

2902055

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Configurable temperature transducer with plug-in connection technology for connecting thermocouples. Configurable via DIP switch or software. Screw connection technology, standard configuration

# Product description

Configurable, 3-way isolated temperature transducer with plug-in connection technology. The device is suitable for the connection of thermocouples. The measured values are converted into a linear and freely adjustable current or voltage signal. You can configure the device using one of the free software solutions. Default settings can also be made directly on the device by simply using the DIP switches (see configuration table). The measuring transducer supports fault monitoring and NFC communication.

### Commercial data

Item number	2902055
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C404
Product key	CK1421
Catalog page	Page 84 (C-5-2019)
GTIN	4046356649766
Weight per piece (including packing)	123.5 g
Weight per piece (excluding packing)	116 g
Customs tariff number	85437090
Country of origin	DE



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# Technical data

### Notes

EMO l	EMO along A 1 to 1
EMC note	EMC: class A product, see manufacturer's declaration in the download area
duct properties	
Product type	Temperature transmitter
Product family	MINI Analog Pro
Туре	Signal conditioner
Configuration	DIP switches
	Software
	Арр
sulation characteristics	
Overvoltage category	II
Pollution degree	2
ctrical properties	
Electrical isolation	3-way isolation
Typical cold point errors	2 K (2 K + (0.2 K * ΔT))
Protective circuit	Transient protection
Step response (0–99%)	300 ms
	570 ms
Maximum temperature coefficient	≤ 0.01 %/K
Transmission error thermocouples	0.1% * 600 K / set measuring range; 0.1% > 600 K (C, E, J, K T, L, U, M Gost, L Gost)
	0.2 % * 600 K / set measuring range; 0.2 % > 600 K (B, R, S, A2, A3)
	0.2% * 600 K / set measuring range; 0.2% > 600 K (E, J, K, N L, U, M Gost, L Gost); Highspeed Mode
	0.4% * 600 K / set measuring range; 0.4% > 600 K (B, R, S, A A2, A3); Highspeed Mode
lectrical isolation Input/output/power supply	
Rated insulation voltage	300 V <sub>rms</sub>
Test voltage	3 kV AC (50 Hz, 60 s)
Insulation	Reinforced insulation according to IEC/EN 61010-1
upply	
Supply voltage range	9.6 V DC 30 V DC (The DIN rail connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, item no. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail in accordance with EN 60715)
Typical current consumption	32.7 mA (24 V DC)
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Power consumption	$\leq$ 850 mW (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 $\Omega$ load)
ut data	
v .	
Signal	4
Number of inputs	1
Measurement	
Number of inputs	1
Configurable/programmable	Yes
Input voltage range	- 500 mV 500 mV (can be set via software)
Sensor types that can be used (TC)	B, C, E, J, K, N, R, S, T, L, U, A-1, A-2, A-3, M, L
Temperature measuring range	-250 °C 2500 °C (Range depends on sensor type, range can be set freely via software or in increments from -150°C to 1350°C via DIP switches)
Temperature measuring range	≥ 50 K
Voltage measuring range	3 mV
Sensor type:	500 °C 1820 °C
	-230 °C 1000 °C
	-210 °C 1200 °C
	-250 °C 1372 °C
	-200 °C 1300 °C
	-50 °C 1768 °C
	-50 °C 1768 °C
	-200 °C 400 °C
	-200 °C 900 °C
	-200 °C 600 °C
	0 °C 2500 °C
	0 °C 1800 °C
	0 °C 1800 °C
	-200 °C 100 °C
	-200 °C 800 °C

# Output data

Signal:	Voltage/	current/
---------	----------	----------

Number of outputs	1
Configurable/programmable	Yes
Voltage output signal	0 V 5 V (via DIP switch)
	1 V 5 V (via DIP switch)
	0 V 10 V (via DIP switch)
	10 V 0 V (via DIP switch)
	0 V 10.5 V (can be set via software)
Max. voltage output signal	≈ <b>╵</b> ╚
Non-load voltage	< 17.5 V
	0 mA 20 mA (via DIP switch)



