

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

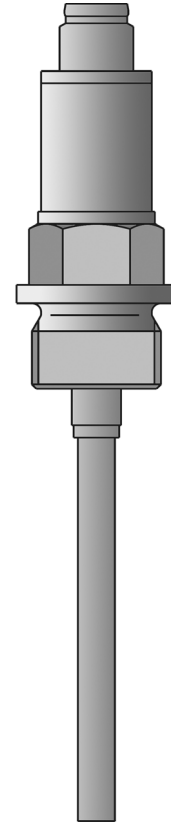
JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



JUMO Dtrans T100

Screw-in resistance thermometers with/without transmitter

- for temperatures from -50 to +260°C
- EHEDG certification
- complies with ROHS for EU and China
- configuration by setup program via USB interface
- M 12x1 plug connection; IP67 protection to EN 60 529 with machine connector plugged in



The screw-in resistance thermometer, which has a compact design, consists of a protection tube with an integrated temperature sensor, a process connection, and an attached housing for the transmitter electronics. The built-in programmable 2-wire transmitter converts the resistance value into a current signal.

The screw-in resistance thermometer and the programmable 2-wire transmitter are used for measuring temperatures from -50 to +150°C (-58 to +302°F), or to 260°C (500°F) with an extension piece (without the transmitter: -50 to +200°C or -58 to +392°F).

The range, fine calibration or measuring circuit monitoring etc. can all be configured with the help of a setup program.

The 4 – 20mA or (reversed) 20 – 4mA output signal that is provided is linear with temperature. The instrument is designed for industrial applications and complies with the European standards for assuring electromagnetic compatibility (EMC).

The transmitter must be protected from temperatures above 85°C !

Technical data

Electrical connection

machine connector M 12x1, 4-pole to IEC 60 947-5-2; FIXCON-capable

Process connection

G 3/8 (3/8" pipe) thread
G 1/2 (1/2" pipe) thread
G 1/2 (1/2" pipe) thread with CIP-compliant conical seal, with EHEDG certification
taper nipple with cap nut (milk pipe screw fitting)
clamping nipple to DIN 32 676
ball weld-in socket with clamping thread
weld-in socket with CIP-compliant conical seal
Varivent connections with EHEDG certification
ball weld-in socket
JUMO PEKA with EHEDG certification

Protection tube

stainless steel 316 L (Mat.Ref. 1.4404/1.4435); stainless steel 316 Ti (Mat.Ref. 1.4571) – on request

Enclosure protection

IP67 protection to EN 60 529, with the machine connector plugged in

Response time

$t_{0,5}$ 5sec in water at 0.4m/sec
 $t_{0,9}$ 12sec in water at 0.4m/sec

Measuring insert

without transmitter:
Pt100 or Pt1000 temperature sensor, EN 60 751, Class A, B or 1/3 DIN B, 2- or 4-wire circuit
with programmable transmitter:
Pt1000 temperature sensor, EN 60 751, Class A, 4-wire circuit

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Technical data (general)

Input

Measurement input	without transmitter: Pt100 or Pt1000 temperature sensor, EN 60 751, Class A, B or 1/3 DIN B, 2- or 4-wire circuit with programmable transmitter: Pt1000 temperature sensor, EN 60 751, Class A, 4-wire circuit
Measuring ranges	Type 902815/10... : -50 to +200°C Type 902815/20... : -50 to +150°C Type 902815/21... : -50 to +260°C with extension piece
Tolerance limits	0.15 + 0.002 · t ¹ , Class A (standard) 0.10 + 0.017 · t ¹ , 1/3 Class B 0.30 + 0.005 · t ¹ , Class B

Environmental influences

Ambient temperature range for the head	Type 902815/10... : -30 to +90°C Types 902815/20... and 902815/21... : -30 to +85°C
Storage temperature range	-30 to +90°C
Climatic conditions	to IEC 68-2-30 (rel. humidity ≤ 95%, with condensation)
Vibration strength	to IEC 68-2-6 (as per GL characteristic)

Technical data (transmitter)

