

Electrical network management

# PowerLogic

Energy management, revenue metering and power quality monitoring

## Catalogue



# General contents

<i>PowerLogic™ applications</i>	4
<i>Market segments</i>	5
<i>Panorama of the PowerLogic range</i>	7
<i>Index of catalogue numbers</i>	13
<i>Power management software introduction</i>	156

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## Current transformers 16




---

## Panel instruments 25




---

## Basic energy meters 35




---

## Multi-circuit and wireless metering 43




---

## Basic multi-function metering 68




---

## Intermediate metering 92




---

## Advanced metering 107




---

## Advanced utility metering 121




---

## Communications 136

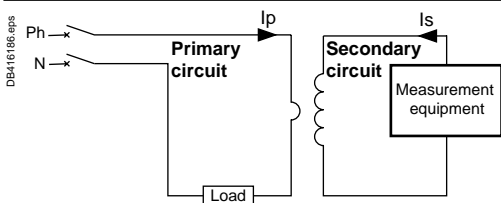



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## Power management software 156



# CT current transformers Ip/5 A ratio



Application diagram of a CT.

The  $I_p/5A$  ratio current transformer delivers at the secondary a current ( $I_s$ ) of 0 to 5 A that is proportional to the current measured at the primary ( $I_p$ ).

This allows them to be used in combination with measurement equipment:

- Ammeters.
- Kilowatt-hour meters.
- Measurement units.
- Control relays.
- etc.

When the primary is energized, the measurement equipment nearly acts as a short circuit which keeps the secondary voltage very low. This voltage will increase significantly if the short circuit is removed.

## CT selection - conductor rating aspects

The choice depends on the conductor profile and the maximum intensity of the primary circuit.

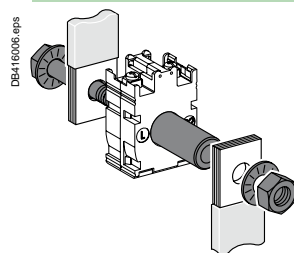
CT with let-through primary					
Conductor type	Cable	Mixed, bars or cables	Vertical or horizontal bars	Vertical bars	
Suggested Current Transformer and mounting					
Ratings (A)	40 to 250	150 to 800	200 to 4000	500 to 600	5000 to 6000
CT internal profile	Type C	Type M	Type D <sup>(1)</sup>	Type V	

(1) Two secondary connectors (parallel internal wiring - only one secondary winding) for easier cable access. 1 lateral + 1 on one extremity. Warning: only one must be used at a time.

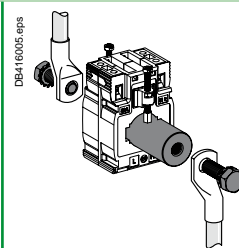
## Specific mounting: use of cylinder

A cylindrical metallic spacer ensures a proper CT positioning when the conductor or the CT cannot be positioned perpendicular. Secured by bolt + nut.

### CT with primary connection by screw and nut (example: use of cylinder with bar or cable)



16550 (brass)



METSECT5CYL1 (aluminium)

# CT current transformers (cont.)

## Ip/5 A ratio

### CT selection - Electrical aspect Ip/5 A

■ We recommend that you choose the ratio immediately higher than the maximum measured current (In).

Example:

In = 1103 A; ratio chosen = 1250/5.

■ For small ratings:

from 40/5 to 75/5 and for an application with digital devices, we recommend that you choose a higher rating, for example 100/5.

This is because small ratings are less accurate and the 40 A measurement, for example, will be more accurate with a 100/5 CT than with a 40/5 CT.

■ Specific case of the motor starter:

to measure motor starter current, you must choose a CT with primary current Ip = Id/2 (Id = motor starting current).

### Validation of measurement solution according accuracy class

It consists in controlling the right adaptation of the CT on the accuracy class aspect. The accuracy class is specified in the project. The total dissipated power of the measurement circuit (meter + cables) should not be superior to the specified limit of the CT. This limit is for different standard classes. If necessary, the choice of the cable section, the CT or meter should be modified to fit the requirement.

