 5 V 0 ... 10 V/2 ... 10 V Can be set via DIP switch
Screw connection	**MINI MCR-SL-UI-UI-NC** 2864150	**MINI MCR-SL-SHUNT-UI-NC** 2810780	**MINI MCR-SL-U-UI-NC** 2865007
Spring-cage connection	**MINI MCR-SL-UI-UI-SP-NC** 2864163	**MINI MCR-SL-SHUNT-UI-SP-NC** 2810793	**MINI MCR-SL-U-UI-SP-NC** 2810078

	Analog IN/Analog OUT	Analog IN/Analog OUT	Analog IN/Analog OUT
	 3-way signal conditioner, With fixed signal combinations	 3-way signal conditioner, With fixed signal combinations	 3-way signal conditioner, With fixed signal combinations
IN	1) 0 … 20 mA/4 … 20 mA 2) 0 … 10 V/-10 … 10 V	0 … 10 V	1) 0 … 20 mA 2) 4 … 20 mA
OUT	1) 0 … 20 mA/4 … 20 mA 2) 0 … 10 V/-10 … 10 V	1) 0 … 20 mA 2) 4 … 20 mA	0 … 10 V
Screw connection	**1) MINI MCR-SL-I-I** 2864406 **2) MINI MCR-SL-U-U** 2864684	**1) MINI MCR-SL-U-I-0** 2813512 **2) MINI MCR-SL-U-I-4** 2813525	**1) MINI MCR-SL-I-U-0** 2813541 **2) MINI MCR-SL-I-U-4** 2813538
Spring-cage connection	**1) MINI MCR-SL-I-I-SP** 2864723 **2) MINI MCR-SL-U-U-SP** 2864697	**1) MINI MCR-SL-U-I-0-SP** 2813570 **2) MINI MCR-SL-U-I-4-SP** 2813583	**1) MINI MCR-SL-I-U-0-SP** 2813554 **2) MINI MCR-SL-I-U-4-SP** 2813567

The module can be snapped onto the DIN rail connector.

MINI Analog – the complete range

	Analog IN/Analog OUT	Analog IN/Analog OUT	Analog IN/Analog OUT
	 Signal duplicator, Configurable	 Repeater power supply	 Repeater power supply HART COMMUNICATION PROTOCOL transparent
IN	0 … 20 mA/4 … 20 mA 0 … 10 V/1 … 5 V Can be set via DIP switch	Isolator operation: 0 … 20 mA/4 … 20 mA Repeater power supply operation: 4 … 20 mA	Isolator operation: 0 … 20 mA/4 … 20 mA Repeater power supply operation: 4 … 20 mA
OUT	2 x 0 … 20 mA/2 x 4 … 20 mA Can be set via DIP switch	0 … 20 mA/4 … 20 mA	0 … 20 mA/4 … 20 mA
Screw connection	**MINI MCR-SL-UI-2I-NC** 2864176	**MINI MCR-SL-RPS-I-I** 2864422	**MINI MCR-SL-RPSS-I-I** 2864079
Spring-cage connection	**MINI MCR-SL-UI-2I-SP-NC** 2864189	**MINI MCR-SL-RPS-I-I-SP** 2864752	**MINI MCR-SL-RPSS-I-I-SP** 2810230

	Analog IN/Analog OUT	Analog IN/Analog OUT
	 Passive isolator Supplied by an input loop	 Loop-powered isolator Supplied by an output loop
IN	1) 0 … 20 mA/4 … 20 mA 2) 2 x 0 … 20 mA/2 x 4 … 20 mA	0 … 2 mA to 0 … 40 mA (16 ranges) Unipolar and bipolar: 0 … 50 mV to 0 … 30 V (58 ranges) Can be set via DIP switch
OUT	1) 0 … 20 mA/4 … 20 mA 2) 2 x 0 … 20 mA/2 x 4 … 20 mA	4 … 20 mA
Screw connection	**1) MINI MCR-SL-1CP-I-I** 2864419 **2) MINI MCR-SL-2CP-I-I** 2864655	**MINI MCR-SL-UI-I-LP-NC** 2902829
Spring-cage connection	**1) MINI MCR-SL-1CP-I-I-SP** 2864749 **2) MINI MCR-SL-2CP-I-I-SP** 2864781	**MINI MCR-SL-UI-I-LP-SP-NC** 2902830

The module can be snapped onto the DIN rail connector.