Input

Shortest span	10°C
Sampling rate	1 measurement per second
Input filter	1st order digital filter; filter constant adjustable from 0 to 125sec

Measuring circuit monitoring

Underrange	linear fall off to 3.8mA (as per NAMUR recommendation 43)
Overrange	linear rise up to 20.5mA (as per NAMUR recommendation 43)
Probe short-circuit, probe or lead break	≤ 3.6 mA or ≥ 21.0mA (configurable)
Current limiting for probe short-circuit or probe break	≤ 25mA

Output

Output signal	proportional DC current 4 — 20mA or 20 — 4mA
Transfer characteristic	linear with temperature
Maximum burden resistance (R _B)	R _B = (U _b - 8V) / 23mA, max. 600Ω
Burden error	≤ ±0.02 %/100Ω ²
Settling time after temperature change	≤ 5sec
Settling time after switch-on or reset	≤ 5sec
Measuring accuracy for electronics	0.1°C or 0.08 % ³

Electrical data

Supply voltage (U _b)	8 — 35V DC (pin 1 = +, pin 3 = -), only for operation in SELV or PELV circuits to EN 50 178
Reverse polarity protection	yes
Supply voltage error	≤ ± 0.01 % per V deviation from 24V ²

Environmental influences

Ambient temperature error	≤ ±(15ppm/°C · (range end + 200) + 50ppm/°C · set range) · Δv Δv = deviation of ambient temperature from the reference temperature
Calibration/reference conditions	24V DC at 25°C ± 5°C (77°F ± 9°F)
Electromagnetic compatibility (EMC)	EN 61 326
- interference emission	Class B
- interference immunity	to industrial requirements

¹ |t| is the numerical value of the temperature in °C, disregarding the sign.

² % details refer to the end of range value 20mA.

³ % details refer to the measuring span that has been set, the larger value applies.

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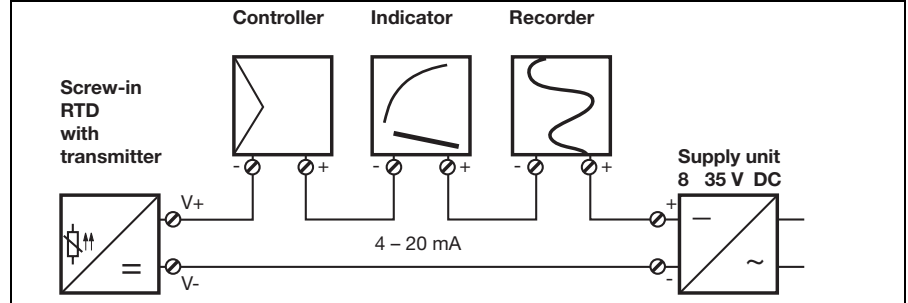
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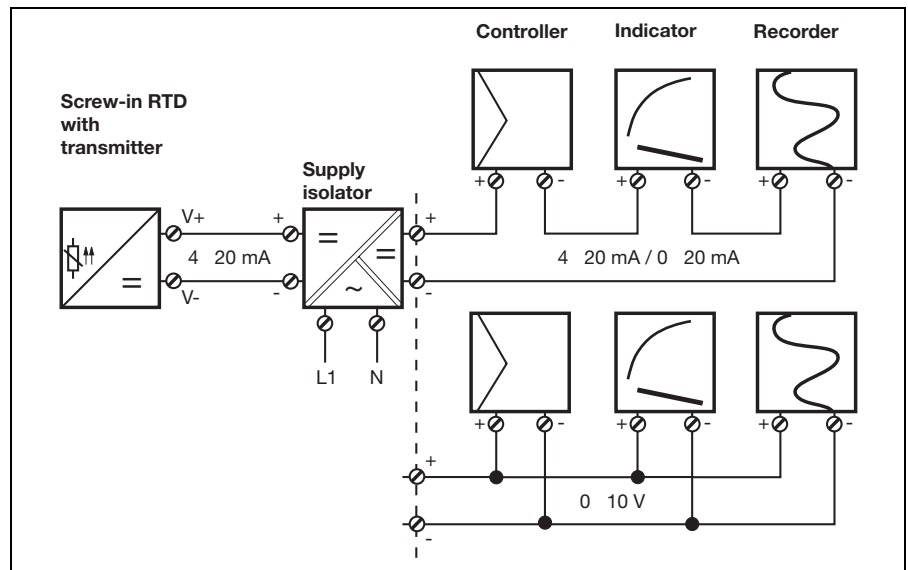