Copper cable cross-section (mm <sup>2</sup> )	Power per doubled meter at 20 °C (VA)	Schneider Electric device	Consumption of the current input (VA)
1	1	Ammeter 72 x 72 / 96 x 96	1.1
1.5	0.685	Analogue ammeter	1.1
2.5	0.41	Digital ammeter	0.3
4	0.254	PM700, PM800	0.15
6	0.169	PM3000	0.3
10	0.0975		
16	0.062		


For each temperature variation per 10 °C bracket, the power drawn up by the cables increases by 4 %.

#### Application example

Project specification: **200 A**, in **Ø27 mm** cable, accuracy class 1.

Our choice is **METSECT5MA020**.

For this CT selected on the chart (next page), the max acceptable power is **7 VA** (for "Accuracy class 1" which is specified in the project).

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.	Accuracy class		
					0.5	1	3
					Max. power (VA)		
	Ø27	10 x 32 15 x 25	150	METSECT5MA015	3	4	-
			200	<b>METSECT5MA020</b>	4	<b>7</b>	-
			250	METSECT5MA025	6	8	-
			300	METSECT5MA030	8	10	-
			400	METSECT5MA040	10	12	-

Control of the conformity of the measurement chain:

■ PM3000 multi-meter: 0.3 VA.

■ 4 meters of 2.5 mm<sup>2</sup>, doubled wires: 0.41 x 4 = 1.64 VA.

**Total:** 0.3 + 1.64 = 1.94 VA (< 7 VA)

**Conclusion:** this CT is well adapted as the accuracy class will be even better than 1.

# CT, I<sub>p</sub>/5 A ratio Catalogue numbers

### Presentation of catalogue numbers

MET SE CT R FF XXX

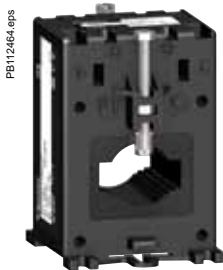
First digit = secondary rating,

**Examples:**

- METSECT5CC008 = 5 A secondary, Cables only, 75 A primary
- METSECT5MC080 = 5 A secondary, Mixed for cables and bars, 800 A primary.



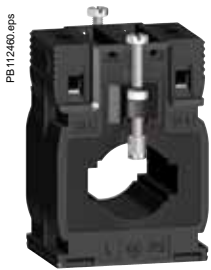
METSECT5CC●●●



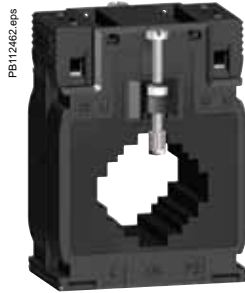
METSECT5ME●●●



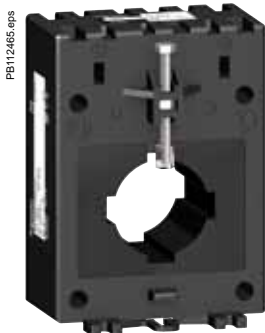
METSECT5MB●●●



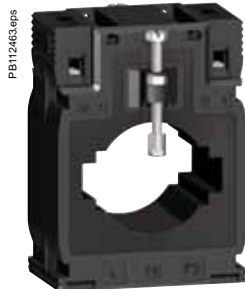
METSECT5MA●●●



METSECT5MC●●●



METSECT5MF●●●



METSECT5MD●●●

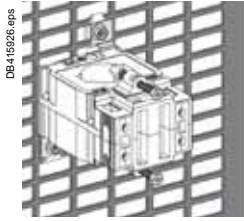
### Type C - current transformer (cable profile)

Internal profile type	Cables (mm)	Bars (mm)	Rating I <sub>p</sub> /5 A (A)	Cat. no.
<b>CC</b>				
	Ø21	-	40	METSECT5CC004
			50	METSECT5CC005
			60	METSECT5CC006
			75	METSECT5CC008
			100	METSECT5CC010
			125	METSECT5CC013
			150	METSECT5CC015
			200	METSECT5CC020
250	METSECT5CC025			

