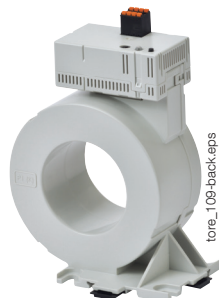
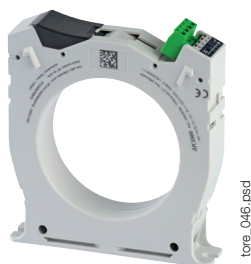
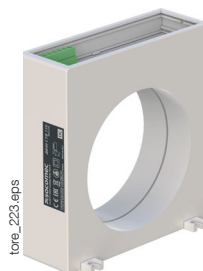


Core balance transformers: type A and B

For use with **RESYS**

Split-core balance transformer $\Delta IP-R$ 

WB toroid with TB adaptor fitted

Core balance transformer **WR**Core balance transformer ΔIC Tore ΔCTB

The solution for

- > Industry
- > Infrastructure
- > Critical facilities
- > OEMs
- > Renewable energy



Strong points

- > Complete range
- > Wide range of fixing systems (ΔIC and $\Delta IP-R$)
- > Patented cable locator (ΔIC and $\Delta IP-R$)
- > Quick to install and safe to use ($\Delta IP-R$)

Conformity to standards

- > IEC 61869-1
- > IEC 62020
- > IEC 60947-2-M
- > IEC 60755



Function

The installation of protection or monitoring systems, such as earth leakage protection relays, involves the use of **core balance transformers**.

Active conductors pass through the aperture of the core balance transformer, providing the differential summation of vector currents which enables the detection of leakage currents. SOCOMEC's core balance transformers (residual CTs) meet industry requirements in terms of measurement sensitivity and are suitable for earth leakage protection relays, RESYS M40/P40 multi-channel differential devices.

Whether closed (ΔIC , WR and TFR series) or split-core ($\Delta IP-R$ series), the transformers are suitable for all wiring configurations. For DC leakage currents, the $\Delta B40$ CTB core range is associated with the RESYS B40.

Advantages

Complete range

All dimensions and types are available to ensure compatibility with any bar, cable configuration or diameter.

Wide range of fixing systems (ΔIC and $\Delta IP-R$)

ΔIC and $\Delta IP-R$ CTs can be mounted onto a DIN-rail, backplate or directly onto the cable. Highly adaptable - even in confined spaces with significant integration constraints - plus quick and easy wiring.

Patented cable locator (ΔIC and $\Delta IP-R$)

The flexible cable locator is a patented SOCOMEC innovation. The cable is perfectly centralised within the CT to ensure accurate measurements and to provide enhanced immunity to network interference. It also enables the CT to be mounted directly onto the cable.

Quick to install and safe to use ($\Delta IP-R$)

Thanks to an innovative "one click" opening/closing system, without the need for additional accessories, split-core $\Delta IP-R$ CTs have been designed to ensure a fully safe installation.

Implementation

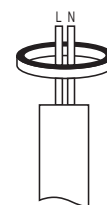
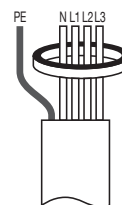
All the active conductors must pass through the aperture of the CT at the same time. The protective conductor must pass on the outside of the toroid or pass through it once in each direction.

Installation limiting distortions when heavy load switching.

Installation of detection CTs



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Characteristics

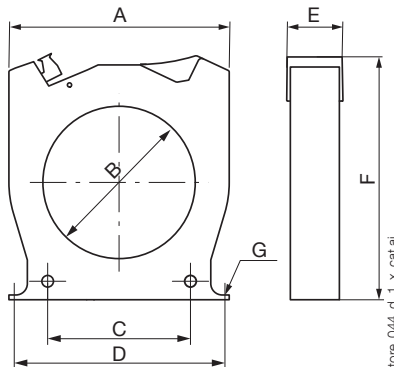
Type A core balance transformers: Δ IC, Δ IP-R, WR and TFR

