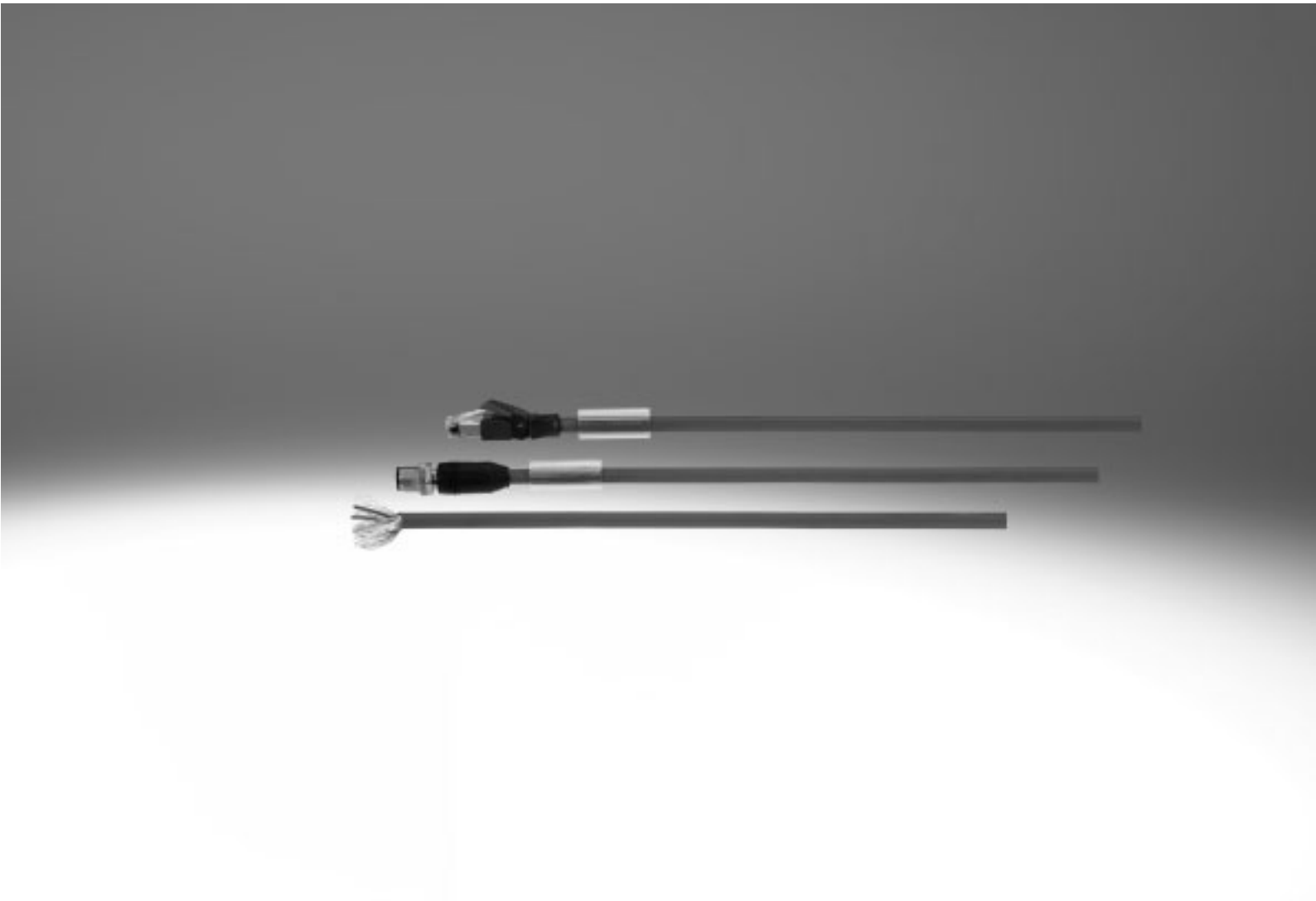
Connecting cables for controllers

FESTO



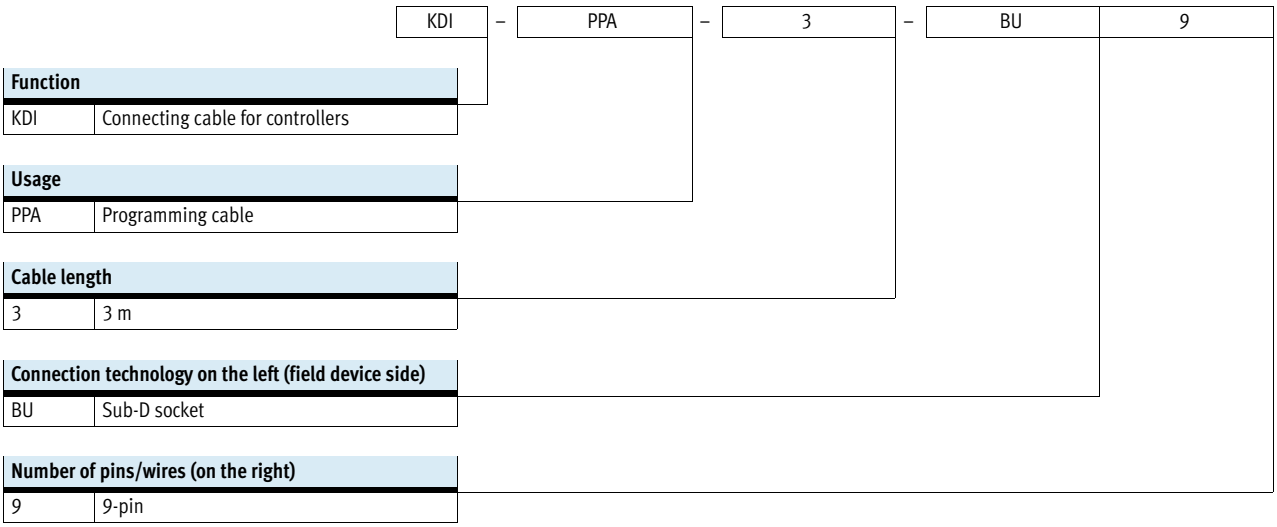
Connecting cables for controllers

Product range overview

Function	Design	Type code	Connection technology (Electrical connection 2)	Cable characteristic	Length	➔ Page/ Internet
Electrical connection 1 plug	**M9 plug**					
	5-pin	NEBC-M9	Open cable end	Suitable for energy chains	2 m 5 m	6
	M12 plug					
	4-pin D-coded	NEBC-D12	M12 plug, 4-pin RJ45 plug, 8-pin Open cable end	Basic Suitable for energy chains	0.5 m 1 m 3 m 5 m 10 m	8
	5-pin	NEBC-A1W3	Socket	Standard	0.3 m	11
	8-pin Festo-specific coding	NEBC-F12	M12 plug, 8-pin	Standard	0.25 m 0.5 m 1 m 1.5 m 2 m 3 m	13
	Sub-D plug					
	9-pin	KDI	Sub-D socket, 9-pin	–	3 m	16
	15-pin	NEBC-S1H15	Open cable end	Suitable for energy chains	1 m 2.5 m 5 m 10 m	18
	25-pin	NEBC-S1G25	Sub-D plug, 25-pin Open cable end	Standard	1 m 2 m 2.5 m 3.2 m 5 m	21
	RJ45 plug					
	8-pin	NEBC-R3G4	RJ45 plug, 8-pin	Standard Suitable for energy chains	0.2 m 1 m	23
	USB 2.0 plug, type A					
	4-pin	NEBC-U1G4	USB 2.0 plug, type B	Standard	1.8 m	26
	USB 3.0 plug, type B					
	10-pin	NEBC-U7G10	USB 3.0 plug, type A	Standard	5 m	27
				Suitable for energy chains	15 m 30 m	27
Electrical connection 1 socket	**Socket M12x1**					
	5-pin	NEBC-M12G5	Open cable end	Suitable for energy chains	5 m	30
	Sub-D socket					
	9-pin	NEBC-S1WA9	Open cable end	Standard	2.5 m 5 m 10 m 0.5 ... 20 m	32

