



TECHNICAL DOCUMENTATION

**INSULATED CONDUCTOR SYSTEM
U10 PE-VPN**

INHALTSVERZEICHNIS

- 1 Assembly overview1
 - 1.1 Conductor system1
 - 1.2 Joint splice/feed2
 - 1.3 Line feed2
 - 1.4 Expansion section2
 - 1.5 Transfer guide3
 - 1.6 Transfer guide PE - PE-VPN3
 - 1.7 Locating clamps4
 - 1.8 Brush wear indicator4
- 2 Installation5
 - 2.1 Assembly tools5
 - 2.2 Installation information5



1 ASSEMBLY OVERVIEW

NOTICE!

► To avoid confusion, the PE-VPN components are colored yellow.

1.1 Conductor system



U10 PE-VPN	
Standard lengths [m]	6
Support distance [m]	0.6 straight sections 0.3 curves
Application	Indoor systems
Phase distance [mm]	14
End processing at the factory	
U10 curved sections	
Bending conductors	
Without pre-bending [mm]	$\geq R \geq 5000$
Horizontal curves	$5000 \geq R \geq 750$
Inward [mm] /outward facing curves	$5000 \geq R \geq 750$
Curves upon request [mm]	$R < 750$

Conductor selection must consider the current to be transmitted and the expected environmental influences.

Legend	Temperature range	t min. [°C]	t max. [°C]	Δt [°C]	Conductor length [m]	Fix point distance [m]
1	Normal	0	40	40	6	36
2	Normal 1	5	35	30	6	48
3	Normal 2	10	30	20	6	72
4	Cool storage	-8	20	28	5	50
5	Freezer	-30	20	50	3	27

U10/25 C Conductor rail with a copper conductor for main current, control current and data transmission.

U10/25 E Conductor rail with a stainless steel conductor for main current, control current and data transmission in corrosive conditions.

At 100 % ED max. 10 A.

Conductor code				
U	10	25	C / E	
Insulated conductor system	Profile dimensions [mm]	Conductor cross sectional area [mm ²]	C = Copper conductor	E = Stainless steel conductor



The types must be added for the following table:

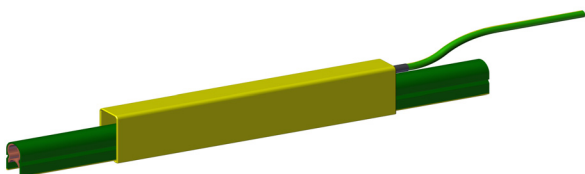
e.g. U10/25C-**6000**VPN-A for 6 m PE, ID no. 144 886

The 4-digit number (printed bold) in the type designation indicates the length of the conductor section in mm. The last digit of the ID no. indicates the individual length in meters. Please add 1, 2, 3, 4, 5 or 6 to the ID no.

Type	Version	Profile color	Pin allocation	Weight [kg/m]	ID no.
U10/25C-....VPN-A	Standard	Green/yellow	PE	0.267	144 88•
U10/25C-....VPNG-A ⁽¹⁾	Standard	Green/yellow	PE	0.267	144 90•
U10/25C-....VPN-C85	Heat resistant	Gray/green-yellow	PE	0.267	144 89•
U10/25C-....VPNG-A-C85 ⁽¹⁾	Heat resistant	Gray/green-yellow	PE	0.267	144 92•
U10/25CW-3000VPN-A	heat treated	Green/yellow	PE	0.267	144 897
U10/25CW-3000VPNG-A ⁽¹⁾	heat treated	Green/yellow	PE	0.267	144 899

⁽¹⁾ For curves facing inward and outward

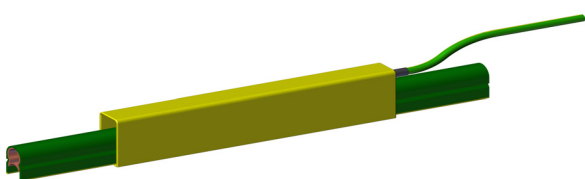
1.2 Joint splice/feed



Joint splice/feed	
VM-UEV10VPN/C	143 213
Nominal current at 100 % ED	[A] 2 x 40
Weight	[kg] 0.026

Also compensates for linear expansion with temperature fluctuations.

