Delivery address: Mackenrodtstraße 14 36039 Fulda, Germany

 Postal address:
 36035 Fulda, Germany

 Phone:
 +49 661 6003-0

 Fax:
 +49 661 6003-607

 Email:
 mail@jumo.net

 Internet:
 www.jumo.net

JUMO UK LTD

JUMO House Temple Bank, Riverway Harlow, Essex, CM20 2DY, UK Phone: +44 1279 63 55 33 Fax: +44 1279 62 50 29

Fax: +44 1279 62 50 29 Email: sales@jumo.co.uk Internet: www.jumo.co.uk JUMO Process Control, Inc.

6724 Joy Road

East Syracuse, NY 13057, USA Phone: +1 315 437 5866 Fax: +1 315 437 5860 Email: info.us@jumo.net Internet: www.jumousa.com



Data Sheet 202990

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# Lines, plugs and sockets for pH, redox, conductivity and temperature sensors

## **Brief description**

The use of electrochemical sensors for liquid analysis requires special connection lines and connectors. JUMO offers a selection of tried and tested versions for this application. They are available either as a finished preassembled connection line, as loose material by the roll or as individual plugs/sockets for self-assembly.

#### As a general rule:

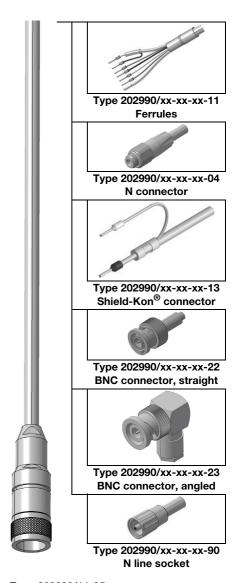
The measuring lead selected between an electrochemical sensor and the transmitter/indicator/controller should be as short as possible. Typical line lengths in this case are 5 to 10 m with high functional reliability. If longer line lengths must be selected in some cases, the technical documentation of the sensors and measuring instruments must be observed. The line between the sensor and evaluation instrument must be laid directly and without interruption (for example terminal strips) or cable extensions.

#### pH and redox measurement

Specially designed coaxial lines are used for pH and redox measurements. In these measurements direct voltages of a lower level are generated by the sensor and transferred to the evaluation instrument. These measurements, some of which are high-resistive measurements (potentiostatic measurement principle, internal resistors up to several gigaohms) are sensitive to electrical faults and radiation. Even a movement of the line can falsify measurement values in unfavorable conditions. An additional layer of insulation in JUMO coaxial line increases the insulation resistance of the line, thereby ensuring a reliable connection from the sensor to the transmitter. Other coaxial lines of the type used for antennas and computers are not suitable and could damage the sensors. This could also result in immediate failure of the sensor or reduced service life. For multiple sensors, for example with integrated temperature sensors, coax lines with individual core wires are available (Variopin, etc.).

#### Conductive conductivity measurement

Connecting cables for conductive conductivity probes as per data sheets 202922 to 202930 are also specially optimized and selected for the application. Alternating voltages of low amplitude in the range of a few Hertz to several Kilohertz are transferred. Accordingly these measuring leads are normally equipped with shielding. The shielding itself must be designed according to applicable technical rules and the relevant application. The individual core wires must be twisted for increased "twisted pair" signal reliability.



Type 202990/11-95-xx-xx-xx with VP line socket

## **Key features**

- High-quality preassembled connection lines
- Highest possible protection type with factory assembly
- Wide range of connectors/sockets and special selection
- Customer-specific versions on request

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Data Sheet 202990

## **Order details**

	(1)	Basic type
202990		Lines, plugs and sockets for pH, redox, conductivity and temperature sensors
	(2)	Type of line
00		Without
02		Line for pH and redox, Ø 5 mm, 75 °C
09		Line for conductive conductivity probes, 4-core
11		VP coaxial line
	(3)	Connection end 1 (sensor side)
00		Without
92		N line socket, rotating
95		VP line socket, 6-pin, for lines Ø 5 mm
	(4)	Line length
		for line type 02
1,5		1.5 m
3		3 m
5		5 m
10		10 m
25		25 m
50		50 m
100		100 m
		for line type 09
25		25 m
50		50 m
		for line type 11
5		5 m
10		10 m
15		15 m
20		20 m
	(5)	Connection end 2 (device side)
00		Without
04		N connector
11		Ferrules
13		Shield-Kon® connector
22		BNC connector, straight, for lines Ø 5 mm
23		BNC connector, angled, for lines Ø 5 mm
90		N line socket, for lines Ø 5 mm

	(1)	_	(2)	_	(3)	_	(4)	_	(5)
Order code		/		-		-		-	
Order example	202990	/	02	-	92	-	10	-	00

Minimum order quantity: Plugs and sockets, 5 pieces per type, deviating and preassembled line 10 pieces per type

Delivery address: Mackenrodtstraße 14 36039 Fulda, Germany

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### JUMO UK LTD

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Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

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6724 Joy Road

East Syracuse, NY 13057, USA Phone: +1 315 437 5866 Fax: +1 315 437 5860 Email: info.us@jumo.net Internet: www.jumousa.com



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# Stock versions (delivery 3 days after receipt of order)

#### **Preassembled lines**

Coaxial lines, Ø 5 mm for pH and redox electrodes, compensation thermometer and glass conductivity cells