Connecting cables for controllers

Type codes



Function	
KDI	Connecting cable for controllers

Usage	
PPA	Programming cable

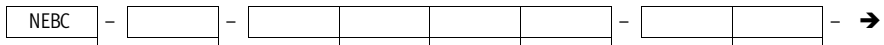
Cable length	
3	3 m

Connection technology on the left (field device side)	
BU	Sub-D socket

Number of pins/wires (on the right)	
9	9-pin

Connecting cables for controllers

Type codes



Function	
NEBC	Connecting cable for controllers

Product version	
–	Standard
C	Easy-to-clean design

Connection technology on the left (field device side)	
LE	Open end
A1	Socket type A, EN 175301-803
P1	Fork spring
M9	Plug M9x0.5
M12	Socket M12x1, A-coded
D12	Plug M12x1, D-coded
F12	M12 plug, with Festo-specific coding
R3	RJ45 plug
S1	Sub-D plug
S1H	Sub-D plug, 3-rows
U1	USB, type A
U7	USB 3.0, type B micro

Cable outlet on the left	
–	None
G	Straight
W	Angled
WA	Angled 45°

Number of pins/wires (on the left)	
3 ... 25	3 ... 25-pin

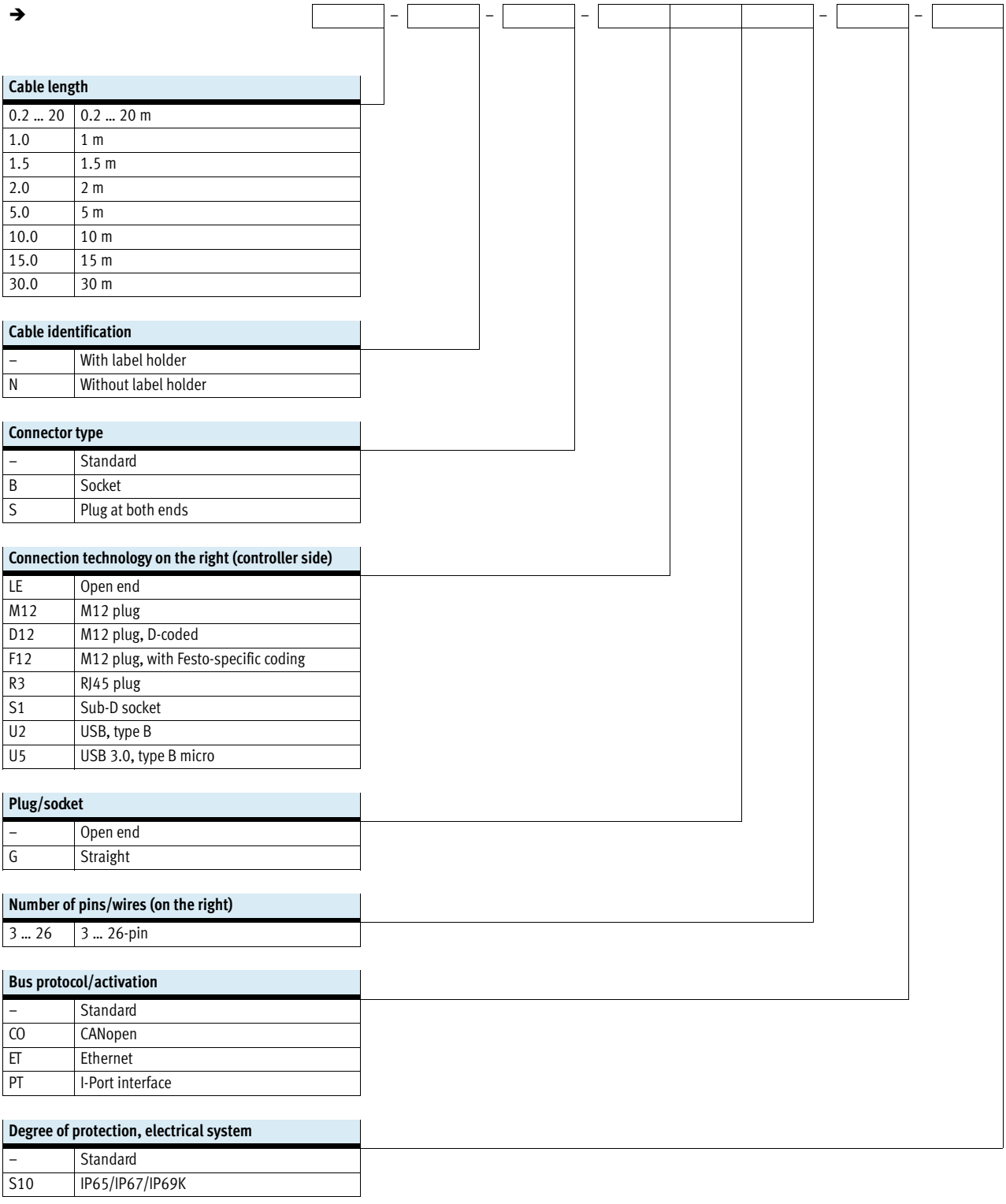
Additional functions	
–	None
HS	With seal

Cable characteristic	
E	Suitable for energy chains
K	Standard

Cable design	
–	Standard
S	Shielded
H	Hybrid cable

Connecting cables for controllers

Type code



Cable length	
0.2 ... 20	0.2 ... 20 m
1.0	1 m
1.5	1.5 m
2.0	2 m
5.0	5 m
10.0	10 m
15.0	15 m
30.0	30 m

Cable identification	
–	With label holder
N	Without label holder

Connector type	
–	Standard
B	Socket
S	Plug at both ends

Connection technology on the right (controller side)	
LE	Open end
M12	M12 plug
D12	M12 plug, D-coded
F12	M12 plug, with Festo-specific coding
R3	RJ45 plug
S1	Sub-D socket
U2	USB, type B
U5	USB 3.0, type B micro

Plug/socket	
–	Open end
G	Straight

Number of pins/wires (on the right)	
3 ... 26	3 ... 26-pin

Bus protocol/activation	
–	Standard
CO	CANopen
ET	Ethernet
PT	I-Port interface

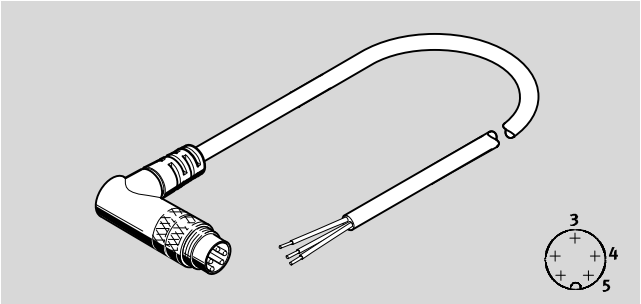
Degree of protection, electrical system	
–	Standard
S10	IP65/IP67/IP69K

Connecting cables for controllers, plug M9, 5-pin

Technical data

Connecting cable NEBC-M9W5

- Connecting cable with 5-pin plug M9x0.5
- Pre-assembled at one end
- Cable lengths: 2 m and 5 m
- Suitable for CPX-CM-HPP



General technical data	
Cable identification	With accessories

Technical data – Electrical connection 2	
Function	Controller side
Connection type	Plug
Cable outlet	Angled
Design	Round
Connection technology	M9x0.5
Number of poles/wires	5
Assigned pins/wires	3
Type of mounting	Screw-type lock

Technical data – Electrical connection 1	
Function	Field device side
Connection type	Cable
Connection technology	Open end
Wire ends	Wire end sleeve
Number of poles/wires	5
Assigned pins/wires	3

Technical data – Electrical		
Operating voltage range	[VDC]	0 … 30
Surge voltage resistance	[kV]	0.5
Current rating at 40°C	[A]	1.6
Information on current rating at 40 °C		2.3 A for 0.34 mm²
		3.6 A for 0.49 mm²
Contamination level		1

Technical data – Cable				
Cable diameter	[mm]	5.5		
Cable characteristic		Suitable for energy chains		
Bending radius, flexible cable installation	[mm]	≥75		
Cable test conditions		Test conditions on request		
Cable design	[mm²]	2x0.25 + 2x0.34 + 0.49		
		Shielded		
Nominal conductor cross section	[mm²]	0.25	0.34	0.49