Electrical characteristics	Δ IC	Δ IP-R
Insulation coordination	according to IEC 60664-1	according to IEC 60664-1
Max. operating voltage	720 VAC	720 VAC
Rated impulse voltage	8 kV	8 kV
Rated withstand voltage	3 kV	3 kV
Pollution degree	3	3
Winding ratio	600 / 1	600 / 1
Rated primary current	10 A	10 A
Nominal power	20 mVA	50 mVA
Max. accuracy class	3	3
Operating temperature	-40 to +80 °C	-40 to +80 °C
Flammability classification	UL94V-0	UL94V-0

Electrical characteristics for series WR and TFR	
Insulation coordination	according to IEC 60664-1
Insulation voltage	690 VAC
Rated impulse voltage	8 kV
Dielectric quality	6 kV
Pollution degree	3
Winding ratio	600 / 1
Rated primary current	10 A
Nominal power	50 mVA
Max. accuracy class	5
Operating temperature	-10 to +55 °C
Flammability classification	UL94V-0

Dimensions

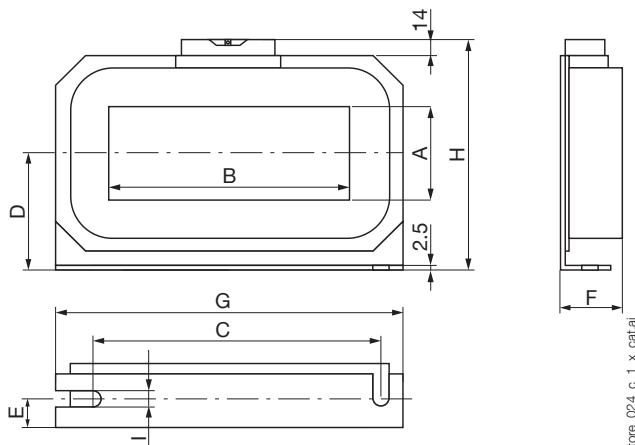
Δ IC-series solid-core CTs



Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight (kg)
Δ IC $\varnothing$ 15	53	17.3	27.8	50	26	81	M4	0.10
Δ IC $\varnothing$ 30	92	30	50	85	26	103.5	M4	0.13
Δ IC $\varnothing$ 50	102.5	50	50	90	26	125	M5	0.18
Δ IC $\varnothing$ 80	116	80	75	105	26	142.5	M5	0.22
Δ IC $\varnothing$ 120	163	120	100	150	26	182.5	M6	0.38
Δ IC $\varnothing$ 200	253	200	150	175 x 41.2	51	274	M6	0.88
Δ IC $\varnothing$ 300	370	300	200	250 x 41.5	50	390	M6	1.72

A. Width
B. Diameter
C. Distance between fixing centres
D. Distance between rear fixing feet
E. Depth
F. Height
G. Diameter of fixing screws

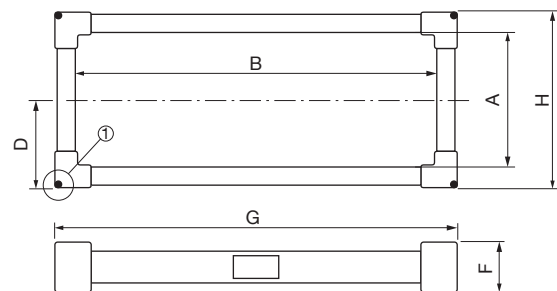
WR-series rectangular solid-core CT



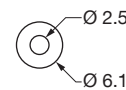
Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	Weight (kg)
WR 70 x 175	70	175	225	85	22	46	261	176	7.5	2.9
WR 115 x 305	115	305	360	116	25	55	402	240	8	6.3
WR 150 x 350	150	350	415	140	28	55	460	285	8	8.2

A. Aperture height
B. Width of gateway window
C. Distance between fixing centres
D. Half-height from base
E. Position of oblong slot
F. Depth
G. Width
H. Height
I. Width of oblong slot

TFR-series rectangular solid-core CT



① Additional mounting details



Type	A (mm)	B (mm)	D (mm)	F (mm)	G (mm)	H (mm)	Weight (kg)
TFR 200 x 500	200	500	140	62	585	285	7.2

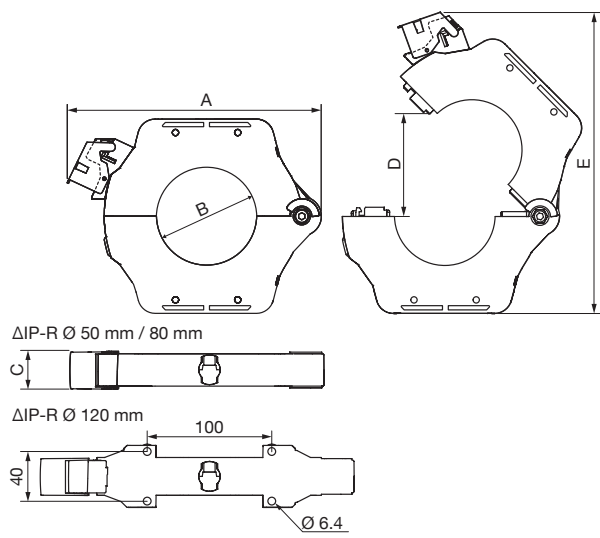
A. Aperture height
B. Width of gateway window
D. Half-height from base
F. Depth
G. Width
H. Height

Core balance transformers: type A and B

Dedicated to **RESYS**

Dimensions (continued)

DIP-R series split-core CTs



Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
ΔIP-R Ø 50	160	49	30	77	200	0.37
ΔIP-R Ø 80	204	79	30	108	260	0.85
ΔIP-R Ø 120	252	119	30	149	328	1.5

A. Width
B. Diameter
C. Depth

D. Maximum opening
E. Device height when open

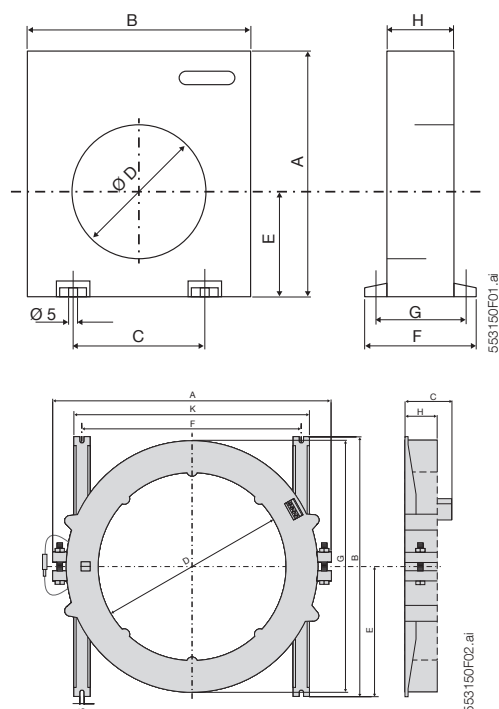
Characteristics

Type B core balance transformer (CTB) for RESYS B40

Electrical characteristics	ΔB40 CTB 35	ΔB40 CTB 60	ΔB40 CTB 80	ΔB40 CTB 110	ΔB40 CTB 160	ΔB40 CTB 210	ΔB40 CTB 300
Measurable differential current range	30 mA to 10 A		100 mA to 10 A		500 mA to 10 A		
Insulation coordination	IEC 62020						
Maximum operating voltage	300 VAC (P/N)						
Rated impulse voltage	2.5 kV						
Rated permanent differential current	10 A						
Operating temperature	-10 to +60°C						

Dimensions

Type B core balance transformer (CTB) for RESYS B40



Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	E (mm)	G (mm)	H (mm)
ΔB40 CTB 35	100	110	50	35	47	60	43	50
ΔB40 CTB 60	100	110	50	60	47	60	43	50
ΔB40 CTB 80	150	160	50	80	70	110	43	50
ΔB40 CTB 110	150	160	50	110	70	110	43	50
ΔB40 CTB 160	220	236	64	160	110	156	50	40

Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	E (mm)	G (mm)	H (mm)	K (mm)
ΔB40 CTB 210	310	290	54	210	145	240	280	36	258
ΔB40 CTB 300	416	385	60	300	190	350	365	42	366

References

Closed toroids: type A - ΔIC series

Type	Rated operational current I_n (A)	Toroid diameter (mm)	Reference
ΔIC Ø 15	36	15	4950 6015 ⁽¹⁾
ΔIC Ø 30	65	30	4950 6030 ⁽¹⁾
ΔIC Ø 50	85	50	4950 6050 ⁽¹⁾
ΔIC Ø 80	160	80	4950 6080 ⁽¹⁾
ΔIC Ø 120	250	120	4950 6120 ⁽¹⁾
ΔIC Ø 200	400	200	4950 6200 ⁽¹⁾
ΔIC Ø 300	630	300	4950 6300 ⁽¹⁾

(1) Toroids for RESYS relays M40 / P40 / N40.

Split-core toroids: type A - ΔIP-R series⁽²⁾

Type	Rated operational current I_n (A)	Toroid diameter (mm)	Reference
ΔIP-R Ø 50	85	50	4750 6051 ⁽¹⁾
ΔIP-R Ø 80	160	80	4750 6081 ⁽¹⁾
ΔIP-R Ø 120	250	120	4750 6121 ⁽¹⁾

(1) Toroids for RESYS relays M40 / P40 / N40.

(2) DELTA IP-R cores are supplied with a sealable protective cover, plug-in spring terminal block and DIN rail attachment.

Rectangular closed toroids: type A - WR and TFR series

Type	Toroid diameter (mm)	Reference
WR 70 x 175	70 x 175	4795 0717 ⁽¹⁾
WR 115 x 305	115 x 305	4795 1130 ⁽¹⁾
WR 150 x 350	150 x 350	4795 1535 ⁽¹⁾
WR 200 x 500	200 x 500	4795 2050 ⁽¹⁾

(1) Toroids for RESYS relays M40 / P40 / N40.

Closed toroids: type B - ΔCTB

Type	Toroid diameter (mm)	Reference
ΔB40 CTB 35	35	19CCJ035
ΔB40 CTB 60	60	19CCJ060
ΔB40 CTB 80	80	19CCJ080
ΔB40 CTB 110	110	19CCJ110
ΔB40 CTB 160	160	19CCJ160
ΔB40 CTB 210	210	19CCJ210
ΔB40 CTB 300	300	19CCJ300

Accessories for ΔIC & ΔIP-R toroids

Cable locator

The cable locator enables the cables to be centred within the aperture of the toroid. The use of this accessory allows the core balance transformer to be directly mounted onto the cables.

Description of accessories	Reference
Cable locator Ø 30 mm	4950 0011
Cable locator Ø 50 mm	4950 0012
Cable locator Ø 80 mm	4950 0013
Cable locator Ø 120 mm	4950 0014



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Sealable protective cover

Description of accessories	Reference
Sealable protective cover	4950 0020



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Detachable screw terminal

Description of accessories	Reference
Detachable screw terminal	4950 0041



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Detachable push-in terminal

Description of accessories	Reference
Detachable push-in terminal	4950 0040



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DIN-rail mounting

For DIN-rail mounting Socomec core balance transformers.

Description of accessories	Reference
DIN-rail clip	4950 0031



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Accessories for ΔIC toroids

Mounting bracket

Description of accessories	Reference
Mounting bracket Ø 30 mm	4950 0001
Mounting bracket Ø 50 mm	4950 0002
Mounting bracket Ø 80 mm	4950 0003
Mounting bracket Ø 120 mm	4950 0003
Mounting bracket Ø 200 mm	4950 0004
Mounting bracket Ø 300 mm	4950 0005



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