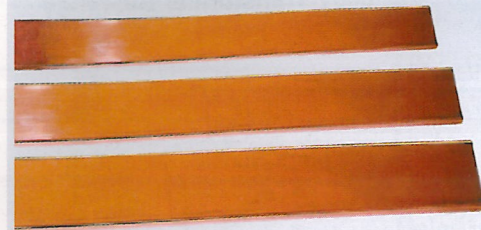


Note that copper prices fluctuate. Please check prices.

COPPER BARS

Standard Solid Copper Busbars



Code	Dimensions (mm)		Length	Current
	W x D			
CUB020X5	20 x 5		3m	200A
CUB025X5	25 x 5		3m	250A
CUB030X5	30 x 5		3m	300A
CUB030X10	30 x 10		3m	600A
CUB040X10	40 x 10		3m	800A
CUB050X10	50 x 10		3m	1000A
CUB060X10	60 x 10		3m	1200A
CUB080X10	80 x 10		3m	1600A
CUB100X10	100 x 10		3m	1600A-2000A

ETP Copper 99.9% min
Conductivity: 100 IACS
Tensile Strength: 275N/mm² min

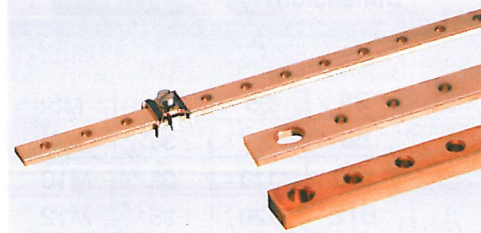
Busbar current ratings at ambient temperature of 35°C and Busbar temperature of 65°C

Copper Earthing Strap



Code	Description	Length
CUS-10	12 x 0.4 with 7mm Ø holes	10m roll

Copper Busbars – Electrolytic copper, threaded and plated. Short lengths for distribution



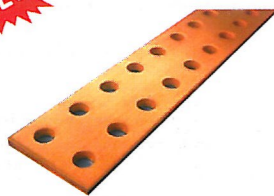
Code	Size	Length	Rating*	Qty	Holes	Size
BFC154	15 x 4	200mm	120A	10		M5
BFC205	20 x 5	200mm	200A	10		M6
BFC256	25 x 6	200mm	300A	10		M6
BFC305	30 x 5	300mm	300A	15		M6
BFC3010	30 x 10	300mm	600A	15		M8
BFC4010	40 x 10	300mm	800A	15		M10
BFC4510	45 x 10	300mm	900A	15		M12

*Current Rating in accordance with SANS 1473 and SANS 1765

Double Perforated Bars

Electrolytic copper, threaded and plated.

NEW



Code	Size (mm)	Cross-Section (mm ²)	L (mm)	Current Flow
BD50X5	50 x 5	250	1750	580
BD60X5	60 x 5	300	1750	680
BD80X5	80 x 5	400	1750	880
BD100X5	100 x 5	500	1750	1030

10mm holes every 25mm spacing

Make your own Braided Connections



Example



Crimp & Drill Kit



Copper Lugs

Nominal Current	Flat Plain Copper Braid 25m Coils	CSA mm ²	Size mm	Crimp & Drill Kit	Bolt Size	Tinned Copper per 100 Lugs
120A	E557040	16	15x1.5	E558610 E558640	M6 M8	E557180
150A	E557060	25	23x1.5	E558620	M10	E557190
250A	E557100	50	28x3	E558630	M12	E557380

WIR

BRASS LINE TAPS

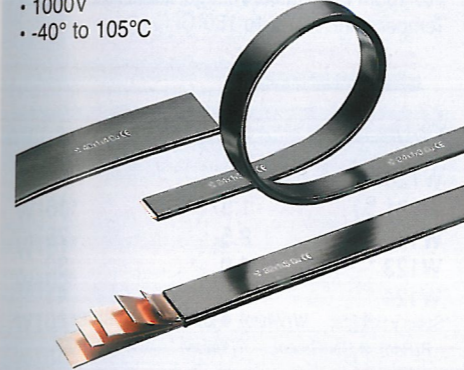


Code	Cable Size	Takes Two Conductors	Code	Cable Size	Takes Two Conductors
BLT-10	4-10mm ²	10mm	BLT-70	6-70mm ²	70mm
BLT-16	4-16mm ²	16mm	BLT-95	6-95mm ²	95mm
BLT-25	4-25mm ²	25mm	BLT-120	8-120mm ²	120mm
BLT-35	6-35mm ²	35mm	BLT-150	8-150mm ²	150mm
BLT-50	6-50mm ²	50mm			

NEW RANGE

FLEXIBLE BUSBARS

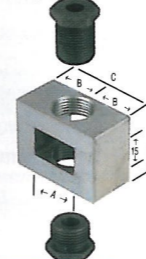
- 1mm Copper Laminations
- 1000V
- -40° to 105°C



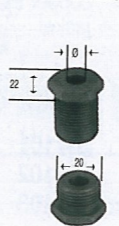
Code	Dimensions (mm)	No of Copper Laminations	Max. Current at T Δ(°K)			Cross Section
			50°C	40°C	30°C	
FLB2015	20 x 5	5	490A	430A	300A	100mm ²
FLB2414	24 x 4	4	460A	410A	280A	96mm ²
FLB2415	24 x 5	5	530A	470A	330A	120mm ²
FLB24110	24 x 10	10	790A	700A	500A	240mm ²
FLB3215	32 x 5	5	610A	550A	390A	160mm ²
FLB3218	32 x 8	8	800A	720A	510A	256mm ²
FLB4015	40 x 5	5	710A	630A	450A	200mm ²
FLB40110	40 x 10	10	1030A	920A	670A	400mm ²
FLB5015	50 x 5	5	880A	780A	540A	250mm ²
FLB50110	50 x 10	10	1300A	1100A	750A	500mm ²
FLB6315	63 x 5	5	1000A	900A	650A	315mm ²
FLB63110	63 x 10	10	1450A	1300A	920A	630mm ²

