

Guide to Specification form for CONNEX Separable Connectors size 0 – 3/3-S

[Link to Form](#)

Introduction

The application, cable and MV-CONNEX Separable Connector need to be matched. Only adapted connectors can achieve the required reliability in the grid.

For cables acc. to DIN VDE standard a simplified selection process is possible. See to begin of "Section B".

For cables that have not been produced to comply with DIN VDE, a product configurator is used to determine an individual article number for the required MV-CONNEX Separable Connectors size 0-3/3-S. In order to be able to define the article number, the Specification Form for MV-CONNEX Separable Connectors must be completely filled-in by the project specialists of the customer.

The individual article number consists of a 9-digit number plus optionally a variant code. This article number contains all parts for connecting and earthing the individual cable. This article number is marked as Set which means 3 pieces of the same connector.

Below please find information and instructions which will help to correctly fill in the CONNEX Specification form.

The parameters needed can be separated in two groups:

- A. Application specific parameters
- B. Cable specific parameters

Please complete section 'A' and 'B'.

Section A: Application specific parameters

A	GIS / Trafo socket:	Size 0 <input type="checkbox"/>	Size 1 <input type="checkbox"/>	Size 2 <input type="checkbox"/>	Size 3 / 3-S <input type="checkbox"/>
	Application: (Cable Connectors)	indoor <input type="checkbox"/>	outdoor <input type="checkbox"/>	offshore (saltwater-proof) <input type="checkbox"/>	soil-resistant <input type="checkbox"/>
	Lowest ambient temperature:	down to - 25°C <input type="checkbox"/>	down to - 45°C <input type="checkbox"/>		
	Connector plug-in location:	top entry <input type="checkbox"/>	other <input type="checkbox"/>		
	Capacitive voltage tap:	yes <input type="checkbox"/>	no <input type="checkbox"/>		

GIS / Trafo socket

The cable connector and the socket have to be the same size. The electrical parameters and dimensional measures are defined in the standards EN 50180 and EN 50181.

The following details might help you:

size 0: $I_N=250A$; $U_m=24kV$

size 1: $I_N=630A$; $U_m=36kV$

size 2: $I_N=800A$; $U_m=42kV$

size 3: $I_N=1250A$; $U_m=42kV$

size 3-S: $I_N=1250A$; $U_m=52kV$

Remark:

It is important to know the size of the socket which is installed in the switchgear or the transformer.

Maybe a different, bigger, higher rated size is installed.

Application

Depending on the application some special materials and/or additional components are needed.

For application “offshore” or for application “soil-resistant” special material for housing and sealing is provided.

The section “offshore” has also be ticked if the application is in a coastal area where there is a saline/corrosive atmosphere.

Soil-resistant is used if the cable connector itself is underground.

Lowest ambient temperature

The standard ambient temperature range is from +50°C down to - 25°C. For applications where the ambient temperature goes down to - 45°C a special low temperature grease is needed.

The temperature directly around the Separable Cable Connector is relevant. Please note that for indoor application the decisive factor is the ambient temperature inside the building.

*Connector plug-in
location*



Only for single sockets installed from inside of the equipment (not relevant for transformer elbow bushing or cast resin joints).

If the application is “outdoor” and if the socket entry is from the topside, an additional sealing system has to be applied.

This is needed to prevent rain/water from entering the connector.

Therefore please indicate if the position of installation is “top entry” or “other” (not top entry).

Top entry



Non-top entry (or: other directions)



*Capacitive voltage
tap*

The voltage tap serves as an interface for a continuous voltage indicator system (DSA-LRM, DSA-2, DSA-i3). This is used to ensuring the absence of system voltage in the cable system before working at the cable system. For the indication of voltage, a separate product is needed (not in scope of supply of the connector). To connect this voltage indicator system the capacitive voltage tap (additional components) has to be included in the connector kit. Please indicate “yes” if needed.

Standard is “no”.

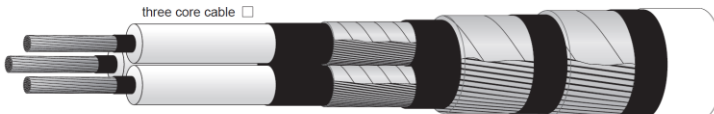
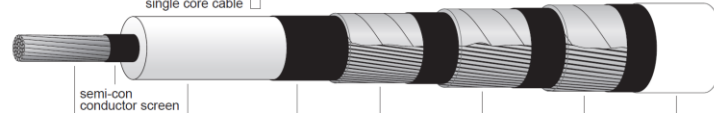
Section B: Cable specific parameters

For cables according to DIN VDE standard a simplified process is possible. For selecting the connector only "cable type", "cross section", "voltage level" and "Section A" are required.



The simplified process is valid for the following cable types:

N2XS2Y RM N2XS(F)2Y RM N2XS(FL)2Y RM
 NA2XS2Y RM NA2XS(F)2Y RM NA2XS(FL)2Y RM

In case of non-DIN VDE cables please indicate all cable parameters.