Connection example with transmitter

Connection example with supply unit

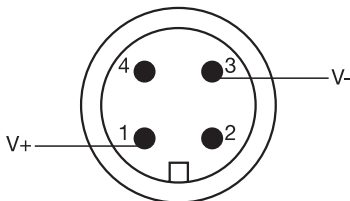
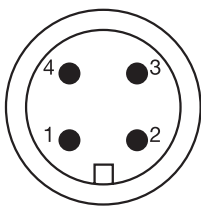


Connection example with supply isolator



Connection diagram

Machine connector M 12x1, 4-pole to IEC 60 947-5-2



Caution:
 do not make any connection to pins 2 and 4!

Electrical connection		Terminal assignments
Type 902815/10... without transmitter		
RTD in 2-wire circuit		
RTD in 4-wire circuit		
Type 902815/20... and 902815/21... with programmable transmitter		
Supply voltage 8 — 35V DC		
Current output 4 — 20mA		
Setup communication via special configuration cable (only for configuration – not for continuous operation)		

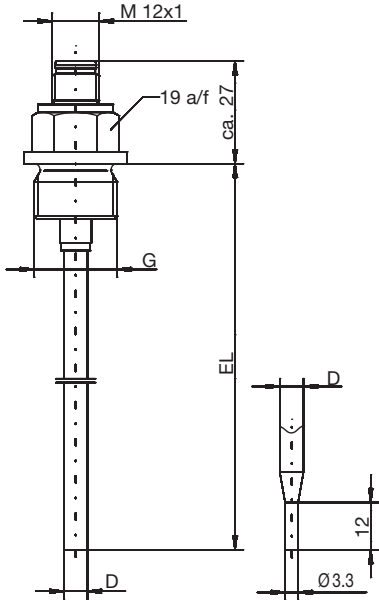
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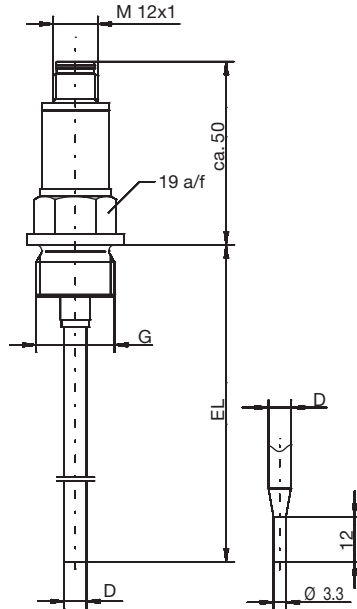
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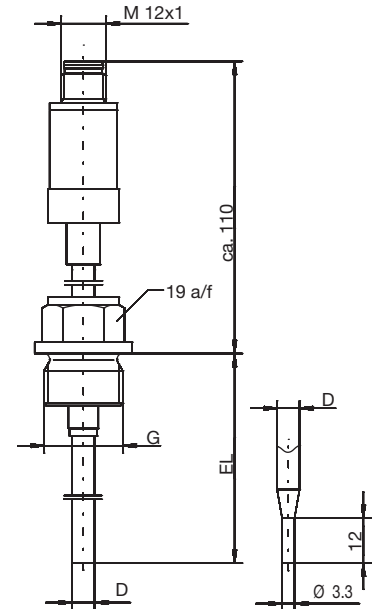
Dimensions – basic versions



