

2865654

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

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Freely programmable Ex-i temperature transducer with analog output and 1 limit value relay, standard configuration, resistance thermometer in 2-, 3-, or 4-conductor technology, thermocouples, electrical isolation, wide-range power supply, screw connection, SIL, PL.

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	CK3121
Catalog page	Page 150 (C-5-2019)
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

NI	~	taa	
IV	u	165	

EMC note	EMC: class A product, see manufacturer's declaration in the download area
duct properties	
Product type	Temperature transmitter
Product family	MACX Analog
Туре	Ex i signal conditioners with SIL and PL Functional Safety
Configuration	DIP switches
	Software
sulation characteristics	
Overvoltage category	II
Pollution degree	2
ctrical properties	
Electrical isolation	4-way isolation
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)
lectrical isolation Input/output/power supply	
Test voltage	2.5 kV AC (50 Hz, 60 s)
lectrical isolation Input/output	
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
lectrical isolation Input/power supply	
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
electrical isolation Input/switching output	
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
lectrical isolation Output/supply	
Rated insulation voltage	300 V _{rms}
Insulation	Safe isolation in accordance with IEC/EN 61010-1
upply	
Nominal supply voltage range	24 V AC/DC 230 V AC/DC (50/60 Hz)
Supply voltage range	19.2 V AC/DC 253 V AC/DC (24 V AC/DC 230 V AC/DC 20 % +10 %, 50/60 Hz))
Typical current consumption	< 50 mA (24 V DC)
Power consumption	< 1.5 W



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Input data

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 ₂ , hard gold-plated
Maximum switching voltage	30 V AC (30 V 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	4 mA 20 mA (in the case of SIL; further free configuration without SIL)
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	according to NE 43 or freely configurable

Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross section rigid	0.2 mm² 2.5 mm²
Conductor cross section flexible	0.2 mm ² 2.5 mm ²
Conductor cross section AWG	24 14
Tightening torque	0.5 Nm 0.6 Nm



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lax. diameter	2 mm
ata	
Ex installation (EPL)	Gc
	Div. 2
Ex i circuits (EPL)	Ga
	Da
	Ma
	Div. 1
ety data	
Max. internal inductance L _i	negligible
Max. internal capacitance C _i	44 nF
Max. output voltage U _o	6 V DC
Max. output current I _o	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 _o	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)
Safety-related maximum voltage U _m	253 V AC (Terminals 1.1, 1.2)
	125 V DC (Terminals 1.1, 1.2)
	250 V AC (Terminals 3.1, 3.2)
	120 V DC (Terminals 3.1, 3.2)
	30 V (Installation in zone 2)
IIC (mixed circuit): Max. external inductivity $L_{\rm o}$ / Max. external capacitance $C_{\rm o}$	100 mH / 600 nF
//IB/IIA/IIIC (mixed circuit): Max. external inductivity $\rm L_{\rm o}$ / Max. external capacitance $\rm C_{\rm o}$	100 mH / 1 μF
aling	
Status display	Green LED (supply voltage)
	Red LED, flashing (line, sensor error, ERR)
	Red LED (module error, ERR)
	Yellow LED (switching output)



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Dimensions

Dimensional drawing	118 (SP) 112,5 99 17,5 99 177,5
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	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.)

Altitude range (≤ 3000 m)

Height range	> 2000 m 3000 m
Ambient temperature (operation)	-20 °C 55 °C
Safety-related maximum voltage \mathbf{U}_{m}	190 V AC (Terminals 1.1, 1.2)
	110 V DC (Terminals 1.1, 1.2)
	190 V AC (Terminals 3.1, 3.2)
	110 V DC (Terminals 3.1, 3.2)
	30 V (Installation in zone 2)

Altitude range (≤ 4000 m)

Height range		> 3000 m 4000 m
Ambient temperature (operation	1)	-20 °C 50 °C



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Safety-related maximum voltage U _m	60 V AC/DC (Terminals 1.1, 1.2)
	60 V AC/DC (Terminals 3.1, 3.2)
	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 _m	60 V AC/DC (Terminals 1.1, 1.2)
,	60 V AC/DC (Terminals 3.1, 3.2)
	30 V (Installation in zone 2)
Approvals	
CE	
Certificate	CE-compliant
ATEX	
Identification	
	ⓑ II 3 G Ex ec ic nC [ia Ga] IIC T4 Gc
	ⓑ I (M1) [Ex ia Ma] I
Certificate	IBExU 10 ATEX 1044
UKCA Ex (UKEX)	
Identification	ⓑ I (M1) [Ex ia Ma] I
	ⓑ II 3 (1) G Ex ec ic nC [ia Ga] IIC T4 Gc
Certificate	CML 22UKEX3529X
IECEx	
Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec ic nC [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	IECEx IBE 10.0004 X
UL, USA/Canada	
Identification	UL 508 Listed
Certificate	ւ®։
KC-s	
Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0411X
Shipbuilding approval	
Certificate	DNV GL TAA000020C



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Identification	2
Certificate	SEBS-A.150520/17, V2.0
erformance Level (ISO 13849)	
Identification	d
METRO	
Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec ic nC [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	DNV 18.0143 X
NV GL data	
Temperature	В
Humidity	В
Vibration	A
EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board
C 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
ectromagnetic HF field	
Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	2 %
st transients (burst)	
Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	2 %
onducted interference	
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	2 %
ndards and regulations	
ndards and regulations	A way isolation
Electrical isolation	4-way isolation



