

Analogue instruments

EC / EM / Ezc / CEC, Moving Iron Milliampmeters and Ammeter



Milliampmeters and Ammeters, 90° - P2 - Class 1,5

Type						
	EC 48	EC 72	EC 96	EC 144	EM 45	
a	48	72	96	144	85	
b	48	72	96	144	52	
c	86,2	69,2	69,2	91,8	65	
mA						
100	[*] M10111.	[*] M10121.	[*] M10131.	[*] M10141.	[*] M10151.	
150	[*] M10112.	[*] M10122.	[*] M10132.	[*] M10142.	[*] M10152.	
250	[*] M10114.	[*] M10124.	[*] M10134.	[*] M10144.	[*] M10154.	
300	[*] M10115.	[*] M10125.	[*] M10135.	[*] M10145.	[*] M10155.	
400	[*] M10116.	[*] M10126.	[*] M10136.	[*] M10146.	[*] M10156.	
500	[*] M10117.	[*] M10127.	[*] M10137.	[*] M10147.	[*] M10157.	
600	[*] M10118.	[*] M10128.	[*] M10138.	[*] M10148.	[*] M10158.	
A						
5	[*] M10212.	[*] M10222.	[*] M10232.	[3] M10242.	[1] M10252.	
10	[*] M10213.	[*] M10223.	[*] M10233.	[3] M10243.	[*] M10253.	
15	[*] M10214.	[*] M10224.	[*] M10234.	[3] M10244.	[*] M10254.	
20	[*] M10215.	[*] M10225.	[*] M10235.	[3] M10245.	[1] M10255.	
25	[*] M10216.	[*] M10226.	[*] M10236.	[3] M10246.	[*] M10256.	
30	[*] M10217.	[*] M10227.	[1] M10237.	[3] M10247.	[*] M10257.	
40	[*] M10218.	[*] M10228.	[*] M10238.	[3] M10248.	[*] M10258.	
50	[*] M10219.	[*] M10229.	[*] M10239.	[3] M10249.	[3] M10259.	
60	[*] M1021A.	[*] M1022A.	[*] M1023A.	[3] M1024A.	[3] M1025A.	
75	-	[*] M1022B.	[1] M1023B.	[3] M1024B.	-	
100	-	[*] M1022C.	[*] M1023C.	[3] M1024C.	-	
.../5 A (*)	[*] M10210.	[*] M10220.	[*] M10230.	[3] M10240.	[*] M10250.	

(*) Exchangeable scales. See next page.

	Ammeters, 240°		Ammeters with phase switch		Ammeters with 2 relays	
Type	Ezc 72	Ezc 96	EC 72 FA	EC 96 FA	CEC 96	
Class	5		1,5		1,5	
Scale	240°, P2		90°, P1		90°, P2	
a	72	96	72	96	96	
b	72	96	72	96	96	
c	69,2	69,2	69,2	69,2	85,3	96
A						
(*) .../5 A (*)	[3] M10920.	[3] M10930.	[*] M10521.	[*] M10531.	[*] M14810.	

(*) Exchangeable scales. See next page.

(*) Specify primary current of the measuring transformer



Exchangeable scales, moving iron ammeters

Type	SEC 48	SEC 72	SEC 96	SEM 45	SEC 72 FA	SEC 96 FA	SEZC 72	SEZC 96
Equipment	EC 48	EC 72	EC 96	EM 45	EC 72 FA	EC 96 FA	EZC 72	EZC 96
A								
5/5	[*] M102Z2.	[*] M102Y2.	[*] M102X2.	-	-	-	[2] M109Y2.	[*] M109X2.
10/5	[*] M102Z3.	[*] M102Y3.	[*] M102X3.	-	-	-	[*] M109Y3.	[*] M109X3.
15/5	[*] M102Z4.	[*] M102Y4.	[*] M102X4.	-	-	-	[*] M109Y4.	[*] M109X4.
20/5	[*] M102Z5.	[*] M102Y5.	[*] M102X5.	-	-	-	[*] M109Y5.	[*] M109X5.
25/5	[*] M102Z6.	[*] M102Y6.	[*] M102X6.	-	-	-	[*] M109Y6.	[*] M109X6.
30/5	[*] M102Z7.	[*] M102Y7.	[*] M102X7.	-	-	-	[*] M109Y7.	[*] M109X7.
40/5	[*] M102Z8.	[*] M102Y8.	[*] M102X8.	-	-	-	[*] M109Y8.	[2] M109X8.
50/5	[*] M102Z9.	[*] M102Y9.	[*] M102X9.	[*] M102V9.	[*] M105Y9.	[*] M105X9.	[*] M109Y9.	[2] M109X9.
60/5	[*] M102ZA.	[*] M102YA.	[*] M102XA.	[*] M102VA.	[2] M105YA.	[*] M105XA.	[*] M109YA.	[*] M109XA.
75/5	[*] M102ZB.	[*] M102YB.	[*] M102XB.	[*] M102VB.	[*] M105YB.	[*] M105XB.	[*] M109YB.	[*] M109XB.
100/5	[*] M102ZC.	[*] M102YC.	[*] M102XC.	[*] M102VC.	[*] M105YC.	[*] M105XC.	[2] M109YC.	[2] M109XC.
125/5	[*] M102ZD.	[*] M102YD.	[*] M102XD.	[*] M102VD.	[2] M105YD.	[*] M105XD.	[*] M109YD.	[*] M109XD.
150/5	[*] M102ZE.	[*] M102YE.	[*] M102XE.	[*] M102VE.	[*] M105YE.	[2] M105XE.	[2] M109YE.	[2] M109XE.
200/5	[*] M102ZF.	[*] M102YF.	[*] M102XF.	[*] M102VF.	[*] M105YF.	[*] M105XF.	[2] M109YF.	[2] M109XF.
250/5	[*] M102ZG.	[*] M102YG.	[*] M102XG.	[1] M102VG.	[*] M105YG.	[*] M105XG.	[2] M109YG.	[2] M109XG.
300/5	[*] M102ZH.	[*] M102YH.	[*] M102XH.	[*] M102VH.	[*] M105YH.	[*] M105XH.	[2] M109YH.	[*] M109XH.
400/5	[*] M102ZJ.	[*] M102YJ.	[*] M102XJ.	[*] M102VJ.	[*] M105YJ.	[*] M105XJ.	[*] M109YJ.	[2] M109XJ.
500/5	[2] M102ZK.	[*] M102YK.	[*] M102XK.	[*] M102VK.	[*] M105YK.	[*] M105XK.	[*] M109YK.	[*] M109XK.
600/5	[*] M102ZL.	[*] M102YL.	[*] M102XL.	[*] M102VL.	[*] M105YL.	[*] M105XL.	[*] M109YL.	[2] M109XL.
750/5	[*] M102ZM.	[*] M102YM.	[*] M102XM.	[*] M102VM.	[*] M105YM.	[*] M105XM.	[*] M109YM.	[2] M109XM.
800/5	[*] M102ZN.	[*] M102YN.	[*] M102XN.	[*] M102VN.	[*] M105YN.	[*] M105XN.	[*] M109YN.	[*] M109XN.
1 000/5	[*] M102ZP.	[*] M102YP.	[*] M102XP.	[1] M102VP.	[*] M105YP.	[*] M105XP.	[*] M109YP.	[2] M109XP.
1 200/5	[*] M102ZQ.	[*] M102YQ.	[*] M102XQ.	[1] M102VQ.	[*] M105YQ.	[*] M105XQ.	[*] M109YQ.	[*] M109XQ.
1 500/5	[*] M102ZR.	[*] M102YR.	[*] M102XR.	[1] M102VR.	[*] M105YR.	[*] M105XR.	[2] M109YR.	[*] M109XR.
2 000/5	[*] M102ZS.	[*] M102YS.	[*] M102XS.	[1] M102VS.	[*] M105YS.	[*] M105XS.	[*] M109YS.	[2] M109XS.
2 500/5	[*] M102ZT.	[*] M102YT.	[*] M102XT.	[1] M102VT.	[*] M105YT.	[*] M105XT.	[*] M109YT.	[*] M109XT.
3 000/5	[*] M102ZU.	[*] M102YU.	[*] M102XU.	[1] M102VU.	[*] M105YU.	[*] M105XU.	[*] M109YU.	[2] M109XU.
4 000/5	[*] M102ZV.	[*] M102YV.	[*] M102XV.	[1] M102VV.	[*] M105YV.	[*] M105XV.	[*] M109YV.	[2] M109XV.
5 000/5	[*] M102ZW.	[2] M102YW.	[*] M102XW.	[1] M102VW.	[*] M105YW.	[*] M105XW.	[*] M109YW.	[*] M109XW.