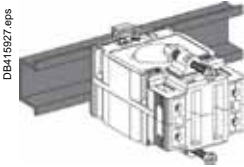
### Type M - current transformers (mixed: cable/bar profile)

<b>ME</b>				
	Ø22	10 x 30 11 x 25 12 x 20	150	METSECT5ME015
			200	METSECT5ME020
			250	METSECT5ME025
			300	METSECT5ME030
			400	METSECT5ME040
			500	METSECT5ME050
			600	METSECT5ME060
<b>MB</b>				
	Ø26	12 x 40 15 x 32	250	METSECT5MB025
			300	METSECT5MB030
			400	METSECT5MB040
<b>MA</b>				
	Ø27	10 x 32 15 x 25	150	METSECT5MA015
			200	METSECT5MA020
			250	METSECT5MA025
			300	METSECT5MA030
			400	METSECT5MA040
<b>MC</b>				
	Ø32	10 x 40 20 x 32 25 x 25	250	METSECT5MC025
			300	METSECT5MC030
			400	METSECT5MC040
			500	METSECT5MC050
			600	METSECT5MC060
			800	METSECT5MC080
<b>MF</b>				
	Ø35	10 x 40	250	METSECT5MF025
			300	METSECT5MF030
			400	METSECT5MF040
			500	METSECT5MF050
<b>MD</b>				

# CT, Ip/5 A ratio Catalogue numbers



Mounting plate installation.



DIN rail mounting.

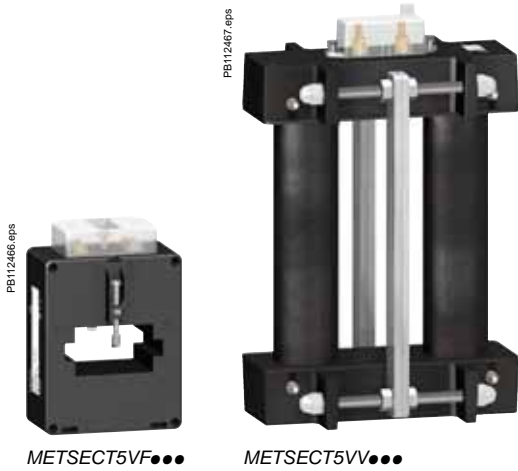
### Common characteristics

Secondary current Is (A)	5
Maximum voltage rating Ue (V)	720
Frequency (Hz)	50/60
Safety factor (sf)	<ul style="list-style-type: none"> <li>■ 40 to 4000 A: sf ≤ 5</li> <li>■ 5000 to 6000 A: sf ≤ 10</li> </ul>
Degree of protection	IP20
Operating temperature	<ul style="list-style-type: none"> <li>■ tropicalised range</li> <li>■ -25 °C to +60 °C <sup>(1)</sup></li> <li>■ relative humidity &gt; 95 %</li> </ul>
Compliance with standards	<ul style="list-style-type: none"> <li>■ IEC 61869-2</li> <li>■ VDE 0414</li> </ul>
Secondary connection (as per model)	<ul style="list-style-type: none"> <li>■ by terminals for lug</li> <li>■ by tunnel terminals</li> <li>■ by screws</li> </ul>

