

2865654

https://www.phoenixcontact.com/us/products/2865654

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Freely programmable Ex i temperature measuring transducer with analog output and 1 limit value relay, intrinsically safe signal inputs, resistance thermometer in 2-, 3-, or 4-conductor technology, thermocouples, wide-range supply. Standard configuration, 4-way isolation, Safety Integrity Level (SIL, IEC 61508): 2, Performance Level (ISO 13849): d, Systematic Capability: 2, Screw connection

### Your advantages

- · Input for resistance thermometers, thermocouples, resistance-type sensors, potentiometers, and mV sources, [Ex ia] IIC
- · Programming during operation with Ex measuring circuit connected and also voltage-free using IFS-USB-PROG-ADAPTER programming adapter
- · Cold junction compensation with separate plug
- · Configuration via software (FDT/DTM) or IFS-OP-UNIT operator interface and display unit
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Up to SIL 2 in accordance with EN 61508
- · Status indicator for supply voltage, cable, sensor, and module errors
- Plug-in screw or spring-cage connection technology (Push-in technology)
- Wide-range power supply of 19.2 ... 253 V AC/DC
- · Measure differential temperatures
- · Inverse output signal ranges as an option
- · Relay switching output
- · Freely programmable input and output

#### Commercial data

Item number	2865654
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1215
GTIN	4046356296670
Weight per piece (including packing)	272.6 g
Weight per piece (excluding packing)	264.1 g
Customs tariff number	85437090
Country of origin	DE



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### Technical data

N 1		
IN	Ωī	es

EMC note	EMC: class A product, see manufacturer's declaration in the download area
duct properties	
Product type	Temperature transmitter
Product family	MACX Analog
Configuration	DIP switches
	Software
nsulation characteristics	
Overvoltage category	II
Pollution degree	2
stem properties  Functionality	
Configuration	DIP switches
	Software
ectrical properties	
Electrical isolation	4-way isolation
Electrical isolation between input and output	yes
Step response (0–99%)	≤ 1.75 s (SIL on)
	1.3 s (SIL off)
Maximum temperature coefficient	0.01 %/K
Maximum transmission error	0.1 % (E.g., at Pt 100, 300 K min. span)
Electrical isolation Input/output/power supply	
Test voltage	2.5 kV AC (50 Hz, 60 s)
Electrical isolation Input/output IEC/EN 60079-11	
Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>P</sub>
Electrical isolation Input/power supply IEC/EN 60079-11	
Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>P</sub>
Electrical isolation Input/switching output IEC/EN 60079-11	
Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>P</sub>



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Standards/regulations	IEC/EN 61010-1	
Rated insulation voltage	300 V <sub>rms</sub>	
Insulation	Safe isolation	
Supply  Nominal supply voltage range  24 V AC/DC 230 V AC/DC -20 % +10 % (50/60 Hz)		
Supply voltage range	19.2 V AC/DC 253 V AC/DC (50/60 Hz)	
Typical current consumption	< 50 mA (24 V DC)	
Power consumption	< 1.5 W	

### Input data

#### Signal

Number of inputs	1
Input signal	Temperature
	Resistor
	Voltage

#### Measurement

Sensor types (RTD) that can be used	Pt, Ni, Cu sensors: 2, 3, 4-wire
Sensor types that can be used (TC)	B, E, J, K, N, R, S, T, L, U, CA, DA, A1G, A2G, A3G, MG, LG
Temperature measuring range	-250 °C 2500 °C (Range depending on the sensor type)
Linear resistance measuring range	0 Ω 50 kΩ
Potentiometer resistance range	0 Ω 50 kΩ
Linear mV signal range	-1000 mV 1000 mV

### Output data

#### Switching: Relay

Configurable/programmable	Yes
Contact switching type	1 changeover contact
Contact material	AgSnO <sub>2</sub> , hard gold-plated
Maximum switching voltage	30 V AC/DC
Max. switching current	0.5 A (30 V AC)
	1 A (30 V DC)

Signal: Voltage/current	
Number of outputs	1
Configurable/programmable	Yes
Max. voltage output signal	± 11 V
Current output signal	0 mA 20 mA (SIL off)
	4 mA 20 mA (SIL on)
Max. current output signal	22 mA
Load/output load voltage output	≥ 10 kΩ
Load/output load current output	≤ 600 Ω (20 mA)
Behavior in the event of a sensor error	freely programmable



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### Connection data

Screw connection
7 mm
M3
0.2 mm² 2.5 mm²
0.2 mm <sup>2</sup> 2.5 mm <sup>2</sup>
24 14
0.5 Nm 0.6 Nm

