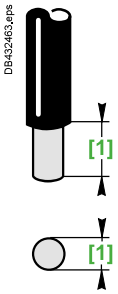
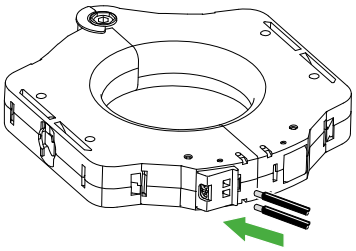
Connection
Toroids and rectangular sensors

Connection of toroids (cont.)

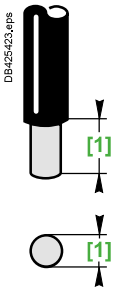
TOA80 and TOA120 split toroids (Ø5 mm round lugs not supplied)



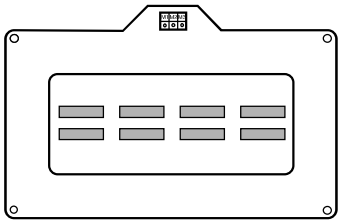


[1] See table page C-6.

Connection of rectangular sensors and conductor layout

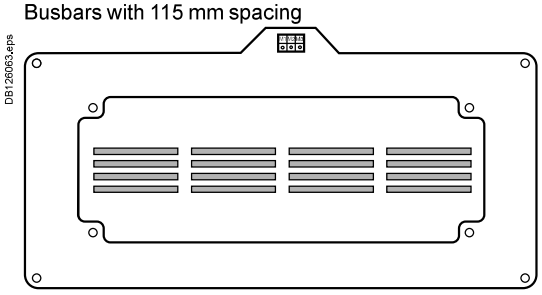


L1: frame 280 x 115 mm
Busbars with 70 mm spacing



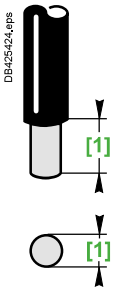
2 bars 50 x 10 mm (1600 A)
The neutral can be located on the right or the left.

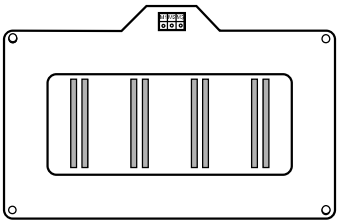
L2: frame 470 x 160 mm
Busbars with 115 mm spacing



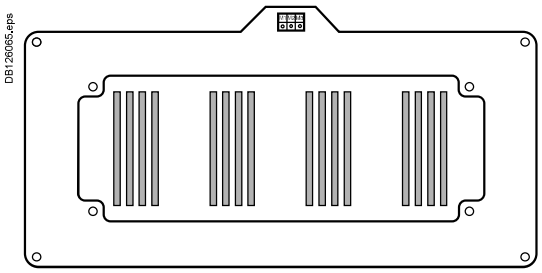
4 bars 100 x 5 mm (3200 A)
The neutral can be located on the right or the left.

[1] See table page C-6.



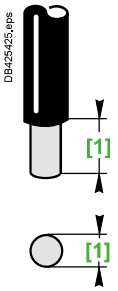


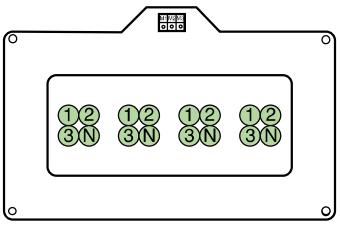
2 bars 100 x 5 mm (1600 A)
The neutral can be located on the right or the left.



4 bars 125 x 5 mm (3200 A).
The neutral can be located on the right or the left.

[1] See table page C-6.





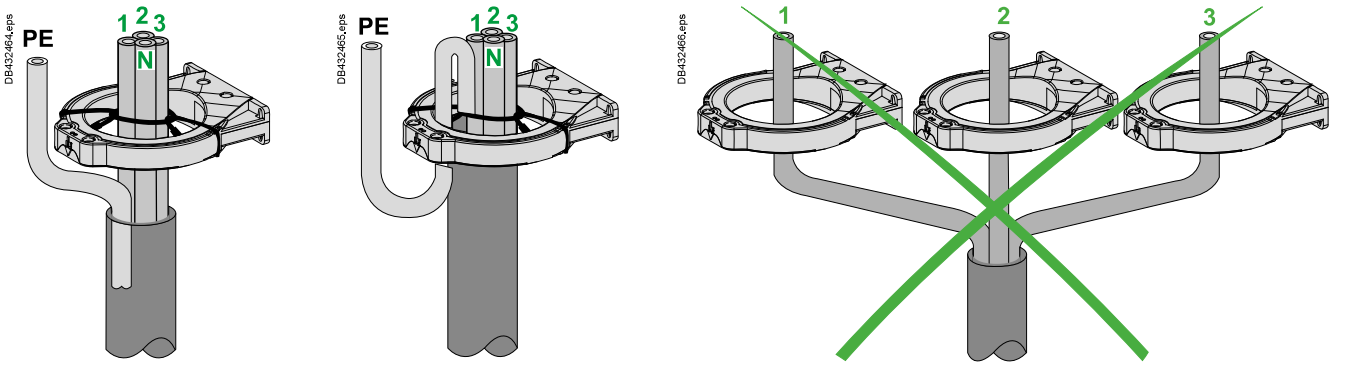
4 cables 240 mm² (1600 A)

[1] See table page C-6.