1.3 Line feed



Line feed	
ES-UES10VPN	143 214
Nominal current at 100 % ED	[A] 2 x 50
Weight	[kg/m] 0.026

1.4 Expansion section

PE-VPN	Weight [kg]	Expansion capacity, up to [mm]	ID no.
VM-UDV10VPN/C-15	0.026	15	143 355
VM-UDV10VPN/C-30	0.052	30	143 356
VM-UDV10VPN/C-45	0.078	45	143 357
VM-UDV10VPN/C-60	0.104	60	143 358



1.5 Transfer guide

Transfer guide PE-VPN



US 10 PE-VPN straight



US 10S PE-VPN oblique



US 10SP PE-VPN oblique positiv

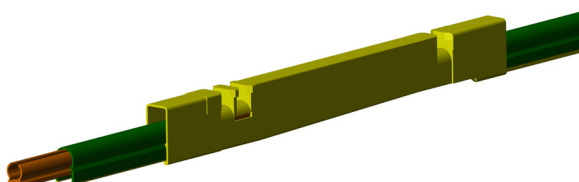
Transfer guide PE-VPN	
Vertical and horizontal offset, max. [mm]	3
Nominal current at 100 % ED, max. [A]	40

Type	Weight [kg/m]	Version	Feed terminal	ID no.
MU-US10-VPN	0.007	Straight	Without	144 863
MU-US10S-VPN	0.007	Oblique	Without	144 865
MU-US10SP-VPN	0.008	Oblique positive	Without	144 867
MU-USE10-VPN	0.011	Straight	With	144 864
MU-USE10S-VPN	0.011	Oblique	With	144 866
MU-USE10SP-VPN	0.012	Oblique positive	With	144 868

1.6 Transfer guide PE - PE-VPN

Transfer guide PE to PE-VPN

The transfer guide is used for a limited time in systems where the standard PE rail is to be replaced by the PE-VPN rail.



Transfer guide	
ID no.	144 880
Service life	200.000 transitions or 2 months (whichever comes first)

NOTICE!

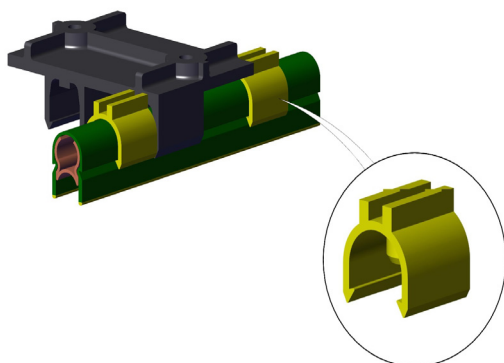
The fact that the PE-VPN conductor system has a running surface that is offset by 8.7 mm from the PE conductor system results in increased contact pressure of the current collector on the PE-VPN conductor system. This results in increased wear of PE-VPN current collectors and the PE-VPN conductor system.

- The time required to convert from PE rail to PE-VPN rail must be limited to a period of 2 months or 200,000 transitions due to increased wear.



1.7 Locating clamps

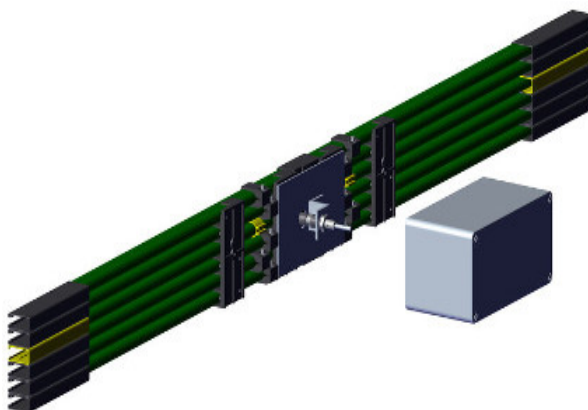
Locating clamp PE-VPN



USK10A-VPN	
ID no.	144 876
Weight [kg]	0.002

The locating clamps must be positioned to the right and left of the fixed point compact hangers. There must be no air gap between locating clamps and compact hanger.

1.8 Brush wear indicator



Brush wear indicator		
Travel speed, max	[m/min]	70
Opening in in track profile		
Length, min.	[mm]	70
Height	[mm]	50
Rail length	[m]	1
PE-VPN position variable		

The brush wear indicator automatically checks the brush wear. The indicator triggers at a residual height of 3 mm. This value has been preset. A pulse is triggered when the carbon brush is worn out. It is advisable to install it in front of a maintenance bay for automatic operation of a switch. The KVT 10 brush wear indicator is supplied complete with a 1 m U10 conductor rail section. The conductor rail ends are already prepared for UEV 10 joint splice/feeds.

Brush wear indicator with inductive proximity switch

For brush wear indicators with an odd number of pins, the lower pin of the compact hanger is not connected.

