ANALOGUE INSTRUMENTS

INSTRUMENTACIÓN INDUSTRIAL ZURC, S.A.

keep your measure under control

ANALOGUE INSTRUMENTS

ANALOGUE INSTRUMENTS GENERAL INFORMATION

GENERAL

ZURC instruments are designed to meet the requirements of following standards::

IEC51 - IEC144 - VDE410 - DIN 43780 - UNE 21318 - BS 89 - UL94

CASES

Body and frame are moulded in self extinguishing polymer (ABS), as per 94V1, which has very high tracking index.

Their dimensions are according to DIN 43700 and DIN 43718.

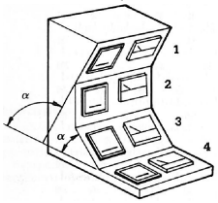
Terminal plates are moulded in self-extinguishing poliphenyleneoxide (P.P.O), as per UL94, with a high tracking index, for maximum electrical strength and safety.

Aspects that affect instrument accuracy

MOUNTING POSITION

Instruments are calibrated for vertical mounting position. It is possible to calibrate for a different mounting position, if requested.. In any case, position tolerance is ±5º

1: ∠ α > 90º
2: ⊥ α = 90º
3: ∠ α < 90º
   ⊓ α



AMBIENT TEMPERATURE

The effect of temperature on the instrument accuracy class may depend on the measuring range. In general, instruments keep their class within the temperature range of +10ºC to +30ºC. If the measuring range is too narrow, range is printed on the instrument scale.

Instrument can be calibrated for temperatures out of the above range, if requested.

RELATIVE HUMIDITY

The accuracy class is guaranteed in a non-condensing relative humidity of 25 to 80% environment.

MAGNETIC FIELD

All the instruments keep their accuracy class under the influence of an external magnetic field ≤0.5mT.

FERROMAGNETIC PANELS

In general, class accuracy is not affected when the instruments are mounted on ferromagnetic panels.

For instruments with especially low measuring ranges, the scales are marked with the letter **Fe** followed by the maximun allowed panel thickness.

AUXILIARY POWER SUPPLY

Accuracy class is guaranteed under auxiliary power supply nominal values variations of:

Voltage : +10%
-15 %
Frequency : 45 to 65 Hz.

Electrical and Mechanical characteristics

VOLTAGE ISOLATION

2kV during 60 seconds between circuits, or between all circuits and case.

CONTINUOUS OVERLOADS

Voltage circuits: 1,2 V_N
Current circuits: 1,2 I_N (1,5 I_N for moving iron ammeters)

SHORT DURATION OVERLOADS

Voltage circuits: 2 V_N for 5 sec.
Current circuits: 5 I_N for 30 sec.
10 I_N for 5 sec.
40 I_N for 1 sec.

AMBIENT TEMPERATURE RANGE

The instruments and their accesories withstand temperature changes of -25ºC to +40ºC (55ºC in TROP version) without damage.

TROP VERSION

In the TROP version, instruments are protected against corrosive environments and withstand temperatures between -25ºC to 55ºC and a non-condensing relative humidity of 95%. This humidity correspond to a maximum temperature of 30ºC and during 30 days per year. The rest of the period, humidity should not exceed 75%.

Within this type of operation, the instruments can be adjusted for reference temperature values above 20 ºC.

In these cases, the scales are marked with TROP, followed by the temperature value at which they are adjusted.

VIBRATIONS

The instruments and their accessorie ssupport a minimum vibration with an amplitude of ∓0.25 mm and a frequency of 50 cycles. Said vibration is equivalent to the application of an acceleration equal to 2.5 g to the three perpendicular axes during 20 minutes.

CHOKES

The instruments and their accessories support five impacts, with an acceleration of 15 g, applied in the direction of the three perpendicular axes.

PROTECTION DEGREE

In their standard version the cases of the instruments comply with IP52 and their terminals with IP00. As an option, the cases may comply with IP54 or IP55 and the terminals with IP20.

ZERO ADJUSTMENT

Relationship between adjustement length of zero corrector, in both sides of its resting position, is not higher than 2%.

POINTERS

The pointers follow the specification DIN 43802

With tube or blade pointers, on demand

pointers according to DIN 43802

ANALOGUE INSTRUMENTS

MOVIN IRON

AMMETERS AND VOLTMETERS. Class 1,5. A.C.

90° PANEL 

90° DIN RAIL 

240° PANEL 

TYPE	EC48	EC72	EC96	EC144	EM45	EZC72	EZC92
V	6_10_15_25_40_50_60 150_250_300 400_500_600 .../100V ó .../110V (scale not included)					250_500 .../100 ó .../110	
mA	100_150_250_300_400_500_600					-	
A	1_1,5_2,5_4_6 10_15 20_25_30_40 (50_60_75_100) .../5A (P2) (scale not included) .../1A (P2) (scale not included)					.../5 (P2) .../1 (P2)	
frontal frame (mm)	48x48	72x72	96x96	144x144	45x52,5	72x72	96x96
scale (mm)	40	61	90	147	40	61	90
kg	0,085	0,13	0,22	0,43	0,11	0,13	0,22
case	C0	C1	C2	C3	-	C1	C2

Rectangular instruments Iron Meters (A.C.) Class 1,5

Rectangular PANEL

TYPE	EK60	EK100
V	10_15_25_40_50_60_100_150_250_300_400_500_600	
mA	400-500-600	
A	1_1,5_2,5_4_5_6_10_15_20_25_30_40_50 .../5 A .../1 A	
frontal frame (mm)	60x65	100x124
scale (mm)	50	90
kg	0.070	0.125
case	K60	K100

Switch instruments Class 1,5

90° PANEL 

	V 3 phases		V 3 phase + N		A 3 phases		V with switch and phase-sequence indicator
TYPE	EC 72F	EC96F	EC 72FN	EC 96FN	EC 72FA	EC 96FA	EC96 FN-S
Alcance	250-300-400-500-600 V				.../5 A		500 V
frontal frame (mm)	72x72	96x96	72x72	96x96	72x72	96x96	96x96
scale (mm)	61	90	61	90	61	90	90
kg	0,15	0,25	0,15	0,25	0,15	0,27	0,25
case	C1	C2	C1	C2	C1	C2	C2

Switches for rail mounting instruments

Switch	TF12-701	TF12-705	TF12-720
change-over	0-RS-ST-TR	RS-ST-TR-0-RN-SN-TN	R-S-T
Connection	Switch for 3 phase Volmeters	Switch for 3 phase Volmeters and neutral	Switch for 3 phase C.T. with unip ammeter

ANALOGUE INSTRUMENTS

MOVING COIL

AMMETERS, VOLTMETERS and PROCESS INDICATORS.
Class 1,5. D.C.