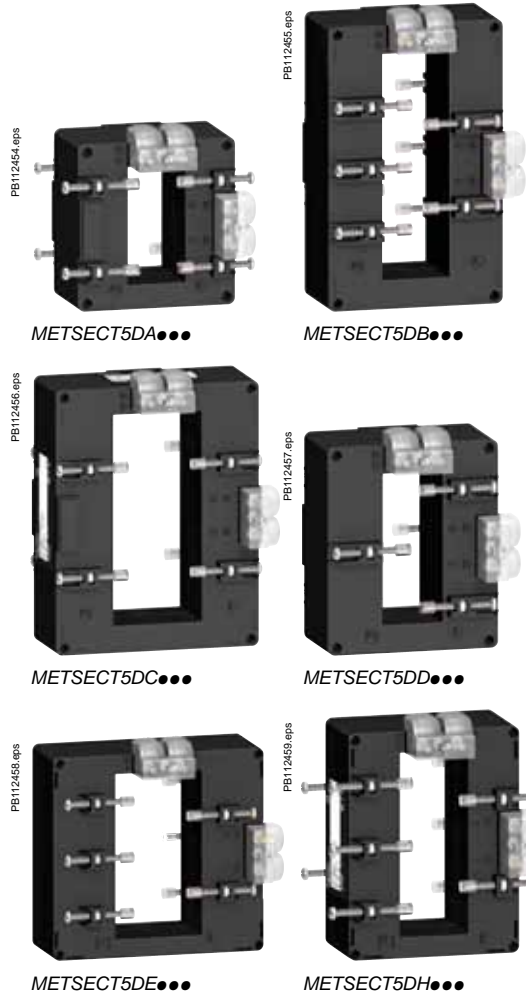
(1) **Warning:** some products are limited to +50 °C.

Accuracy class			Overall dimensions (refer to drawing pages for details) W x H x D (mm)	Fastening mode	Accessories Cylinder	Sealable cover
0.5	1	3				
Max. power (VA)						
-	-	1	44 x 66 x 37	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	16550 METSECT5CYL1	Included
-	1.25	1.5				
-	1.25	2				
-	1.5	2.5				
2	2.5	3.5				
2.5	3.5	4				
3	4	5				
4	5.5	6				
5	6	7				
1.5	5.5	6.5	56 x 84 x 60	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> <li>■ Insulated locking screw.</li> </ul>	16551	16552
4	7	8.5				
6	9	11				
7.5	11	14				
10.5	15	18				
12	18	22				
14.5	21.5	26				
3	4	-	60 x 85 x 63	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	-	METSECT5COVER
4	6	-				
6	8	-				
3	4	-	56 x 80 x 63	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	METSECT5CYL2	METSECT5COVER
4	7	-				
6	8	-				
8	10	-				
10	12	-				
3	5	-	70 x 95 x 65	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	-	METSECT5COVER
5	8	-				
8	10	-				
10	12	-				
12	15	-				
10	12	-				
2.5	5	8	77 x 107 x 64	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> <li>■ Insulated locking screw.</li> </ul>	-	16553
4	8	12				
8	12	15				
10	12	15				

# CT, I<sub>p</sub>/5 A ratio Catalogue numbers




Type V current transformers (vertical bar profile)					
Internal profile type	Cables (mm)	Bars (mm)	Rating I <sub>p</sub> /5 A (A)	Cat. no.	
VF	-	11 x 64 31 x 51	500	METSECT5VF050	
			600	METSECT5VF060	
VV	-	55 x 165	5000	METSECT5VV500 ★	
			6000	METSECT5VV600 ★	



Type D - current transformers (vertical or horizontal bar - dual secondary terminals)					
Internal profile type	Cables (mm)	Bars (mm)	Rating I <sub>p</sub> /5 A (A)	Cat. no.	
DA	-	32 x 65	200	METSECT5DA020	
			250	METSECT5DA025	
			300	METSECT5DA030	
			400	METSECT5DA040	
			500	METSECT5DA050	
			600	METSECT5DA060	
			800	METSECT5DA080	
			1000	METSECT5DA100	
DB	-	38 x 127	1000	METSECT5DB100	
			1250	METSECT5DB125 ★	
DC	-	52 x 127	1500	METSECT5DB150 ★	
			2000	METSECT5DB200 ★	
			2500	METSECT5DB250 ★	
			3000	METSECT5DB300 ★	
			4000	METSECT5DB400 ★	
DD	-	34 x 84	2000	METSECT5DC200 ★	
			2500	METSECT5DC250 ★	
			3000	METSECT5DC300 ★	
DE	-	54 x 102	4000	METSECT5DC400 ★	
			1000	METSECT5DD100	
			1250	METSECT5DD125 ★	
DH	-	38 x 102	1500	METSECT5DD150 ★	
			1250	METSECT5DE100	
			1500	METSECT5DE125 ★	
DH	-	38 x 102	2000	METSECT5DE150 ★	
			1250	METSECT5DE200 ★	
			1500	METSECT5DH100	
DH	-	38 x 102	1250	METSECT5DH125 ★	
			1500	METSECT5DH150 ★	
			2000	METSECT5DH200 ★	