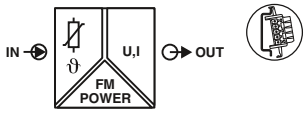
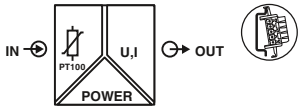
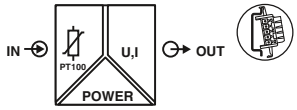
Order configuration

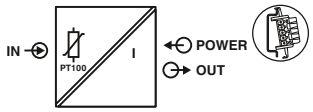
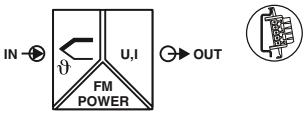
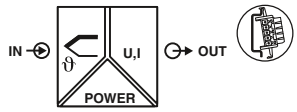
You can order your desired device configuration easily and flexibly:

- Using order keys from the catalog or
- In the user-guided e-shop

www.phoenixcontact.net/catalog

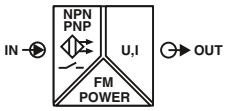
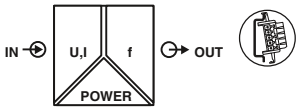
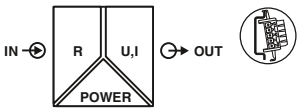
MINI Analog – the complete range

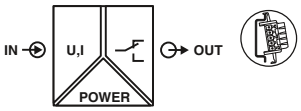
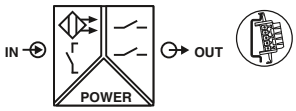
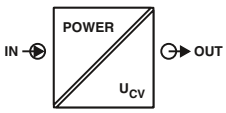
	Temperature	Temperature	Temperature
	 Universal measuring transducer for resistance thermometers	 Temperature transducer PT100, up to 200°C	 Temperature transducer PT100, up to 850°C
IN	2-, 3- or 4-conductor IEC 751: Pt100/Pt200/Pt500/Pt1000 GOST 6651-2009: Pt100/Pt1000/Cu50/ Cu100/Cu53 JIS C1604-1997: Pt100/Pt1000 DIN 43760: Ni100/Ni1000 -200°C … 850°C (depending on the sensor) linear resistance: 0 … 4 kΩ Can be set via DIP switch or software	PT100 2-, 3- or 4-conductor, In accordance with IEC 751; Temperature range: -50°C … +200°C Can be set via DIP switch	PT100 2-, 3- or 4-conductor, In accordance with IEC 751; Temperature range: -150°C … +850°C Can be set via DIP switch
OUT	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V With error signaling Supports fault monitoring Can be set via DIP switch or software	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V With error signaling Can be set via DIP switch	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V With error signaling Can be set via DIP switch
Screw connection	**MINI MCR-RTD-UI-NC** 2902849	**MINI MCR-SL-PT100-UI-200-NC** 2864370	**MINI MCR-SL-PT100-UI-NC** 2864273
Spring-cage connection	**MINI MCR-RTD-UI-SP-NC** 2902850	**MINI MCR-SL-PT100-UI-200-SP-NC** 2864202	**MINI MCR-SL-PT100-UI-SP-NC** 2864286