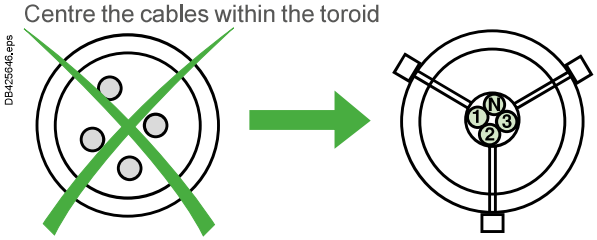
Note: connect M1 and M2 with Vigirex.

Selection and installation instructions for toroids and rectangular sensors

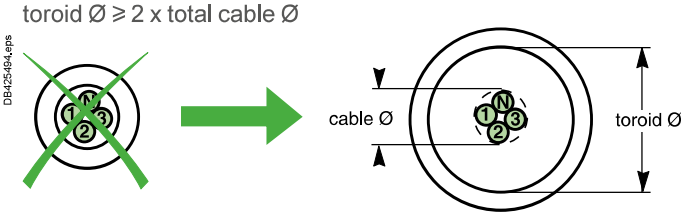
Cable layout



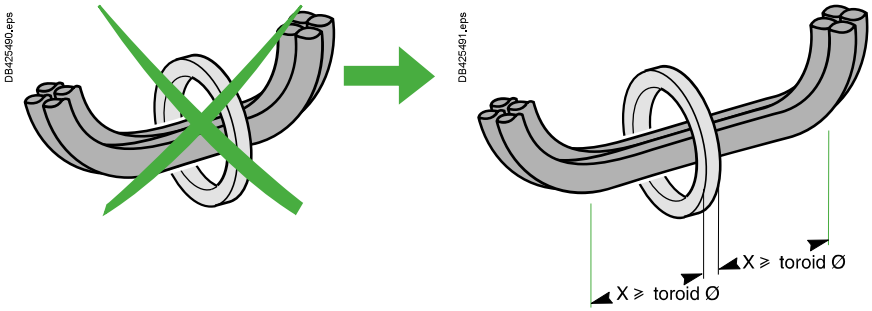
Centre the cables within the toroid



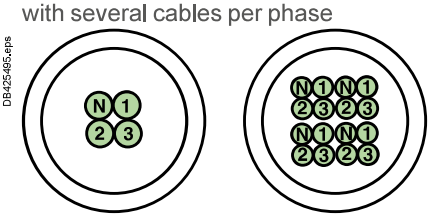
toroid Ø ≥ 2 x total cable Ø



Do not bend cables near the toroids



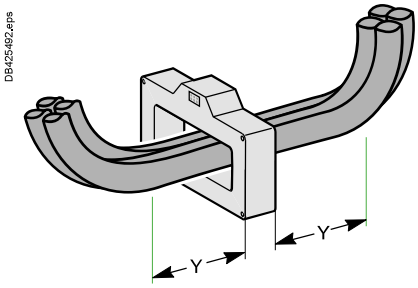
Single-phase or three-phase loads with several cables per phase



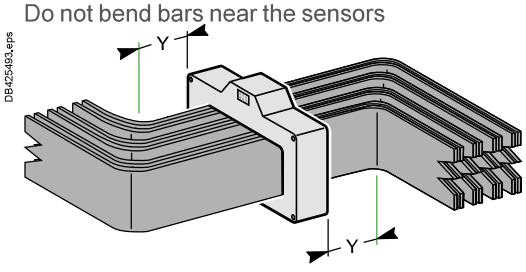
1 cable per phase.

Several cables per phase.

Do not bend cables near the sensors



Do not bend bars near the sensors



Note: Y ≥ 25 cm for 280 x 115 mm sensor.
Note: Y ≥ 30 cm for 470 x 160 mm sensor.