Connecting cables for controllers, M9 plug, 5-pin

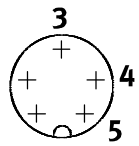
Technical data

Materials	
Housing	PA, PBT, TPE-U(PUR)
Housing colour	Black
Screw-type lock	Brass, nickel-plated
Pin contacts	Bronze, gold-plated
	Brass, gold-plated
Cable sheath	TPE-U(PUR)
Cable sheath colour	Light grey
Insulating sheath	TPE-U(PUR)
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +80
Ambient temperature with flexible cable installation	[°C]	–5 … +80
Corrosion resistance class CRC[1)]		1
Degree of protection		IP65
		IP67
Note on degree of protection		In assembled state

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Circuitry (view of socket/plug)

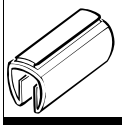
Electrical connection 2	Pin	Wire colour[1)]	Electrical connection 1
	1	n.c.	–
	2	n.c.	–
	3	GN	Open end
	4	WH	Open end
	5	BN	Open end

1) To IEC 757

Ordering data

	Cable length [m]	Weight [g]	Part no.	Type code
Plug M9x0.5 – open cable end	2	108	**563711**	**NEBC-M9W5-K-2-N-LE3**
	5	250	**563712**	**NEBC-M9W5-K-5-N-LE3**

Ordering data – Accessories

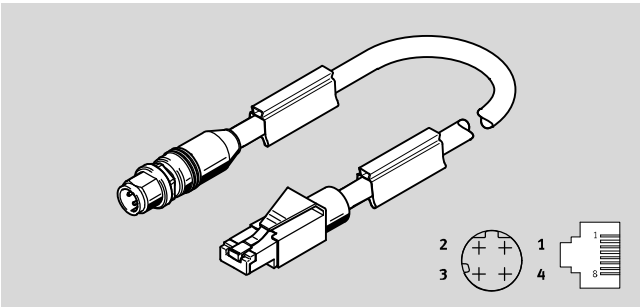
			Part no.	Type code
	Inscription labels for placing on a cable with diameter 5 … 8 mm	11x20 mm	**33361**	**KM-BZ**

Connecting cables for controllers, M12 plug, D-coded

Technical data

Connecting cable NEBC-D12G4

- M12 4-pin connecting cable
- D-coded
- Cable lengths 0.5 … 10 m
- Suitable for Ethernet



General technical data			
	Plug M12x1, D-coded	RJ45 plug	
Conforms to	EN 61076-2-101	IEC 60603-7-3	
Transmission characteristics	In accordance with category 5, EN 50173, class D		
	In accordance with category 5, ISO/IEC 11801, class D		
Ethernet cable specification	Type: CAT.5		

Technical data – Electrical connection 1	
Connection type	Plug
Cable outlet	Straight
Connection technology	M12x1, D-coded
Number of pins/wires	4

Technical data – Electrical connection 2		
Connection type	Plug	Cable
Cable outlet	Straight	–
Connection technology	RJ45	Open end
Wire ends	–	Cut off bluntly, sheath removed
Number of pins/wires	4	4

Technical data – Electrical				
		Plug M12x1, D-coded	RJ45 plug	Open cable end
Operating voltage range	[VDC]	0 … 30	0 … 30	0 … 30
	[VAC]	–	–	0 … 30
Surge voltage resistance	[kV]	0.8	0.8	0.8
Current rating at 40 °C	[A]	4	1.76	4
Contamination level		3	3	3

Technical data – Cable		
Cable diameter	[mm]	6.7
Cable characteristics		Suitable for energy chains
Minimum cable bending radius	[mm]	100
Cable test conditions		Energy chain: 2 million cycles, bending radius 100 mm
		Bending strength: to Festo standard
		Test conditions on request
Cable design	[mm^2]	2x(2x0.34)
Nominal conductor cross section	[mm^2]	0.34
Special characteristics		Oil-resistant

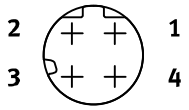
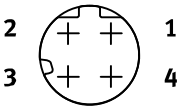
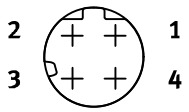
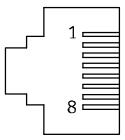
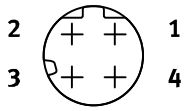
Connecting cables for controllers, M12 plug, D-coded

Technical data

Materials			
	Plug M12x1, D-coded	RJ45 plug	Open cable end
Housing	TPE-U(PUR)	PA, TPE-U(PUR), brass, nickel-plated	TPE-U(PUR)
Housing colour	Black		
Threaded sleeve	Die-cast zinc		
Pin contacts	Brass, gold-plated		
Cable sheath	TPE-U(PUR)		
Cable sheath colour	Green		
Insulating sheath	PE		
Note on materials	Free of copper and PTFE		
	RoHS-compliant		

Operating and environmental conditions			
	Plug M12x1, D-coded	RJ45 plug	Open cable end
Ambient temperature [°C]	–25 … +80		
Ambient temperature with flexible cable installation [°C]	–20 … +60		
Corrosion resistance class CRC[1)]	1		
Degree of protection	IP65	IP20	IP65
	IP67	–	IP67
Approvals	–	–	c UL us listed (OL)

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Circuitry (view of plug)				
	Pin	Wire colour[1)]	Pin	
Electrical connection, plug, M12x1, 4-pin – plug, M12x1, 4-pin				
	1	YE	1	
	2	WH	2	
	3	OG	3	
	4	BU	4	
Electrical connection, plug, M12x1, 4-pin – plug, RJ45, 8-pin				
	1	YE	1	
	2	WH	3	
	3	OG	2	
	4	BU	6	
	–	–	4	
	–	–	5	
	–	–	7	
	–	–	8	
Electrical connection, plug, M12x1, 4-pin – open cable end				
	1	YE	Open end	
	2	WH	Open end	
	3	OG	Open end	
	4	BU	Open end	

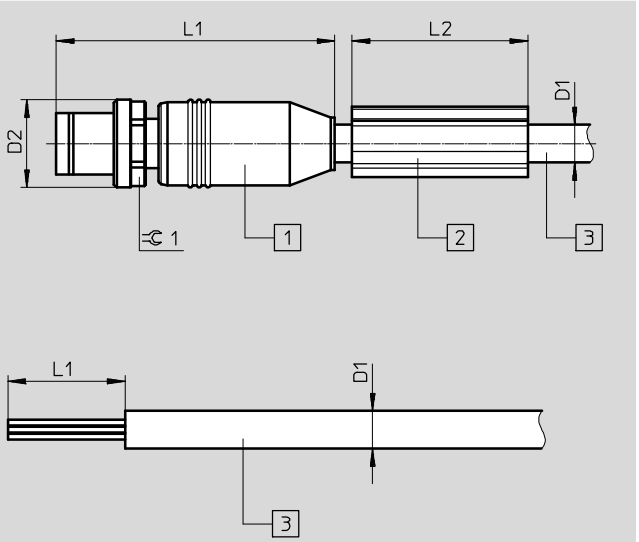
1) To IEC 757

Connecting cables for controllers, M12 plug, D-coded

Technical data

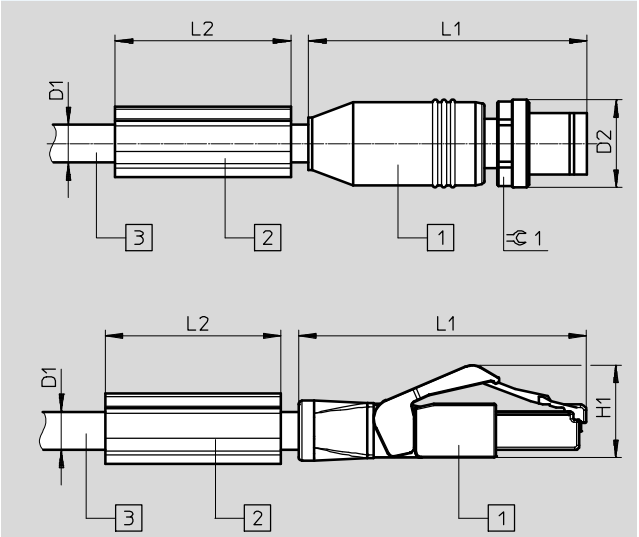
Dimensions Download CAD data ➔ **www.festo.com**

Connection technology, left



1 Plug
2 Inscription label holder
3 Cable, length 0.5 ... 10 m depending on the order

Connection technology, right



1 Plug
2 Inscription label holder
3 Cable, length 0.5 ... 10 m depending on the order

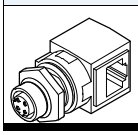
Connection technology, left	D1 ∅	D2 ∅	L1	L2	⫧1
Plug M12x1	6.7	15	47.5	30	13
Open end	6.7	–	20	–	–