	Temperature	Temperature	Temperature
	 Temperature transducer PT100 Supplied by an output loop	 Universal measuring transducer for thermocouples	 Temperature transducer for thermocouple types J and K
IN	PT 100 2-, 3- or 4-conductor, in accordance with IEC 751; Temperature range: -150°C … +300°C Can be set via DIP switch	IEC 584-1: B/E/J/K/N/R/S/T DIN 43710: L/U GOST 8.585: A-1/A-2/A-3/M/L -250°C … 2500°C (depending on the sensor) Can be set via DIP switch or software	Thermocouples type J or K in accordance with IEC 584-1 Temperature range can be set Can be set via DIP switch
OUT	4 … 20 mA/20 … 4 mA With error signaling Can be set via DIP switch	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V With error signaling Supports fault monitoring Can be set via DIP switch or software	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V With error signaling Can be set via DIP switch
Screw connection	**MINI MCR-SL-PT100-LP-NC** 2810308	**MINI MCR-TC-UI-NC** 2902851	**MINI MCR-SL-TC-UI-NC** 2864299
Spring-cage connection	**MINI MCR-SL-PT100-LP-NC-SP** 2810395		

The module can be snapped onto the DIN rail connector.

MINI Analog – the complete range

	Frequency	Frequency	Potentiometer
	 Frequency transducer, Configurable	 Analog frequency measuring transducer, Configurable	 Potentiometer measuring transducer, Configurable
IN	0.002 Hz … 20 kHz Can be set via DIP switch 0.002 Hz … 80 kHz Can be set via teach-in wheel	0 … 20 mA/4 … 20 mA, 0 … 5 V/1 … 5 V Can be set via DIP switch	3-wire potentiometer 100 Ω … 100 kΩ Automatic detection
OUT	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V With error signaling Supports fault monitoring Can be set via DIP switch	Frequency output: 0 Hz … 10 kHz/0 Hz … 5 kHz 0 Hz … 2.5 kHz/0 Hz … 1 kHz 0 Hz … 500 Hz/0 Hz … 250 Hz 0 Hz … 100 Hz/0 Hz … 50 Hz PWM output: 7.8 kHz (10 bit)/3.9 kHz (10 bit) 1.9 kHz (12 bit)/977 Hz (12 bit) 488 Hz (14 bit)/244 Hz (14 bit) 122 Hz (16 bit)/61 Hz (16 bit) Can be set via DIP switch	0 … 20 mA/4 … 20 mA 20 … 0 mA/20 … 4 mA 0 … 5 V/1 … 5 V 0 … 10 V/10 … 0 V Can be set via DIP switch
Screw connection	**MINI MCR-SL-F-UI-NC** 2902832	**MINI MCR-SL-UI-F** 2864082	**MINI MCR-SL-R-UI** 2864095
Spring-cage connection	**MINI MCR-SL-F-UI-SP-NC** 2902833	**MINI MCR-SL-UI-F-SP** 2810243	**MINI MCR-SL-R-UI-SP** 2810256

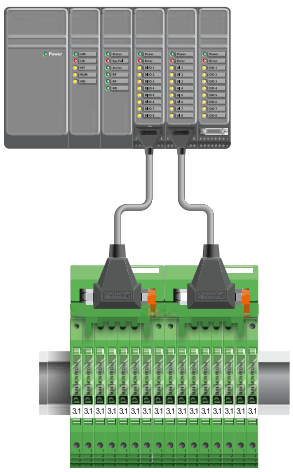
	Limit values	Digital IN	Accessories
	 Threshold value switch Configurable	 NAMUR signal conditioner, Configurable	 Constant voltage source, Configurable
IN	0 … 20 mA 0 … 10 V Can be set via DIP switch	NAMUR proximity sensors, Floating switch contacts, Switch contacts with resistance circuit Can be set via DIP switch	9.6 … 30 V DC
OUT	1 relay contact (PDT) Threshold value can be set via potentiometer	2 N/O contacts, 1 N/O contact for use as fault signal Can be set via DIP switch	2.5 V DC/5 V DC/7.5 V DC/10 V DC
Screw connection	**MINI MCR-SL-UI-REL** 2864480	**MINI MCR-SL-NAM-2RNO** 2864105	**MINI MCR-SL-CVS-24-5-10-NC** 2902822
Spring-cage connection	**MINI MCR-SL-UI-REL-SP** 2864493	**MINI MCR-SL-NAM-2RNO-SP** 2810269	**MINI MCR-SL-CVS-24-5-10-SP-NC** 2902823

The module can be snapped onto the DIN rail connector.