90° PANEL 

90° DIN RAIL 

240° PANEL 

TYPE	BC48	BC72	BC96	BC144	BM45	ZC48	ZC72	ZC96	ZC144
mV	10-15-20-25-40-50-60-100-150-250-300-400-500-600					100-150-250-300-400-500-600			
V	1-1,5-2,5-4-5-6-10-15-20-25-40-50-60-100-150-250-300-400-500-600								
µA	25-40-50-60-100-150-250-300-400-500-600					250-300-400-500-600			
mA	From 1 to 600								
process	4-20 mA								
A	1-1,5-2,5-4-5-6-10-15-20-25-40-50-60					1-1,5-2,5-4-5-6-10-15-20-25-40			
shunt	.../60 mV or .../150 mV								
frontal frame (mm)	48x48	72x72	96x96	144x144	45X52,5	48x48	72x72	96x96	144x144
scale (mm)	40	61	90	147	40	70	105	151	226
kg	0,075	0,17	0,21	0,42	0,11	0,18	0,26	0,3	0,51
case	C0	C1	C2	C3	-	C0	C4	C5	C3

Rectangular Instruments
Moving Coil (D.C.)
Clase 1,5

Rectangular PANEL

TYPE	BK60	BK100
mV	10-15-20-25-40-50-60-100-150-200-300-400-500-600	
V	1-1,5-2,5-4-5-6-10-15-20-25-40-50-60-100-150-250-300-400-500-600	
µA	40-50-60-100-150-250-300-400-500-600	
mA	From 1 to 600	
A	1-1,5-2,5-4-5-6-10-15-20-25-40	
external shunt	...A/60 mV or 150 mV	
frontal frame (mm)	60x65	100x124
scale (mm)	50	90
kg	0,07	0,125
case	K60	K100

AMMETERS and VOLTMETERS with rectifier. A.C.

90° PANEL 

240° PANEL 

TYPE	RBC 48	RBC 72	RBC 96	RBC 144	RZC 48	RZC 72	RZC 96	RZC 144
V	6-10-15-25-40-50-60-100-150-250-300-400-500 .../100V or 110V				6-10-15-25-40-50-60-100-150-250-300-400-500			
µA	40-50-60-100-150-250-300-400-500-600				250-300-400-500-600			
mA	From 1 to 600							
A	1-1,5-2,5-5-10-15-20-25-40-50-60 .../5A or .../1A				1-1,5-2,5-4-5 connection to C.T. .../1 or 5			
frontal frame (mm)	48x48	72x72	96x96	144x144	48x48	72x72	96x96	144x144
scale (mm)	40	61	90	147	70	105	151	226
kg	0,095	0,18	0,25	0,48	0,195	0,25	0,32	0,53
case	C0	C1	C2	C3	C0	C4	C5	C3

EXPANDED SCALE VOLTMETERS

90° PANEL 

240° PANEL 

TYPE	BNC48	BNC72	BNC96	BNC144	ZNC48	ZNC72	ZNC96	ZNC144
Ranges	0...90 :110 V for 100 V 0...100 :120 V for 110 V 0...200 :240 V for 220 V 0...340 :420 V for 380 V 0...400 :480 V for 440 V 0...450 :550 V for 500 V							
frontal frame (mm)	48x48	72x72	96x96	144x144	48x48	72x72	96x96	144x144
scale (mm)	40	61	90	147	40	61	90	147
kg	0,085	0,18	0,25	0,48	0,195	0,25	0,32	0,53
case	C0	C1	C2	C3	C0	C4	C5	C3

ANALOGUE INSTRUMENTS

MAXIMUN DEMAND

BIMETALLIC MAXIMUM DEMAND AMMETERS

90° PANEL 

90° DIN RAIL 

TYPE	MC48	MC72	MC96	MC144	WITH BUILT-IN SATURABLE CURRENT TRANSFORMER MCT72	MCT96	MCT144	MM45
delay time	8, 15 or 30 min			8 or 15 min	8, 15 or 30 min		8 or 15 min	8, 15 or 30 min
A	.../5 .../1				.../5 .../1			.../5 .../1
frontal frame (mm)	48x48	72x72	96x96	144x144	72x72	96x96	144x144	45x52,5
scale (mm)	40	61	90	147	61	90	147	40
kg	0,075	0,14	0,21	0,42	0,14	0,21	0,42	0,11

COMBINED WITH MOVING IRON AMMETERS

90° PANEL 

TYPE	EMC72	EMC96	EMC144	WITH BUILT-IN SATURABLE CURRENT TRANSFORMER EMCT72	EMCT96	EMCT144
delay time	8, 15 or 30 min		8 or 15 min	8, 15 or 30 min		8 or 15 min
A	.../5 .../1			.../5 .../1		
frontal frame (mm)	72x72	96x96	144x144	72x72	96x96	144x144
scale (mm)	61	90	147	61	90	147
kg	0,22	0,26	0,47	0,22	0,26	0,47

FREQUENCYMETERS

POINTER TYPE

90° PANEL 

90° DIN RAIL 

240° PANEL 

REED TYPE

TYPE	HC48	HC72	HC96	HC144	HM45	HZC96	HZC144	HLC72	HLC96	HLC144
Hz	45 - 55 47 - 53 55 - 65 57 - 63 45 - 65					40-60 / 45-55 / 47-53 45-65 / 55-65 / 57-63 90-110 180-220 270-330 360-440		47-53 / 57-63 - 7 reeds 45-55 / 55-65 - 11 reeds 47-53 / 57-63 - 13 reeds 45-55 / 55-65 - 21 reeds		
frontal frame (mm)	48x48	72x72	96x96	144x144	45x52,5	96x96	144x144	72x72	96x96	144x144
scale (mm)	40	61	90	147	40	151	226	-		
kg	0,095	0,175	0,215	0,425	0,11	0,215	0,425	0,26	0,35 / 0,58	0,58 / 0,71
case						C6	C7	C1	C2	C3

POWER INDICATORS

WATTMETERS

90° PANEL 

TYPE	WMC96	WMC144	WTC96E	WTC144E	WTC96A	WTC144A	WTC96AN	WTC144AN
circuit	single-phase		balanced three-phase		unbalanced three-phase 3 wires		unbalanced three-phase 4 wires	
	100/√3- 110/√3 100-110-220 V 380-440-500 V		100-110-220 V 380-440-500 V					
	.../ 5 A							
frontal frame (mm)	96x96	144x144	96x96	144x144	96x96	144x144	96x96	144x144
scale (mm)	90	147	90	147	90	147	90	147
kg	0,26	0,43	0,26	0,43	0,39	0,6	0,4	0,61

ANALOGUE INSTRUMENTS

POWER INDICATORS

WATTMETERS

90° DIN RAIL 

240° PANEL 

TYPE	WMM45	WTM45E	WTM45A	WTM45AN	WZMC96	WZTC96E	WZTC96A	WZTC96AN
circuit	single-phase	balanced three-phase	unbalanced three-phase 3w	unbalanced three-phase 4w	single-phase	balanced three-phase	unbalanced three-phase 3w	unbalanced three-phase 4w
	100/√3- 110/√3 100-110-220 V 380-440-500 V	100-110-220 V 380-440-500 V			100/√3- 110/√3 100-110-220 V 380-440-500 V	100-110-220 V 380-440-500 V		
					.../ 5 A			
frontal frame (mm)	45x52,5	45x52,5	45x52,5	45x52,5	96x96	96x96	96x96	96x96
scale (mm)	40	40	40	40	151	151	151	151
kg	0,11	0,11	0,11	0,11	0,5	0,5	0,63	0,64