★ Operating temperature: -25 °C to +50 °C.

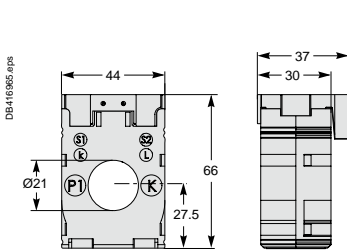
# CT, Ip/5 A ratio Catalogue numbers

Accuracy class			Overall dimensions (refer to drawing pages for details) W x H x D (mm)	Fastening mode	Accessories Cylinder 	Sealable cover 
0.5	1	3				
Max. power (VA)						
2	4	-	90 x 130 x 66	<ul style="list-style-type: none"> <li>■ Mounting plate.</li> <li>■ Insulated locking screw.</li> </ul>	-	Included
4	6	-				
60	-	-	175 x 273.5 x 110	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
70	-	-				
-	2	5	90 x 94 x 90	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
1	4	-				
1.5	6	-				
4	8	-				
8	10	-				
8	12	-				
12	15	-				
15	20	-				
15	20	-				
20	25	-				
6	10	-	99 x 160 x 87	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
8	12	-				
10	15	-				
15	20	-				
20	25	-				
25	30	-				
25	30	-	125 x 160 x 87	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
30	50	-				
30	50	-				
30	50	-				
10	15	-	96 x 116 x 87	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
12	15	-				
15	20	-				
12	15	-	135 x 129 x 85	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
15	20	-				
20	25	-				
20	25	-				
12	15	-	98 x 129 x 75	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
12	15	-				
20	25	-				