Connection technology, right	D1 ∅	D2 ∅	L1	L2	H1	⫧1
Plug M12x1	6.7	15	47.5	30	–	13
RJ45 plug	6.7	–	49	30	15.8	–

Ordering data

Electrical connection 1	Electrical connection 2	Cable length [m]	Weight [g]	Part no.	Type code
Straight plug, M12x1, 4-pin, D-coded	Straight plug, M12x1, 4-pin, D-coded	0.5	57	**8040446**	**NEBC-D12G4-ES-0.5-S-D12G4-ET**
		1	93	**8040447**	**NEBC-D12G4-ES-1-S-D12G4-ET**
		3	223	**8040448**	**NEBC-D12G4-ES-3-S-D12G4-ET**
		5	350	**8040449**	**NEBC-D12G4-ES-5-S-D12G4-ET**
		10	679	**8040450**	**NEBC-D12G4-ES-10-S-D12G4-ET**
	Straight plug, RJ45, 8-pin	1	89	**8040451**	**NEBC-D12G4-ES-1-S-R3G4-ET**
		3	219	**8040452**	**NEBC-D12G4-ES-3-S-R3G4-ET**
		5	347	**8040453**	**NEBC-D12G4-ES-5-S-R3G4-ET**
		10	674	**8040454**	**NEBC-D12G4-ES-10-S-R3G4-ET**
	Open end, 4-wire	5	341	**8040456**	**NEBC-LE4-ES-5-D12G4-ET**

Ordering data – Accessories

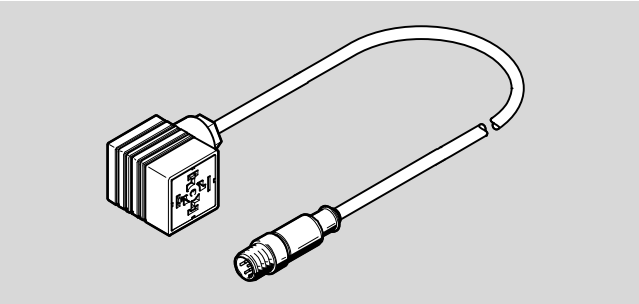
	Electrical connection 1	Electrical connection 2	Part no.	Type code
Cabinet through-feed				
	Straight socket, 4-pin, M12x1, D-coded	Straight socket, 4-pin, M12x1, D-coded	**8040459**	**NEFU-D12G4-D12DG4**
		Angled socket, 8-pin, RJ45	**8040457**	**NEFU-D12G4-R3DW4**

Connecting cables for controllers, M12 plug

Technical data

Connecting cable NEBC-A1W3

- Connecting cable M12 5-pin
- Cable length 0.3 m



General technical data	
Based on norm	EN 61076-2-101

Technical data – Electrical connection 1	
Function	Field device side
Connection type	Socket
Cable outlet	Angled
Design	Square design

Technical data – Electrical connection 2	
Function	Controller side
Connection type	Plug
Cable outlet	Straight
Design	Round
Connection technology	M12x1
Number of pins/wires	5

Technical data – Electrical	
Protective earth connection	Available

Technical data – Cables		
Cable diameter	[mm]	5.9
Approved cable diameter	[mm]	5.7 … 6.1
Minimum cable bending radius	[mm]	90
Cable design	[mm^2]	4x0.34
Nominal conductor cross section	[mm^2]	0.34

Materials	
Housing colour	Black
Cable sheath	TPE-U(PUR), PVC
Cable sheath colour	Grey

Connecting cables for controllers, M12 plug

Technical data

Operating and environmental conditions		
Ambient temperature	[°C]	–25 … +80
Ambient temperature with flexible cable installation	[°C]	–20 … +60
Corrosion resistance class CRC[1)]		0
Degree of protection		IP65

1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

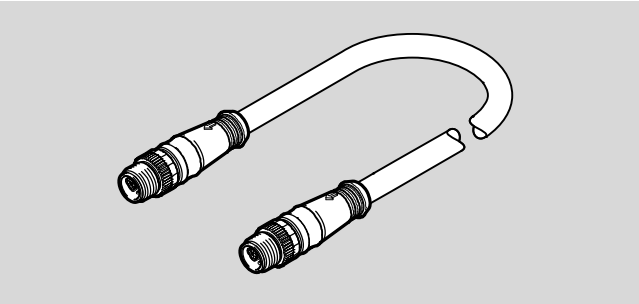
Ordering data				
Electrical connection 2	Electrical connection 1	Cable length [m]	Part no.	Type code
Straight plug, M12x1, 5-pin	Angled socket	0.3	**549294**	**NEBC-A1W3-K-0.3-N-M12G5**
			549293	**NEBC-P1W4-K-0.3-N-M12G5**

Connecting cables for controllers, hybrid plug M12

Technical data

Connecting cable NEBC-F12G8

- Hybrid cable for common transmission of bus signal and power supply
- Hybrid plug M12 8-pin
- Pre-assembled at both ends
- Cable lengths 0.25 … 3 m



General technical data	
Based on norm	Dimensions to EN 61076-2-101
Cable identification	Without label holder
Contact resistance	100

Technical data – Electrical connection 1	
Function	Field device side, controller side
Connection type	Hybrid plug
Cable outlet	Straight
Design	Round
Connection technology	M12x1, with Festo-specific coding
Number of pins/wires	8
Assigned pins/wires	8
Type of mounting	Screw-type lock with A/F14 and longitudinal knurl

Technical data – Electrical connection 2	
Function	Field device side, controller side
Connection type	Hybrid plug
Cable outlet	Straight
Design	Round
Connection technology	M12x1, with Festo-specific coding
Number of pins/wires	8
Assigned pins/wires	8
Type of mounting	Screw lock with SW14 and longitudinal knurl

Technical data – Electrical		
Operating voltage range	[V]	0 … 30
Surge voltage resistance	[kV]	0.8
Current rating at 40 °C	[A]	7
Note on current rating	[A]	1.5 A for cable diameter 0.14 mm^2
Contamination level		3

Connecting cables for controllers, hybrid plug M12

Technical data

Technical data – Cables			
Cable diameter	[mm]	8	
Cable diameter tolerance	[mm]	±0.2	
Cable characteristic		Standard	
Bending radius, fixed cable installation	[mm]	≥24	
Bending radius, flexible cable installation	[mm]	≥56	
Cable test conditions		Test conditions on request	
Cable design	[mm^2]	(1 x (4 x 0.14)) + 4 x 0.75	
Nominal conductor cross section	[mm^2]	0.14	0.75
Special characteristics		Oil resistant	

Materials	
Housing	TPE-U(PUR)
Housing colour	Black
Screw-type lock	Brass, nickel-plated
Pin contacts	Brass, gold-plated
Cable sheath	TPE-U(PUR)
Cable sheath colour	Light grey
Insulating sheath	PP
Note on materials	RoHS-compliant
	Halogen-free

Operating and environmental conditions		
Ambient temperature	[°C]	–25 ... +70
Ambient temperature with flexible cable installation	[°C]	–5 ... +70
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1)]		1
Degree of protection		IP65
		IP67
Note on degree of protection		In assembled state
Approval		c UL us - Recognized (OL)

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Connecting cables for controllers, hybrid plug M12

Technical data

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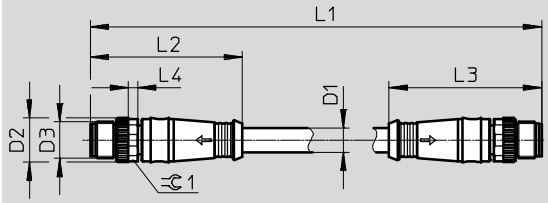
Dimensions Download CAD data ➔ **www.festo.com**



Type code	D1 ∅	D2 ∅	D3	L1	L2	L3	L4	⌀1
NEBC-F12G8-KH-0.25-N-S-F12G8	8	15	M12x1	250	50	50	3	14
NEBC-F12G8-KH-0.5-N-S-F12G8				500				
NEBC-F12G8-KH-1-N-S-F12G8				1000				
NEBC-F12G8-KH-1.5-N-S-F12G8				1500				
NEBC-F12G8-KH-2-N-S-F12G8				2000				
NEBC-F12G8-KH-3-N-S-F12G8				3000				