VARMETERS

90° PANEL 

TYPE	YMC96	YMC144	YTC96E	YTC144E	YTC96A	YTC144A	YTC96AN	YTC144AN
circuit	single-phase		balanced three-phase		unbalanced three-phase 3 wires		unbalanced three-phase 4 wires	
	100/√3- 110/√3 100-110-220 V 380-440-500 V		100-110-220 V 380-440-500 V					
	.../ 5 A							
frontal frame (mm)	96x96	144x144	96x96	144x144	96x96	144x144	96x96	144x144
scale (mm)	90	147	90	147	90	147	90	147
kg	0,26	0,43	0,26	0,43	0,39	0,6	0,4	0,61

90° DIN RAIL 

240° PANEL 

TYPE	YMM45	YTM45E	YTM45A	YTM45AN	YZMC96	YZTC96E	YZTC96A	YZTC96AN
circuit	single-phase	balanced three-phase	unbalanced three-phase 3w	unbalanced three-phase 4w	single-phase	balanced three-phase	unbalanced three-phase 3w	unbalanced three-phase 4w
	100/√3- 110/√3 100-110-220 V 380-440-500 V	100-110-220 V 380-440-500 V			100/√3- 110/√3 100-110-220 V 380-440-500 V	100-110-220 V 380-440-500 V		
					.../ 5 A			
frontal frame (mm)	45x52,5	45x52,5	45x52,5	45x52,5	96x96	96x96	96x96	96x96
scale (mm)	40	40	40	40	151	151	151	151
kg	0,11	0,11	0,11	0,11	0,5	0,5	0,63	0,64

INDUCTION POWER FACTOR METERS

360° PANEL 

TYPE	PIC96A	PIC144A	PIC96B	PIC144B	PIC96C	PIC144C	PIC96E	PIC144E
circuit	single-phase		balanced three-phase		unbalanced three-phase 3 wires		unbalanced three-phase 3 or 4 wires	
	100/√3- 110/√3 100-110-220 V 380-440-500 V		100-110-220 V 380-440-500 V					
frontal frame (mm)	96x96	144x144	96x96	144x144	96x96	144x144	96x96	144x144
scale (mm)	180	305	180	305	180	305	180	305
kg	1,91	1,96	1,410 (100V: 1,010)	1,460 (100V: 1,060)	1,41	1,46	1,41	1,46
case	C6	C7	C6	C7	C6	C7	C6	C7

ANALOGUE INSTRUMENTS

POWER INDICATORS

ELECTRONIC POWER FACTOR METERS

90° PANEL 

360° PANEL 

90° DIN RAIL 

TYPE	FEMC96	FEMC144	FETC96	FETC144	FMZ96	FMZ144	FTZ96	FTZ144	FEMM45	FETM45
circuit	single-phase		unbalanced three-phase 3 or 4 wires		single-phase		unbalanced three-phase 3 or 4 wires		single-phase	balanced three-phase
	100/√3- 110/√3 100-110-220 V 380-440-500 V		100-110-220 V 380-440-500 V		100/√3- 110/√3 100-110-220 V 380-440-500 V		100-110-220 V 380-440-500 V		100/√3- 110/√3 100-110-220 V 380-440-500 V	
ranges	0,5-1-0,5 / 0,8-1-0,2									
frontal frame (mm)	96x96	144x144	96x96	144x144	96x96	144x144	96x96	144x144	45x52,5	45x52,5
scale (mm)	90	147	90	147	151	226	151	226	40	40
kg	0,48	0,69	0,48	0,69	0,5	0,71	0,5	0,71	0,11	0,11

SYNCHRONIZATION

DOUBLE MOVING IRON VOLTMETERS

90° PANEL 

TYPE	2EC96	2EC144
V	2x100 V (2x160 V) 2x110 V (2x175 V) 2x220 V (2x350 V) 2x380 V (2x600 V) 2x440 V (2x700 V)	
frontal frame (mm)	96x96	144x144
scale (mm)	46	88
kg	0,29	0,5
case	C2	C3

ZERO VOLMETER

90° PANEL 

TYPE	VC96	VC144
range	100/√3 (115V) 100 (220 V) 110/√3 (127 V) 110 (220 V)	220 (440 V) 380 (760 V) 440 (880 V) 500 (1000 V)
frontal frame (mm)	96x96	144x144
scale (mm)	90	147
kg	0,23	0,47
case	C2	C3

DIFFERENTIAL VOLTMETER

240° PANEL 

TYPE	ZDC96	ZDC144
range	20... 0 ... 20%	
nominal V	100/√3-110/√3-100-110-220-440-500	
frontal frame (mm)	96x96	144x144
scale (mm)	90	147
kg	0,23	0,47

DIFFERENTIAL FREQUENCYMETER

240° PANEL 

TYPE	HDC96	HDC144
range	10... 0 ... 10%	
nominal V	100/√3-110/√3-100-110-220-440-500	
frontal frame (mm)	96x96	144x144
scale (mm)	151	226
kg	0,5	0,71

SYNCHROSCOPE

PANEL 

TYPE	SMC96	SMC144	STC96	STC144
circuit	single-phase		three-phase	
	100/√3- 110/√3 100-110-220 V 380-440-500 V		100-110-220 V 380-440-500 V	
frontal frame (mm)	96x96	144x144	96x96	144x144
scale (mm)	90	147	90	147
kg	1,7	2,25	1,410/1,800	1,960/2,350
case	C6	C7	C6	C7

ANALOGUE INSTRUMENTS

SYNCHRONIZATION

DOUBLE FREQUENCYMETERS

POINTER TYPE

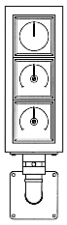
2x90°
PANEL

TYPE	2HC96	2HC144
Hz	45 - 55 47 - 53 55 - 65 57 - 63 45 - 65	
frontal fram (mm)	96x96	144x144
kg	0,4	0,45
case	C5	C3

REED TYPE

PANEL

TYPE	2HLC96	2HLC144
Hz	44-56 / 47-53 - 13 reeds 54-66 / 57-63 - 13 reeds 45-55 - 21 reeds 55-65 - 21 reeds	
frontal frame (mm)	96x96	144x144
kg	0,5	0,71
case	C5	C3



SYNCHRONIZING SETS

TYPE	GS96	GS144
frontal frame (mm)	96x96	144x144

PHASE-SEQUENCE INDICATOR

PANEL

TYPE	UC72	UC96	CUC96 (relay)
V	100 ...500		
frontal frame (mm)	72x72	96x96	96x96
kg	0,2	0,275	0,375
case	C4	C5	C5