CODIFICATION TABLE

EC, EZC

Code		Internal code		
M 1 X X X X 0 0		X	X	X
		↑	↑	↑
		Delivery time		
Standard 2P		0		-
Adjustment	1P	1		2
	5P	6		2
Current input	Standard (.../5 A)	0		-
	... / 1 A	1		1
Scales(*)	1		1	2
	5		2	2
	10		3	2
	15		4	2
	20		5	2
	25		6	2
	30		7	2
	40		8	2
	50		9	2
	60		A	2
	75		B	2
	100		C	2
	125		D	2
	150		E	2
	200		F	2
	250		G	2
	300		H	2
	400		J	2
	500		K	2
	600		L	2
750		M	2	
800		N	2	
1000		P	2	
1200		Q	2	
1500		R	2	
2000		S	2	
2500		T	2	
3000		U	2	
4000		V	2	
5000		W	2	

EC (mA), EM (mA)

Code		Internal code		
M 1 X X X X 0 0		X		
		↑		
		Delivery time		
Standard 2P		0		-
Adjustment	1P	1		2
	5P	6		2

SEC, SEM, EM

Code		Internal code		
M 1 X X X X 0 0		X	X	
		↑	↑	
		Delivery time		
Standard 2P		0		-
Adjustment	1P	1		2
	5P	6		2
Current input	Standard (.../5 A)	0		-
	... / 1 A	1		1

EC FA

Code		Internal code		
M 1 X X X X 0 0		X	X	
		↑	↑	
		Delivery time		
Standard 1P		0		-
Adjustment	5P	6		2
Current input	Standard (.../5 A)	0		-
	... / 1 A	1		1

CEC

Code		Internal code		
M 1 X X X X 0 0		X	X	
		↑	↑	
		Delivery time		
60		A		-
75		B		-
100		C		-
125		D		-
150		E		-
200		F		-
250		G		-
300		H		-
400		J		-
Scales	500	K		-
	600	L		-
	750	M		-
	800	N		-
	1000	P		-
	1200	Q		-
	1500	R		-
	2000	S		-
	2500	T		-
	3000	V		-
Standard (.../5 A)		0		-
Current input	... / 1 A	1		1
	/10 A	4		1



EC / EM / EZC / CEC, Moving Iron Voltmeters

	Voltmeters, 90°				Voltmeters, 90°	Voltmeters, 240°	
Type	EC 48	EC 72	EC 96	EC 144	EM 45	EZC 72	EZC 96
Class	1,5				1,5	5	
Scale	90°, P1				90°, P1	240°, P1	
a	48	72	96	144	85	72	96
b	48	72	96	144	52	72	96
c	86,2	69,2	69,2	91,8	65	69,2	69,2
V							
250	[*] M10415.	[*] M10425.	[*] M10435.	[3] M10445.	-	[3] M11125.	[3] M11135.
300	[*] M10416.	[*] M10426.	[*] M10436.	[3] M10446.	[*] M10456.		
400	[*] M10417.	[*] M10427.	[*] M10437.	[3] M10447.	-	-	-
500	[*] M10418.	[*] M10428.	[*] M10438.	[3] M10448.	[*] M10458.	[3] M11128.	[3] M11138.
600	[1] M10419.	[*] M10429.	[*] M10439.	[3] M10449.	-	-	-
.../110 V(*)	[1] M10410.	[*] M10420.	[*] M10430.	[3] M10440.	[1] M10450.	-	-

(*) Exchangeable scales, Voltmeters 90°

	Voltmeters with phases switch					Voltmeters with 2 relays	
	Three-phase 3 wire		Three-phase 4 wire		with sequence meter		
Type	EC 72 F III	EC 96 F III	EC 72 F III +N	EC 96 F III +N	EC 96 FN-S	CEC 96	
Class	1,5					1,5	
Scale	90°, P1					90°, P1	
a	72	96	72	96	96	96	
b	72	96	72	96	96	96	
c	69,2	69,2	69,2	69,2	69,2	85,3	
V							
150	-	-	-	-	-	[3] M14821.	
250	[*] M10625.	[3] M10635.	[*] M10725.	[3] M10735.	-	[3] M14822.	
300	[*] M10626.	[*] M10636.	[*] M10726.	[*] M10736.	-	[3] M14823.	
400	[*] M10627.	[3] M10637.	[*] M10727.	[3] M10737.	-	[3] M14824.	
500	[*] M10628.	[*] M10638.	[*] M10728.	[*] M10738.	[2] M11038.	[3] M14825.	
600	[*] M10629.	[3] M10639.	[*] M10729.	[3] M10739.	-	[3] M14826.	
(1).../110 V	-	[2] M10632.	-	-	-	[3] M14820.	