Type 902815/10 ...
without transmitter

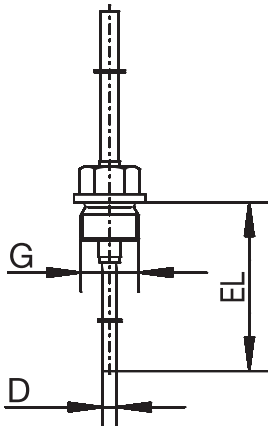


Type 902815/20 ...
with transmitter



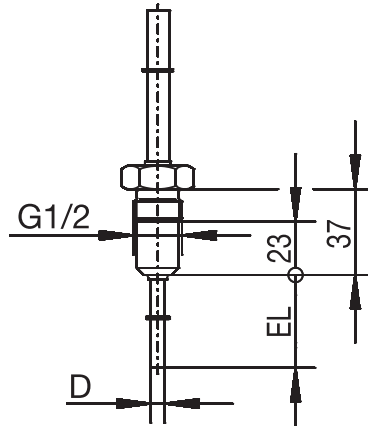
Type 902815/21 ...
with transmitter and extension piece

Dimensions of process connections (PA)



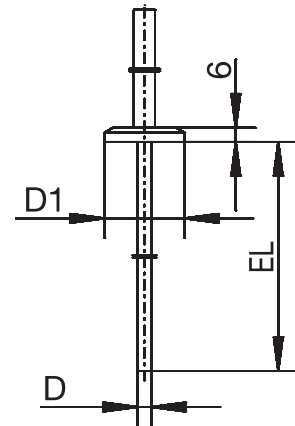
PA	DN
104	1/2
103	3/4

Screw fitting



PA	DN	D1
380		

Screw fitting with
CIP-compliant conical seal



PA	DN	D1	PA	DN	D1
-	-	Ø 25	613	40/1,5"	Ø 50.5
611	10/20	Ø 34	616	50/2"	Ø 64
613	25/1"	Ø 50.5	617	2.5"	Ø 77.5

Clamping nipple to DIN 32 676
(clamp)

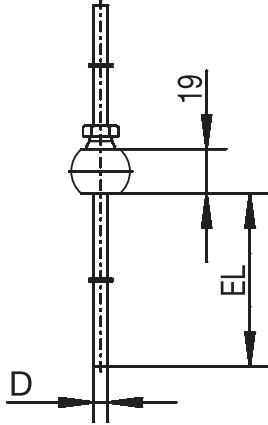
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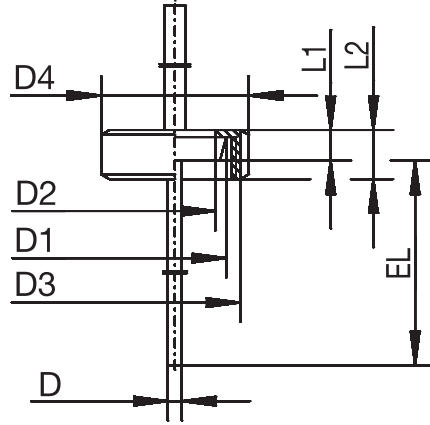


Dimensions of process connections (PA)



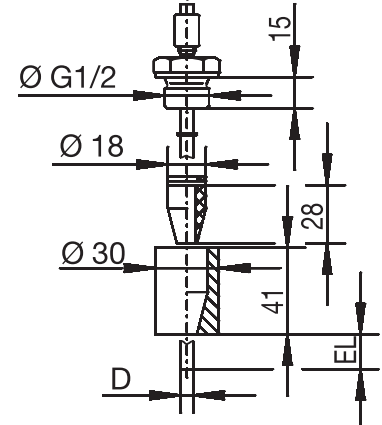
PA	DN	D1
681		

Ball weld-in socket with clamping thread



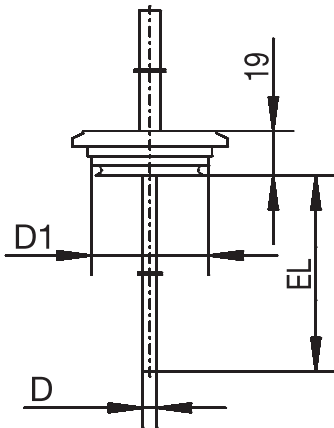
PA	DN	D1	D2	D3	D4	L1	L2
601	10	Ø 22	Ø 18	RD 28x1/8	Ø 38	9	18
604	25	Ø 44	Ø 35	RD 52x1/6	Ø 63	13	21
605	32	Ø 50	Ø 41	RD 58x1/6	Ø 70	13	21

