Supplementary instructions

Connection cables

With M12 plug connector

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VEGA

Contents

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1 For your safety

1.1 Appropriate use

The connection cables described here are used to connect sensors with plug connector M12 x 1 to the power supply/signal processing.

1.2 Impermissible use

As a rule, the cables are not allowed to be used with four-wire instruments. Four-wire instruments are sensors for direct mains connection whose power supply and measurement signal are transmitted over two separate pairs of wires.

1.3 General safety instructions

The safety information in the operating instructions manual of the respective sensor must be noted.

1.4 Safety instructions for Ex areas

Take note of the Ex specific safety instructions for Ex applications. These instructions are attached as documents to each instrument with Ex approval and are part of the operating instructions.

In these cases, only use appropriately approved cables.

2 Product description

2.1 Configuration

Scope of delivery

The scope of delivery encompasses:

● Connection cable
● Documentation
  – This operating instructions manual

Versions

The cables are available in the following versions:

● M12 plug connector on both sides
● M12 plug connector one-sided, open cable ends
● With food/pharmaceutical certificate

2.2 Principle of operation

Area of application

The cables are used to connect sensors with M12 plug connectors to the power supply/signal processing. The versions with M12 plug connector on both sides are intended in particular for connecting sensors with IO-Link to an IO-Link master.

The cables are suitable for the following sensors:.

● Sensors of the plics® family
  – VEGAPULS series 60
  – VEGAFLEX 80 series
  – VEGASON series 60
  – VEGABAR series 80
  – VEGACAL series 60
  – VEGASWING series 60
  – VEGAVIB series 60
  – VEGAWAVE series 60
● Compact devices
  – VEGAPULS 10, 20, 30 series
  – VEGABAR 10, 20, 30 series
  – VEGAPOINT 10, 20, 30 series
  – VEGASWING 51

Position in the housing - plics® devices

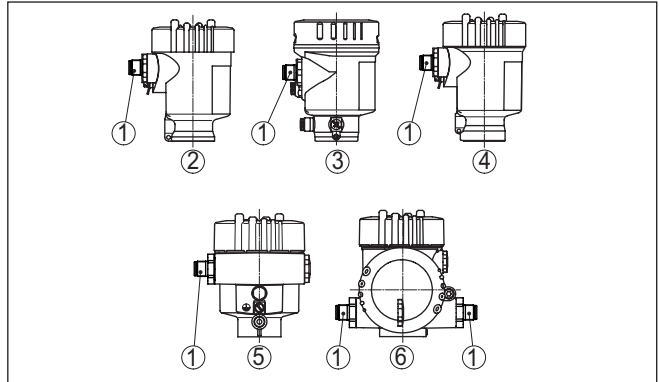The following illustration shows the position of the M12 plug connector in the respective housing:

Fig. 1: Position M12 plug connector - plics® devices

1   Plug connector
2   Single chamber housing plastic
3   Single chamber housing, stainless steel (electropolished)
4   Single chamber housing stainless steel (precision casting)
5   Single chamber housing Aluminium
6   Double chamber housing stainless steel (precision casting), Aluminium
7   Double chamber stainless steel (precision casting), Aluminium - with additional current output

Position in the housing - compact devices

The following illustration shows the position of the M12 plug connector in the respective housing:
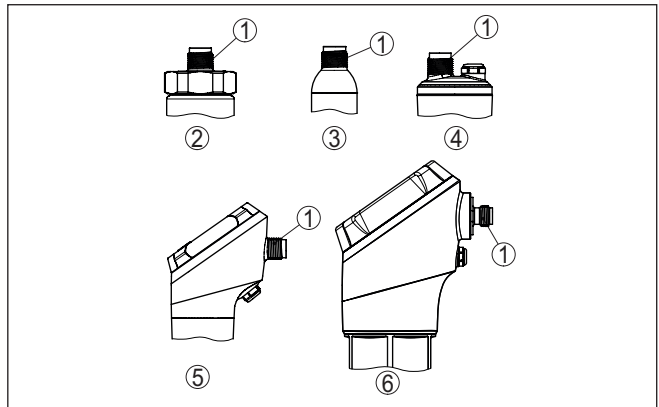

Fig. 2: Position M12 plug connector - compact devices

1   M12 plug connector
2   VEGABAR 10 series, VEGASWING 51
3   VEGAPOINT 10 series
4   VEGABAR 20 series, VEGAPOINT 20, 30 series
5   VEGABAR 30 series
6   VEGAPULS 30 series

3 Wiring plan

3.1 Plug connector on both sides

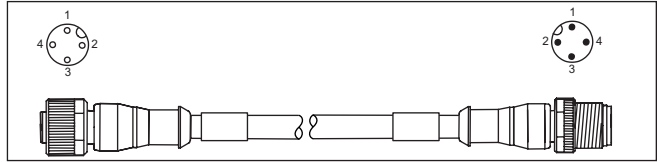**Plug connector, straight**

Product code: M12PC.XTCEH

Fig. 3: Connection cable with plug connector on both sides - straight
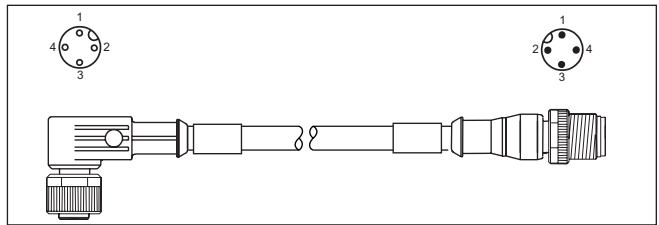
Plug connector, bent