(1) Specify primary voltage of the measuring transformers



Exchangeable scales, moving iron voltmeters, 1,2P

Type	SEC 48	SEC 72	SEC 96	SEM 45
Equipment	EC 48	EC 72	EC 96	EM 45
V				
1 000/110	[1] M104Z1.	[1] M104Y1.	[1] M104X1.	[1] M104V1.
3 300/110	[1] M104Z2.	[1] M104Y2.	[1] M104X2.	[1] M104V2.
6 600/110	[1] M104Z3.	[1] M104Y3.	[1] M104X3.	[1] M104V3.
13 200/110	[1] M104Z4.	[1] M104Y4.	[1] M104X4.	[1] M104V4.
15 000/110	[1] M104Z5.	[1] M104Y5.	[1] M104X5.	[1] M104V5.
20 000/110	[1] M104Z6.	[1] M104Y6.	[1] M104X6.	[1] M104V6.
22 000/110	[1] M104Z7.	[1] M104Y7.	[1] M104X7.	[1] M104V7.
25 000/110	[1] M104Z8.	[1] M104Y8.	[1] M104X8.	[1] M104V8.

CODIFICATION TABLE

EC Voltmeters with external transformer and EZC

Code	Internal code			
M 1 X X X X 0 0 X X X				
			↑	Delivery time
Adjustment	Standard 1,2P	0	↑	-
	1P	1	↑	2
	Standard (.../110 V)	0		-
Voltage input	... / 100 V	1		1
	... / 63,5 V	2		1
	... / 57,8 V	3		1
Scales (For equipments with external transformer and all EC)	1000	1		2
	3300	2		2
	6600	3		2
	13200	4		2
	15000	5		2
	20000	6		2
	22000	7		2
	25000	8		2

EC and EC-F direct Voltmeters

Code	Internal code			
M 1 X X X X 0 0 X				
			↑	Delivery time
Adjustment	Standard 1P	0		-
	1,2P	2		2

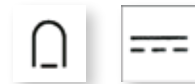
EC scales and EM Voltmeters and scales

Code	Internal code			
M 1 X X X X 0 0 X X				
			↑	Delivery time
Adjustment	Standard 1,2P	0	↑	-
	1P	1	↑	2
	Standard (.../110 V)	0		-
Voltage inputs	... / 100 V	1		1
	... / 63,5 V	2		1
	... / 57,8 V	3		1

Delivery time: [*] immediate
 [x] working weeks
 [c] consult



BC / BM / CBC, Moving coil ammeters



Ammeters, 90°					Ammeters, 90°		ammeters with 2 relays	
Type	BC 48	BC 72	BC 96	BC 144	BM 45	CBC 96		
Class	1,5				1,5	1,5		
Scale	90°, P1				90°, P1	90°, P1		
a	48	72	96	144	85	96		
b	48	72	96	144	52	96		
c	86,2	69,2	69,2	91,8	65	85,3		
5	[3] M11412.	[*] M11422.	[3] M11432.	M11442.	[3]	[3] M11452.		
10	[3] M11413.	[*] M11423.	[3] M11433.	M11443.	[3]	[*] M11453.		
25	[*] M11416.	[*] M11426.	[*] M11436.	M11449.	[3]	[3] M11456.		
50	[3] M11419.	[*] M11429.	[3] M11439.	M1144A.	[3]	[*] M11459.		
60	-	[3] M1142A.	[3] M1143A.	M11440.	-			
.../60 mV(*)	[*] M11410.	[*] M11420.	[*] M11430.		[3] M11450.	[3] M14830.		

(*) Exchangeable scales. See M.7 for external shunts

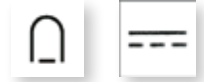
Exchangeable Scales

Type	SBC 48	SBC 72	SBC 96	SBM 45	Type	SBC 48	SBC 72	SBC 96	SBM 45
Device	BC 48	BC 72	BC 96	BM 45	Device	BC 48	BC 72	BC 96	BM 45
A / mV					A / mV				
50/60	[1] M114Z9.	[1] M114Y9.	[*] M114X9.	[1] M114V9.	300/60	[1] M114ZH.	[1] M114YH.	[1] M114XH.	[1] M114VH.
60/60	[1] M114ZA.	[1] M114YA.	[1] M114XA.	[1] M114VA.	400/60	[1] M114ZJ.	[1] M114YJ.	[*] M114XJ.	[1] M114VJ.
75/60	[1] M114ZB.	[1] M114YB.	[1] M114XB.	[1] M114VB.	600/60	[1] M114ZL.	[*] M114YL.	[*] M114XL.	[1] M114VL.
100/60	[1] M114ZC.	[*] M114YC.	[*] M114XC.	[1] M114VC.	1 000/60	[1] M114ZP.	[1] M114YP.	[*] M114XP.	[1] M114VP.
150/60	[1] M114ZE.	[1] M114YE.	[1] M114XE.	[1] M114VE.	1 500/60	[1] M114ZR.	[1] M114YR.	[1] M114XR.	[1] M114VR.
200/60	[1] M114ZF.	[*] M114YF.	[*] M114XF.	[1] M114VF.	2 500/60	[1] M114ZT.	[1] M114YT.	[1] M114XT.	[1] M114VT.
250/60	[1] M114ZG.	[1] M114YG.	[1] M114XG.	[1] M114VG.					

CODIFICATION TABLE

BC and BM ammeter				
Code	Internal code			Delivery time
M 1 X X X X 0 0	X	X	X	
Adjustment	Standard	0		-
	central zero	1		2
Shunt input range	Standard (.../60 mV)	0		-
	... / 50 mV	1		2
	... / 150 mV	3		2
	... / 300 mV	5		2
Scale	50	9		2
	60	A		2
	75	B		2
	100	C		2
	150	E		2
	200	F		2
	250	G		2
	300	H		2
	400	J		2
	500	K		2
600	L		2	
1000	P		2	
1500	R		2	
2500	T		2	

SBC, SBM45 scales				
Code	Internal code			Delivery time
M 1 X X X X 0 0	X	X	X	
Adjustment	Standard	0		-
	central zero	1		2
Shunt input range	Standard (.../60 mV)	0		-
	... / 50 mV	1		2
	... / 150 mV	3		2
	... / 300 mV	5		2