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Current output signal	4 mA 20 mA (via DIP switch)
	20 mA 0 mA (via DIP switch)
	20 mA 4 mA (via DIP switch)
	0 mA 21 mA (can be set via software)
Max. current output signal	24.6 mA
Short-circuit current	< 31.5 mA
Load/output load voltage output	≥ 10 kΩ
Load/output load current output	≤ 600 Ω (20 mA)
Ripple	< 10 mV <sub>rms</sub>
	< 10 mV <sub>rms</sub> (600 Ω)
Resolution, outputs (voltage)	1 mV
Resolution, outputs (current)	2 μΑ

## Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross section rigid	0.2 mm <sup>2</sup> 1.5 mm <sup>2</sup> (with ferrule)
	0.14 mm <sup>2</sup> 2.5 mm <sup>2</sup> (without ferrule)
Conductor cross section flexible	0.14 mm² 2.5 mm²
Conductor cross section AWG	24 12 (flexible)
Tightening torque	0.5 Nm 0.6 Nm

## Ex data

Ex installation (EPL)	Gc
	Div. 2

## Interfaces

#### Data: IFS interface

Connection method	Micro USB type B
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# Signaling

Status display	Green LED (supply voltage)
Error indication	Red LED

### **Dimensions**

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

# Material specifications

Color	gray (RAL 7042)
Housing material	PBT
Fire protection for rail vehicles (DIN EN 45545-2) R22	HL 1 - HL 2



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Fire protection for rail vehicles (DIN EN 45545-2) R23	HL 1 - HL 2
Fire protection for rail vehicles (DIN EN 45545-2) R24	HL 1 - HL 2

## Environmental and real-life conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-40 °C 70 °C
Ambient temperature (storage/transport)	-40 °C 85 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	5 % 95 % (non-condensing)

# Approvals

CE	
Certificate	CE-compliant
ATEX	
Identification	
Certificate	BVS 20 ATEX E 024 X
UKCA Ex (UKEX)	
Identification	
Certificate	PxCIF21UKEX2902049X
IECEx	
Identification	Ex ec IIC T4 Gc
Certificate	IECEx BVS 20.0017X
UL, USA/Canada	
Identification	UL 508 Listed
	Class I, Div. 2, Groups A, B, C, D T6
	Class I, Zone 2, Group IIC T6
Shipbuilding approval	
Certificate	DNV GL TAA00002UA
EAC Ex	
Identification	⊞ LEx ec IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00079
DNV GL data	
Temperature	В
Humidity	В
Vibration	A
EMC	A
Enclosure	Required protection according to the Rules shall be provided

upon installation on board



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# EMC data

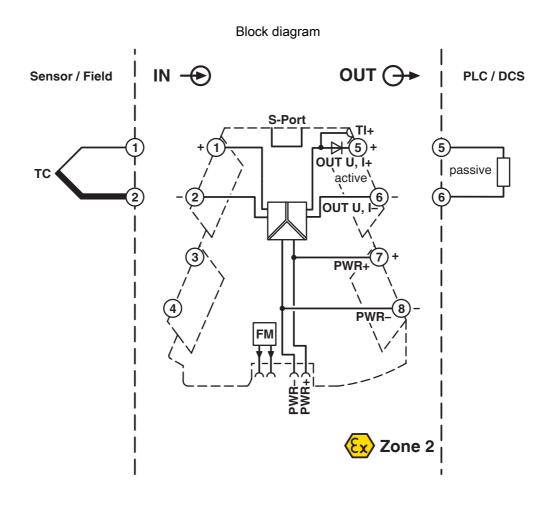
Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.
Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
Electrostatic discharge	
Standards/regulations	EN 61000-4-2
Electrostatic discharge	
Comments	Safety measures must be taken to prevent electrostatic discharge.
Electromagnetic HF field	
Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	0.06 %
Fast transients (burst)	
Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	0.1 %
Surge current load (surge)	
Standards/regulations	EN 61000-4-5
Conducted interference	
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	0.05 %
andards and regulations	
Electrical isolation	3-way isolation
unting	
Mounting type	DIN rail mounting
Mounting type Assembly instructions	DIN rail mounting  The DIN rail connector can be used for bridging the supply voltage. It can be snapped onto a 35 mm EN 60715 DIN rail.