Ordering data

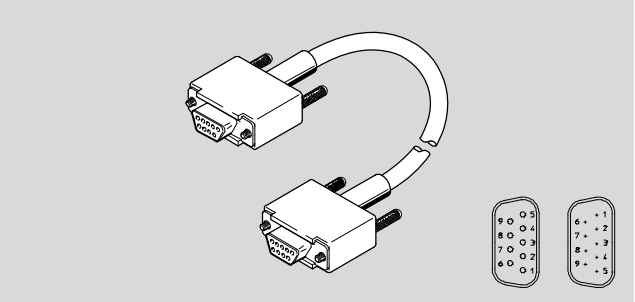
	Cable length [m]	Weight [g]	Part no.	Type code
Hybrid plug, M12x1, with Festo-specific coding, 8-pin	0.25	47	**564189**	**NEBC-F12G8-KH-0.25-N-S-F12G8**
	0.5	69	**564190**	**NEBC-F12G8-KH-0.5-N-S-F12G8**
	1	113	**564191**	**NEBC-F12G8-KH-1-N-S-F12G8**
	1.5	154	**564192**	**NEBC-F12G8-KH-1.5-N-S-F12G8**
	2	200	**576015**	**NEBC-F12G8-KH-2-N-S-F12G8**
	3	280	**576636**	**NEBC-F12G8-KH-3-N-S-F12G8**

Connecting cables for controllers, Sub-D plug, 9-pin

Technical data

Connecting cables KDI

- Connecting cable (programming cable) for different applications
- Pre-assembled at both ends
- Cable length 3 m



General technical data	
Cable identification	With accessories

Technical data – Electrical connection 1	
Function	Controller side
Connection type	Plug
Cable outlet	Straight
Connection technology	Sub-D
Number of pins/wires	9
Assigned pins/wires	3
Type of mounting	Screws 4-40 UNC

Technical data – Electrical connection 2	
Function	Controller side
Connection type	Socket
Cable outlet	Straight
Connection technology	Sub-D
Number of pins/wires	9
Assigned pins/wires	7
Type of mounting	Screws 4-40 UNC

Technical data – Cables		
Cable composition	[mm^2]	9x0.22
		Shielded

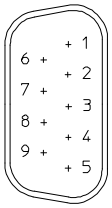
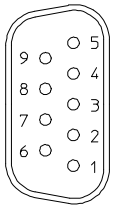
Materials	
Housing	PBT
Contacts	Copper alloy, gold-plated
Union nut	Brass, nickel-plated
Cable sheath	PVC

Operating and environmental conditions		
Ambient temperature	[°C]	–30 … +80
Ambient temperature for flexible cable installation	[°C]	–10 … +80

Connecting cables for controllers, Sub-D plug, 9-pin

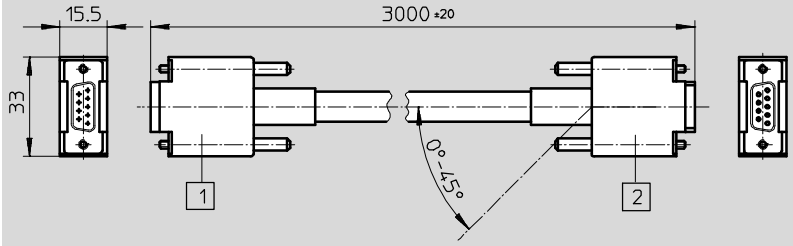
Technical data

Circuitry (view of socket/plug)

Electrical connection 1	Pin	Wire colour[1)]		Pin	Electrical connection 2
	1	n.c.	Bridge to pin 6	1	
	2	BN		3	
	3	GN		2	
	4	n.c.		4	
	5	WH		5	
	6	n.c.	Bridge to pin 1	6	
	7	n.c.	Bridge to pin 8	7	
	8	n.c.	Bridge to pin 7	8	
	9	n.c.		9	
	Housing	Shielded		–	

1) To IEC 757

Dimensions Download CAD data ➔ **www.festo.com**



1 Straight socket, 9-pin, Sub-D
2 Straight plug, 9-pin, Sub-D

Ordering data

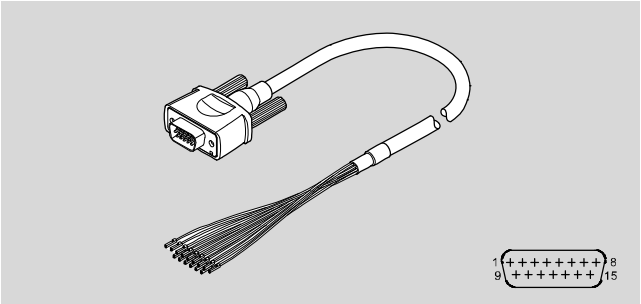
	Cable length [m]	Weight [g]	Part no.	Type code
Sub-D plug, 9-pin - Sub-D socket, 9-pin	3	156	**151915**	**KDI-PPA-3-BU9**

Connecting cables for controllers, Sub-D plug, 15-pin

Technical data

Connecting cable NEBC_S1H15

- Connecting cable, Sub-D, 15-pin
- Cable lengths: 1 m, 2.5 m, 5 m and 10 m



General technical data	
Conforms to standard	DIN 47100
Cable identification	Without label holder

Technical data – Electrical connection 1	
Function	Field device side
Connection type	Plug
Cable outlet	Straight
Design	Square
Connection technology	Sub-D
Number of pins/wires	15
Assigned pins/wires	15
Type of mounting	2x screw 4-40 UNC

Technical data – Electrical connection 2	
Function	Controller side
Connection type	Cable
Connection technology	Open end
Wire ends	Wire end sleeve
Number of pins/wires	15
Assigned pins/wires	15

Technical data – Electrical		
Nominal operating voltage	[VDC]	24
Operating voltage range	[VDC]	0 … 30
Contamination level		3

Technical data – Cable		
Cable diameter	[mm]	6.6
Cable characteristic		Suitable for energy chains
Bending radius, fixed cable installation	[mm]	≥33
Cable design	[mm^2]	18x0.14
Nominal conductor cross section	[mm^2]	0.14

Connecting cables for controllers, Sub-D plug, 15-pin

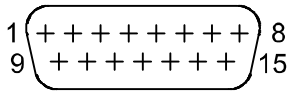
Technical data

Materials	
Cable sheath	TPE-U(PUR)
Cable sheath colour	Grey
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–30 ... +80
Ambient temperature with flexible cable installation	[°C]	–30 ... +80
CE mark (see declaration of conformity)[1]		In accordance with EU Low Voltage Directive
Degree of protection		IP50
Note on degree of protection		In assembled state

1) Additional information www.festo.com/sp ➔ Certificates.

Circuitry (view of plug)



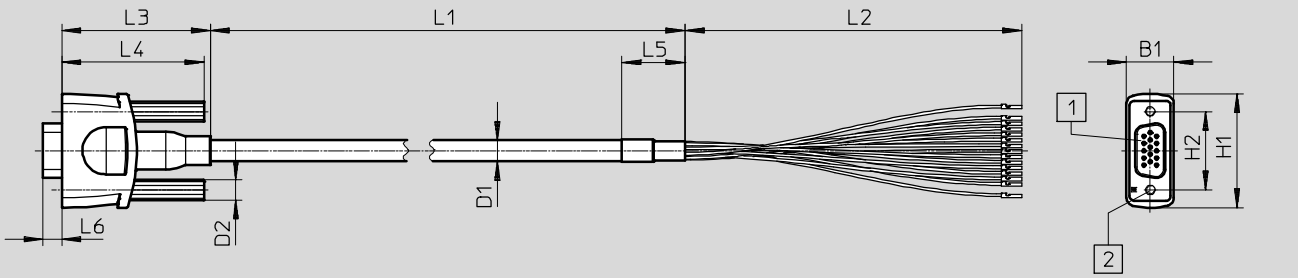
Pin	Wire colour[1]	
1	WH	Open end
2	BN	Open end
3	GN	Open end
4	YE	Open end
5	GY	Open end
6	PK	Open end
7	BU	Open end
8	RD	Open end
9	BK	Open end
10	VT	Open end
11	GY PK	Open end
12	RD BU	Open end
13	GN WH	Open end
14	BN GN	Open end
15	YE WH	Open end