BC / BM / CBC, Moving coil voltmeters


Volts, 90°						Volts, 90°		Volts with relay		
Type	BC 48	BC 72	BC 96	BC 144		BM 45	CBC 96			
Class	1,5					1,5		1,5		
Scale	90°, P1					90°, P1		90°, P1		
a	48	72	96	144		85	96			
b	48	72	96	144		52	96			
c	86,2	69,2	69,2	91,8		65	85,3			
V										
0...10 V (*1)	[*] M11813.	[*] M11823.	[*] M11833.	M11843.	[3]	-		-		
1	[2] M11711.	[1] M11721.	[1] M11731.	M11741.	[3]	-		-		
15	[*] M11714.	[*] M11724.	[*] M11734.	M11744.	[3]	[3] M11754.	-			
30	[*] M11716.	[*] M11726.	[*] M11736.	M11746.	[3]	[3] M11755.	-			
60	[*] M11718.	[*] M11728.	[*] M11738.	M11748.	[3]	[3] M11756.	-			
100	[3] M11719.	[*] M11729.	[*] M11739.	M11749.	[3]	[3] M11757.				
150	[3] M1171A.	[*] M1172A.	[*] M1173A.	M1174A.	[3]	[*] M11758.	[3] M14841.			
250	[3] M1171B.	[*] M1172B.	[*] M1173B.	M1174B.		-	[3] M14842.			
300	-	-	-	-		-	[3] M14843.			
400	[3] M1171D.	[*] M1172D.	[*] M1173D.	M1174D.	[3]	-	[3] M14844.			
500	[3] M1171E.	[*] M1172E.	[1] M1173E.	M1174E.	[3]	-	[3] M14845.			
600	[3] M1171F.	[1] M1172F.	[1] M1173F.	M1174F.		[3] M1175F.	[3] M14846.			

(*1) Scale NOT included

CODIFICATION TABLE

BC and BM equipment

Code	Internal code	
M 1 X X X X 0 0 X		
		Delivery time
Adjustment	Standard	0 -
	Central zero	1 2

 Delivery time: [*] immediate
 [x] working weeks
 [c] consult



BC / BM / ZC, Process indicators



Process indicators, 90°

Type	BC 48	BC 72	BC 96	BC 144	BM 45
Class	1,5				1,5
Scale	90°, P1				90°, P1
a	48	72	96	144	85
b	48	72	96	144	52
c	86,2	69,2	69,2	91,8	65
Scope					
0...10 V	[*] M11813.	[*] M11823.	[*] M11833.	[3] M11843.	[3] M11853.
0...20 mA	[1] M11812.	[1] M11822.	[1] M11832.	[3] M11842.	[3] M11852.
4...20 mA	[*] M11811.	[*] M11821.	[*] M11831.	[3] M11841.	[3] M11851.

Scales NOT included

Exchangeable scales

Type	SIP 48	SIP 72	SIP 96	SIPM 45
Equipment	BC 48	BC 72	BC 96	BM 45
Scope				
0...10 V	[3] M118Z3.	[3] M118Y3.	[3] M118X3.	[1] M118V3.
0...20 mA	[3] M118Z2.	[3] M118Y2.	[3] M118X2.	[1] M118V2.
4...20 mA	[3] M118Z1.	[3] M118Y1.	[3] M118X1.	[1] M118V1.

Process indicators, 240°

Type			
	ZC 72	ZC 96	ZC 144
Class	1,5		
Scale	240°, P1		
a	72	96	144
b	72	96	144
c	69,2	69,2	91,8
Scope			
0...10 V	[1] M12523.	[1] M12533.	[1] M12543.
4...20 mA(*)	[1] M12521.	[1] M12531.	[1] M12541.
.../60 mV	[1] M12520.	[1] M12530.	[1] M12540.

(*) Scale included in the price
The 6-digit code already includes the 4...20 mA scale

CODIFICATION TABLE

BC and ZC process indicators

Code		Internal code			Delivery time	BC	ZC,SIP			
M	1	X	X	X				X	0	0
Adjustment	Standard				0					
	Central zero				1		7,57(*)			
Scale	1				1	2	-			
	5				2	2	-			
	10				3	2	-			
	15				4	2	-			
	20				5	2	-			
	25				6	2	-			
	30				7	2	-			
	40				8	2	-			
	50				9	2	-			
	60				A	2	-			
	75				B	2	-			
	100				C	2	-			
	125				D	2	-			
	150				E	2	-			
	200				F	2	-			
	250				G	2	-			
	300				H	2	-			
	400				J	2	-			
	500				K	2	-			
	Unit	600				L	2	-		
750					M	2	-			
800					N	2	-			
1000					P	2	-			
1200					Q	2	-			
1500					R	2	-			
2000					S	2	-			
2500					T	2	-			
3000					U	2	-			
4000					V	2	-			
5000					W	2	-			
						0	2	-		
		mA				1	2	-		
		A				2	2	-		
		kA				3	2	-		
	mV				4	2	-			
	V				8	2	-			
	kV				9	2	-			
	rpm				A	2	-			
	rpm x 1000				B	2	-			
	l (litros)				C	2	-			
	m				G	2	-			
	m ²				H	2	-			
	m ³				J	2	-			
	%				K	2	-			

(*) Only for ZC equipments.



MC / MMC / EMC, maximeter ammeters

Bimetallic maximeter ammeter					Bimetallic maximeter ammeters + moving iron ammeters			
Type	MC 48	MC 72	MC 96	MC 144	MMC 45	EMC 72	EMC 96	EMC 144
Class	3					Bimetallic: 3 Moving iron:1,5		
Scale	90°, P1,2					Double Scale 90°, P1,2, moving iron P2		
a	48	72	96	144	85	72	96	144
b	48	72	96	144	52	72	96	144
c	86,2	69,2	69,2	91,8	65	69,2	69,2	91,8
A								
.../ 5 A	[1] M12211.	[*] M12221.	[*] M12231.	[3] M12241.	[*] M12651.	[*] M12622.	[*] M12632.	[3] M12642.
Scales NOT included								
Scale	120% 90°, P1,2							
.../ 5 A		[3] M15521	[3] M15531					
Scale included								