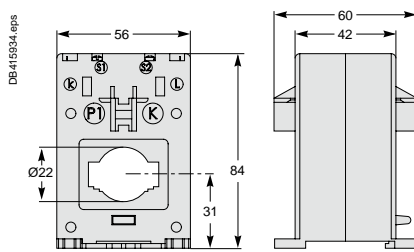


### CT current transformers

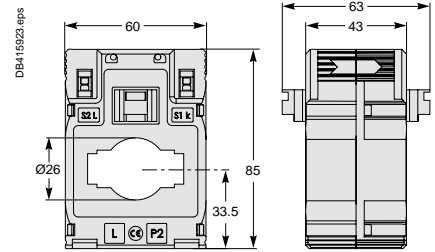
#### CC internal profile type



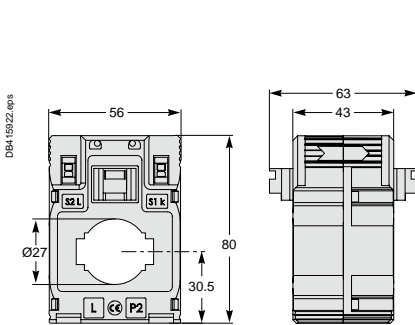
#### ME internal profile type



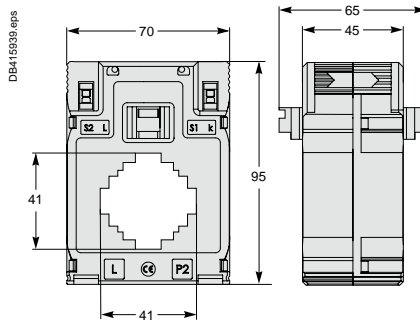
#### MB internal profile type



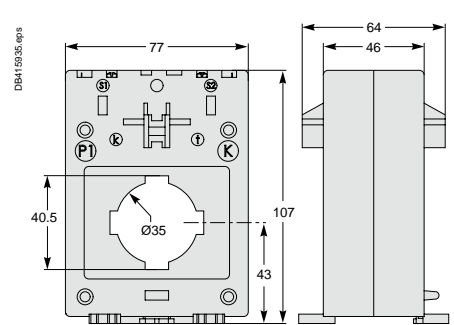
#### MA internal profile type



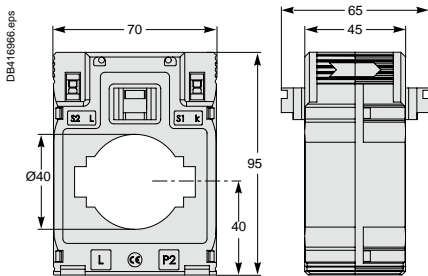
#### MC internal profile type



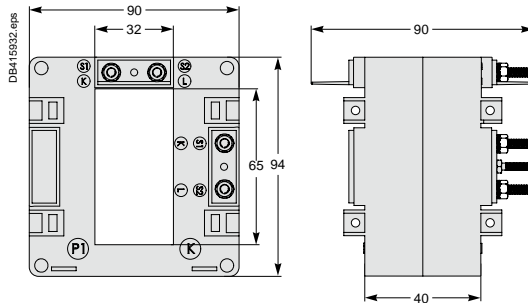