Taper nipple with cap nut to DIN 11 851 (milk pipe screw fitting)



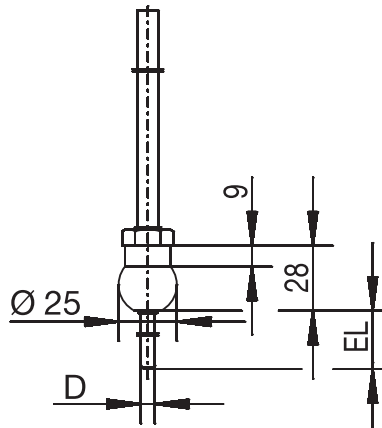
PA	DN	D1
682		

Weld-in socket with CIP-compliant conical seal



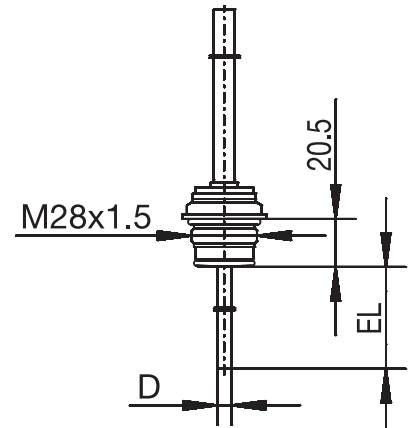
PA	DN	D1
684	15/10	Ø 31
685	32/25	Ø 50
686	50/40	Ø 68

Varivent connection



PA	DN	D1
681		

Ball weld-in socket



Varivent	Clamp	Aseptic	Weld-in socket
DN 25/32	DN 25/32/40	DN 40	Ø 55mm
DN 40-125	DN 50	DN 50	-
-	-	NKS DN 40	-

JUMO PEKA PA 997 Process connection adapter, see data sheet 40.9711

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Order details: JUMO Dtrans T100
Screw-in resistance thermometer with/without transmitter

(1) Basic type

902815/10	Screw-in resistance thermometer without transmitter, connection: M 12x1 machine connector	
902815/20	JUMO Dtrans T100 Screw-in resistance thermometer with programmable transmitter, connection: M 12x1 machine connector	
902815/21	JUMO Dtrans T100 Screw-in resistance thermometer with programmable transmitter, connection: M 12x1 machine connector, high-temperature version with extension piece	

(2) Operating temperature in °C

x	370	-50 to +150 °C (max. transmitter temperature 85 °C)
x	380	-50 to +200 °C
x	386	-50 to +260 °C (max. transmitter temperature 85 °C)

(3) Measuring insert

x	1003	1x Pt100 in 2-wire circuit
x	1005	1x Pt1000 in 2-wire circuit
x	1011	1x Pt100 in 4-wire circuit
x x x	1013	1x Pt1000 in 4-wire circuit

(4) Tolerance class to EN 60 751

x	1	Class B (standard)
x x x	2	Class A (standard)
x	3	Class 1/3 DIN B

(5) Protection tube diameter D in mm

x x x	6	Ø 6mm
-------	---	-------

(6) Fitting length EL in mm (50 ≤ EL ≤ 500)

x x x	50	50mm
x x x	100	100mm
x x x	150	150mm
x x x	200	200mm
x x x	...	specify in plain text (50mm steps)