Exchangeable scales

Type	SMC 48	SMC 72	SMC 96	SMMC 45-A	SEMC 72	SEMC 96
Equipment	MC 48	MC 72	MC 96	MMC 45	EMC 72	EMC 96
A						
100/5	[1] M122ZC.	[*] M122YC.	[*] M122XC.	[1] M126VC.	[*] M126YC.	[*] M126XC.
200/5	[*] M122ZF.	[*] M122YF.	[*] M122XF.	[1] M126VF.	[*] M126YF.	[*] M126XF.
300/5	[*] M122ZH.	[*] M122YH.	[*] M122XH.	[1] M126VH.	[*] M126YH.	[*] M126XH.
400/5	[*] M122ZJ.	[*] M122YJ.	[*] M122XJ.	[1] M126VJ.	[*] M126YJ.	[*] M126XJ.
500/5	[*] M122ZK.	[*] M122YK.	[*] M122XK.	[1] M126VK.	[*] M126YK.	[*] M126XK.
600/5	[1] M122ZL.	[3] M122YL.	[*] M122XL.	[1] M126VL.	[3] M126YL.	[*] M126XL.
750/5	[1] M122ZM.	[3] M122YM.	[*] M122XM.	[1] M126VM.	[*] M126YM.	[*] M126XM.
800/5	[1] M122ZN.	[*] M122YN.	[*] M122XN.	[1] M126VN.	[*] M126YN.	[*] M126XN.
1 000/5	[1] M122ZP.	[*] M122YP.	[*] M122XP.	[1] M126VP.	[*] M126YP.	[*] M126XP.
1 500/5	[1] M122ZR.	[*] M122YR.	[*] M122XR.	[1] M126VR.	[*] M126YR.	[*] M126XR.
2 000/5	[1] M122ZS.	[*] M122YS.	[*] M122XS.	[1] M126VS.	[*] M126YS.	[*] M126XS.

CODIFICATION TABLE

MC and EMC maximeters and SMC and SEMC scales

Code	Internal code	Delivery time
M 1 X X X X 0 0 X X X		
Standard (15 minutes)	0	-
Adjustment		
8 minutes	1	1
30 minutes	2	2
Current input		
Standard (.../5 A)	0	-
.../ 1 A	1	1
Scale		
100	C	2
125	D	2
150	E	2
200	F	2
250	G	2
300	H	2
400	J	2
500	K	2
600	L	2
750	M	2
800	N	2
1000	P	2
1200	Q	2
1500	R	2
2000	S	2
2500	T	2
3000	U	2
4000	V	2
5000	W	2

MMC 45 Maximeter

Code	Internal code	Delivery time
M 1 X X X X 0 0 X		
Standard (15 minutes)	0	-
Adjustment		
8 minutes	1	1
30 minutes	2	2

HC / HM / HZC / HLC, Frequency meters

Pointer type frequency meters, 90°, 230 V				Pointer type frequency meters, 90° ^a , 230 V	Pointer type frequency meters, 240° ^a , 230 V	
Type	HC 72	HC 96	HC 144	HM 45	HZC 96	HZC 144
Class	0,5			0,5	0,5	
Scale	90°			90°	240°	
a b c	72 72 69,2	96 96 69,2	144 144 91,8	85 52 65	96 96 121.2	144 144 122
45...55 Hz	[*] M12721.	[*] M12731.	[3] M12741.	[2] M12751.	[1] M12831.	[1] M12841.

Reed type frequency meters

Reed type frequency meters			
Type	HLC 72	HLC 96	HLC 144
Class	0,5		
a b c	72 72 69,2	96 96 69,2	144 144 91,8
Hz	47...53, 13 reeds		
	[*] M12921.	[*] M12931.	[3] M12941.

CODIFICATION TABLE
HC, HZC and HM frequency meters

Code	Internal code	
M 1 X X X X 0 0 X X		
	↑	↑ Delivery time
Frequency	Standard (45...55 Hz)	0 -
	57...63 Hz	1 2
	55...65 Hz	3 2
	45...65 Hz	4 2
	47...53 Hz	5 2
Voltage	Standard (230 V)	0 -
	100 ... 120 V	1 2
	380 ... 400 V	3 2
	440 V	4 2
	(*) 380 ... 440 V	6

(*) Only HC

HLC frequency meters

Code	Internal code	
M 1 X X X X 0 0 X X		
	↑	↑ Delivery time
Frequency / Num. reeds	Standard (47...53 Hz / 13 reed.)	0 -
	57...63 Hz / 13 reed.	1 2
	45...55 Hz / 11 reed.	2 2
	55...65 Hz / 11 reed.	3 2
	57...63 Hz / 7 reed.	4 2
	47...53 Hz / 7 reed.	5 2
	45...55 Hz / 21 reed.	6 2
	55...65 Hz / 21 reed.	7 2
Voltage	Standard (230 V)	0 -
	100 ... 120 V	1 2
	380 ... 400 V	3 2
	440 V	4 2

WMC / WTC / YMC / YTC, Wattmeters and varmeters



WATTMETERS, 45 ... 65 Hz

Type									
	Single-phase		Balanced three-phase		Three-phase 3 wire (ARON)		Three-phase 4 wire		
	WMC 96	WMC 144	WTC 96E	WTC 144E	WTC 96A	WTC 144A	WTC 96AN	WTC 144AN	
Class	1,5								
Scale	90° P1								
	a	96	144	96	144	96	144	96	144
	b	96	144	96	144	96	144	96	144
	c	69,2	91,8	69,2	91,8	82,9	91,8	82,9	91,8
$U_{\text{phase-phase}}$	400 V		400 V		110 V (*)		400 V		
	[*] M13031.	[4] M13041.	[*] M13032.	[4] M13042.	[3] M13034.	[4] M13044.	[*] M13033.	[4] M13043.	

Exchangeable scales for the WMC 96, WTC 96E and WTC 96AN equipment. Scales NOT included
 (*) Specify primary voltage and current of the measuring transformers, and power at full scale

Varmeters, 45 ... 65 Hz

Type									
	Single-phase		Balanced three-phase		Three-phase 3 wire (ARON)		Three-phase 4 wire		
	YMC 96	YMC 144	YTC 96E	YTC 144E	YTC 96A	YTC 144A	YTC 96AN	YTC 144AN	
Class	1,5								
Scale	90 ° P1								
	a	96	144	96	144	96	144	96	144
	b	96	144	96	144	96	144	96	144
	c	69,2	91,8	69,2	91,8	82,9	91,8	82,9	91,8
$U_{\text{fase-fase}}$	400 V		400 V		110 V		400 V		
	[3] M13231.	[3] M13241.	[3] M13232.	[3] M13242.	[3] M13234.	[3] M13244.	[3] M13233.	[3] M13243.	