#### MF internal profile type



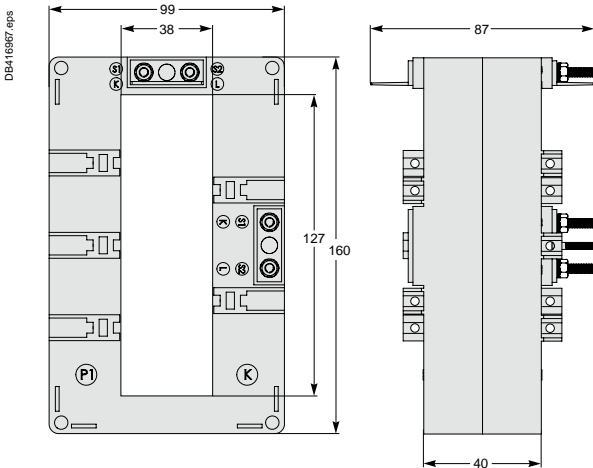
#### MD internal profile type



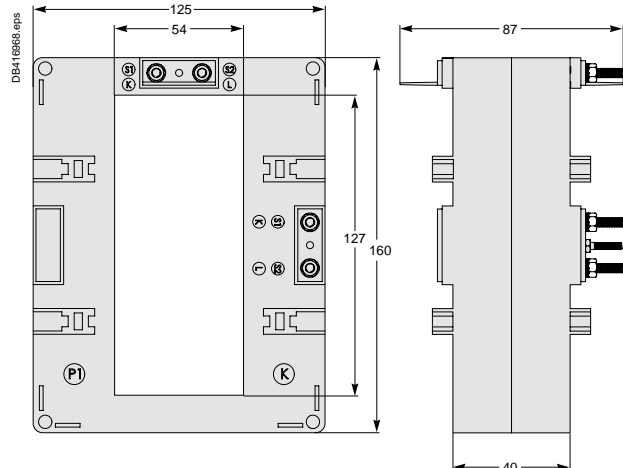
#### DA internal profile type



#### DB internal profile type

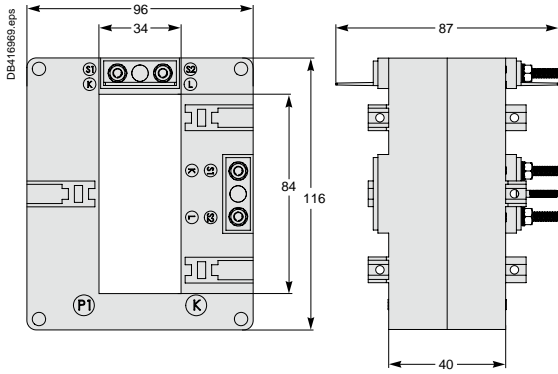


#### DC internal profile type

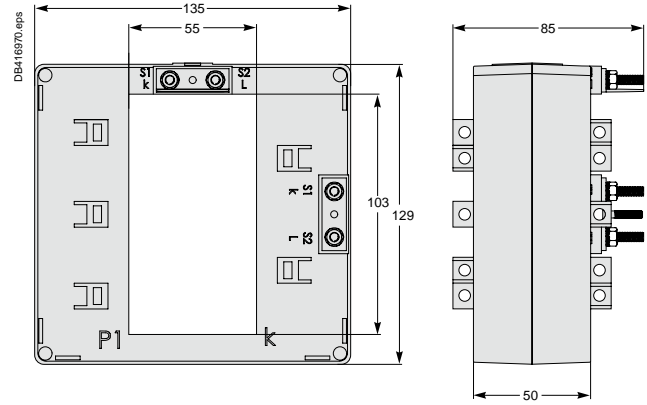


### CT current transformers

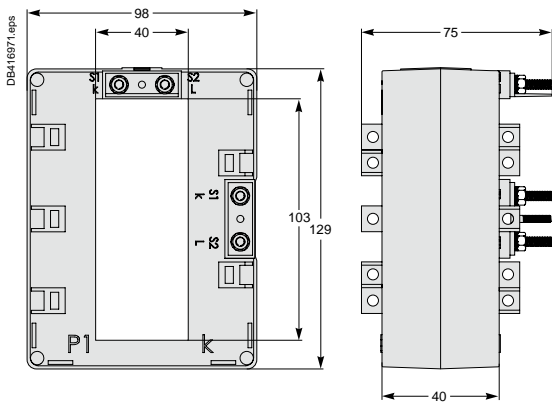
#### DD internal profile type



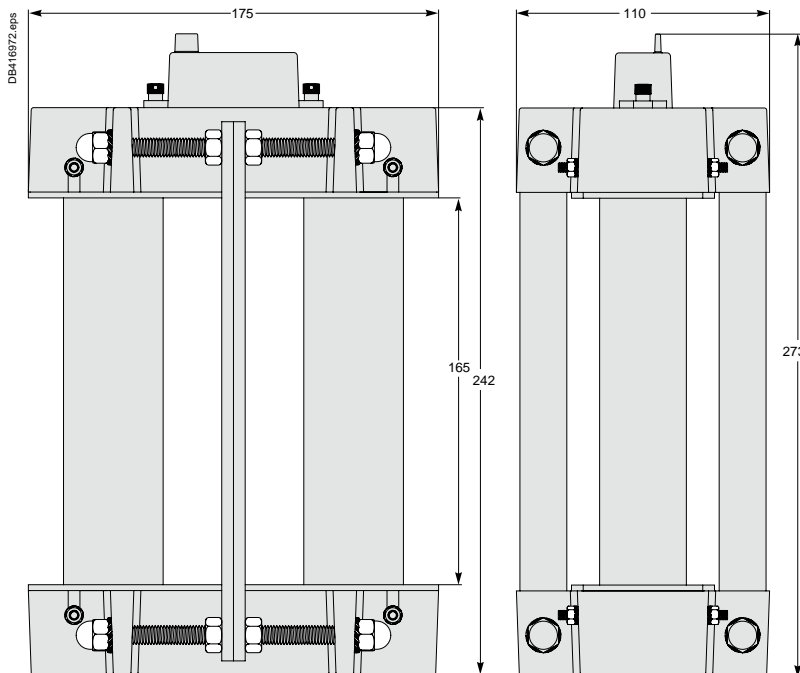
#### DE internal profile type



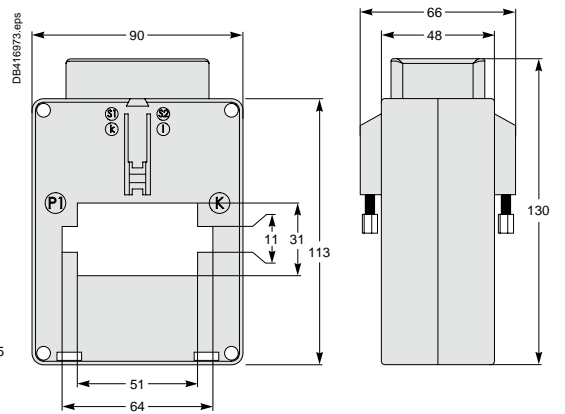