#### Test socket

100,000,00		
	Max. diameter	2 mm

#### Ex data

Ex installation (EPL)	Gc
, ,	Div. 2
Ex i circuits (EPL)	Ga
	Da
	Ма
	Div. 1

#### Safety data

Safety data	
Max. internal inductance L <sub>i</sub>	negligible
Max. internal capacitance C <sub>i</sub>	44 nF
Max. output voltage U <sub>o</sub>	6 V DC
Max. output current I <sub>o</sub>	7 mA (RTD in 2-conductor technology)
	13 mA (RTD in 3-conductor technology)
	16 mA (RTD in 4-conductor technology)
	13 mA (TC with internal cold junction compensation)
	10 mA (TC with external cold junction compensation)
	5 mA (mV)
	13 mA (Potentiometer)
Max. output power P <sub>o</sub>	11 mW (RTD in 2-conductor technology)
	20 mW (RTD in 3-conductor technology)
	24 mW (RTD in 4-conductor technology)
	20 mW (TC with internal cold junction compensation)
	15 mW (TC with external cold junction compensation)
	7.5 mW (mV)
	20 mW (Potentiometer)
IIA/I (simple circuit): Max. external inductivity $\rm L_{o}$ / Max. external capacitance $\rm C_{o}$	100 mH / 150 μF
IIB/IIIC (simple circuit): Max. external inductivity $\rm L_{o}$ / Max. external capacitance $\rm C_{o}$	100 mH / 100 μF
IIC (simple circuit): Max. external inductivity $\rm L_{\rm o}$ / Max. external capacitance $\rm C_{\rm o}$	100 mH / 10 μF



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IIC (mixed circuit): Max. external inductivity $\rm L_{o}$ / Max. external capacitance $\rm C_{o}$	100 mH / 600 nF, 10 mH / 600 nF, 1 mH / 600 nF
I/IIB/IIA/IIIC (mixed circuit): Max. external inductivity $\rm L_{o}$ / Max. external capacitance $\rm C_{o}$	100 mH / 1 $\mu$ F, 10 mH / 1 $\mu$ F, 1 mH / 1 $\mu$ F

### Signaling

Status display	LED supply voltage, PWR (green)
	Red LED, flashing (line, sensor error, ERR)
	Red LED (module error, ERR)
	Yellow LED (switching output)

#### **Dimensions**

Dimensional drawing	107,9 (SP) 112,5 99 107,5 107,
Width	17.5 mm
Height	112.5 mm
Depth	113.7 mm
Depth NS 35/7,5	114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)

### Material specifications

Color	gray (RAL 7042)
Flammability rating according to UL 94 (Housing)	V0 (Housing)
Housing material	PA 6.6-FR

#### Environmental and real-life conditions

#### Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-20 °C 65 °C
Ambient temperature (storage/transport)	-40 °C 85 °C
Permissible humidity (operation)	typ. 5 % 95 % (non-condensing)
Shock (operation)	15g (IEC 60068-2-27)
Vibration (operation)	5g (IEC 60068-2-6)

#### Altitude range (≤ 2000 m)

,	
Altitude	≤ 2000 m (The technical data refers to altitudes ≤2000 m above mean sea level. For altitudes >2000 m above mean sea level, refer to the data sheet.)
Ambient temperature (operation)	-20 °C 65 °C
Safety-related maximum voltage U <sub>m</sub>	253 V AC/DC (Terminals 1.1, 1.2)
	250 V AC (Terminals 3.1, 3.2, 3.3)



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	120 V DC (Terminals 3.1, 3.2, 3.3)
	30 V (Installation in zone 2)
Altitude range (≤ 3000 m)	
Height range	> 2000 m 3000 m
Ambient temperature (operation)	-20 °C 55 °C
Safety-related maximum voltage U <sub>m</sub>	190 V AC (Terminals 1.1, 1.2)
J III	110 V DC (Terminals 1.1, 1.2)
	190 V AC (Terminals 3.1, 3.2, 3.3)
	110 V DC (Terminals 3.1, 3.2, 3.3)
	30 V (Installation in zone 2)
Altitude range (≤ 4000 m)	
Height range	> 3000 m 4000 m
Ambient temperature (operation)	-20 °C 50 °C
Safety-related maximum voltage U <sub>m</sub>	60 V AC/DC (Terminals 1.1, 1.2)
	60 V AC/DC (Terminals 3.1, 3.2, 3.3)
	30 V (Installation in zone 2)
	(
Altitude range (≤ 5000 m)	
Height range	> 4000 m 5000 m
Ambient temperature (operation)	-20 °C 45 °C
Safety-related maximum voltage U <sub>m</sub>	60 V AC/DC (Terminals 1.1, 1.2)
	60 V AC/DC (Terminals 3.1, 3.2, 3.3)
	30 V (Installation in zone 2)
pprovals	
CE	
Certificate	CE-compliant
ATEX	
Identification	
Certificate	IBExU 10 ATEX 1044 X
IECE,	
IECEx Identification	[Ex ia Ga] IIC
Identification	[Ex ia Da] IIIC
	Ex ec ic nC [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	IECEx IBE 10.0004 X
INMETRO	
	[Ex ia Ga] IIC