BI-DIRECTIONAL POWER PROTECTOR

90°
PANEL

TYPE	PGR96M	PGR96E	PGR96A	PGR96AN
range	single-phase	balanced three-phase	unbalanced three-phase 3 w	unbalanced three-phase 4 w
V	100/√3 - 500 V	100 - 500 V		
frontal frame (mm)	96x96			
scale (mm)	90			
kg	0,5	0,5	0,63	0,64

ANALOGUE INSTRUMENTS WITH CONTACTS

90° PANEL

TYPE	CEC 96	CBC 96	CRBC 96
mV	10-15-20-25-40-50-60-100-150-250-300-400-500-600		
V	1-1,5-2,5-4-5-6-10-15-20-25-40-50-60-100-150-250-300-400-500-600		
	.../100 V or .../110 V		
µA	15-20-30-40-50-60-100-150-250-300-400-500-600		
mA	1-1,5-2,5-4,5-6-10-15-20-25-40-50-60-100-150-200-300-400-500-600		
A	1-1,5-2,5-4-5		
	.../1A -.../5A		
	...A/60 mV		
	...A/150 mA		
system	Moving iron (a.c.)	Moving coil (d.c.)	Moving coil (a.c.)
frontal frame (mm)	96x96		
scale (mm)	90		
kg	0,5	0,48	
case	C5		

ANALOGUE INSTRUMENTS

OTROS INSTRUMENTOS

TAP-POSITION INDICATOR

240° PANEL

TYPE	PBC96	PBC144
frontal frame (mm)	96x96	144x144
kg	0,52	0,79
case	C6	C7

INSUMATION METER

90° PANEL

TYPE	MEG-1000
range	0 to 1000 kOhm
frontal frame (mm)	96x96
scale (mm)	90
kg	0,23
case	C2

TEMPERATURE INDICATORS

90° PANEL

90° PANEL

TYPE	PEC72	PEC96	PZC96
range	J type Thermocouples		20-600 °C
	K type Thermocouples		20-1200 °C
	S type Thermocouples		20-1600 °C
TYPE	TEC72	TEC96	TZC96
range	for PT100		
frontal frame (mm)	72x72	96x96	96x96
scale (mm)	61	90	90
kg	0,3	0,34	0,34
case	C1	C2	C2

OHMMETERS

90° PANEL

TYPE	OBC96	OBC144
range	from 10 to 600 Ohm	
	from 1 to 600 kOhm	
frontal frame (mm)	96x96	144x144
scale (mm)	151	226
kg	0,35	0,55
case	C6	C7

HOURMETERS

PANEL DIN RAIL

TYPE	CH45	CH48	CH 72	CH96
range	24 - 110 - 230 V a.c.			
	10 - 80 V d.c.			
frontal frame (mm)	36x45	48x48	72x72	96x96
digits height	5	5	5	5
kg	0,075	0,049	0,176	0,246

PULSE COUNTER

DIN RAIL

TYPE	CI 45
range	24 - 115 - 230 V a.c. 10 - 27 V d.c.
frontal frame (mm)	45x52,5
digits height	5
kg	0,176

ANALOGUE INSTRUMENTS
CASE DIMENSIONS

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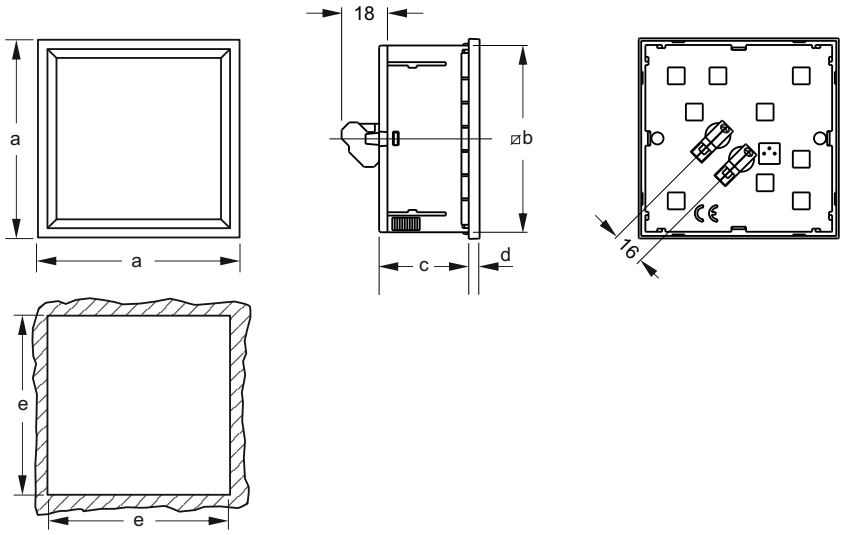
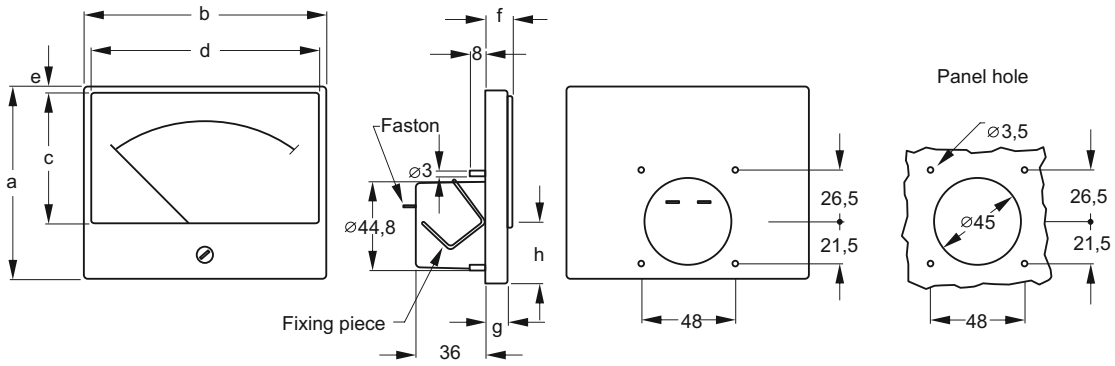


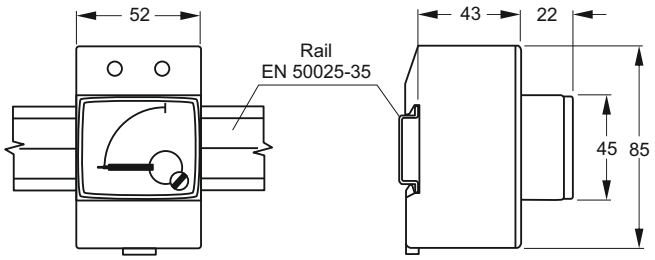
	C0	C1	C2	C3	C4	C5	C6	C7
a	48	72	96	144	72	96	96	144
b	44	66	89,6	137	66	89,6	89,6	137
c	41	43	43	64,5	57,2	57,2	95,5	94,7
d	5	5,2	5,2	7,1	5,2	5,2	5,2	7,1
e	45^{+1}	68^{+1}	92^{+1}	138^{+1}	68^{+1}	92^{+1}	92^{+1}	138^{+1}