1) To IEC 757

Connecting cables for controllers, Sub-D plug, 15-pin

Technical data

Dimensions Download CAD data ➔ **www.festo.com**



1 Sub-D plug, 15-pin

2 Screw 4-40 UNC

Type code	B1	D1 ∅	D2 ∅	H1	H2	L1	L2	L3	L4	L5	L6
NEBC-S1H15-E-1.0-N-LE15	15	6.6	6.4	36	24.8	1000	100	47	45	20	6
NEBC-S1H15-E-2.5-N-LE15						2500					
NEBC-S1H15-E-5.0-N-LE15						5000					
NEBC-S1H15-E-10.0-N-LE15						10000					

Ordering data

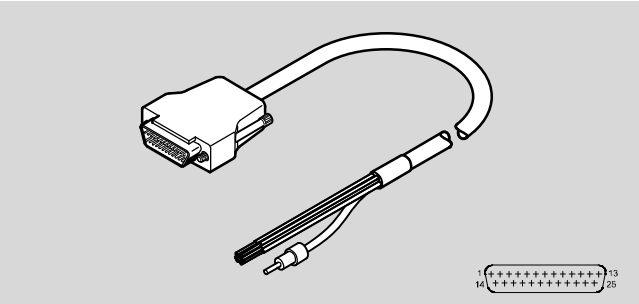
Electrical connection 1	Electrical connection 2	Cable length [m]	Part no.	Type code
Straight plug, Sub-D, 15-pin	Open cable end	1	**2307459**	**NEBC-S1H15-E-1.0-N-LE15**
		2.5	**2052917**	**NEBC-S1H15-E-2.5-N-LE15**
		5	**2052918**	**NEBC-S1H15-E-5.0-N-LE15**
		10	**2052919**	**NEBC-S1H15-E-10.0-N-LE15**

Connecting cables for controllers, Sub-D plug, 25-pin

Technical data

Connecting cable NEBC_S1G25

- Connecting cable, Sub-D, 25-pin
- Cable lengths: 1 m, 2 m, 2.5 m, 3.2 m, 5 m and 10 m



Technical data – Electrical connection 1	
Connection type	Plug
Cable outlet	Straight
Connection technology	Sub-D
Number of pins/wires	25

Technical data – Electrical connection 2			
Type code	NEBC- … -S1G25	NEBC- … -LE25	NEBC- … -LE26
Connection type	Socket	Cable	Cable
Cable outlet	Straight	–	–
Connection technology	Sub-D	Open end	Open end
Number of pins/wires	25	25	26

Technical data – Electrical				
Type code		NEBC- … -S1G25	NEBC- … -LE25	NEBC- … -LE26
Nominal operating voltage	[VDC]	–	–	24
Operating voltage range	[VDC]	–	–	0 … 30
Surge voltage resistance	[kV]	–	–	0.8
Acceptable current load	[A]	–	–	3.9

Technical data – Cables				
Type code		NEBC- … -S1G25	NEBC- … -LE25	NEBC- … -LE26
Cable diameter	[mm]	7	7	10.8
Cable diameter tolerance	[mm]	–	–	±0.2
Minimum cable bending radius	[mm]	–	–	220
Cable design	[mm^2]	Shielded	Shielded	5x(2x0.25) + 16x0.25
Connection diameter	[mm^2]	–	–	0.25

Connecting cables for controllers, Sub-D plug, 25-pin

Technical data

Materials			
Type code	NEBC- ... -S1G25	NEBC- ... -LE25	NEBC- ... -LE26
Housing	–	–	Die-cast zinc
Housing colour	Grey	Grey	–
Pin contacts	–	–	Copper alloy, tin-plated
			Nickel-plated and gold-plated
Cable sheath	–	–	PVC
Cable sheath colour	Grey	Grey	Grey
Insulating sheath	–	–	PVC
Note on materials	Contains paint-wetting impairment substances	Contains paint-wetting impairment substances	–
	RoHS-compliant	RoHS-compliant	RoHS-compliant

Operating and environmental conditions			
Type code	NEBC- ... -S1G25	NEBC- ... -LE25	NEBC- ... -LE26
Ambient temperature [°C]	–	–	–30 ... +80
Ambient temperature with flexible cable installation [°C]	–	–	–5 ... +80
Corrosion resistance class CRC[1)]	0	0	0
Degree of protection	IP40	IP40	IP20

1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

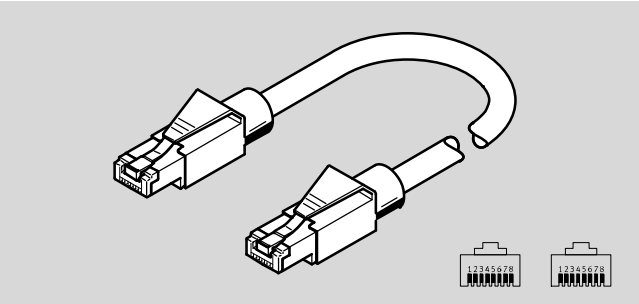
Ordering data						
Electrical connection 1	Electrical connection 2		Cable length [m]	Weight [g]	Part no.	Type code
Straight plug connector, Sub-D, 25-pin	Straight socket, Sub-D	25-pin	1	–	**8001374**	**NEBC-S1G25-K-1.0-N-S1G25**
			2	–	**8001375**	**NEBC-S1G25-K-2.0-N-S1G25**
			5	–	**8001376**	**NEBC-S1G25-K-5.0-N-S1G25**
	Open cable end	25-wire	3.2	–	**8001373**	**NEBC-S1G25-K-3.2-N-LE25**
		26-wire	2.5	570	**552254**	**NEBC-S1G25-K-2.5-N-LE26**

Connecting cables for controllers, RJ45 plug

Technical data

Connecting cable NEBC-R3

- RJ45 connecting cable
- Cable length 0.2 m and 1 m
- Ethernet-compatible



General technical data		
Type	NEBC-R3G4	NEBC-R3G8
Conforms to standard	IEC 60603-7-3	–
Transmission characteristics	In accordance with category 5, EN 50173, class D	–
	In accordance with category 5, ISO/IEC 11801, class D	–
Ethernet cable specification	Type: CAT.5	–
Cable designation	–	Without inscription label holder

Technical data – Electrical connection 1		
Type	NEBC-R3G4	NEBC-R3G8
Function	–	Field device side
Connection type	Plug	Plug
Cable outlet	Straight	Straight
Design	–	Angular
Connection technology	RJ45	RJ45
Number of pins/wires	8	8
Assigned pins/wires	4	8

Technical data – Electrical connection 2		
Type	NEBC-R3G4	NEBC-R3G8
Function	–	Control-system side
Connection type	Plug	Plug
Cable outlet	Straight	Straight
Design	–	Angular
Connection technology	RJ45	RJ45
Number of pins/wires	8	8
Assigned pins/wires	4	8

Technical data – Electrical components			
Type		NEBC-R3G4	NEBC-R3G8
Operating voltage range	[V DC]	0 … 30	0 … 50
Surge resistance	[kV]	0.8	2.5
Acceptable current load at 40 °C	[A]	1.76	1.5
Contamination level		3	2
Shielding		–	Yes

Connecting cables for controllers, RJ45 plug

Technical data

Technical data – Cable			
Type		NEBC-R3G4	NEBC-R3G8
Cable diameter	[mm]	6.7	5
Cable characteristics		Suitable for energy chains	Standard
Minimum cable bending radius	[mm]	100	–
Bending radius, fixed cable installation	[mm]	–	24
Cable test conditions		Energy chain: 2 million cycles, bending radius 100 mm	–
		Bending strength: to Festo standard	–
		Test conditions on request	Test conditions on request
Cable composition	[mm²]	2x(2x0.34)	4 x 2 x 0.16
Conductor nominal cross section	[mm²]	0.34	0.16
Special characteristics		Oil resistant	–

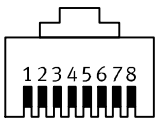
Materials		
Type	NEBC-R3G4	NEBC-R3G8
Housing	PA, brass, nickel-plated	PVC
Housing colour	Black	Grey
Pin contacts	Gold-plated brass	–
Cable sheath	TPE-U(PUR)	PVC
Cable sheath colour	Green	Grey
Insulating sheath	PE	PVC
Note on materials	Free of copper and PTFE	–
	RoHS-compliant	RoHS-compliant

