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 13032, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us

2-wire transmitter

for pH Type 202701/10
for redox Type 202701/20

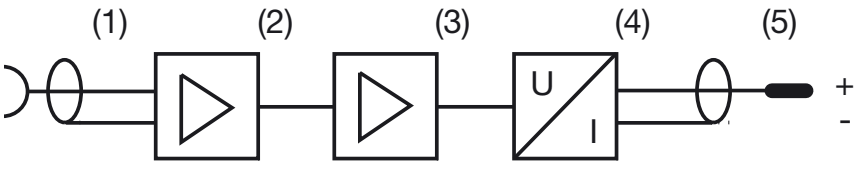
General application

The 2-wire transmitter is intended for linking a pH or redox combination electrode with plug connection to indicators/controllers with an active 4 — 20 mA input. On the output side the 2-wire transmitters have a connection for supply and standard signal. Zero and slope of pH combination electrodes are adjusted at the indicator/controller. No calibration is required for redox electrodes.
The 2-wire transmitter is screwed directly on to the electrode head of the combination electrodes.
This circuit arrangement largely prevents interference from dirt, humidity, or electrical fields from live conductors. A conventional coaxial cable is sufficient as connection between the transmitter and the indicator. This permits trouble-free transmission over larger distances between the transmitter and the indicator.
An isolated supply is recommended when operating the transmitters with a PLC.

Type 202701 for pH
The 2-wire transmitter converts the high-impedance signal of the pH electrode (up to 1000 MOhm) into a standard 4 — 20 mA signal.

Type 202702 for redox
The 2-wire transmitter converts the signal of the redox electrode into a standard 4 — 20 mA signal.

Block diagram



Operation

The combination electrode is connected to the cable socket N (1). The input voltage is passed to the amplifier (2). Stage (3) determines the start and end of the signal assignment. Stage (4) converts the voltage into a proportional 4 — 20 mA current. The connector N (5) connects the 2-wire transmitter to the next instruments.

Technical data

Type 202701/10 pH

Input
The high-impedance voltage signal of the pH electrode in the range +600 to –600 mV is converted to a standard 4 — 20 mA signal (not isolated).

Type 202701/20 redox

Input
The voltage signal of the redox electrode in the range of –1000 mV to +1000 mV is converted to a standard 4 — 20 mA signal (not isolated).

General

Case
PVC

Weight
0.2 kg max.

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Electrical connection

Input
coaxial connector suitable for most commercially available electrode connector heads

Output
coaxial screw-plug connection suitable for cable socket N

Supply U_B
11.5 to 30 V DC
nominally 24 V DC

Max. current uptake
40 mA approx.

Supply voltage error
0.02 %max. of span per Volt deviation from 24 V DC

Output signal

max. burden $\frac{U_B - 11.5V}{0.02A}$

Deviation of characteristic
2.5% max. referred to span

Ambient temperature error
0.2% max. per 10°C referred to span

Burden error
0.02% max. of span per 100 Ohm burden

Permitted ambient temperature
-5 to +55° C

Protection
IP 65 to EN 60 529

CE symbol
EN 50 081 Part 1
EN 50 082 Part 2

Dimensions
diameter 20 mm approx.
length 145 mm approx.

Connections

Coaxial plug		**Coaxial cable**	
outer sleeve	-	screen	-
inner pin	+	inner conductor	+

The current 4 — 20 mA in the output circuit provides the supply to the 2-wire transmitter (4mA) and the output signal (4 — 20 mA).

Supply units suitable for the 2-wire transmitter:

e.g. supply units to Data Sheet 40.9750, if no isolation is required, or supply units to Data Sheet 95.6055 when isolation is necessary.

Order details

		(1)	**Basic type**
	202701		2-wire transmitter
		(2)	**Basic type extension**
	10		pH
	20		redox
		(3)	**Electrical connection - input**
x x	86		N cable socket
		(4)	**Electrical connection - output**
x x	21		N plug cap (S7)
o o	32		Harting connector (Harax M12)
o o	83		M12 connector (4-pole)
		(5)	**Measuring span**
x	01		+600 to -600 mV (for pH)
x	02		-1000 to+1000 mV (for redox)
o	03		-600 to +600 mV (special pH version)
o	04		-500 to +500 mV (special redox version)

	(1)		(2)		(3)		(4)		(5)
Order code		/		-		-		-	
Order example	202701	/	10	-	86	-	21	-	01

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Stock versions (shipment: 3 working days after receipt of order)

Type	Description	Sales No.
202701/10-86-21-01	pH	20/00332272
202701/20-86-21-02	Redox	20/00335049

Production versions (shipment: 10 working days after receipt of order)

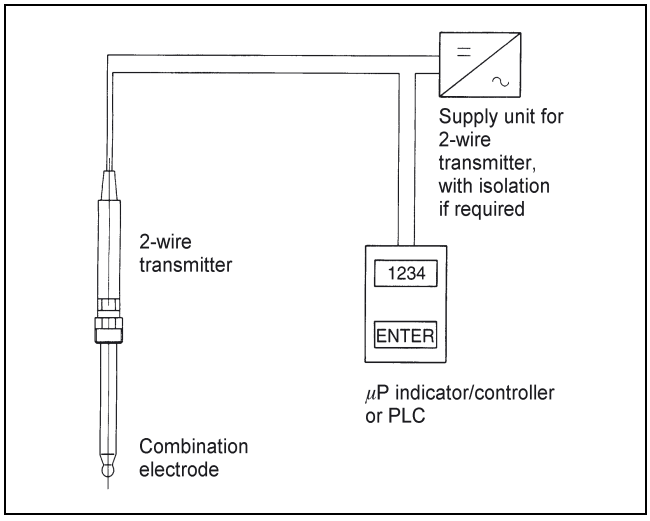
Type	Description	Sales No.
202701/10-86-83-01	pH, M12 connector	20/00409877
202701/10-86-83-03	pH, M12 connector, -600 to +600 mV	20/00415579

Accessories (shipment: 10 working days after receipt of order)

Type	Description	Sales No.
N cable socket (only for connection 21) Type 2991-00-0 / Ø 5 mm		20/00409877
Adapter for checking the signal output of the 2-wire transmitter		20/00332273

Example 1:

Possible arrangement of a complete measurement circuit:



Example 2:

Possible arrangement of a complete measurement circuit for determining electrode parameters, with adapter and multimeter: