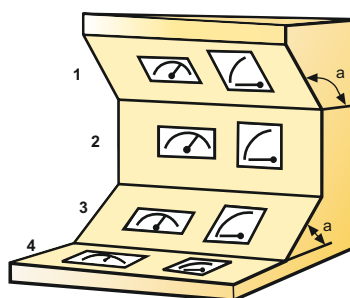


## CARACTERÍSTICAS GENERALES

<b>Normas</b>	EN60051, VDE 0410, BS-89, EN50081, EN50082, EN61010
<b>Certificaciones</b>	ISO 9001:2008 DER NORSE VERITAS, BUREAU VERITAS
<b>Envoltentes</b>	IEC 61554 72x72, 96x96, 144x144 MODULAR (para carril DIN)
<b>Escala</b>	Valor final de escala DIN 43701 Divisionado de escalas DIN 43802
<b>Agujas</b>	DIN 43802
<b>Posición de Montaje</b>	

1	$a > 90^\circ$
2	$\perp$
3	$a < 90^\circ$
4	$\square$



<b>Sobrecargas</b>	1,2 Vn permanente, 2 Vn 5s. 1,5 In permanente, 5In 30 s., 10 In 5 s., 40 In 1 s.
<b>Resistencia a la vibración</b>	VDE 0410, Párrafo 27: 2,5 g, $\pm 0,25$ mm, 50 Hz
<b>Resistencia al choque</b>	VDE 0410, Párrafo 28: 15 g
<b>Temperatura de funcionamiento</b>	-25°C..+40°C
<b>Temperatura de referencia</b>	+10°C..+30°C (para la clase de precisión)
<b>Tensión de prueba</b>	2kV, 50 Hz, 1 min.
<b>Tropicalización</b>	DIN 40040 (Bajo demanda)
<b>Protección</b>	Envoltentes IP52, (IP54, IP65 bajo demanda) Terminales IP00, IP20 (bajo demanda)

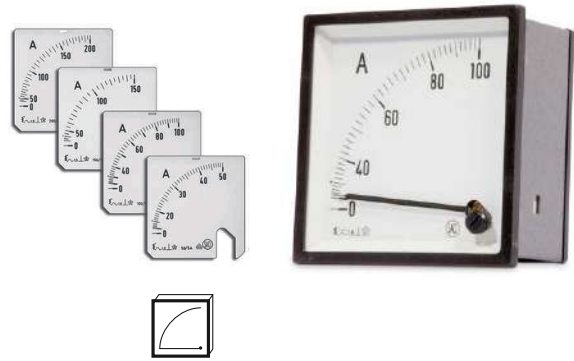
## BOBINA MÓVIL

Medida de tensión y de corriente en circuitos de corriente continua

### AMPERÍMETROS (ESCALA INTERCAMBIABLE)

A través de resistencias (Shunt)

- Escala: 90°
- Precisión: 1,5 %
- Rango de medida: 60 mV, 150 mV
- Consumo propio: 60 - 150 Ω



Modelo		CC5VR	CC5V	CC4V	CC3V
Dimensiones	mm	45x52,5 DIN	48x48	72x72	96x96
Peso aprox.	kg.	0,10	0,09	0,21	0,28
AMPERÍMETROS (ESCALA INTERCAMBIABLE)					
Módulo	Vn	X/60mV ó X/150mV			
Escalas	In	1, 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 30; 40; 50; 60; 80 ó 100A y múltiplos			

\* Protección IP20

### AMPERÍMETROS (μA, mA y A) VOLTÍMETROS (mV, y V)

- Escala: 90°
- Precisión: 1,5 %

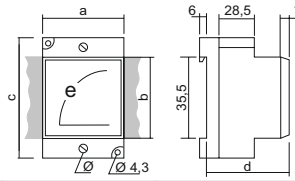


Modelo		CC5VR*	CC5V	CC4V	CC3V	CC2V	CCb7	CCb3	CCb8
Dimensiones	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Peso aprox.	kg.	0,25	0,09	0,21	0,28	0,50	0,15	0,19	0,25
AMPERÍMETROS (μA)									
RANGO DE MEDIDA	In	40; 50; 60; 100; 150; 250; 300; 400; 500 ó 600 μA							
		AMPERÍMETROS (mA)							
		1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 ó 600 mA							
	AMPERÍMETROS (A)								
	4-20 mA								
	1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40 ó 50 A								
Vn	VOLTÍMETROS (mV)								
	10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 ó 600 mV								
	VOLTÍMETROS (V)**								
1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 ó 600 V									

\* Hasta 40 A

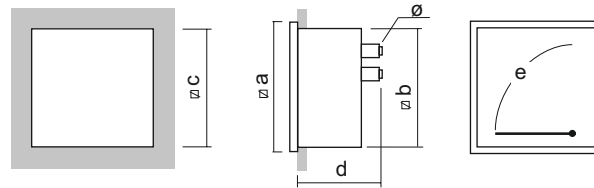
\*\* >600-<1000 V, caja exterior 1.2.1. (página 42) / 1000-2000 V, caja exterior - 3.3.1 / >2000-4000 V, caja exterior -3.3.2 (página 42)

Dimensiones (mm)



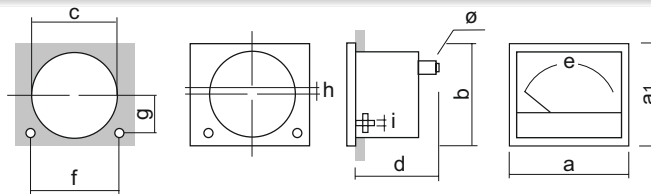
Modelos	Rango	a	b	c	d	e	ø
CC5VR	μA; mA; A; V	52,5	45	75	60	38	M.6

Dimensiones (mm)



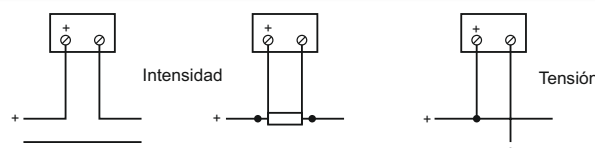
Modelos	Rango	∅a	∅b	∅c	d	e	ø
CC5V	x/60..x/150 mV	48	44,5	45+0,6	59	38	M.4
CC4V	x/60..x/150 mV	72	66,5	68+0,7	60	65	M.4
CC3V	x/60..x/150 mV	96	89	92+0,8	59	100	M.4
CC5V	>4..15 A	48	44,5	45+0,6	63	38	M.4
	>15..50 A				62		M.6
CC4V	>4..15 A	72	66,5	68+0,7	63	65	M.4
	>15..50 A				68		M.6
	Resto				60		M.4
CC3V	>4..15 A	96	89	92+0,8	63	100	M.4
	>15..50 A				68		M.6
	Resto				59		M.4
CC2V	>4..15 A	144	135	138+1	63	140	M.4
	>15..50 A				68		M.6
	Resto				59		M.4
CC4VP	x/60..x/150 mV	72	66,5	68+0,7	58	65	M.4
CC3VP	x/60..x/150 mV	96	90	92+0,8	58	100	M.4

Dimensiones (mm)



Modelos	Rango	axa1	b	c	d	e	f	g	h	i	ø
CCb7	<4...15A	80x64	57,6	58,6+0,6	63	59	63	12,5	1,5	M.3	M.4
	>15..50 A					57					M.6
	Resto					55					M.4
CCb3	<4...15A	105x80	66	67+0,7	63	59	81	13	4,5	M.3	M.4
	>15...<50 A					75					M.6
	Resto					55					M.4
CCb8	<4...15A	130x100	66	67+0,8	63	59	100	13	13	M.4	M.4
	>15...<50 A				63	100					M.6
	Resto				55	100					M.4

Esquemas de conexión



## CAJAS DE RESISTENCIAS

Conexión a elementos de medida.



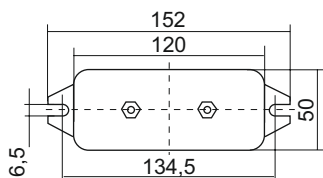
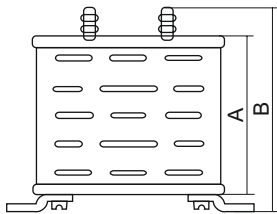
- Precisión: 0,5 %

Modelo		1.2.1	1.3.1	1.4.1	1.4.2	1.5.1	1.6.1	1.6.2
Terminales		2	3	4	4	5	6	6
Peso aprox.	kg.	0,23	0,23	0,24	0,31	0,50	0,25	0,40

Modelo		2.2.1	2.3.1	2.4.1	2.4.2	2.5.2	2.6.1	2.6.2	2.6.3	2.7.1	2.8.1	2.8.2
Terminales		2	3	4	4	5	6	6	6	7	8	8
Peso aprox.	kg.	0,31	0,31	0,31	0,31	0,32	0,32	0,55	0,74	0,40	0,60	0,77

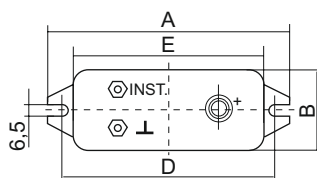
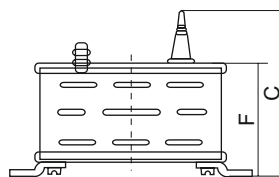
Modelo		3.3.1	3.3.2	4.2.1	4.3.1	4.4.1	4.5.1	4.6.1	4.8.1
Terminales		3	3	2	3	4	5	6	8
Peso aprox.	kg.	0,27	0,70	0,90	0,90	0,95	1,00	1,00	1,00

Dimensiones (mm)



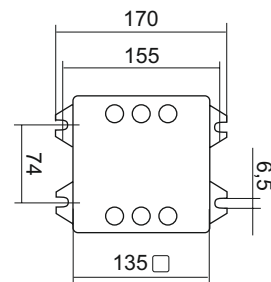
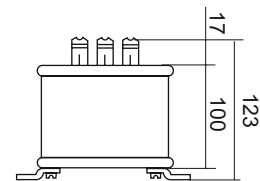
Modelo	1..1	2..1
A	64	99
B	86	121

Dimensiones (mm)



Modelo	3.3.1	3.3.2
A	155	270
B	50	100
C	101	148
D	135	235
E	120	220
F	69	102

Dimensiones (mm)