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- ast transients (burst)	
Typical deviation from the measuring range final value	2 %
Standards/regulations	EN 61000-4-3
Designation	Electromagnetic RF field
Electromagnetic HF field	
Standards/regulations	EN 61000-6-4
Noise emission	EN 04000 C 4
Naisa amining	domaiono.
Note	When being exposed to interference, there may be minimal deviations.
Noise immunity	EN 61000-6-2
Electromagnetic compatibility	Conformance with EMC directive
IC data	
Enclosure	Required protection according to the Rules shall be provided upon installation on board
EMC	A
Vibration	A
Humidity	В
Temperature	В
Shipbuilding data	
Identification	ď
Performance Level (ISO 13849)	
Identification	2
Systematic Capability	
Certificate	SEBS-A.150520/17, V2.0
Identification	2
Safety Integrity Level (SIL, IEC 61508)	
Certificate	DNV GL TAA000020C
Shipbuilding approval	
Certificate	17-KA4BO-0411X
Identification	[Ex ia] IIC
(C-s	
Certificate	®,®, C.DNo 83104549
Identification	UL 508 Listed
JL, USA/Canada	
Cerunicate	DINV 10.0145 A
Certificate	[Ex ia Ma] I  DNV 18.0143 X
	Ex ec ic nC [ia Ga] IIC T4 Gc
Identification	5 . O. O. D. D. D. T. O.



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Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	2 %
Conducted interference	
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	2 %
Standards and regulations	
Electrical isolation	4-way isolation
Mounting	
Mounting type	DIN rail mounting

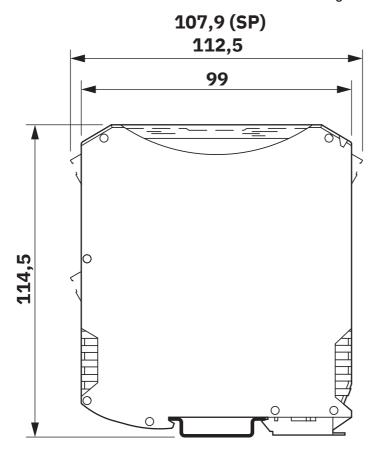


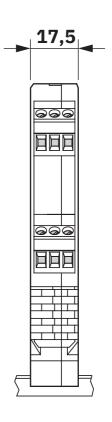
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### Drawings

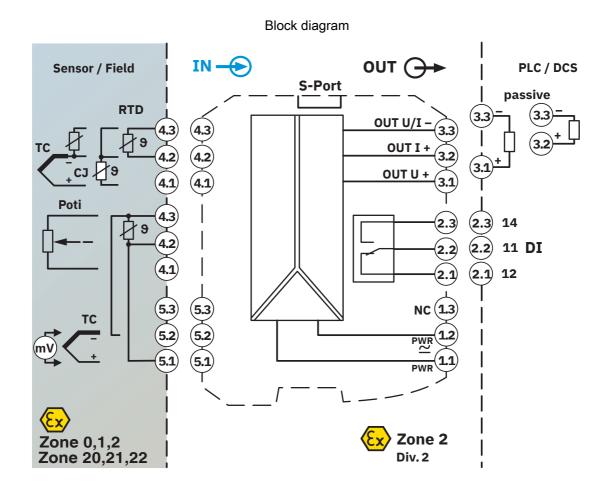
Dimensional drawing







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### **Approvals**

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2865654

DNV

Approval ID: TAA000020C



**UL Listed** 

Approval ID: E238705



cUL Listed

Approval ID: E238705



**IECEx** 

Approval ID: IECEx IBE 10.0004X



cUL Listed

Approval ID: E199827



**UL Listed** 

Approval ID: E199827



**ATEX** 

Approval ID: IBExU 10 ATEX 1044



Approval ID: DNV 18.0143 X



KC-s

Approval ID: 17-KA4BO-0411X

#### **INMETRO**

Approval ID: DNV 18.0143 X



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### Classifications

#### **ECLASS**

	ECLASS-13.0	27210129	
	ECLASS-15.0	27210129	
ETIM			
	ETIM 9.0	EC002919	
UNSPSC			
	UNSPSC 21.0	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	38abe268-e596-4328-9202-4f127a6029b6



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#### Accessories

EA-MSTB 2,5/5 - Accessories

1831016

https://www.phoenixcontact.com/us/products/1831016

Cover for screw shafts of the MSTB connector ranges with a pitch of 5.0 mm and 5.08 mm. These can be aligned and shortened for use with different numbers of positions



#### MCR-DP - Separating plate

1430594

https://www.phoenixcontact.com/us/products/1430594



The partition plate is used to maintain  $Ex\ i$  isolating distances when  $Ex\ i$  and non- $Ex\ i$  devices are mounted side by side on a DIN rail.