(7) Process connection (PA)

x x x	000	none
x x x	103	G 3/8 (3/8" pipe) thread
x x x	104	G 1/2 (1/2" pipe) thread
x x x	380	G 1/2 (1/2" pipe) thread with CIP-compliant conical seal, with EHEDG certification
x x x	601	taper nipple with ring nut DN10 to DIN 11 851 (milk pipe screw fitting)
x x x	604	taper nipple with ring nut DN25 to DIN 11 851 (milk pipe screw fitting)
x x x	605	taper nipple with ring nut DN32 to DIN 11 851 (milk pipe screw fitting)
x x x	611	clamping nipple DN 10/20 to DIN 32 676
x x x	613	clamping nipple DN 25/40 (1"/1.5") to DIN 32 676
x x x	616	clamping nipple DN 50 (2") to DIN 32 676
x x x	617	clamping nipple 2.5" similar to DIN 32 676
x x x	681	ball weld-in socket with clamping thread
x x x	682	weld-in socket with CIP-compliant conical seal
x x x	684	Varivent connection DN 15/10, with EHEDG certification
x x x	685	Varivent connection DN 32/25, with EHEDG certification
x x x	686	Varivent connection DN 50/40, with EHEDG certification
x x x	840	ball weld-in pocket (material 316 Ti)
x x x	997	JUMO PEKA with EHEDG certification

(8) Protection tube material

x x x	24	stainless steel 316 L (Mat.Ref. 1.4404/1.4435)
x x x	26	stainless steel 316 Ti (Mat.Ref. 1.4571) (on request)

(9) Extra codes

x x x	000	none
x x	100	customer-specific factory setting (please specify parameters in plain text)
x x x	310	protection tube stepped down from 6mm dia. to 3.3mm
x x x	452	parts in contact with the medium: electrolytically polished, surface roughness Ra ≤ 0.8µm
x x x	810	weld-in socket (only for process connection 380)

Order code	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	/	...	1					
Order example	902815/20	-	370	-	1013	-	2	-	6	-	100	-	104	-	24	/	000

¹ List extra codes in sequence, separated by commas.

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Setup program

The setup program is used for configuring the programmable 2-wire transmitter with the aid of a PC.

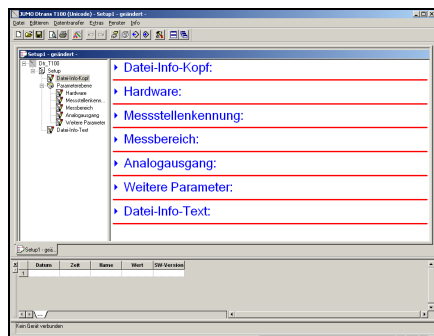
This requires:

- configuration cable with plug connector, socket and Western plug
- PVC connecting cable, length 2 meters
- PC interface with USB/TTL converter and USB cable

(see accessories for programmable 2-wire transmitter)

In order to configure the 2-wire transmitter, it has to be connected to a supply voltage.

If no power supply or supply isolator is available, it can also be configured by using a 9 V battery as a power source.



Configurable parameters

Measuring point ID

- TAG number

Range configurable in °C/°F

- Offset
- Range start
- Range end

Analog output

- Reversed output
- Signal for probe break/short-circuit

Additional parameters

- Filter time constant
- Unit

Hardware and software requirements

The following hardware and software requirements have to be met for installing and operating the software:

Minimum configuration

- Intel Pentium² III
- Microsoft Windows³ 2000 or XP
- 256MB main memory
- CD drive
- mouse
- free USB interface
- 120MB available on hard disk

Recommended configuration

- Intel Pentium 4
- Windows XP
- 512MB main memory

Notes for Windows 2000 or XP

If more than one user is administered by the computer, then the user who is logged in must be the one who will subsequently be working with the program.

The user must have administrator rights during the installation of the software. After installation, the rights can be restricted again. If this is disregarded, it is not possible to ensure a correct and complete installation.

Standard accessories

1 Operating Instructions 90.2815.0

Accessories for programmable 2-wire transmitter

Setup program on CD, multilingual

Configuration cable, 4-pole with plug and socket M 12x1 and Western connector RJ-45

PVC connecting cable, 4-pole with M 12x1 socket, length 2000 mm

PC interface with USB/TTL converter and USB cable

Transmitter supply units: 1- way and 4-way (data sheet 70.7500)

Isolating amplifier and supply isolator for electrical isolation of standard signals and supply voltage for 2-wire transmitter (data sheet 70.7510)

Sales No.

90/00485016
90/00484692
90/00404585
70/00456352

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