Operating and environmental conditions			
Type		NEBC-R3G4	NEBC-R3G8
Ambient temperature	[°C]	–25 ... +80	–20 ... +60
Ambient temperature with flexible cable installation	[°C]	–20 ... +60	–
Corrosion resistance class CRC[1)]		1	0
Degree of protection		IP20	IP20
Note on degree of protection		–	In assembled state

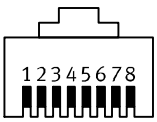
1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.
Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Circuitry (view of plug)

NEBC-R3G4



Pin	Wire colour[1)]	Pin
1	YE	1
2	OG	2
3	WH	3
4	–	4
5	–	5
6	BU	6
7	–	7
8	–	8



1) To IEC 757

Connecting cables for controllers, RJ45 plug

Technical data

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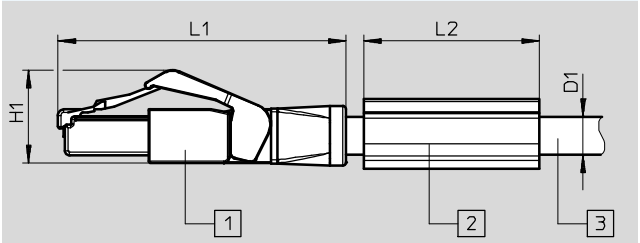
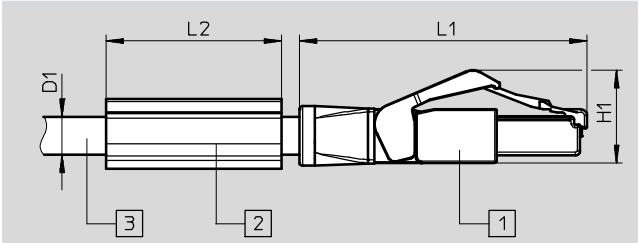
Connection technology on the left



1 Plug
2 Inscription label holder
3 Cable, length depending on the order

Type	D1 ∅	L1	L2	H1
NEBC-R3G4	6.7	49	30	15.8

Connection technology on the right



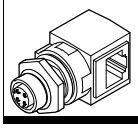
1 Plug
2 Inscription label holder
3 Cable, length depending on the order

Type	D1 ∅	L1	L2	H1
NEBC-R3G4	6.7	49	30	15.8

Ordering data

Electrical connection 1	Electrical connection 2	Cable length [m]	Weight [g]	Part no.	Type
4 assigned pins/wires					
Straight plug, RJ45	Straight plug, RJ45	1	87	**8040455**	**NEBC-R3G4-ES-1-S-R3G4-ET**
8 assigned pins/wires					
Straight plug, RJ45	Straight plug, RJ45	0.2	15	**8082383**	**NEBC-R3G8-KS-0.2-N-S-R3G8-ET**

Ordering data – Accessories

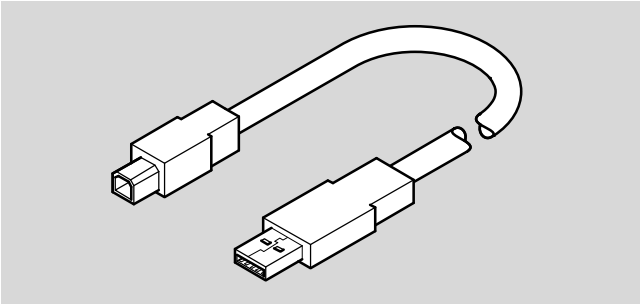
	Electrical connection 1	Electrical connection 2	Part no.	Type
Cabinet through-feed				
	Straight socket, 4-pin, M12x1, D-coded	Angled socket, 8-pin, RJ45	**8040457**	**NEFU-D12G4-R3DW4**

Connecting cables for controllers, USB 2.0 plug, type A

Technical data

Connecting cable NEBC-U1G4

- USB 2.0 connecting cable
- Type A and type B
- Cable length 1.8 m
- Suitable for CMMP-AS
- Backwards compatible to USB 1.1



Technical data – Electrical connection 1	
Connection type	Plug
Cable outlet	Straight
Connection technology	USB 2.0 type A
Number of pins/wires	4

Technical data – Electrical connection 2	
Connection type	Plug
Cable outlet	Straight
Connection technology	USB 2.0 type B
Number of pins/wires	4

Materials	
Note on materials	Contains paint-wetting impairment substances
	RoHS-compliant

Operating and environmental conditions	
Corrosion resistance class CRC[1)]	0

1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

Ordering data

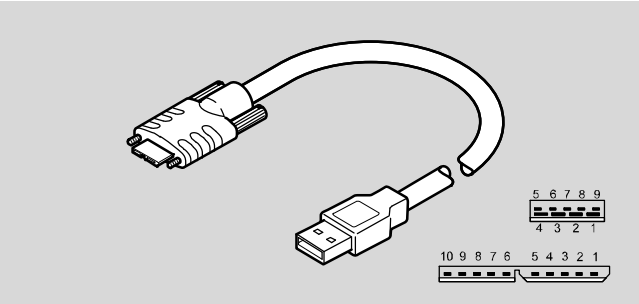
Electrical connection 1	Electrical connection 2	Cable length [m]	Part no.	Type code
Straight plug, USB 2.0 type A, 4-pin	Straight plug, USB 2.0 type B, 4-pin	1.8	**1501332**	**NEBC-U1G4-K-1.8-N-U2G4**

Connecting cables for controllers, USB 3.0 plug type B

Technical data

Connecting cable NEBC-U7G10

- USB 3.0 connecting cable
- Type B micro to type A
- Cable length 5 m



General technical data		
Type	NEBC-U7G10-KS	NEBC-U7G10-EH
Cable identification	Without label holder	Without label holder
Additional functions	–	Hybrid cable

Technical data – Electrical connection 1	
Function	Field device side
Connection type	Plug
Cable outlet	Straight
Design type	Square
Connection technology	USB 3.0 type B micro
Number of pins/wires	10
Assigned pins/wires	9
Type of mounting	2x screw M2x0.4

Technical data – Electrical connection 2		
Type	NEBC-U7G10-KS	NEBC-U7G10-EH
Function	Controller side	
Connection type	Plug	
Cable outlet	Straight	
Design type	Square	
Connection technology	USB 3.0 type A	
Number of pins/wires	9	
Assigned pins/wires	9	
Type of mounting	–	Plugged

Technical data – Electrical			
Type		NEBC-U7G10-KS	NEBC-U7G10-EH
Operating voltage range	[V DC]	0 … 30	4.75 … 5.25
Nominal operating voltage	[V DC]	–	5
Surge voltage resistance	[kV]	0.3	–
Current rating at 40 °C	[A]	1.8	0.9
Contamination level		1	1

Connecting cables for controllers, USB 3.0 plug type B

Technical data

Technical data – Cable			
Type		NEBC-U7G10-KS	NEBC-U7G10-EH
Cable diameter	[mm]	6.2	3.1
Cable diameter tolerance	[mm]	–	±0.2
Cable characteristic		Standard	Suitable for energy chains
Bending radius, fixed cable installation	[mm]	≥125	≥20
Bending radius, flexible cable installation	[mm]	≥125	≥10
Cable test conditions		Test conditions on request	–
Cable design	[mm²]	2xAWG22 + 2x(2xAWG26)C + 1x(2xAWG28)	–
		Shielded	–
Nominal conductor cross section	[mm²]	0.08	–
	[mm²]	0.128	–
	[mm²]	0.324	–

Materials		
Type	NEBC-U7G10-KS	NEBC-U7G10-EH
Cable sheath	PVC	PVC
Cable sheath colour	Black	Black
Housing	–	Wrought aluminium alloy, anodised
Housing colour	–	Silver
Note on materials	Free of halogen	–
	RoHS-compliant	RoHS-compliant
	–	Contains PWIS (paint-wetting impairment substances)

Operating and environmental conditions			
Type		NEBC-U7G10-KS	NEBC-U7G10-EH
Ambient temperature	[°C]	–20 … +80	–5 … +50
Ambient temperature with flexible cable installation	[°C]	–20 … +60	–5 … +50
Storage temperature	[°C]	–	–40 … +90
Corrosion resistance class CRC[1]		0	0
CE mark (see declaration of conformity)[2]		–	To EU EMC Directive[2]
Degree of protection		IP20	IP20
Note on degree of protection		In assembled state	In assembled state

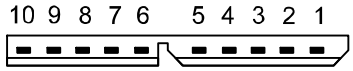
1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

2) Additional information www.festo.com/sp ➔ Certificates.