Product code: M12PC.XTDEH

Fig. 4: Connection cable with plug connector on both sides - bent

3.2 Plug connector one-sided, open cable ends

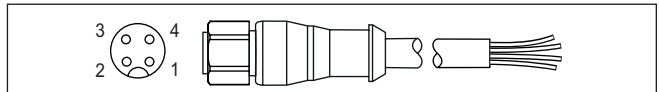**Plug connector straight – Stainless steel**

Product code: M12FL.XACB

Fig. 5: Connection cable with plug connector at single-sided - straight, stainless steel

Plug connector bent – Stainless steel
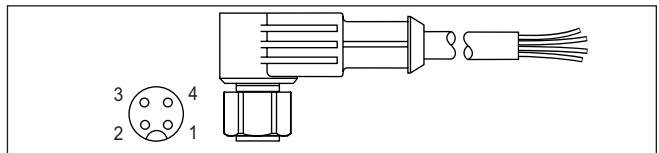
Product code: M12FL.XADB

Fig. 6: Connection cable with plug connector at single-sided - bent, stainless steel

Plug connector bent – Zinc nickel plated
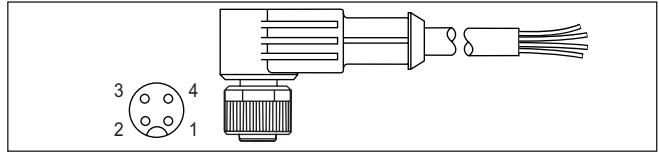
Product code: M12FL.XCBB

Fig. 7: Connection cable with plug connector at single-sided - bent, Zinc nickel plated

Assignment

Contact, plug connector	Wire colour	Function/Polarity
1	Brown	Voltage supply/Plus
2	White	Sensor-dependent
3	Blue	Voltage supply/Minus
4	Black	Sensor-dependent

3.3 Plug connector single-sided (special cable for PA/FF sensors with VEGADIS 81)

Plug connector straight – Brass nickel plated

From product code: PAFF-ADAPKIT.B1M

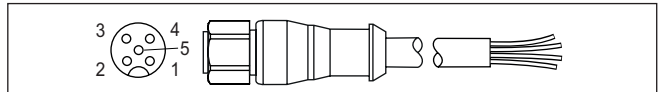*Fig. 8: Connection cable with plug connector at single-sided - straight, brass nickel plated*

Assignment

Contact, plug connector	Wire colour	Function/Polarity
1	Brown	Voltage supply/Plus
2	White	Free
3	Blue	Voltage supply/Minus
4	Black	Inner shielding
5	Yellow-green	Outer shielding

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4 Supplement

4.1 Technical data

Mechanical data

Cable

− Length	Depending on order specification
− Diameter standard approx.	5.0 mm (0.197 in)
− Diameter special cable approx.	7.1 mm (0.280 in)
− Min. bending radius at 25 °C/77 °F	25 mm (0.984 in)

Threaded fitting

− Size	M12x1
− Wrench size	SW 13
− Recommended tightening torque	0.6 Nm (0.45 lbf ft)

Materials

Cable

− Cover	PVC, PUR, TPE-S
− Colour standard/Ex version	black/blue
− Colour with food/pharmaceutical certificate	Pastel blue

Threaded fitting	Stainless steel 1.4404, brass nickel-plated, zinc die-cast nickel-plated
Overmoulding	PP, PUR

Ambient conditions

Ambient temperature

− Standard	-25 … +80 °C (-13 … +176 °F)
− With food/pharmaceutical certificate	-25 … +105 °C (-13 … +221 °F)

Electrical data

Wire cross-section	4 x 0.34 mm² (AWG 22)

Operating voltage U_B max.

− Standard	250 V AC/DC
− With food/pharmaceutical certificate	125 V AC/DC

Reference surge voltage

− Standard	2.5 kV
− With food/pharmaceutical certificate	1.5 kV
− Special cable	2.0 kV
− Standard	2.5 kV

Operating current per contact, max.	4 A
Insulating material group	Category 1 acc. to IEC 60664-1

Electrical protective measures

Protection in assembled and screwed state

‒ Plug connector on both sides   IP67 according to EN 60529

‒ Plug connector on both sides with   IP69K according to EN 60529
  food/pharmaceutical certificate

‒ Plug connector single-sided, brass   IP67 according to EN 60529
  nickel-plated