Wattmeters and varmeters Exchangeable scales

Type	Single-phase			Three-phase				
		SWM 96	SYM 96		SWT 96E (*1)	SWT 96AN (*2)	SYT 96E (*1)	SYT 96AN(*2)
Equipment		WMC 96	YMC 96		WTC 96E	WTC 96AN	YTC 96E	YTC 96AN
A	Full scale	Code	Code	Full scale	Code	Code	Code	Code
50/5	20 kW	[1] M130J9.	[1] M132J9.	30 kW	[1] M130K9.	[1] M130L9.	[1] M132K9.	[1] M132L9.
75/5	-	-	-	50 kW	[1] M130KB.	[1] M130LB.	[1] M132KB.	[1] M132LB.
100/5	40 kW	[1] M130JC.	[1] M132JC.	60 kW	[1] M130KC.	[1] M130LC.	[1] M132KC.	[1] M132LC.
150/5	60 kW	[1] M130JE.	[1] M132JE.	90 kW	[1] M130KE.	[1] M130LE.	[1] M132KE.	[1] M132LE.
200/5	80 kW	[1] M130JF.	[1] M132JF.	120 kW	[1] M130KF.	[1] M130LF.	[1] M132KF.	[1] M132LF.
300/5	120 kW	[1] M130JH.	[1] M132JH.	180 kW	[1] M130KH.	[1] M130LH.	[1] M132KH.	[1] M132LH.
400/5	160 kW	[1] M130JJ.	[1] M132JJ.	240 kW	[1] M130KJ.	[1] M130LJ.	[1] M132KJ.	[1] M132LJ.
500/5	200 kW	[1] M130JK.	[1] M132JK.	300 kW	[1] M130KK.	[1] M130LK.	[1] M132KK.	[1] M132LK.
600/5	240 kW	[1] M130JL.	[1] M132JL.	360 kW	[1] M130KL.	[1] M130LL.	[1] M132KL.	[1] M132LL.
1 000/5	400 kW	[1] M130JP.	[1] M132JP.	600 kW	[1] M130KP.	[1] M130LP.	[1] M132KP.	[1] M132LP.
1 500/5	600 kW	[1] M130JR.	[1] M132JR.	900 kW	[1] M130KR.	[1] M130LR.	[1] M132KR.	[1] M132LR.
2 000/5	800 kW	[1] M130JS.	[1] M132JS.	1,2 MW	[1] M130KS.	[1] M130LS.	[1] M132KS.	[1] M132LS.
3 000/5	1,2 MW	[1] M130JU.	[1] M132JU.	1,8 MW	[1] M130KU.	[1] M130LU.	[1] M132KU.	[1] M132LU.
4 000/5	1,6 MW	[1] M130JV.	[1] M132JV.	2,4 MW	[1] M130KV.	[1] M130LV.	[1] M132KV.	[1] M132LV.
5 000/5	2,0 MW	[1] M130JW.	[1] M132JW.	3 MW	[1] M130KW.	[1] M130LW.	[1] M132KW.	[1] M132LW.

(*1) Balanced three-phase wattmeters and varmeters type WTC 93E and YTC 96E, 230 V, 400 V

(*2) Unbalanced three-phase wattmeters and varmeters type WTC 96AN and YTC 96AN, 400 V

CODIFICATION TABLE

Wattmeters and Varmeters			
Code	Código interno		
M 1 X X X X 0 0 X X X			
		↑	Delivery time
Current input	Standard ... / 5 A	0	-
	... / 1 A	1	2
Voltage	Standard (400 V _{ph-ph})	0	-
	110 V _{ph-ph} (a)	1	2
	230 V _{ph-ph}	2	2
	440 V _{ph-ph}	5	2
	460 V _{ph-ph}	6	2
	50	9	2
	75	B	2
	100	C	2
	150	E	2
	200	F	2
	300	H	2
Scale ranges	400	J	2
Primary current transformer	500	K	2
	600	L	2
	1000	P	2
	1500	R	2
	2000	S	2
	3000	U	2
	4000	V	2
	5000	W	2

(a) In ARON unbalanced three-phase Wattmeters an Varmeters (3 wires), the standard voltage is 110 V

Wattmeters and Varmeters scales			
Code	Internal code		
M 1 X X X X 0 0 X X			
		↑	Delivery time
Current input	Standard ... / 5 A	0	-
	... / 1 A	1	2
Voltages (V)	Standard (400 V)	0	-
	110 (a)	1	2
	230	2	2
	440	5	2
	460	6	2

(a) In ARON unbalanced three-phase Wattmeters an Varmeters (3 wires), the standard voltage is 110 V

Delivery time: [*] immediate
[x] working weeks
[c] consult

FEMC / FETC / FMZ / FTC / PIC, Phasemeters

Electronic phasemeters, 90 °, 50 Hz					Electronic phasemeters, 240 °, 50 Hz				
	Single-phase		Balanced three-phase		Single-phase		Balanced three-phase		
Type	FEMC 96	FEMC 144	FETC 96	FETC 144	FMZ 96	FMZ 144	FTZ 96	FTZ 144	
Class	1,5								
Scale	90° P1				240° P1				
	a	96	144	96	144	96	144	96	144
	b	96	144	96	144	96	144	96	144
	c	82,9	91,8	82,9	91,8	121,2	91,8	121,2	91,8
V	cos φ 0,5-1-0,5								
100/√3	[1] M13431.	[3] M13441.	-	-	[4] M13531.	[4] M13541.	-	-	
110/√3	[1] M13432.	[3] M13442.	-	-	[4] M13532.	[4] M13542.	-	-	
100	[1] M13433.	[3] M13443.	[1] M1343C.	[3] M1344C.	[4] M13533.	[4] M13543.	[4] M1353C.	[4] M1354C.	
110	[1] M13434.	[3] M13444.	[1] M1343D.	[3] M1344D.	[4] M13534.	[4] M13544.	[4] M1353D.	[4] M1354D.	
230	[1] M13435.	[3] M13445.	[3] M1343E.	[3] M1344E.	[4] M13535.	[4] M13545.	[4] M1353E.	[4] M1354E.	
400	[1] M13436.	[3] M13446.	[*] M1343F.	[3] M1344F.	[4] M13536.	[4] M13546.	[4] M1353F.	[4] M1354F.	
440	[1] M13437.	[3] M13447.	[1] M1343G.	[3] M1344G.	[4] M13537.	[4] M13547.	[4] M1353G.	[4] M1354G.	
500	[1] M13438.	[3] M13448.	[1] M1343H.	[3] M1344H.	[4] M13538.	[4] M13548.	[4] M1353H.	[4] M1354H.	

Current range: from 0,1 to 1,2 In. To connect to .../ 5 A transformers. Electronic converter included.