Selection of toroids according to circuit power

3P + N copper cables

Rated operational current (Ie)	Max. cross-section/ phase	Toroids
65 A	16 mm²	TA30
85 A	25 mm²	PA50
160 A	70 mm²	IA80 or TOA80
250 A	120 mm²	MA120 or TOA120
400 A	2 x 185 mm²	SA200
630 A	2 x 240 mm²	GA300
1600 A	4 x 240 mm²	L1

Selection of rectangular sensors according to circuit power

3P + N copper bars

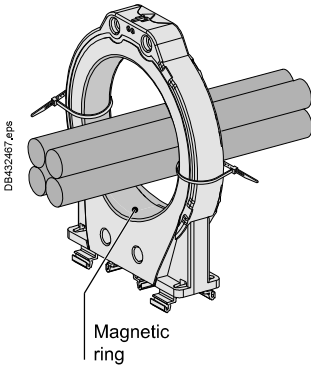
Rated operational current (Ie)	Max. cross-section/phase	Sensors
1600 A	2 bars 50 x 10 mm²	L1
	2 bars 100 x 5 mm²	
3200 A	4 bars 100 x 5 mm²	L2
	4 bars 125 x 5 mm²	

Selection and installation instructions for toroids and rectangular sensors

Immunisation with respect to false zero-sequence currents (tested at 6 In as per IEC 60947-2 annex M)

The addition of a shielding ring prevents nuisance tripping with TA30, PA50, IA80 and MA120 toroids for the settings indicated in table below

For circuits with high transient currents (6 In)



Sensor	In	Maximum cross-section per phase	IΔn
With shielding ring			
TA30	65 A	16 mm²	30 mA
PA50	85 A	25 mm²	30 mA
IA80	160 A	70 mm²	100 mA
MA120	250 A	120 mm²	100 mA
Without shielding ring			
SA200	400 A	2 x 185 mm²	300 mA
GA300	630 A	2 x 240 mm²	300 mA
TOA80	85 A	95 mm²	100 mA
TOA120	250 A	240 mm²	1 A
L1	1600 A	4 x 240 mm² or 2 copper bars 100 x 5 mm²	500 mA
L2	3200 A	2 copper bars 125 x 10 mm²	500 mA

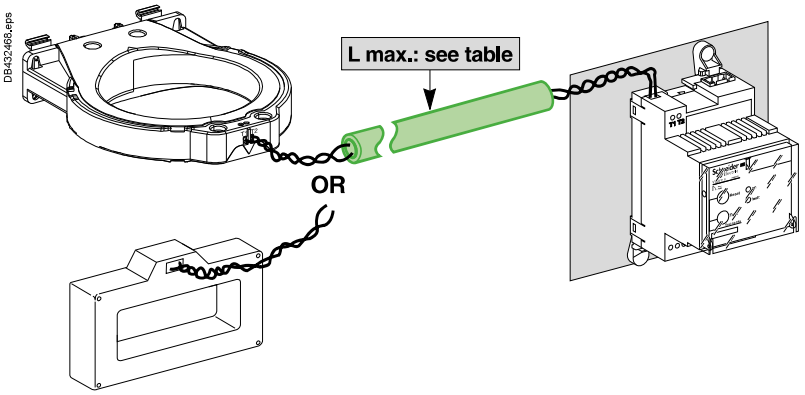
Connection between Vigrex relays and sensors

Vigirex relays must be connected to the sensors as indicated:

Cross-section (Cu)	Maximum length
Toroids	
0.22 mm² [1]	18 m
0.75 mm² [1]	60 m
1 mm² [1]	80 m
1.5 mm² [1]	100 m
Rectangular sensors	
0.5 mm² min. / 2.5 mm² max.	10 m

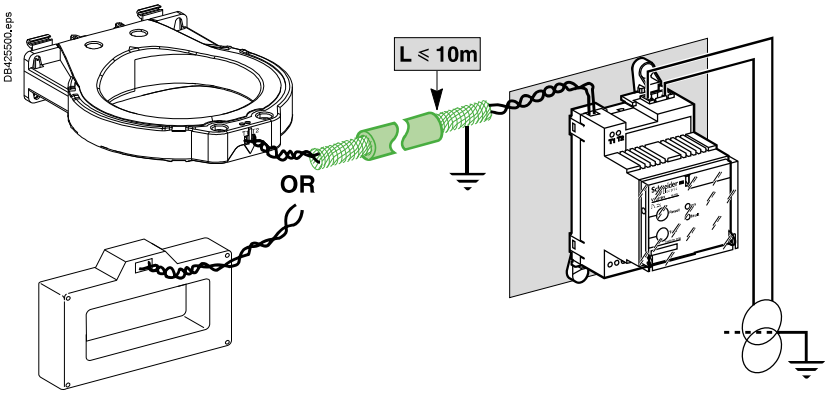
[1] Wire size for resistance R maximum = 3 W.

Cable type
Standard twisted pair (not to be run alongside power cables).



In highly disturbed environments:

Wiring
Shielded twisted pair (not to be run alongside power cables).
The shielding must be earthed at both ends by connection to the equipotential bonding circuit.
The cable between the toroid and the relay should be as short as possible.
If this is not sufficient, use a transformer with high frequency (HF) shielding.



Auxiliary power supply via external transformer.