Cable manufacturer: _____		Cable type: _____					
Voltage level: U_0 (phase-earth) _____ kV		U_n (phase-phase) _____ kV		U_m (max. operating voltage $2 \times U_0$) _____ kV			
Cable design:							
three core cable <input type="checkbox"/> 							
single core cable <input type="checkbox"/> 							
	conductor	insulation	semi-con insulation screen	cable screen	1. armouring	2. armouring	outer jacket
Diameter (mm)	Ø _____	Ø _____	Ø _____	Ø _____	Ø _____	Ø _____	Ø _____
Cross Section (mm ²)	_____						
Thickness (mm)	_____						
stranded circular RM <input type="checkbox"/> stranded sector SM <input type="checkbox"/> solid circular RE <input type="checkbox"/> solid sector SE <input type="checkbox"/> superflexible stranded RF <input type="checkbox"/>	XLPE <input type="checkbox"/> EPR <input type="checkbox"/>	fully bonded <input type="checkbox"/> easy strip <input type="checkbox"/> graphite <input type="checkbox"/> without semi-con layer <input type="checkbox"/>	Cu-wire <input type="checkbox"/> Cu-tape <input type="checkbox"/> Al-wire <input type="checkbox"/> Al-tape <input type="checkbox"/>	Lead sheath <input type="checkbox"/> Cu-corr. sheath <input type="checkbox"/> Al-corr. sheath <input type="checkbox"/> Fibre optic cable <input type="checkbox"/>	n/a <input type="checkbox"/> Cu-wire <input type="checkbox"/> Cu-tape <input type="checkbox"/> Al-wire <input type="checkbox"/> Al-tape <input type="checkbox"/> steel-wire <input type="checkbox"/> steel-tape <input type="checkbox"/> Lead sheath <input type="checkbox"/>	n/a <input type="checkbox"/> Cu-wire <input type="checkbox"/> Cu-tape <input type="checkbox"/> Al-wire <input type="checkbox"/> Al-tape <input type="checkbox"/> steel-wire <input type="checkbox"/> steel-tape <input type="checkbox"/> Lead sheath <input type="checkbox"/>	up to 3 earth leads <input type="checkbox"/> Cu-corr. sheath <input type="checkbox"/> Al-corr. sheath <input type="checkbox"/> Inner sheath <input type="checkbox"/> Filling compound <input type="checkbox"/> laminated foil Al <input type="checkbox"/> laminated foil Cu <input type="checkbox"/> Fibre optic cable <input type="checkbox"/>
Remark:	_____						

Cable design

single core cable  or
 three core cable 

A three core cable only has to be indicated if accessories for cable break out have to be included in the cable kit. If those accessories are not needed as they are e.g. already supplied in scope of the project, single core cable can be selected (please indicate cable screen and armouring only for the single cable core).

Voltage level

Voltage level of the cable.

U₀: phase to earth voltage

U_n: nominal voltage; phase to phase voltage

U_m: max. operating voltage (2 x U₀)

Common voltage levels as reference:

U ₀ [kV]	U _n [kV]	U _m [kV]
3,6	6	7,2
3,8	6,6	7,2
6	10	12
6,6	11	12
8,7	15	17,5
12	20	24
12,7	22	24
15	20	24
15	25	30
18	30	36
19	33	36
20,8	36	42
26	42	52

Conductor

~ Cross Section

Cross Section is only a reference value and does not influence component selection.

Conductor

~ Diameter

~ Type

The contact system consists of several components. The components are selected according to the conductor type and the diameter of the conductor. The diameter of the bare conductor is relevant (without semi-con conductor screen).

The components have a designed working tolerance in which they can be used. During cable preparation and connector assembly the conductor diameter has to be within this tolerance, for the contact system components to fit properly.

Conductor types: [IEC 60228]



RM: stranded circular [class 2]



SM: stranded sector



RE: solid circular [class 1]



SE: solid sector



RF: super-flexible stranded [class 5+6]

The standard is RM stranded circular [class 2].

Insulation

~ *Diameter*

The insulation diameter defines the correct insulating part for the connector. The diameter of the bare insulation (without semi-con insulation screen) is required.

The insulating parts have a designed working tolerance in which they can be used. During cable preparation and connector assembly the insulation diameter has to be within this tolerance, for the insulating part to fit properly.

Semi-Conductive Insulation Screen

~ *Type*

~ *Thickness*

Depending on the semi-conductive insulation screen type and layer thickness a special assembly method with special components is used.

fully bonded: The semi-con insulation screen is removed with a cable peeling tool. Standard for DIN VDE cables. Standard thickness is $\leq 1\text{mm}$; in case thickness is $\geq 1\text{mm}$ please indicate the thickness of semi-con layer.

easy strip: The semi-conductive insulation screen can be removed without a cable peeling tool.

graphite: The cable has a layer of graphite on the insulation. This could be the case with older cables, but is not common with new cables.

without semi-conductive layer: If a low voltage cable or a medium voltage cable with only 3 kV voltage level is used the insulation could be without semi-con insulation screen.

The standard is fully bonded, thickness $\leq 1\text{mm}$.

Cable screen

1st Armouring

2nd Armouring

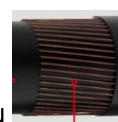
Depending on the cable design the cable core could have one or more metallic layers. If these metallic layers are indicated on the Specification form (cable screen, 1st and 2nd armouring) corresponding accessories to connect and to ground these layers are supplied.

Diameter values are over each metallic layer.

The Standard is: cable screen = Cu wire screen, without 1st and without 2nd armouring.

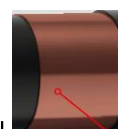
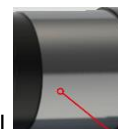
Wire:

made of Cu

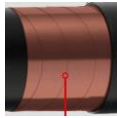
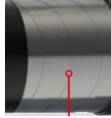
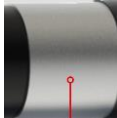
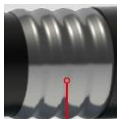
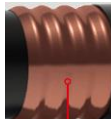



Laminated foil ($\leq 0,1\text{mm}$):

made of Al



or Cu

Tape:	made of Cu		or Al	
Lead sheath:	made of Pb			
Corrugated sheath:	made of Al		or Cu	
Wire mesh:	made of Cu			

If your cable has another special cable screen, please indicate this on the form, e.g. fibre optics or up to 3 separate earthing leads (3 core cables).

Outer jacket

Diameter of the complete cable. For cables with very big or very small diameters a special assembly method with special components is applied.