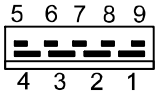
Connecting cables for controllers, USB 3.0 plug type B

Technical data

Circuitry (view of plug)



Pin	Wire colour[1)]	Pin
1	RD	1
2	WH	2
3	GN	3
4	n.c.	–
5	BK	4
6	BU	5
7	YE	6
8	GND-DRAIN	7
9	VT	8
10	OG	9
Housing	Shielded	Housing

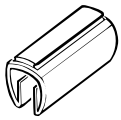


1) To IEC 757

Ordering data

Electrical connection 1	Electrical connection 2	Cable characteristic	Cable length [m]	Weight [g]	Part no.	Type code
USB 3.0 type B	USB 3.0 type A	Standard	5	282	**8072582**	**NEBC-U7G10-KS-5-N-S-U5G9**
		Suitable for energy chains	15	444	**8093271**	**NEBC-U7G10-EH-15-N-S-U5G9**
			30	530	**8093272**	**NEBC-U7G10-EH-30-N-S-U5G9**

Ordering data – Accessories

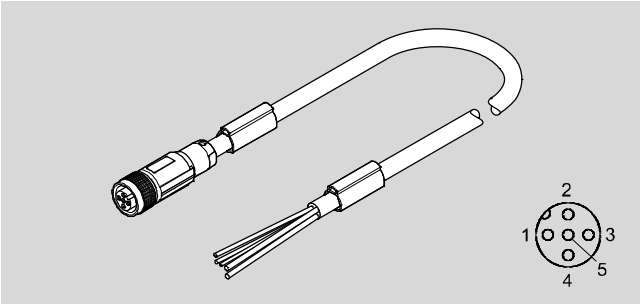
			Part no.	Type code
	Inscription labels for placing on a cable with diameter 5 ... 8 mm	11x20 mm	**33361**	**KM-BZ**

Connecting cables for controllers, M12 socket, A-coded

Technical data

Connecting cable NEBC-M12G5

- Connecting cable M12 5-pin
- A-coded
- Cable length 5 m
- Suitable for DeviceNet®/CANopen



General technical data	
Protocol	CANopen
	DeviceNet®
Cable name	With 2x label holders
Contact resistance	100

Technical data – Electrical connection 1	
Function	Field device side
Connection type	Socket
Cable outlet	Straight
Design	Round
Connection technology	M12x1, A-coded, to EN 61076-2-101
Number of pins/wires	5
Assigned pins/wires	5
Type of mounting	Screw-type lock

Technical data – Electrical connection 2	
Function	Controller side
Connection type	Cable
Connection technology	Open end
Wire ends	Sheath removed
Number of pins/wires	5
Assigned pins/wires	5

Technical data – Electrical		
Operating voltage range	[VDC]	0 ... 30
Surge voltage resistance	[kV]	2
Current rating at 40°C	[A]	4
Contamination level		3

Technical data – Cable			
Cable diameter	[mm]	6.7	
Cable diameter tolerance	[mm]	±0.3	
Cable characteristic		Suitable for energy chains	
Bending radius, fixed cable installation	[mm]	≥35	
Bending radius, flexible cable installation	[mm]	≥70	
Cable test conditions		Test conditions on request	
Cable design	[mm^2]	(2x0.34) + (2x0.25)) + 0.34	
		Shielded	
Nominal conductor cross section	[mm^2]	0.25	0.34

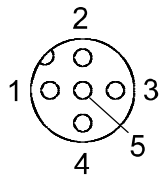
Connecting cables for controllers, M12 socket, A-coded

Technical data

Materials	
Housing	TPE-U(PUR) reinforced
Housing colour	Black
Screw-type lock	Die-cast zinc, nickel-plated
Seals	NBR
Pin contacts	Brass, nickel-plated and gold-plated
Cable sheath	TPE-U(PUR)
Cable sheath colour	Red-purple
Insulating sheath	PE
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–25 ... +80
Ambient temperature with flexible cable installation	[°C]	–20 ... +60
Degree of protection		IP65
		IP67
Note on degree of protection		In assembled state

Circuitry (view of plug)



Pin	Wire colour[1]	
1	–	Open end
2	RD	Open end
3	BK	Open end
4	WH	Open end
5	BU	Open end

1) To IEC 757

Ordering data

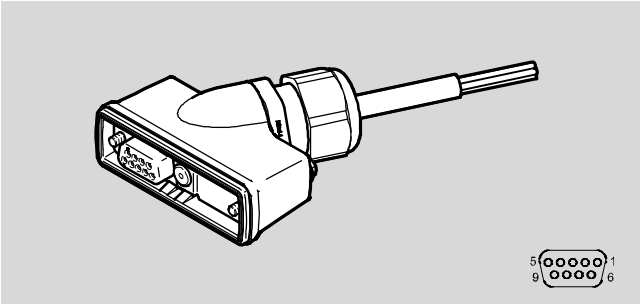
Electrical connection 1	Electrical connection 2	Cable length [m]	Weight [g]	Part no.	Type code
Straight socket, M12x1, 5-pin, A-coded to EN 61076-2-101	Open end	5	310.7	**8074191**	**NEBC-M12G5-ES-5-LE5-CO**

Connecting cables for controllers, Sub-D socket, 9-pin

Technical data

Connecting cable NEBC_S1WA9

- Connecting cable, Sub-D, 9-pin
- Cable lengths 0.5 ... 20 m
- Suitable for MPA-C valve terminal



General technical data	
Protocol	I-Port
Based on norm	DIN 47100
Cable identification	Without label holder
Contact resistance	50

Technical data – Electrical connection 1	
Function	Field device side
Connection type	Socket
Cable outlet	Angled
Design	Square
Connection technology	Sub-D
Number of pins/wires	9
Assigned pins/wires	5
Type of mounting	2x screw 4-40 UNC
	With seal

Technical data – Electrical connection 2	
Function	Controller side
Connection type	Cable
Connection technology	Open end
Number of pins/wires	5

Technical data – Electrical		
Operating voltage range	[VDC]	0 ... 30
Current rating at 40 °C	[A]	5.2
Protective earth connection		Not available
Contamination level		3

Technical data – Cable		
Cable diameter	[mm]	6.5
Cable diameter tolerance	[mm]	±0.1
Cable characteristic		Standard
Bending radius, fixed cable installation	[mm]	≥26
Bending radius, flexible cable installation	[mm]	≥78
Cable design	[mm^2]	5x0.5
Nominal conductor cross section	[mm^2]	0.5
Special characteristics		Easy to clean

Connecting cables for controllers, Sub-D socket, 9-pin

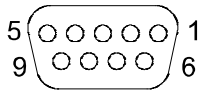
Technical data

Materials	
Housing	PA reinforced
Housing colour	Grey
Screws	Stainless steel
Pin contacts	Bronze, gold-plated
Cable sheath	PVC
Cable sheath colour	Grey
Insulating sheath	PVC
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–5 … +60
Ambient temperature with flexible cable installation	[°C]	–5 … +60
Storage temperature	[°C]	–20 … +40
Corrosion resistance class CRC[1)]		3
Degree of protection		IP65
		IP67
		IP69K
Note on degree of protection		In assembled state

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Circuitry (view of socket)



Pin	Wire colour[1)]	
1	BK	Open end
2	GY	Open end
3	BU	Open end
4	WH	Open end
5	BN	Open end
6	n.c.	–
7	n.c.	–
8	n.c.	–
9	n.c.	–

1) To IEC 757

Ordering data

Electrical connection 1	Electrical connection 2	Cable length [m]	Weight [g]	Part no.	Type code
Straight socket, Sub-D, 9-pin	Open cable end	2.5	300	**2376018**	**NEBC-C-S1WA9HS-K-2.5-N-B-LE5-PT-S10**
		5	600	**2376019**	**NEBC-C-S1WA9HS-K-5-N-B-LE5-PT-S10**
		10	1120	**2376020**	**NEBC-C-S1WA9HS-K-10-N-B-LE5-PT-S10**
		0.5 … 20	–	**4106124**	**NEBC-C-S1WA9HS-K- … -N-B-LE5-PT-S10**