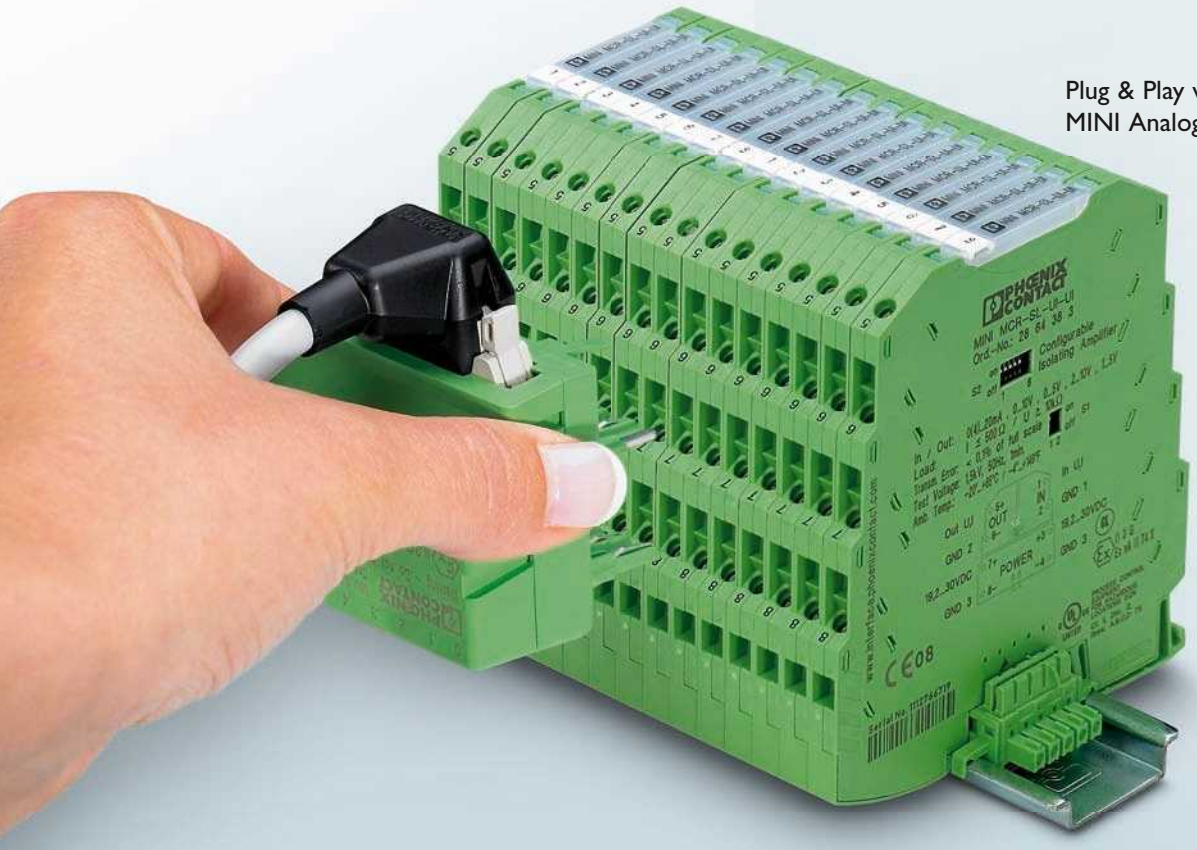
Quick and error-free wiring with system cabling

Time savings of up to 95%: the MINI Analog system cabling gives you two options for quick and error-free wiring:

1. MINI Analog system adapter
   - For up to eight channels
2. MINI Analog termination carrier
   - For large numbers of channels
   - Enables module replacement during operation



The system adapter allows you to wire eight analog channels on the signal conditioner and controller side quickly and without errors.