Line end 1 (sensor side)	Type of line	Туре	Old type	Line end 2 (device side)	Part no.
92	02			0	
N-line socket, rotating	Low-noise coaxial line, temperature: -25 to +75, PVC, black			Without plug, without socket	
	Length 3 m:	202990/02-92-3-00	2992-2(3)-0		00082672
	Length 5 m:	202990/02-92-5-00	2992-2(5)-0		00082673
	Length 10 m:	202990/02-92-10-00	2992-2(10)-0		00082659
	Length 25 m:	202990/02-92-25-00	2992-2(25)-0		00082660
	Length 50 m:	202990/02-92-50-00	2992-2(50)-0		00303525
		<u> </u>	ZØ	<b></b>	

#### Coaxial lines, Ø 5 mm for pH and redox electrodes, compensation thermometer and glass conductivity cells

Line end 1 (sensor side)	Type of line	Туре	Old type	Line end 2 (device side)	Part no.
92	02			22	
N line socket, rotating	Low-noise coaxial line, temperature: -25 to +75, PVC, black			BNC connector, straight	
6	Length 1 m:	202990/02-92-1-22	-		00328997
		, de la companya de l	\$   		

## Coaxial lines, Ø 5 mm for pH and redox electrodes, compensation thermometer and glass conductivity cells

Line end 1 (sensor side)	Leitungsart	Туре	Old type	Line end 2 (device side)	Part no.
92	02			13	
N line socket, rotating	Low-noise coaxial line, temperature: -25 to +75, PVC, black			Shield-Kon <sup>®</sup> connector	
	Length 1,5 m:	202990/02-92-1,5-13	-		00085154
	Length 5 m:	202990/02-92-5-13	-	5	00307298
	Length 10 m:	202990/02-92-10-13	-		00082649
				0	
				₩ 2, 5,	

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# Connecting cables for pH and redox electrodes and glass conductivity cells and multisensors with integrated temperature sensor; VP terminal head

line socket, 6-pin  with and tem PVC Len Len	P (Variopin) coaxial line th shield +4 stranded wire d cable shield, mperature: -30 to +70, /C, black ngth 5 m:			11 Ferrules	
line socket, 6-pin with and tem PVC Len Len	th shield +4 stranded wire d cable shield, mperature: -30 to +70, /C, black			Ferrules	
	ngth 10 m: ngth 15 m:	202990/11-95-5-11 202990/11-95-10-11 202990/11-95-15-11	- - -		00372919 00373029 00451481
. 4 3		0 2 2	75	1 (TR) 2 (RD) 3 (GY) 4 (BU) 5 (WH) 6 (GN) 7 (GN/YE)	9 5
Contact assignment: (1) p (5) F	ما ا مامه	(2) pH reference (6) Pt100/1000	(3) Pt100/1000 (3-1) (7) Shield	wire)	(4) free

#### Lines (by the roll without plugs or sockets)

#### Coaxial lines, Ø 5 mm for pH and redox measurements

(sensor side)		Туре	Old type	Line end 2 (device side)	Part no.
0	02			0	
Without plug, without socket	Low-noise coaxial line, temperature: -25 to +75, PVC, black			Without plug, without socket	
	Length 100 m:	202990/02-00-100-00	2990-2(100)-0		00085976

#### Connecting cables, Ø 5.7 mm for conductive conductivity probes (2-electrode system)

Line end 1 (sensor side)	Type of line	Туре	Old type	Line end 2 (device side)	Part no.		
0	09			0			
Without plug, without socket	4 stranded wire and shield temperature: -5 to +80 PVC, grey			Without plug, without socket			
	Length 25 m:	202990/09-00-25-00	2990-9(25)-0		00303681		
	Length 50 m:	202990/09-00-50-00	2990-9(50)-0		00304181		
Z0Z990/09-00-30-00   Z990-9(30)-0     00304181							

Color coding to DIN IEC 757:

 $BU = Blue \qquad GN = Green \qquad GN/YE = Green/Yellow \ GY = Grey \qquad RD = Red \qquad TR = Transparent \qquad WH = White \qquad YE = Yellow \ GN = Green \ GN/YE = Green/Yellow \ GY = Green \ GN/YE = Green \ GN/YE = Green/Yellow \ GY = Green \ GN/YE = Green/Yellow \ GY = Green \ GN/YE = GN$ 

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Data Sheet 202990

## Plugs<sup>1</sup> (for self-assembly on coaxial line)

Designation/illustration	Туре	Old type	for line type	Part no.
N connector for line diameter Ø 5 mm:	202990/00-00-000-04	2990-00-4	02	00061202
BNC connector, straight for line diameter Ø 5 mm:	202990/00-00-000-22	2990-00-22	02	00068842
BNC connector, angled for line diameter Ø 5 mm:	202990/00-00-000-23	2990-00-23	02	00064222

## Sockets<sup>1</sup> (for self-assembly on coaxial line)

Designation/illustration	Туре	Old type	for line type	Part no.
N line socket for line diameter Ø 5 mm:	202990/00-00-000-90	2991-00-0	02	00057350

## **Disposal**



- Do not dispose of the device or replaced parts in the trash after use.
- Dispose of the device and the packaging material in a responsible and environmentally friendly manner.
- Observe the country-specific laws and regulations for waste treatment and disposal.

In accordance with Directive 2012/19/EU on Waste from Electrical and Electronic Equipment, manufacturers are obliged to offer the option of returning waste equipment. Request the return from the manufacturer.

V1.00/EN/00544851/2025-09-03

Minimum order quantity: Plugs and sockets, 5 pieces per type, deviating and preassembled line 10 pieces per type