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# Drawings





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# **Approvals**

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2902055



**DNV GL** 

Approval ID: TAA00002UA



**UL Listed** 

Approval ID: FILE E 238705



cUL Listed

Approval ID: FILE E 238705



**IECEx** 

Approval ID: IECEx\_BVS\_20.0017X



cUL Listed

Approval ID: FILE E 196811



**UL Listed** 

Approval ID: FILE E 196811



**ATEX** 

Approval ID: BVS 20 ATEX E 024 X

**cULus** Listed

**cULus Listed** 



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# Classifications

UNSPSC 21.0

## **ECLASS**

ECLASS-11.0	27210129
ECLASS-12.0	27210129
ECLASS-13.0	27210129
ETIM	
ETIM 9.0	EC002919
UNSPSC	

41112100



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# Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-l
China RoHS	
Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.
EU REACH SVHC	
REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	6fd57326-a253-4c34-89d0-81b3b89a6e1a



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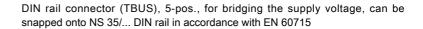
https://www.phoenixcontact.com/us/products/2902055

### Accessories

ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - DIN rail bus connectors

2695439

https://www.phoenixcontact.com/us/products/2695439





## ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - DIN rail bus connectors

2869728

https://www.phoenixcontact.com/us/products/2869728

 $\ensuremath{\mathsf{DIN}}$  rail connector for  $\ensuremath{\mathsf{DIN}}$  rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.





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#### TC-D37SUB-AIO16-MP-PS-UNI - Module carrier

2906640

https://www.phoenixcontact.com/us/products/2906640



Universal Termination Carrier for connecting 16 MINI Analog Pro signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection

#### TC-D37SUB-ADIO16-MP-P-UNI - Module carrier

2906639

https://www.phoenixcontact.com/us/products/2906639

Universal Termination Carrier for connecting 16 MINI Analog Pro signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)





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## MINI MCR-2-V8-FLK 16 - System adapter

2901993

https://www.phoenixcontact.com/us/products/2901993



Eight MINI Analog Pro signal conditioners and measuring transducers can be connected to a controller with minimal cabling effort and without any errors using system adapters and system cabling.

#### MINI MCR-2-V8-MOD-RTU - Communication module

2905634

https://www.phoenixcontact.com/us/products/2905634



Eight MINI Analog Pro signal conditioners and measuring transducers are quickly and easily integrated into a Modbus/RTU network via a communication adapter.



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### MINI MCR-2-V8-MOD-TCP - Communication module

2905635

https://www.phoenixcontact.com/us/products/2905635



Eight MINI Analog Pro signal conditioners and measuring transducers are quickly and easily integrated into a Modbus/TCP network via a communication adapter.

#### MINI MCR-2-V8-PB-DP - Communication module

2905636

https://www.phoenixcontact.com/us/products/2905636



Eight MINI Analog Pro signal conditioners and measuring transducers are quickly and easily integrated into a PROFIBUS DP network via a communication adapter.



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# MINI MCR-2-V8-PN - Communication module

2905637

https://www.phoenixcontact.com/us/products/2905637



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a PROFINET network via a communication adapter.

## IFS-USB-PROG-ADAPTER - Programming adapter

2811271

https://www.phoenixcontact.com/us/products/2811271



Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.



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# IFS-BT-PROG-ADAPTER - Adapter

2905872

https://www.phoenixcontact.com/us/products/2905872



Bluetooth adapter with micro USB and S-PORT interface for wireless communication with the MINI Analog, MINI Analog Pro, MACX Analog, Interface System Gateways, and PLC logic device series.

## TWN4 MIFARE NFC USB ADAPTER - Programming adapter

2909681

https://www.phoenixcontact.com/us/products/2909681



Near Field Communication (NFC) programming adapter with USB interface for the wireless configuration of NFC-capable products from Phoenix Contact with software. A separate USB driver is not required.



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### FASTCON PRO-SET - Connector set

2906227

https://www.phoenixcontact.com/us/products/2906227



FASTCON Pro plug set consisting of four plugs with screw connection, one for each position on the module. Suitable for all MINI Analog Pro modules.

### FASTCON PRO-SET-PT - Connector set

2906228

https://www.phoenixcontact.com/us/products/2906228



FASTCON Pro plug set consisting of four plugs with push-in connection, one for each position on the module. Suitable for all MINI Analog Pro modules.