Plug & Play with the MINI Analog system adapter

Hot-swappable system cabling with the termination carrier

Compact

For high packing density

- Space savings of up to 30%, thanks to compact design
- Space-saving connection points
- Integrated end clamps

Robust

For high system availability

- Stable, vibration-resistant aluminum carrier device profile
- Mechanically decoupled termination PCB
- Passive PCB without active components
- Redundant supply and monitoring electronics in a separate DIN rail device

Easy maintenance

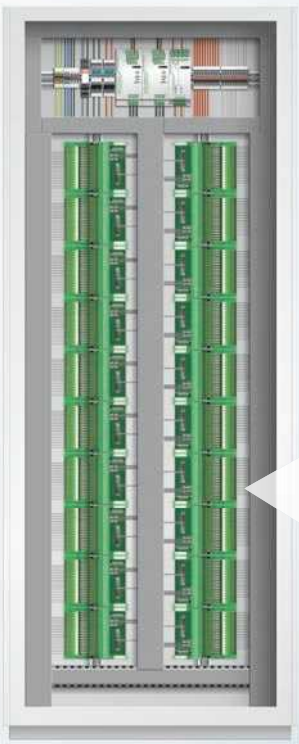
For simplified documentation and startup

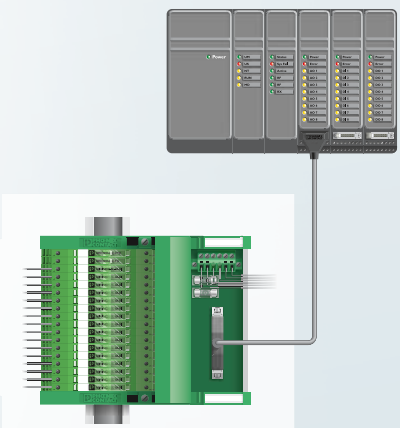
- Use of standard DIN rail devices
- Easily accessible connection points
- Module replacement during operation (hot swap)
- Pre-assembled system cabling with front adapter

Flexible

For optimum adaptation

- Gridless profile lengths for controller-specific number of I/Os
- Different system plug types, including redundant
- Horizontal and vertical mounting



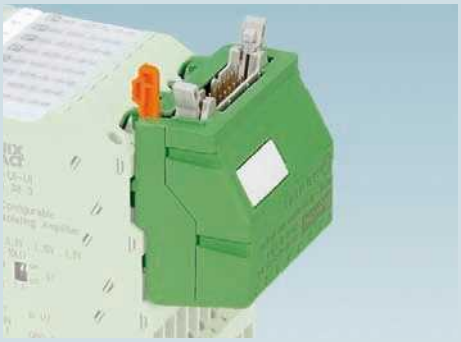


When used in combination with MINI Analog, the termination carrier offers unique packing density: install up to 320 channels in an 80 x 200 cm control cabinet. Phoenix Contact offers a comprehensive range of system cables for specific higher-level control systems.

In addition to universal termination carriers, versions which are tailored to your higher-level control system are also available.

Please contact us for more information.

Accessories for MINI Analog



System adapter

MINI MCR-SL-V8-FLK 16-A
Order No. 2811268
MINI Analog system adapter for all MINI Analog modules with screw connection

FLK 16/ EZ-DR/.../KONFEK
FLK 16 cables in various lengths
(see INTERFACE catalog)

FLKM 16...
VARIOFACE front adapter for SIMATIC S7-300
(see INTERFACE catalog)

Termination carrier

TC-D37SUB-ADIO16-M-P-UNI
Order No. 2902933

- For 16 MINI Analog devices + 1 x power module and 1 x feed-through terminal block
- With 1:1 pinning to DSUB37

TC-D37SUB-AIO16-M-PS-UNI
Order No. 2902934

- For 16 MINI Analog devices + 1 x power module and 1 x feed-through terminal block
- With 1:1 pinning to DSUB37
- Additional HART decoupling option

MINI Analog multiplexer

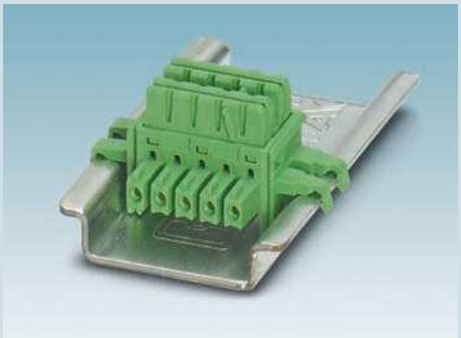
MINI MCR-SL-MUX-V8-FLK 16
Order No. 2811815
Can be combined with MINI MCR-... or MINI MCR-SL-TB feed-through terminal block with existing isolation