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

2811271

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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.

#### MACX MCR-EX-I20 - Plug

2905679

https://www.phoenixcontact.com/us/products/2905679



Connection terminal block for current signals +20 mA  $\dots$  -20 mA for safe switching of limit values, in combination with MACX...EX-T-UI... temperature transducers.



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#### MACX MCR-EX-CJC - Plug

2925002

https://www.phoenixcontact.com/us/products/2925002



Plug for cold junction compensation for thermocouples, for safe switching of limit values, in combination with MACX ...EX-T-UI... temperature transducers.

#### 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.



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### MPS-IH WH - Insulating sleeve

0201663

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Insulating sleeve, color: white



#### MPS-IH RD - Insulating sleeve

0201676

https://www.phoenixcontact.com/us/products/0201676

Insulating sleeve, color: red





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### MPS-IH BU - Insulating sleeve

0201689

https://www.phoenixcontact.com/us/products/0201689

Insulating sleeve, color: blue



#### MPS-IH YE - Insulating sleeve

0201692

https://www.phoenixcontact.com/us/products/0201692

Insulating sleeve, color: yellow





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#### MPS-IH GN - Insulating sleeve

0201702

https://www.phoenixcontact.com/us/products/0201702

Insulating sleeve, color: green



#### MPS-IH GY - Insulating sleeve

0201728

https://www.phoenixcontact.com/us/products/0201728

Insulating sleeve, color: gray





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#### MPS-IH BK - Insulating sleeve

0201731

https://www.phoenixcontact.com/us/products/0201731

Insulating sleeve, color: black



#### MPS-MT - Test plug

0201744

https://www.phoenixcontact.com/us/products/0201744



Test plug, with solder connection up to 1 mm<sup>2</sup> conductor cross-section, number of positions: 1, color: gray



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#### UC-EMLP (11X9) - Plastic label

0819291

https://www.phoenixcontact.com/us/products/0819291



Plastic label, Sheet, white, unmarked, can be labeled with: BLUEMARK E. CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

#### UC-EMLP (11X9) YE - Plastic label

0822602

https://www.phoenixcontact.com/us/products/0822602



Plastic label, Sheet, yellow, unmarked, can be labeled with: BLUEMARK E. CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm



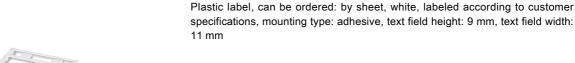
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https://www.phoenixcontact.com/us/products/2865654

#### UC-EMLP (11X9) CUS - Plastic label

0824547

https://www.phoenixcontact.com/us/products/0824547





#### UC-EMLP (11X9) YE CUS - Plastic label

0824548

https://www.phoenixcontact.com/us/products/0824548

Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, text field height: 9 mm, text field width: 11 mm





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### UC-EMLP (11X9) SR - Plastic label

0828094

https://www.phoenixcontact.com/us/products/0828094



Plastic label, Sheet, silver, unmarked, can be labeled with: BLUEMARK E. CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

#### UC-EMLP (11X9) SR CUS - Plastic label

0828098

https://www.phoenixcontact.com/us/products/0828098



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm



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#### US-EMLP (11X9) - Plastic label

0828789

https://www.phoenixcontact.com/us/products/0828789



Plastic label, Card, white, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

#### US-EMLP (11X9) YE - Plastic label

0828871

https://www.phoenixcontact.com/us/products/0828871



Plastic label, Card, yellow, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm



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#### US-EMLP (11X9) SR - Plastic label

0828872

https://www.phoenixcontact.com/us/products/0828872



Plastic label, Card, silver, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

#### LS-EMLP (11X9) WH - Device marker

0831678

https://www.phoenixcontact.com/us/products/0831678

Device marker, Sheet, white, unmarked, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm





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#### LS-EMLP (11X9) SR - Device marker

0831705

https://www.phoenixcontact.com/us/products/0831705

Device marker, Sheet, silver, unmarked, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm



#### LS-EMLP (11X9) YE - Device marker

0831732

https://www.phoenixcontact.com/us/products/0831732

Device marker, Sheet, yellow, unmarked, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm





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

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

#### 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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