Modelo
4.5.1
4.6.1
4.8.1




## ESPECIALIDADES

ESPECIALIDADES												
	∅ 48	∅ 72	∅ 96	∅ 144	80 x 64	105 x 80	130 x 100	MODULAR	∅ 48	∅ 72	∅ 96	∅ 144
<b>AGUJA</b>												
Aguja de cuchillo y divisiones finas	---	●	●	●	---	---	---	---	---	---	---	---
Aguja de cuchillo, divisiones finas y espejo	---	●	●	●	---	●	---	---	---	---	---	---
Aguja roja regulable desde el exterior	---	●	---	---	---	●	---	---	---	---	---	---
<b>ESCALA</b>												
Escala no normalizada (*)	---	---	●	---	---	●	---	●	---	●	---	---
Escala antiparalaje	---	---	---	---	---	---	---	---	---	●	●	---
Escala fondo negro, divisiones, números y aguja blancos	---	●	●	●	---	●	---	---	---	---	---	---
Escala fondo negro, divisiones, números y aguja amarillos	---	●	●	●	---	---	---	---	---	●	●	●
Doble escala	---	●	●	●	---	●	---	---	---	●	---	---
Doble numeración	---	●	●	●	---	●	---	---	---	●	●	●
Trazo rojo	---	●	---	---	---	●	---	●	---	●	---	---
Franja de color (hasta 20 mm)	---	●	---	---	---	●	---	●	---	●	---	---
Rótulos adicionales (< de 10 letras)	---	●	---	---	---	●	---	●	---	●	---	---
Unidad de medida no eléctrica	---	---	---	---	---	---	---	---	---	---	---	---
<b>PROTECCIONES</b>												
Serie Naval ó Tropicalizado	---	●	---	---	---	●	---	●	---	●	---	---
Protección IP43	---	●	---	---	---	●	---	---	---	●	---	---
Protección IP54	---	●	---	---	---	---	---	---	---	●	---	---
Protección de bornas IP20	●	●	●	---	---	---	---	---	●	---	---	---
Equipos móviles y amortiguamiento	---	●	---	---	---	●	---	---	---	●	---	---
Protección IP65	---	●	●	---	---	---	---	---	---	●	●	---
<b>VARIOS</b>												
Cristal de makrolón	---	●	---	---	---	●	---	---	---	●	---	---
Cristal antirreflexivo	---	●	---	---	---	●	---	---	---	●	---	---
Iluminación 12,24 V(escala fondo blanco)	---	●	●	●	---	●	●	---	---	●	●	●
Iluminación 12,24 V(escala fondo negro)	---	●	●	●	---	●	●	---	---	●	●	●
Posición de trabajo distinta a la vertical	---	●	---	---	---	●	---	●	---	●	---	---
Junta de goma (Panel)	---	●	●	---	---	---	---	---	---	---	---	---
<b>APARATOS DE HIERRO MÓVIL</b>												
Alcance no normalizado (**)	---	●	---	---	---	●	---	●	---	---	---	---
Calibrados a 150 ó 400 Hz (los posibles)	---	●	---	---	---	●	---	●	---	---	---	---
Calibrados en c. continua	---	●	---	---	---	●	---	●	---	---	---	---
Precisión 1%	---	●	---	---	---	●	---	●	---	---	---	---
Aislamiento 3 kV	---	●	---	---	---	●	---	●	---	---	---	---
750-1.000V (con caja exterior)	---	●	---	---	---	●	---	●	---	---	---	---
Escala ampliada 200% (amp. y mA)	---	●	---	---	---	●	---	●	---	---	---	---
Escala ampliada 500% (amp. y mA)	---	●	---	---	---	●	---	●	---	---	---	---
Doble alcance	---	●	---	---	---	●	---	●	---	---	---	---
<b>APARATOS DE BOBINA MÓVIL</b>												
Alcance no normalizado (**)	---	●	---	---	---	●	---	●	---	●	---	---
Aislamiento 3 kV	---	●	---	---	---	●	---	●	---	●	---	---
Cero central	---	●	---	---	---	●	---	●	---	●	---	---
Cero desplazado	---	●	---	---	---	●	---	●	---	●	---	---
Cero suprimido mecánicamente (máx. 25%)	---	●	---	---	---	●	---	●	---	●	---	---
Compresión final (amper. c.a)	---	●	---	---	---	●	---	●	---	●	---	---
Escala de función no lineal (Ω, db, etc.)	---	●	---	---	---	●	---	●	---	●	---	---
Ajuste específico de res. interna (los posibles)	---	●	---	---	---	●	---	●	---	●	---	---
Precisión 1%	---	●	---	---	---	●	---	●	---	●	---	---
600 ÷ 1.000 V c. c (caja ext. potenciométrica)	---	●	---	---	---	●	---	●	---	●	---	---
>1.000+2.000V c. c (caja ext. potenciométrica)	---	●	---	---	---	●	---	●	---	●	---	---
>2.000+4.000V c. c (caja ext. potenciométrica)	---	●	---	---	---	●	---	●	---	●	---	---
Potenciómetro de ajuste 10% fin escala	---	●	●	●	---	---	---	---	---	●	●	●
Doble alcance	---	●	---	---	---	●	---	●	---	●	---	---

(\*) Escala: Dibujo del rayado y numeración.

(\*\*) Intensidad o tensión necesaria para llevar la aguja al final de la zona de medida.

## ESPECIALIDADES

ESPECIALIDADES									
	∅ 48	∅ 72	∅ 96	∅ 144	MODULAR	∅ 48	∅ 72	∅ 96	∅ 144
<b>VATÍMETROS Y VÁRMETROS INDUCCIÓN</b>									
Cero central			●		●			●	
Cero desplazado			●		●			●	
Tensión no normalizada			●		●			●	
Intensidad 1 amperio (por sistema)			●		●			●	
Calibrado entre 0,4 - 0,6 de pot. aparente			●		●			---	
Calibrado entre 0,6 - 0,8 de pot. aparente			---		---			●	
Calibrado entre 1,3 - 1,5 de pot. aparente			●		●			●	
Precisión 1%			●		●			●	
<b>VATÍMETROS Y VÁRMETROS ELECTRÓNICOS</b>									
Calibrados a 400 Hz			●		●			●	
Intensidad 1 amperio			●		●			●	
Precisión 1%			●		●			●	
<b>FASÍMETROS DE INDUCCIÓN</b>									
Tensión no normalizada (monofásica)			●		●			●	
Tensión no normalizada (trifásica)			●		●			●	
Intensidad 1 amperio (por sistema)			●		●			●	
<b>FASÍMETROS ELECTRÓNICOS</b>									
Tensión no normalizada			●		●			●	
Escala 0-1-0 (monof.) 0,1-0-0,1 (trifásica)			●		●			●	
Intensidad 1 amperio			●		●			●	