- Input: 8 x 4...20 mA
- Output: 1 x 4...20 mA + 3x digital

Cables:

VIP-CAB-FLK16/FR/OE/0,14/...
(see INTERFACE catalog)

CABLE-FLK16/OE/0,14/...
(see INTERFACE catalog)



DIN rail connector

ME 6,2 TBUS-2 1,5/5-ST-3,81 GN
Order No. 2869728

For two MINI Analog modules each

ME 17,5 TBUS 1,5/5-ST-3,81 GN
Order No. 2709561

For MINI-SYS system power supply (2 required)

Power terminal blocks, can be monitored

MINI MCR-SL-PTB-FM
Order No. 2902958

Screw connection

MINI MCR-SL-PTB-FM-SP
Order No. 2902959

Spring-cage connection

- Inputs: 0...30 V DC
- Output: max. 2 A; 0...29.2 V
- Monitoring of the supply possible in combination with the fault monitoring module

Fault monitoring module

MINI MCR-SL-FM-RC-NC
Order No. 2902961

Screw connection

MINI MCR-SL-FM-RC-SP-NC
Order No. 2902962

Spring-cage connection

- For evaluating and reporting group errors from the fault monitoring system
- Supply voltage monitoring of the PTB-FM module

Accessories for MINI Analog

Feed-through terminal block

MINI MCR-SL-TB
Order No. 2811420

For 1:1 forwarding of signals

- For increasing to eight modules when using the system adapter or multiplexer

Surge protection

LINETRAB LIT
Highly compact surge protection

- Same shape as the MINI Analog
- Quick and easy to connect to MINI Analog thanks to the standard system cabling
- More detailed information on the Internet under Surge protection

System power supply

MINI-SYS-PS-100-240AC/24DC/1.5
Order No. 2866983

MINI-PS-100-240AC/24DC/1.5/EX
Order No. 2866653 (Ex n-capable)

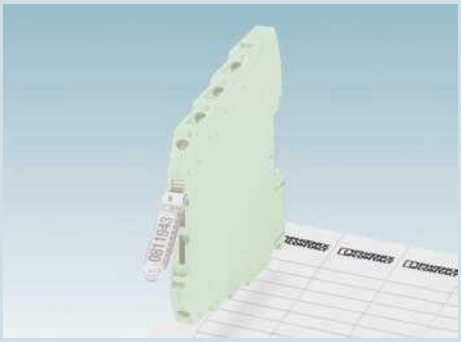
- Wide range input: 85…264 V AC (45 – 65 Hz)
- Output voltage: 24 V DC ± 1%
- Output current: 1.5 A at 60°C/2 A at 40°C

Programming adapter

IFS-USB-PROG-ADAPTER
Order No. 2811271

Programming adapter with USB interface, for programming using software

- The software is available on the Internet free of charge.



Marking

MINI MCR DKL
Order No. 2308111

Hinged transparent cover with opening for insert strips

MINI MCR-DKL-LABEL
Order No. 2810272

Insert strips, for transparent MINI cover

ZBF6…
Flat-ribbon labeling

Further information on the products presented here and on the world of solutions from Phoenix Contact can be found at

www.phoenixcontact.net/products

Or contact us directly.

Modular Terminal Blocks
CLIPLINE 1

Marking Systems, Tools, and Mounting Material
CLIPLINE 2

Connection Technology for Field Devices and Field Cabling
PLUSCON

Device Connection Technology and Electronic Housings
COMBICON

Power and Signal Quality
TRABTECH

Signal Converters, Switching Devices, Power Supply Units
INTERFACE

Automation Components and Systems
AUTOMATION

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Printed in Germany

MNR 5170883/15.11.2012-04

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