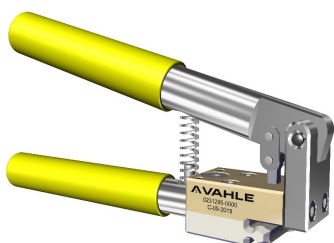
Type PE-VPN to no. 4	Number of pins	Weight [kg]	ID no.
VT-KVT10-4-14VPN4B	4	2.773	144 907
VT-KVT10-5-14VPN4B/6	5	3.247	144 908
VT-KVT10-6-14VPN4B	6	3.631	144 909
VT-KVT10-7-14VPN4B/8	7	4.039	144 910
VT-KVT10-8-14VPN4B	8	4.423	144 911
VT-KVT10-9-14VPN4B/10	9	2.534	144 094
VT-KVT10-10-14VPN4B	10	3.010	144 095



2 INSTALLATION

2.1 Assembly tools

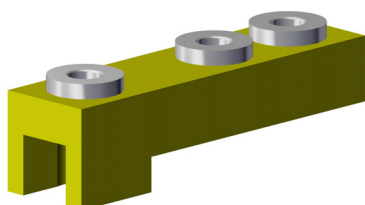
Conductor punch tool for PE-VPN



LZ10 PE-VPN		
ID no.		144 875
Weight	[kg]	0.563

Drilling jig

For drilling the holes for the USK10A-VPN locating clamps at fixed points.

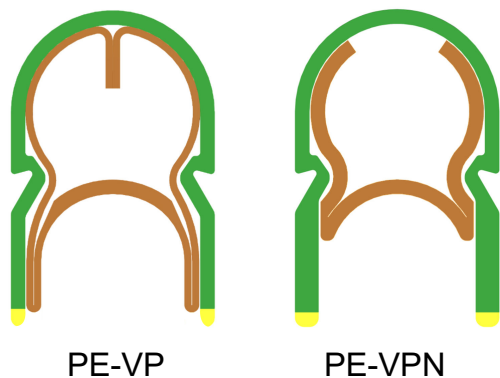


DRILLING JIG BS 10 FOR PE-VPN		
ID no.		144 877
Weight	[kg]	0.092

2.2 Installation information

The general installation and safety instructions in the U10 installation manual must be observed and followed!

Instructions for installation PE-VPN with PE-VP



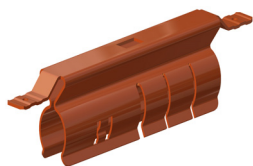
NOTICE!

In systems that are partly converted from PE-VP to PE-VPN, the following instructions must be observed during installation:

- The heights of the conducting surfaces are compatible. When finishing the ends of the butts, a stronger beveling of the inner side surfaces of the copper profile is necessary (see U10 assembly instructions for end finishing).
- No transition from PE-VP to PE-VPN can be realized in curved sections. The transition can be at the next mechanical separation by mounting of the new PE-VPN conductor rail on transition piece or on the track by installing a connector.

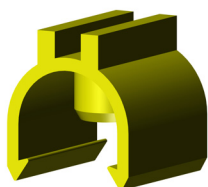


Installation PE-VPN



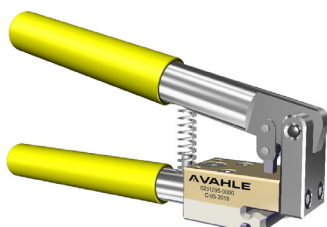
NOTICE!

- The U10 standard joint splice is compatible with PE-VPN.



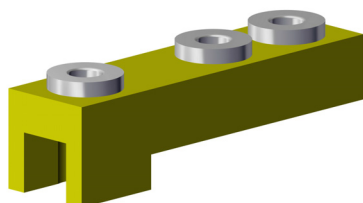
NOTICE!

- Only the PE-VPN locating clamps (1.7 Locating clamps) may be used for PE-VPN.
- It is not permitted to use other locating clamps.



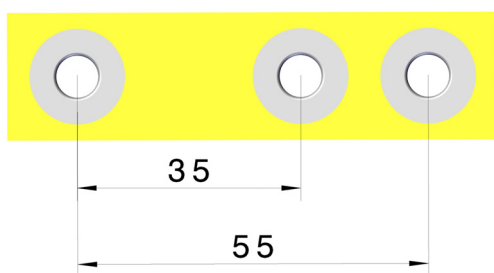
NOTICE!

End finishing of the PE-VPN profiles may only be carried out with the PE-VPN conductor punch tool (2.1 Assembly tools). Due to the different geometry of the profile it is not possible to use other conductor punch tools.



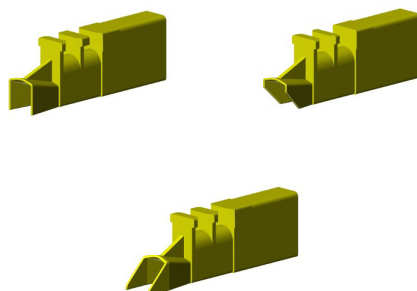
NOTICE!

- Only the PE-VPN drilling jig (2.1 Assembly tools) may be used for PE-VPN.
- It is not permitted to use other drilling jigs.



NOTICE!

- Borehole A with 35 mm hole spacing: for 20 mm wide compact hangers
- Borehole B with 55 mm hole spacing: for 40 mm wide compact hangers



NOTICE!

- Only the PE-VPN transfer guides (1.5 Transfer guide) may be used for PE-VPN.
- It is not permitted to use other transfer guides.



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Technical Documentation