#### DH internal profile type



#### VV internal profile type

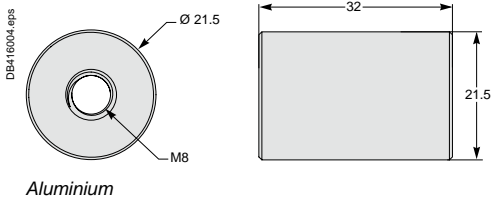


#### VF internal profile type

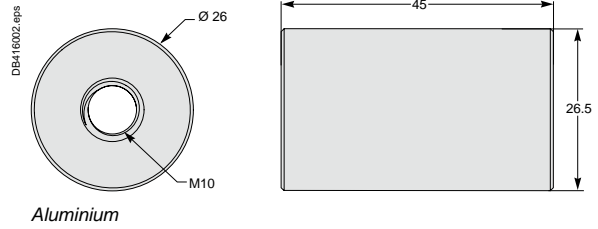


### Cylinders

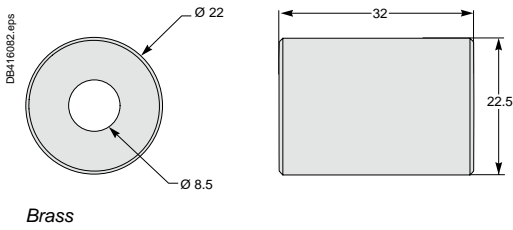
#### METSECT5CYL1



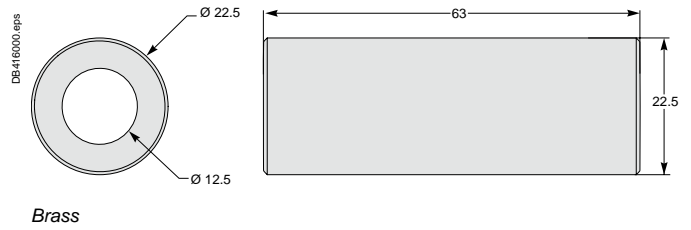
#### METSECT5CYL2



#### 16550

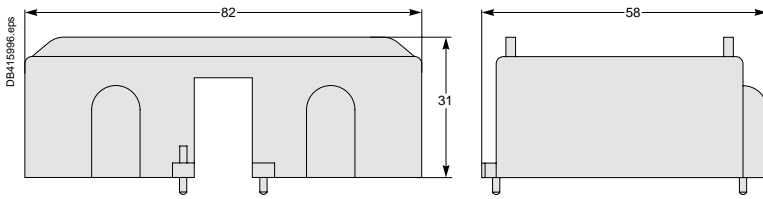


#### 16551

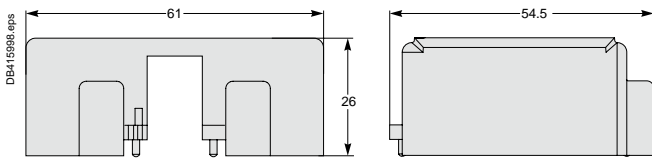


### Covers

#### 16552



#### 16553



#### METSECT5COVER