K60 K100



Type	a	b	c	d	e	f	g	h
K60	60	66	34	62	2	12,4	10,4	27,5
K100	99	124	67	117	3,3	14,4	11,4	29,7

M 45



ANALOGUE INSTRUMENTS

GENERAL OPTIONS

GENERAL OPTIONS
Tropicalized
IP54 protection cases
IP20 back side terminal cover
Non-vertical mounting position
Adjustable red pointer
Knife type pointer
Low reflecting glass
Makrolon window
Grey RAL 7037 bezel
Scale ilumination (6-12-24V, except 48x48)

SCALES

Non-standard scale
Colour mark at scale value
Colour band
Additional (marks, signs, etc.)
Division and figures in colour
Double scale
Black scale, with divisions, figures and pointer in white or yellow
Scale with center zero
Scale with off-set zero

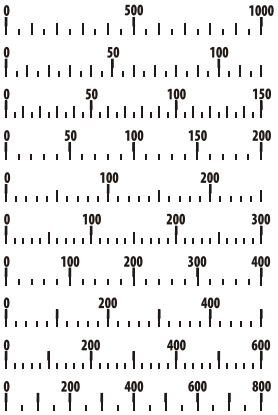
According to standards:

DIN 43701 for full scale values
DIN 43802 for division values
DIN EN 61010-1 (IEC 1010-1) for Overvoltage category

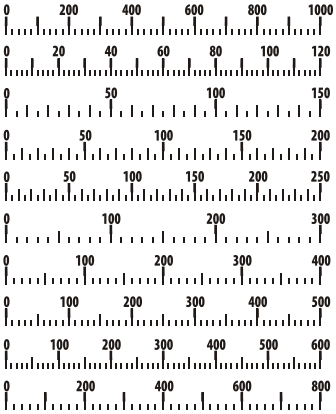
Overvoltage category	Test Voltage (50/60Hz) RMS	Impulse Test (1,2/50us)
CAT III 600 V	3320 V	6100 V
CAT III 300 V	2210 V	4070 V

Divisions and numbers for standard ranges follow next examples:

For instruments with DIN sizes C48-C72-M45-K60



For instruments with DIN sizes C96-C144-K100



Full scale values higher than 1.000 are indicated in thousand units

Instrumentación Industrial ZURC, SA
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50 Aniversario

DIGITAL INSTRUMENTS
PROGRAMMABLE INSTRUMENTS
ENERGY METERS
TRANSDUCERS

ZURC

INSTRUMENTACIÓN INDUSTRIAL ZURC, S.A.

keep your measure under control

DIGITAL INSTRUMENTS

PROGRAMMABLE DIGITAL INSTRUMENTS

SERIE DM 45

DIN RAIL

LED Display Programable
Reading de 0 a 9999
AdcurACy 0,5 % of f.e.
2 modules

Auxiliary supply
230 V AC
110 V AC

Type	Range	Description
V	600 V	Voltmeter
A	../5 A	Ammeter, Maximeter
AD	30 A directos	
F	10 ... 600 Hz	Frequencymeter
CM	600V- .../5A - 10...600Hz	Voltmeter, Ammeter, Maximeter, Frequencymeter y THD
CMD	600V- 30A directos - 10 ...600Hz	
frontal frame (mm)	45x52	45x52
caja	M-45	M-45

SERIE DC

PANEL

LED Display
Reading RMS
AdcurACy 0,5 f.e.
Fully programmable

Auxiliary supply	
AC	dc
230 V (50/60 Hz)	9-18 V
110 V (50/60 Hz)	18-36 V
	36-72 V

Type	DC-48	DC-72	DC-96
V - dc	10-50-200 V dc		
mV - dc	60 mV-150 mV-200 mV		
mA - dc	20 mA - 200 mA		
V - AC	150 - 300 - 600 V		
.../5 A	.../5 A		
.../1 A	.../1 A		
Hz	10-600 Hz		
TMP22		- 200 ºC / + 200 ºC	
TMP22-R1		- 200 ºC / + 200 ºC +1 relay	
TMP28		- 200 ºC / + 800 ºC	
TMP28-R1		- 200 ºC / + 800 ºC +1 relay	
.../5 A MD		.../5 A + 1 relay	
frontal frame (mm)	48x48	72x72	96x96

SERIE DH-96

High Adcuracy
4 digits plus sign
Fully programmable
True RMS measurement .

CE

PANEL

Auxiliary Supply DH96

AC	dc
230 V (50/60 Hz)	9-18 V
110 V (50/60 Hz)	18-36 V
	36-72 V
	40-170 V

AC

Type	Description	Range
DH96-AC-5	Ammeter - Voltmeter programable AC	150 V - 300 V - 600 V 5 A - .../5 A
DH96-AC-1		150 V - 300 V - 600 V 1 A - .../1 A
DH96-WG	Earth leakage current indicator	With earth leakage protection transformer (WG)

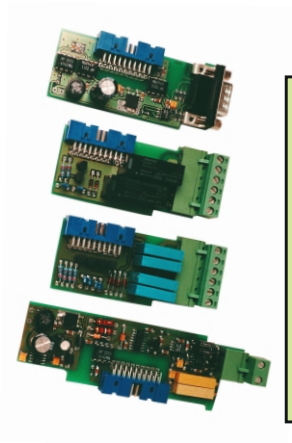
DC

Type	Description	Range
DH96 DC-S	Ammeter - Voltmeter programable DC	50 V - 100 V - 200 V 200 mA
DH96 DC-P	Process universal indicator	120 mV - 500 mV - 1 V - 10 V 20 mA - 1 mA
DH96P FAST	Process universal indicator Response time 50 ms	120 mV - 500 mV - 1 V - 10 V 20 mA - 1 mA
DH96 AV	A / V programable dc	100 V Shunt ... /60 mV Measurement: V, A
DH96 BG	Measurement: V, A, 4(A· h) independent counters	100 V Shunt ... /60 mV Measurement: V, A, 4 meters
DH96-FT	Frequencmeter / Tachometer	0... 20 000 Hz / r/min 0... 65 000 Hz
DH96 CT	Chronometer / Pulses counter	Pulses input
DH96 SG	Load cell indicator	10 mV a 300 mV
DH96 TMP	Temperature indicator	Thermocouple and RTD
DH96 CPP	Power control	Pulses input
DH96 CPP-RS	Power control with communication	Pulses input

DIGITAL INSTRUMENTS

PROGRAMMABLE DIGITAL INSTRUMENTS

OPTIONS FOR DH-96 MODULES



	2 relay	4 relay	2 relay+ RS485 ó RS232	4 relay + RS485 ó RS232	Analogue output	RS 232	RS 485	Analogue output + 2 relés	Ethernet
DH 96AC	●	●	●	●	●	●	●	●	●
DH 96WG	●	●	●	●	●	●	●	●	●
DH 96DC	●	●	●	●	●	●	●	●	●
DH 96DC-P	●	●	●	●	●	●	●	●	●
DH 96CPM	●	●	●	●	●	●	●	●	●
DH 96AV	●								
DH 96FT	●	●	●	●	●	●	●	●	●
DH 96CT	●	●	●	●	●	●	●	●	●
DH 96TMP	●	●	●	●	●	●	●	●	●
DH 96SG	●	●	●	●	●	●	●	●	●
DH 96BG	●	●							

MULTIFUNCTION DIGITAL INSTRUMENTS WITH ALARMS

SERIE ROYAL

CARRIL DIN

PANEL

Type	ROYAL A1	ROYAL A2	ROYAL A3	ROYAL A4
frontal frame (mm)	45x105	45x105	45x105	45x105
Type	**ROYAL A1-P**	**ROYAL A2-P**	**ROYAL A3-P**	**ROYAL A4-P**
frontal frame (mm)	96x48	96x48	96x48	96x48
V-A-Hz	.../5 A ó 10 A dir. 100 A (c. DIN)	-	-	-
A	-	A1-A2-A3	-	-
V	-	-	V1-V2-V3	-
V-A-Hz-W-VA var-F.P.-d maxímeter	-	-	-	Programmable

FEATURES (according types)

RoyalA1

-Measureament of voltage, current and the frequency
-True R.M.S value measurements by sampling
-Memorization of peak and valley values for all measurements
-Configuration of any .../5 A current transformer.
-Able to directly measurement up to 100 A by means of a built-in bus bar transformer
-Configuration of any .../110 V voltage transformer

RoyalA2

-Measurement of three currents.
-True R.M.S value measurements by sampling
-Memorization of peak and valley values for all the measurements
-Configuration of any .../5 A current transformer

RoyalA3

-Measurament of three voltages
-True R.M.S value measurements by sampling.
-Display of either line-to-line or line-to-neutral voltages.
-Memorization of peak and valley values for all the measurements
-Configuration of any .../110 V voltage transformer

RoyalA4

-Measurament of three voltages
-True R.M.S value measurements by sampling.
-Display of either line-to-line or line-to-neutral voltages.
-Memorization of peak and valley values for all the measurements
-Configuration of any .../110 V voltage transformer
-Four quadrants indication
-True R.M.S value measurement by sampling
-Memorization of peak and valley values for all the measurements
-Configuration of any .../5 A current transformer.
-Configuration of any .../110 V voltage transformer

ALARMS (Common for all types)

- Alarm trip due to an only measurement or all three.
- Trip due to maximum or minimum condition.
- Trip delay user-configurable between 1 & 9 999 s.
- Hysteresis user-configurable 1 to 9 999.
- Optional trip latch.
- Optional operation mode with failure safety function.
- All the set parameters can be protected against accidental.

DIGITAL INSTRUMENTS

MULTIFUNCTION DIGITAL INSTRUMENTS WITH ALARMS

SERIE ROYAL
Motor protection

LED Display
Measurement system based on microprocessor
Class 0,5
Relay output

	Type	Range	frontal frame (mm)
ROYAL A5-P	PANEL	A1 - A2 - A3	96X48

ROYAL A5-P Features

- Measurement of the three currents.
- Peak and valley values of the three currents and of the unbalance.
- Instantaneous maximum unbalance.
- Two user-configurable alarms: Set at a value of one the three currents
  Set at a value of any of the three currents.
  Set at the unbalance.
- Type of alarm: Trip due to maximum or minimum condition
  Trip delay user-configurable between 1 & 9 999 s
  Hysteresis user-configurable between 1 to points 9 999
  Optional trip latch
  Optional operation mode with failure safety function.
  Protection against any accidental modification.
- LED to indicate whether the measured current is under the rated one.
- Two LED to indicate whether and unbalance alarm or a phase loss (or inversion) has occurred.

Technical data

Auxiliary. supply:	**220 V ± 15% (40-70 Hz)**
Display:	**7 segments**
	14 mm high digits
	Red colour
Measuring system:	**Based on microprocessor**
	True R.M.S. values
	Reading rate 1 read./s
Burden:	**Ammeter - 0,25 VA**
	Supply - 3 VA

ELECTRIC GENERATOR CONTROLLER

SERIE GENIUS

PANEL

Type
GENIUS
GENIUS with Earth leakage protection

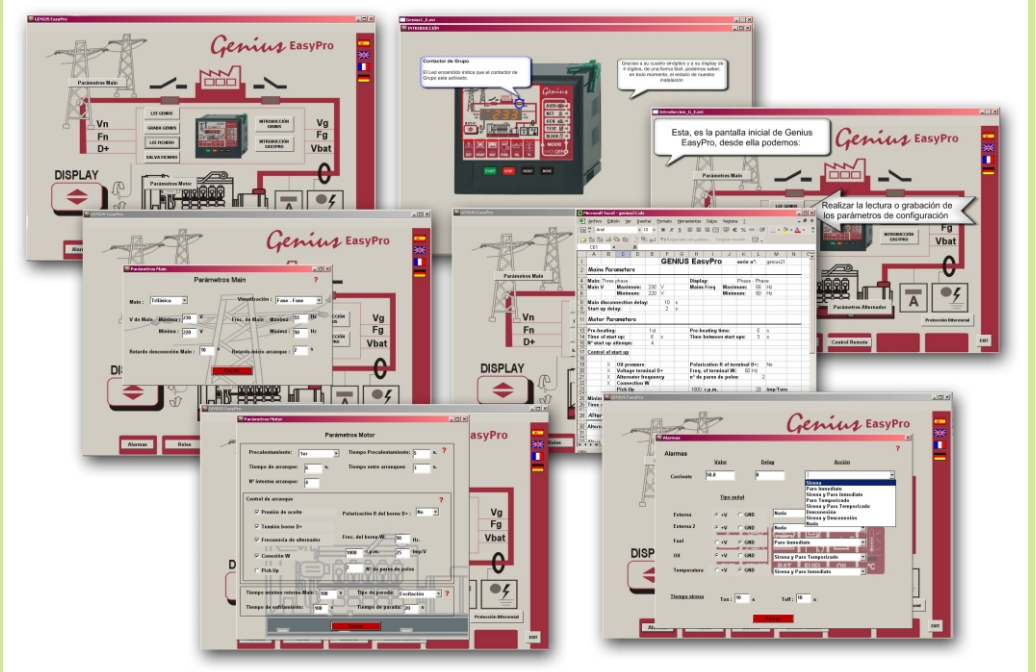
Visualization on display:
- Voltage and frequency of Network and group.
- Battery voltage.
- Terminal D+ voltage.
- Hourmeter.
- Status messages.

Three-phase or single-phase working

6 working modes
- Automatic Mode
- Network Mode
- Generator Mode
- Test Mode
- Blocked Mode
- Disconnection Mode

Fully programmable
Functions from keyboard:
- Manual Start and Stop of the group.
- Change of working Mode.
- Alarms control.
- Full configuration of the equipment.

SET UP of the equipment



DIGITAL INSTRUMENTS

MULTIFUNCTION MEASUREMENT CENTRAL

SERIE CMM96

PANEL

Type
CMM96 - MD
CMM96 - CH

3 Displays - 4 digits
Frontal frame 96x96

FEATURES:

- 4 programmable alarms, 4 LED indicate the status of each alarm.
- Fully configurable equipment for any measured parameter.
- True RMS measurement for simple and compound voltages, and phase currents.
- Voltage and current average of the three phases (average).
- Frequency, with a resolution of 0,1 Hz, in the 20 to 600 Hz range.
- Unbalance of voltages and currents.
- Three programmable hourmeters (CMM96-CH).
- Three maximum demand ammeters, you can select any integration time between the 5 to 60 min range (CMM96-MD).

SYNCHRONIZING

SERIE SYNCHROMAX

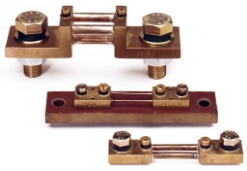
PANEL

TYPE	SYNCHROMAX	SYNCHROMAX-PID
V	110 - 230 - 400 - 480	
Frontal framel (mm	96x96	96x96
scale (mm)	90	90
kg	0,4	0,4
case	C2	C2

FEATURES

- All parameters can be set by the frontal keyboard.
- 4 digits display for visualizing and programming all values.
- Protection password.
- Wide measurement range (+20/-40%, max. 690 V)
- Multifrequency system (30...70Hz)
- Operation Modes: manual, assisted or automatic.
- Voltage comparison included.
- Analogic Simulation.
- Remote controller for enable / disable synchronization operations.
- Dead bus function.
- Speed regulation by means of relay (optional).

DIGITAL INSTRUMENTS FOR D.C. - SOLAR ENERGY - BATTERY CHARGE CONTROL



PANEL

DIN RAIL

TYPE	description	range
GENERAL INSTRUMENTS		
Shunts	see Analogue Instruments	
MULTIFUNCTION CENTRAL UNIT		
DH96 AV	A / V programmable DC	100 V Shunt ... /60 mV Measurement: V, A
DH96 CPM	Programmable Measurement Central	800 V Shunt ... /60 mV Measurement: V, A, W, W·h, A·h
DC ENERGY METERS		
MK-30 DC	DC kW·h Meter	Measurement up to 30 A direct
MK-SH DC	DC kW·h Meter	Measurement with shunt .../ 60 mV
BATTERY CHARGE CONTROL		
CB-30	Battery charge control	V, A, A·h(+), A·h(-), ΔA·h

MK-30-DC FEATURES

Auxiliary supply	
Nominal values:	115 V ac or 230 V ac (+/- 10%)
Frequency range:	40 to 70 Hz
Power Consumption:	4 VA
Measurement circuit	
Measurement by microcontroller	
Refresh rate:	1 reading/s
Voltage Accuracy:	+/- 0.5% FS +/- 1 digit
Current accuracy:	+/- 0.5% FS +/- 1 digit
Power accuracy:	+/- 1% FS +/- 1 digit
Display	
Display:	4 digits, 7 segments
Colour :	Red, high efficiency
Aux. LED:	4
Enviromental conditions:	
Storage temperature:	-40 ºC ... +70 ºC
Working temperature:	0 ºC ... 65 ºC
Pulse Output	
Output type:	optoinsulated transistor
Pulse duration:	Ton = 240 msec
Isolation:	500 V dc (10^{10} ohm)
Standards	
IEC 1010, IEC 348, IEC 664, EN 50081-1, EN 50082-1 IEC/EN 62053-31	

DIGITAL INSTRUMENTS

SINGLE PHASE ELECTRIC ENERGY METERS

EM 30 C **EMS 30**

DIN RAIL

Voltage circuit	
Rated voltage	230 V (+15% / -20%)
Consumption	< 2 W
Frequency	50/60 Hz
Power On LED	Green LED

Current circuit	
Rated base current (*Ib*)	5 A
Starter current (*Ist*)	20 mA
Maximum current (*Imax*)	30 A
Current connection	Direct

Display mode	Mechanical
Digits	5 +1 decimal
Digit height	4 mm
Energy units	kW·h
Resolution	0,1 kW·h
Counting range	99 999,9 kW·h
Blink frequency of LED	3 200 pls/kW·h

Class	1 (IEC 62053-21)

Constructive features	
Working temperature	-20 ºC / +55 ºC
Casing type	DIN rail
Terminals protection degree	IP20
Shock resistance	> 3 500 m/s (IEC 068-2-27)
Vibrostability	30 m/s2 (IEC 068-2-6)
Weight	0,1 kg

Pulse output	
Maximum current	I_{max} 50 mA
Maximum voltage	U_{max} 35 V c.c.
Pulse	T_{on} = 240 ms
Isolation	(500 V c.c.) 10^{10} Ω

Standard
IEC 62053-21
IEC/EN50081-2
IEC/EN50082-2

MK-30 LCD-RS485
MK-60 LCD-RS485

DIN RAIL

Voltage circuit	
Rated voltage:	110/230V a.c +15% / -20%
Consumption:	0,5 VA
Frequency:	45 ... 65Hz

Current circuit (according Type)	
Rated base current:	30A or 60A a.c.
Maximum current:	60A or 120A a.c.

Visualizador	Digital
6 digits	
Energy units: kW.h	
Resolution: 10kW.h	
Counting range: 999999 kW.h	

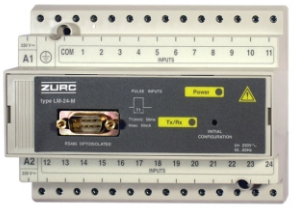
Clase	1

Constructive characteristics	
Casing type:	Modular (4 modules) DIN rail
Protection terminals:	IP 20
Protection realy:	IP 51
Connection-Screws:	Posidriv
Weight:	200 g

Salida de Pulsos	
Type of output (transistor):	Optoisolated
Maximun current:	50mA
Maximun voltage:	24 V d.c.
Pulse sequence:	100 pulse / 1 kW. h
Duration pulse:	500 ms
Isolation:	2,5 kV - 1 min transistor

Standars
IEC 62053-21
IEC 61000-6-4 / 61000-6-2
IEC 61010

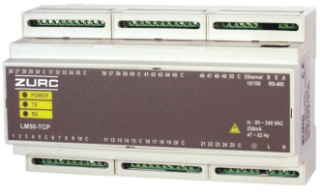
Accesories - Energy meter centralisation unit



DIN RAIL

LM 24-M

24 inputs (MODBUS/RTU protocol)
Power supply 230 V
Communication RS-485



DIN RAIL

LM 50-TCP

50 inputs (MODBUS/TCP protocol)
Ethernet input

DIGITAL INSTRUMENTS

THREE PHASE ENERGY METERS

EDMk

CEP 96

MKB-363-M

MKD

Rated voltage 400 V AC ± 10 % V AC
Burden 12 VA
Reference frequency de 50-60 Hz.