Induction phasemeters 360°, 50 Hz, 4 quadrants							
	Single-phase		Balanced three-phase		Unbalanced three-phase		
Type	PIC 96 A	PIC 144 A	PIC 96 B	PIC 144 B	PIC 96 E	PIC 144 E	
Class	1,5						
Scale	360°, P1						
	a	96	144	96	144	96	144
	b	96	144	96	144	96	144
	c	121,2	122	121,2	122	121,2	122
V	cos φ 0-1-0						
110	[4] M13631.	[4] M13641.	[4] M13634.	[4] M13644.	[4] M13637.	[4] M13647.	
230	[4] M13632.	[4] M13642.	[4] M13635.	[4] M13645.	[4] M13638.	[4] M13648.	
400	[4] M13633.	[4] M13643.	[4] M13636.	[4] M13646.	[*] M13639.	[4] M13649.	

Current range: from 0,1 to 1,2 In. To connect to .../ 5 A transformers.

CODIFICATION TABLE

Electronic phasemeters		
Code	Internal code	
M 1 X X X X 0 0 X		
		↑ Delivery time
Secondary current	Standard .../ 5 A	0 -
	.../ 1 A	1 3

Induction phasemeters		
Code	Internal code	
M 1 X X X X 0 0 X X		
		↑ Delivery time
Secondary current	Standard .../ 5 A	0 -
	.../ 1 A	1 3

PGR, Protection vatmeters
Protective dual bidirectional wattmeter, 230 V

	Single-phase	Balanced three-phase	Three-phase 3 wire (ARON)	Three-phase 4 wire
Type	PGR 96 M	PGR 96E	PGR 96A	PGR 96AN
Converter	CW-M	CW-TE	CW-TA	CW-TAN
Class	1,5			
Scale	90° , P2			
	96 96 110			
100/√3... 500 V .../ 5 A	[4] M14721.	-	-	-
100...500 V .../5 A	-	[4] M14722.	[4] M14724.	[4] M14723.

MUST SELECT THE REST OF PARAMETERS ON THE BELOW TABLE

The instrument includes the analogue converter and indicator.

Specify the primary voltage and current of the current transformers, the full scale power value and main voltage.

Included and exchangeable scales. Standardized scales.

CODIFICATION TABLE
PGR

Code		Internal code		
M 1 X X X X 0 0 X X X				
		↑	↑	↑
		50	9	Delivery time
		60	A	-
		75	B	3
		100	C	3
		125	D	3
		150	E	3
		200	F	3
		250	G	3
		300	H	3
		400	J	3
Scale		500	K	3
		600	L	3
		750	M	3
		800	N	3
		1000	P	3
		1200	Q	3
		1500	R	3
		2000	S	3
		2500	T	3
		3000	U	3
		4000	V	3
		5000	W	3
input current	Standard (.../ 5 A)	0	-	-
	.../ 1 A	1	3	3
Power Supply	Standard 220...240 V	0	2	-
	380 ... 400 V 40/60 Hz	3	3	3

Delivery time: [*] immediate
 [x] working weeks
 [c] consult

2EC / 2HC / 2HLC / SMC / STC / UC / SynchroMAX, Synchronization and marine applications equipment

2EC, Double voltmeters

Type	2 EC 96		2 EC 144
Class	1,5		
Scale	90°		
	96 96 69,2	144 144 91,8	
V			
2 x .../100	[3] M13831.	M13841.	[4]
2 x .../110	[3] M13832.	M13842.	[4]
2 x 220	[3] M13833.	M13843.	[*]
2 x 380	[3] M13834.	M13844.	[4]
2 x 440	[3] M13835.	M13845.	

Specify voltage transformers

2HC / 2HLC, Double frequencymeters

	Pointer type, 230 V		Reed type, 400 v	
Type	2 HC 96	2 HC 144		2 HLC 96 2 HLC 144
Class	0,5			0,5
Scale	90°			-
	96 96 82,9	144 144 91,8		96 144 96 144 82,9 91,8
Hz			Hz	
45...55	[3] M12732.	[4] M12742.	47...53, 13 reeds	[*] M12932. [4] M12942.

SMC / STC, Synchrosopes, 50 Hz

Type	Single-phase		Three-phase	
	SMC 96	SMC 144	STC 96	STC 144
Class	1,5		1,5	
	96 96 121,2	144 144 122	96 96 121,2	144 144 122
V				
110	[3] M14431.	[4] M14441.	[*] M14435.	[4] M14445.
230	[3] M14432.	[4] M14442.	[3] M14436.	[4] M14446.
400	[3] M14433.	[4] M14443.	[*] M14437.	[4] M14447.
500	[3] M14434.	[4] M14444.	[3] M14438.	[4] M14448.

UC / CUC, Phase sequence indicators, 50 Hz

Type	UC 72	UC 96	CUC 96
Control Relay	No		Yes
	72 72 82,9	96 96 82,9	96 96 82,9
V			
100...150	[1] M13726.	[1] M13736.	-
150...500	[1] M13721.	[*] M13731.	-
230	-	-	[3] M13754.
400	-	-	[*] M13755.

SynchroMAX, Synchronization equipment

Power Supply 400 V

Type		
	SynchroMAX	SynchroMAX PID
PID Control	No	Yes
	96 96 82,9	
Frequency	30 ... 70 Hz	
V Measurement		
30...150	[*] M14624.	[*] M14634.
110...600	[*] M14625.	[4] M14635.

Delivery time: [*] immediate
[x] working weeks
[c] consult

CH, Hour run meters
Hour run meters

Type	CH 48	CH 72	CH 96	CH 48
Display	5 + 2			
 a b c	48	72	96	
	48	72	96	
	86,2	69,2	69,2	
Code	[3] M14911.	[3] M14921.	[3] M14931.	[3] M14951.

MEG-1000, Insulation resistance meter
Insulation resistance meter, 230 V (*), 50...60 Hz

Type	MEG-1000
Class	1,5
Scale	90°
Frequency	50...60 Hz
 a b c	96
	96
	132
Ω (double Scales)	0...500 kΩ 0.5...5 MΩ
Code	[*] M15051.