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### UCT-EM (30X5) - Marker for end clamp

0801505

https://www.phoenixcontact.com/us/products/0801505



Marker for end clamp, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped, lettering field size: 30 x 5 mm, Number of individual labels: 24

### UCT-EM (30X5) CUS - Marker for end clamp

0801589

https://www.phoenixcontact.com/us/products/0801589



Marker for end clamp, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24



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### SK 5,0 WH:REEL - Marker strip

0805221

https://www.phoenixcontact.com/us/products/0805221



Marker strip, Roll, white, unlabeled, can be labeled with: THERMOMARK E.300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: adhesive, lettering field size: continuous x 5 mm, Number of individual labels: 10

### UC-EMLP (15X5) - Plastic label

0819301

https://www.phoenixcontact.com/us/products/0819301



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10



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## UC-EMLP (15X5) YE - Plastic label

0822615

https://www.phoenixcontact.com/us/products/0822615



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

# UC-EMLP (15X5) CUS - Plastic label

0824550

https://www.phoenixcontact.com/us/products/0824550

Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm





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## UC-EMLP (15X5) YE CUS - Plastic label

0824551

https://www.phoenixcontact.com/us/products/0824551

Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size:  $15 \times 5 \text{ mm}$ 



### UC-EMLP (15X5) SR - Plastic label

0828095

https://www.phoenixcontact.com/us/products/0828095



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10



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## UC-EMLP (15X5) SR CUS - Plastic label

0828099

https://www.phoenixcontact.com/us/products/0828099



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

### US-EMLP (15X5) - Plastic label

0828790

https://www.phoenixcontact.com/us/products/0828790



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size:  $15 \times 5$  mm, Number of individual labels: 189



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### US-EMLP (15X5) YE - Plastic label

0828873

https://www.phoenixcontact.com/us/products/0828873



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

### US-EMLP (15X5) SR - Plastic label

0828874

https://www.phoenixcontact.com/us/products/0828874



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size:  $15 \times 5$  mm, Number of individual labels: 189



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## US-EMLP (15X5) CUS - Plastic label

0830076

https://www.phoenixcontact.com/us/products/0830076



Plastic label, can be ordered: by card, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

# US-EMLP (15X5) YE CUS - Plastic label

0830077

https://www.phoenixcontact.com/us/products/0830077



Plastic label, can be ordered: by card, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189



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### US-EMLP (15X5) SR CUS - Plastic label

0830078

https://www.phoenixcontact.com/us/products/0830078



Plastic label, can be ordered: by card, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

# UCT-EM (30X5) YE - Marker for end clamp

0830340

https://www.phoenixcontact.com/us/products/0830340



Marker for end clamp, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped, lettering field size: 30 x 5 mm, Number of individual labels: 24



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## UCT-EM (30X5) YE CUS - Marker for end clamp

0830348

https://www.phoenixcontact.com/us/products/0830348



Marker for end clamp, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: snapped into marker carrier, lettering field size:  $30 \times 5$  mm, Number of individual labels: 24

#### MINI MCR-2-PTB - Power terminal block

2902066

https://www.phoenixcontact.com/us/products/2902066



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Screw connection technology



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## MINI MCR-2-PTB-PT - Power terminal block

2902067

https://www.phoenixcontact.com/us/products/2902067



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Push-in connection technology

### QUINT4-SYS-PS/1AC/24DC/2.5/SC - Power supply unit

2904614

https://www.phoenixcontact.com/us/products/2904614



Primary-switched power supply, QUINT POWER, screw connection, DIN rail mounting, supply of devices possible via the TBUS DIN rail connector, protective coating, input: single-phase, output: 24 V DC/2.5 A



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### MINI MCR-2-FM-RC - Monitoring block

2904504

https://www.phoenixcontact.com/us/products/2904504



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Screw connection technology, standard configuration

## MINI MCR-2-FM-RC-PT - Monitoring block

2904508

https://www.phoenixcontact.com/us/products/2904508



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Push-in connection technology, standard configuration



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SZS 0,6X3,5 - Screwdriver

1205053

https://www.phoenixcontact.com/us/products/1205053



Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size:  $0.6 \times 3.5 \times 100$  mm, 2-component grip, with non-slip grip

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