Type	Description	Display	Communication
EDMk-ITF-C2	Three phase active and reactive energy meter, DIN rail, external transf.	LCD	-
EDM3k-ITF-C2		LCD	
EDMk-ITF-RS485		LCD	RS-485 communication
CEP96	Three phase active energy meter, panel, external transformer	LCD	-
MKB-363-M-400V	Three phase active energy meter (ARON) 63A, built in transf. 400V	mechanical	isolated input
MKD-ITF-C2	Three phase active and reactive energy meter, direct connection, DIN Rail	digital	-
MKD-ITF-RS458-I2-C2	Three phase active and reactive energy meter, direct connection, DIN Rail	digital	RS-485 communication

OUTPUT MAIN FEATURES

- Pulse input
- Nº of outputs: 1 or 2
- All pulse outputs are independent and isolated between both them
- Type de salida: Por transistor optoaislado
- Maximum current: 30 mA
- Maximum voltage: 24 V dc
- Pulse rate: 1 pulse / 1 kW·h
- Pulse duration: 100 ms

NETWORK ANALYZERS

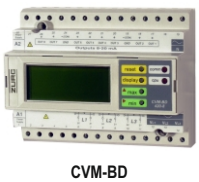
- Panel mounting (144x144 y 96X96)
- DIN rail mounting (8 modules)
- Measurement of following electrical systems:
  Single-phase, 3 and 4 wires, balanced or
  Unbalanced three-phase systems
- 9 measuring parameters to be selected among more than 50 available ones
- Accuracy of 0,5% for voltage and current, and 1 % for the rest
- LED or LCD type display
- V.T. and C.T. ratios easily user-configurable
- Additional functions: relay outputs, analog and digital outputs
- SCADA software for WINDOWS

CVM-MINI

CVM-NRG

CVM-96

CVM-144

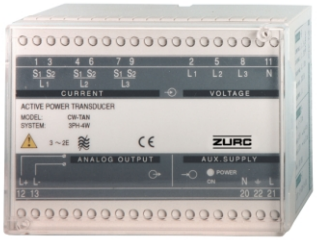


CVM-BD

Type	Features		
CVM MINI	DIN RAIL	—	—
CVM MINI-ITF			Isolated input.
CVM MINI-ITF-RS485-C2			Isolated input. 2 digital output. RS-485. Modbus/RTU
CVM MINI-ITF-HAR-RS485-C2			Isolated input. 2 digital output. RS-485. Modbus/RTU
CVM NRG	PANEL	96X96	—
CVM NRG-ITF			Isolated input.
CVM NRG-ITF-RS485-C2			Isolated input. 1 digital output. RS-485. Modbus/RTU
CVM NRG-ITF-HAR-RS485-C2			Isolated input. 1 digital outputl. RS-485. Modbus/RTU
CVM 96	PANEL	96X96	—
CVM 96-ITF			Isolated input.
CVM 96-ITF-RS485-C2			Isolated input. 2 digital output. RS-485. Modbus/RTU
CVM 96-ITF-Ethernet-C2-TCP			Isolated input. 2 digital output. Ethernet. Modbus/TCP
CVM 144	PANEL	144x144	—
CVM 144-ITF			Isolated input.
CVM 144-ITF-HAR			Isolated input.
CVM 144-ITF-Ethernet-C2-TCP			Isolated input. 2 digital output. Ethernet. Modbus/TCP
CVM BD RED H	DIN RAIL	—	RS-485
CVM BD RED C2 H			2 relay output. RS-485
CVM BD RED C420 H			1 relay output. RS-485. 1 output 4-20mA

DIGITAL INSTRUMENTS

TRANSDUCERS



DIN RAIL

FEATURES

Output A (unidirectional, bidirectional)
0-10V ó 0-20mA
Output B (Shifted output)
4-20mA ó 2-10V
Isolation of 3kV for A.C.
Isolation of 2,5kV for D.C.
Accuracy 0,2 (D.C. & A.C. converters)
Accuracy 0,5 (power converters)
100 ppm / ºC

CE

Optionals
Auxiliary power supply
9 to 18 V D.C. (isolated)
18 to 36 V D.C. (isolated)
36 to 72 V D.C. (isolated)
40 to 170 V D.C. (isolated)

Accessories
Frontal cover 45 transducer
Frontal cover 100 transducer

TYPE	DESCRIPTION
CV-A	A.C. Voltage transducer
CV-A-RMS	A.C. Voltage transducer true RMS
CV-A-AP	A.C. Voltage transducer self-powered
CC-A	A.C. Current transducer
CC-A-RMS	A.C. Current transducer true RMS
CC-A-AP	A.C. Current transducer self-powered
CC-WG	Earth leakage transducer
CF	Frequency transducer
CW-M	Active power transducer, single-phase
CW-TE	Active power transducer, three-phase, 3 wires, balanced
CW-TA	Active power transducer, three-phase, 3 wires, unbalanced
CW-TAN	Active power transducer, three-phase, 4 wires, unbalanced
CY-M	Reactive power transducer, single-phase
CY-TE	Reactive power transducer, three-phase, 3 wires, balanced
CY-TA	Reactive power transducer, three-phase, 3 wires, unbalanced
CY-TAN	Reactive power transducer, three-phase, 4 wires, unbalanced
CPF-M	Power factor transducer, single-phase
CPF-TE	Power factor transducer, three-phase, 3 wires, balanced
CPF-TEN	Power factor transducer, three-phase, 4 wires, balanced
CCOS-M	Cosφ transducer, single-phase
CCOS-TE	Cosφ transducer, three-phase, 3 wires, balanced
CCOS-TEN	Cosφ transducer, three-phase, 4 wires, balanced
CFD-THD	Distortion factor transducer (%) THD + 1 output relay
CFD-D	Distortion factor transducer (%) D + 1 output relay
CV-D	Direct voltage transducer
CC-D	Direct current transducer
CC-G	Galvanic isolator 4...20 / 4...20 mA 0...10 / 0...10 V
CT-PT100	Temperature transducer (PT 100 probe)
CR-2	Resistance transducer

NARROW SECTION TRANSDUCERS

DIN RAIL

FEATURES

Class 0,5
Isolation 3 kV
Standard Output:
0-20mA
0-10V
4-20mA
2-10V

CE

Optionals
Auxiliary power supply
9 to 18 V D.C. (isolated)
18 to 36 V D.C. (isolated)
36 to 72 V D.C. (isolated)
40 to 170 V D.C. (isolated)

A.C.

TYPE	DESCRIPTION
CVE-A 75 V	Voltage Transducer
CVE-A 150 V	Voltage Transducer
CVE-A 300 V	Voltage Transducer
CVE-A 600 V	Voltage Transducer
CVE-A-AP 115 V	Voltage Transducer self-powered
CVE-A-AP 240 V	Voltage Transducer self-powered
CVE-A-AP 400 V	Voltage Transducer self-powered
CCE-A 1 A	Current Transducer
CCE-A 5 A	Current Transducer
CCE-A-AP 1 A	Current Transducer self-powered
CCE-A-AP 5 A	Current Transducer self-powered
CFE 50-600 V	Frequency Transducer
CFE-AP 115 V	Frequency Transducer
CFE-AP 240 V	Frequency Transducer self-powered
CFE-AP 400 V	Frequency Transducer self-powered

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