(*) Power Supply 440 Vac +10%

CODIFICATION TABLE

2 EC	Internal code	
Code	M 1 X X X X 0 0 X	
		↑ Delivery time
Nominal scale value (Full scale)		
400 (640)	0	-
440 (700)	1	3
660 (1050)	2	3
1000 (1600)	3	3
1200 (1920)	4	3
2500 (4000)	5	3
3000 (4800)	6	3
3300 (5280)	7	3
4000 (6400)	8	3
5000 (8000)	9	3
5500 (8800)	A	3
6600 (10560)	B	3
7200 (11520)	C	3
9000 (14400)	D	3
10000 (16000)	E	3
11000 (17600)	F	3
12500 (20000)	G	3
15000 (24000)	H	3
20000 (32000)	J	3
22000 (35200)	K	3
24000 (38400)	L	3
25000 (40000)	M	3

2HC frequencymeters

Code	Internal code	
Code	M 1 X X X X 0 0 X X	
		↑ Delivery time
Frequency (Hz)		
Standard (45...55 Hz)	0	-
57...63	1	2
55...65	3	2
45...65	4	2
47...53	5	2
Voltage (V)		
Standard (230 V)	0	-
100 ... 120	1	3
380 ... 400	3	3
440	4	3

SMC, STC, UC

Code	Internal code	
Code	M 1 X X X X 0 0 X	
		↑ Delivery time
Frequency		
Standard (50 Hz)	0	-
60 Hz	1	3

SynchroMAX

Code	Internal code	
Code	M 1 X X X X 0 0 X	
		↑ Delivery time
Voltage supply		
Standard (400 V)	0	-
110 V	1	-
230 V	2	-
90...140 Vc.c	C	2

2HLC

Code	Internal code	
Code	M 1 X X X X 0 0 X X	
		↑ Delivery time
Frequency / No. reeds		
Standard (47...53 Hz / 13 reed.)	0	-
57...63 Hz / 13 reed.	1	2
45...55 Hz / 11 reed.	2	2
55...65 Hz / 11 reed.	3	2
Voltage		
Standard (400 V)	0	-
100 ... 120 V	1	2
440 V	4	2
380 ... 400 V	3	2
380 ... 440 V	6	2

CH

Code	Internal code	
Code	M 1 X X X X 0 0 X X	
		↑ Delivery time
Frequency		
Standard 50 Hz	0	-
60 Hz	1	2
Voltage		
Standard (230 V)	0	-
24 Vc.a.	6	2
110 Vc.a.	1	2
10...80 Vc.c.	8	2
80...200 Vc.c.	A	2

 Delivery time: [*] immediate
 [x] working weeks
 [c] consult

Accessories / Options for analogue instruments

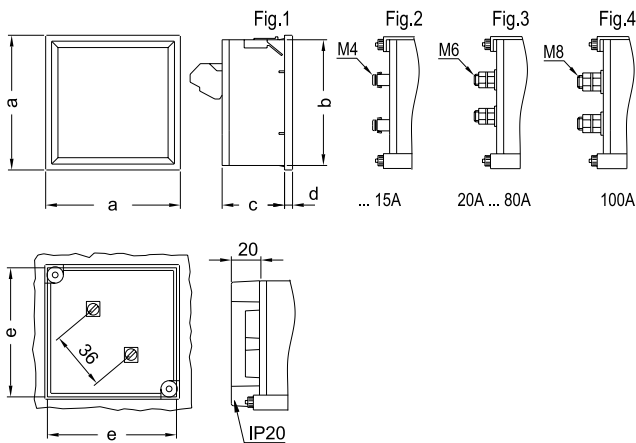
GENERAL options for analogue instruments

Type	Code
IP 54 airtight seal , 48 x 48	[1] M1ZZ52.
IP 54 airtight seal, 72 x 72	[1] M1ZZ53.
IP 54 airtight seal, 96 x 96	[1] M1ZZ54.
IP 54 airtight seal, 144 x 144	[1] M1ZZ55.
Protection IP 65, 48 x 48	[1] M19941.
Protection IP 65, 72 x 72	[1] M19942.
Protection IP 65, 96 x 96	[1] M19943.
Protection IP 65, 144 x 144	[1] M19944.
Terminal covers (IP 20) 48 x 48	[3] M19921.
Terminal covers (IP 20) 72x 72	[*] M19922.
Terminal covers (IP 20) 96 x 96	[*] M19923.

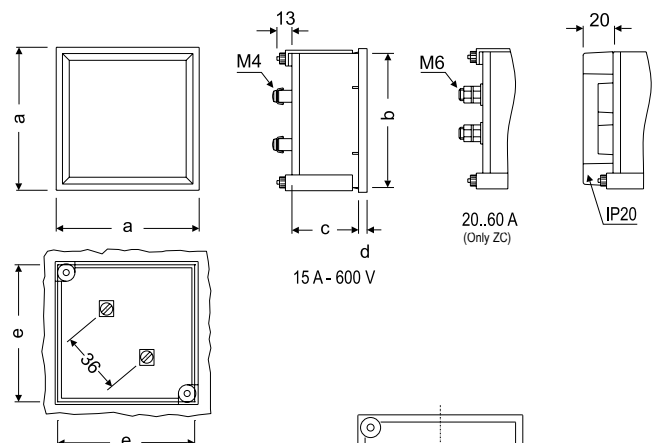
Code	Internal code		
M 1 X X X X 0 0 X X X X X			
	↑	↑	Delivery time
Tropical proof (assembly panel only)	0	1	2
Externally regulated pointer	0	2	2
Anti-reflection glass	0	3	2
Other options Makrolon glass	0	4	2
Interior lighting (6-12-48 V dc) panel only	0	5	2
Tropical proof + Anti-reflection glass	0	6	2
Tropical proof + Makrolon glass	0	7	2

Dimensions

EC / BC

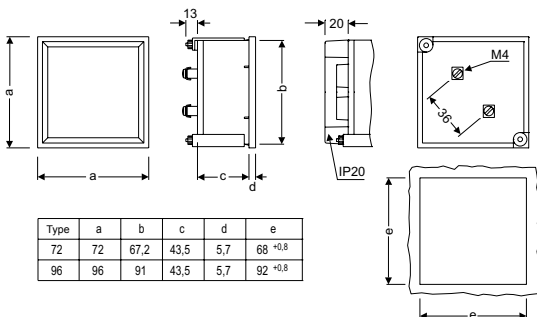


EZC / ZC



Typ	Fig. EC	Fig. BC	Fig. ZC	Fig. EZC	a	b	c	d	e
48	1-3	1-3	1	-	48	44,7	61	5,2	45
72	1-3-4	2-3-4	1	1	72	67,2	43,5	5,7	68
96	1-3-4	2-3-4	1	1	96	91	43,5	5,7	92
144	2-3-4	2-3-4	1	-	144	137	64,5	7,3	138

EC-FA, EC-F, EC-FN



Type	a	b	c	d	e
72	72	67,2	43,5	5,7	68 ^{+0,8}
96	96	91	43,5	5,7	92 ^{+0,8}

EM 45 / BM 45 / MMC 45 / HM 45