‒ Plug connector single-sided, stainless IP68 according to EN 60529
  steel

Pollution degree   3
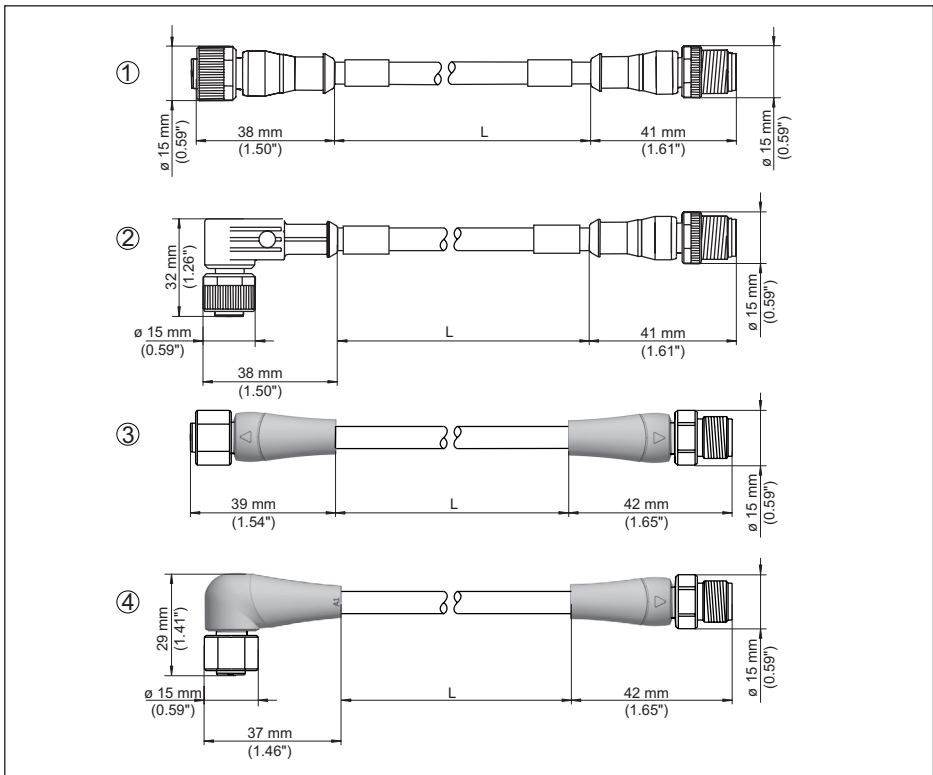
4.2 Dimensions

Fig. 9: Dimensions connection cables with plug connector M12 on both sides

1 *Plug connector, straight*
2 *Plug connector, bent*
3 *Plug connector straight – with food/pharmaceutical certificate*
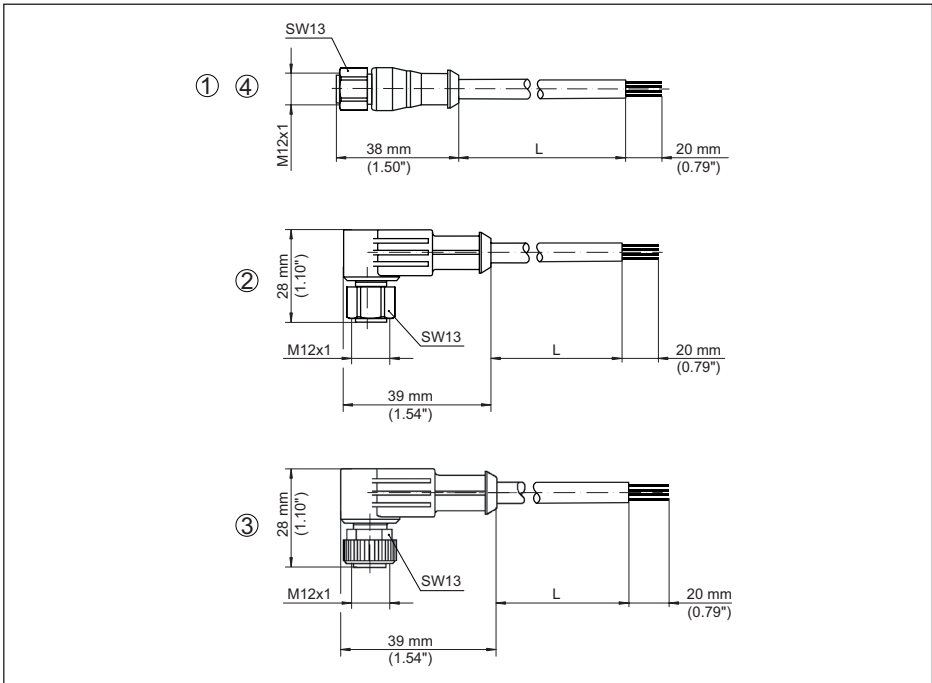4 *Plug connector bent – with food/pharmaceutical certificate*

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Fig. 10: Dimensions connection cables with plug connector M12 single-sided, open cable ends

1   Plug connector straight - Stainless steel
2   Plug connector bent - Stainless steel
3   Plug connector bent - Zinc die-cast
4   Plug connector straight - Brass nickel plated

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