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Mounting

Mounting type	DIN rail mounting
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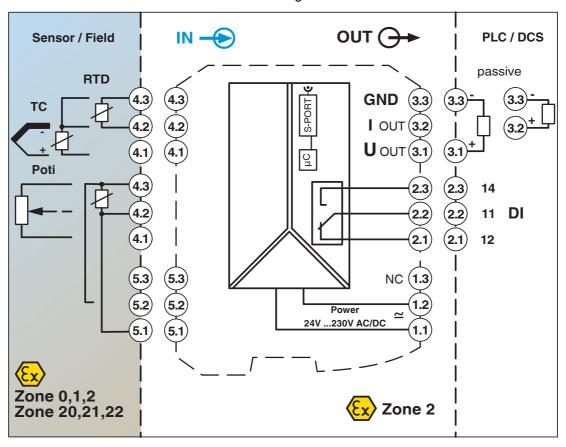


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Drawings

Block diagram

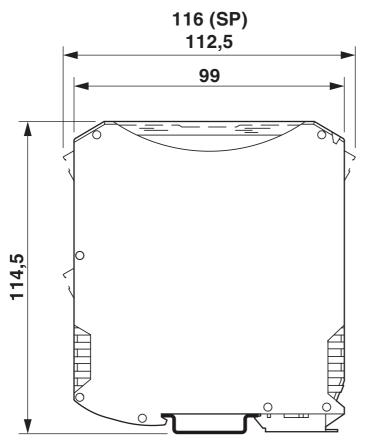


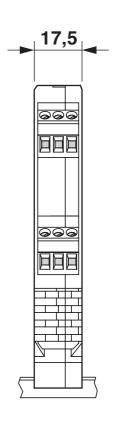


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Dimensional drawing







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To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2865654				
DNV GL Approval ID: TAA000020C				
© UL Listed Approval ID: FILE E 238705				
CUL Listed Approval ID: FILE E 238705				
Functional Safety Approval ID: SEBS-A.150520/17 V1				
Functional Safety Approval ID: 09/11-04 R013 V1R0				
Functional Safety Approval ID: 100134C P0019 C001				
EAC EX Approval ID: RU C-DE.AB72.B.00093				



IECEx

Approval ID: IECEx IBE 10.0004X



cUL Listed

Approval ID: FILE E 199827



UL Listed

Approval ID: FILE E 199827



ATEX

Approval ID: IBExU 10 ATEX 1044



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cULus Listed

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	IMETRO proval ID: DNV 18.0143 X
© •	KC-s Approval ID: 17-KA4BO-0411X
cl	JLus 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)-I
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



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.



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MACX MCR-EX-I20 - Plug

2905679

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



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

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.



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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.

MPS-IH WH - Insulating sleeve

0201663

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Insulating sleeve, color: white





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MPS-IH RD - Insulating sleeve

0201676

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

Insulating sleeve, color: red



MPS-IH BU - Insulating sleeve

0201689

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

Insulating sleeve, color: blue





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MPS-IH YE - Insulating sleeve

0201692

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

Insulating sleeve, color: yellow



MPS-IH GN - Insulating sleeve

0201702

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Insulating sleeve, color: green





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MPS-IH GY - Insulating sleeve

0201728

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Insulating sleeve, color: gray



MPS-IH BK - Insulating sleeve

0201731

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

Insulating sleeve, color: black





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MPS-MT - Test plug

0201744

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



Test plug, with solder connection up to 1 mm² conductor cross section, number of positions: 1, color: gray

UC-EMLP (11X9) - Plastic label

0819291

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



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: 11 x 9 mm, Number of individual labels: 10



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UC-EMLP (11X9) YE - Plastic label

0822602

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



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: 11 x 9 mm, Number of individual labels: 10

UC-EMLP (11X9) CUS - Plastic label

0824547

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

Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm





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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, lettering field size: 11 x 9 mm



UC-EMLP (11X9) SR - Plastic label

0828094

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



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: 11 x 9 mm, Number of individual labels: 10



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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, lettering field size: 11 x 9 mm, Number of individual labels: 10

US-EMLP (11X9) - Plastic label

0828789

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



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: 11 x 9 mm, Number of individual labels: 135



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US-EMLP (11X9) YE - Plastic label

0828871

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



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: 11 x 9 mm, Number of individual labels: 135

US-EMLP (11X9) SR - Plastic label

0828872

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



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: 11 x 9 mm, Number of individual labels: 135



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LS-EMLP (11X9) WH - Device marker

0831678

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

Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



LS-EMLP (11X9) SR - Device marker

0831705

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

Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255





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LS-EMLP (11X9) YE - Device marker

0831732

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

Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



MACX MCR-PTB - Power and error message module

2865625

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Power and fault signaling module with screw connection, including corresponding ME 17,5 TBUS 1,5/5-ST-3,81 GY DIN rail connector



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MACX MCR-PTB-SP - Power and error message module

2924184

https://www.phoenixcontact.com/us/products/2924184



Power and fault signaling module with Push-in connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

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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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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