Accessories

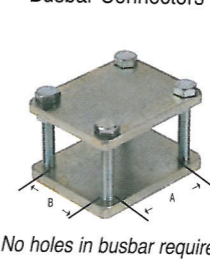
Drilling Devices



Drill Guides

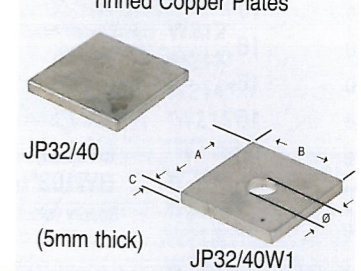


Busbar Connectors



No holes in busbar required

Tinned Copper Plates

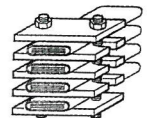


JP32/40

JP32/40W1

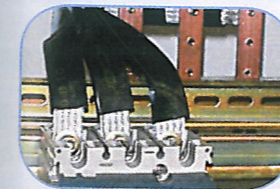
(5mm thick)

Flexible Bar Spacers



Code	Dimensions (mm)			Code	Drill Ø mm	Dimensions (mm)		Dimensions (mm)				Code	Bar Width (mm)		
	A	B	C			A	B	A	B	C	Ø				
JS-20	20.5	25	50	JW-7	7	JM-21	23	18	JP-32	30	30	5	-	JD-20	20
JS-24	24.5	25	50	JW-9	9	JM-30	30	30	JP-40	40	40	5	-	JD-32	24-32
JS-32	32.5	32.5	60	JW-11	11	JM-40	40	40	JP-50	50	50	5	-	JD-50	40-50
JS-40	40.5	37.5	70	JW-13	13	JM-43	42	33	JP-60	60	60	5	-	JD-50	40-50
JS-50	50.5	42.5	80			JM-54	53	42	JP-32W1	30	30	5	9	JD-63/100	63-80-100
JS-63	63.5	50	85			JM-55	53	53	JP-40W1	40	40	5	11		
						JM-64	64	42							
						JM-66	64	64							

Insulated Braided Shunts $U_i = 1000V$. Max. temperature 105°C



Code	CSA	Length*	Max Current at Δ T 50°C Rise			Holes Size Ø
			1 per Phase	2 per Phase†	3 per Phase†	
BRS25230	25mm ²	230mm	187A	299A	374A	One side
BRS25330	25mm ²	330mm	187A	299A	374A	8.5mm other side 10.5mm
BRS25430	25mm ²	430mm	187A	299A	374A	
BRS50230	50mm ²	230mm	280A	448A	560A	10.5mm
BRS50330	50mm ²	330mm	280A	448A	560A	10.5mm
BRS50430	50mm ²	430mm	280A	448A	560A	10.5mm

*Measured between hole centres.

†Connected in parallel

COPPER BRAIDS FOR EARTHING CONNECTIONS

Ready Made Tinned Copper Braid

Code	Cross Section mm ²	Hole Ø mm	L* mm	Max Current	Code	Cross Section mm ²	Hole Ø mm	L* mm	Max Current
CR6-100	6	7	100	55A	CR16-250	16	9	250	120A
CR6-150	6	7	150	55A	CR16-300	16	9	300	120A
CR10-100	10	9	100	85A	CR25-150	25	9	150	150A
CR10-150	10	9	150	85A	CR25-200	25	9	200	150A
CR10-200	10	9	200	85A	CR25-250	25	9	250	150A
CR10-250	10	9	250	85A	CR35-150	35	9	150	195A
CR16-100	16	9	100	120A	CR35-200	35	9	200	195A
CR16-150	16	9	150	120A	CR35-250	35	9	250	195A

*measured between hole centres

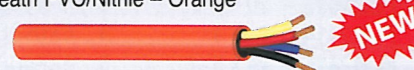
WIRE

Silicone Cabtyre (Per 100m roll)
Rated Voltage 300/500V
Temperature: -50°C to 180°C



Code	Size mm ²	Amps
W600	0.5 x 2 core	3
W601	0.5 x 3 core	3
W602	0.5 x 4 core	3
W603	0.75 x 2 core	6
W604	0.75 x 3 core	6
W605	0.75 x 4 core	6
W606	1.0 x 2 core	10
W607	1.0 x 3 core	10
W608	1.0 x 4 core	10
W609	1.5 x 2 core	16
W610	1.5 x 3 core	16
W611	1.5 x 4 core	16
W612	2.5 x 2 core	20
W613	2.5 x 3 core	20
W614	2.5 x 4 core	20

Nitrile Trailing Cable (Per 100m roll)
Rated Voltage 600/1000V
Sheath PVC/Nitrile - Orange



Code	Size mm ²	Amps
W110	1.5x4 Core	15
W111	2.5x4 Core	21
W112	4x4 Core	28
W113	6x4 Core	36
W114	10x4 Core	50

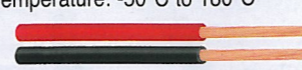
Box Type GP-Wire
Comes in easy pull box



Code	Size mm ²	Amps
BW101*	1.5mm ²	14
BW102*	2.5mm ²	17

*Specify colours: W(White), BK(Black), BL(Blue), R(Red)

Silicone Single Core Flexible Cable
Per 100m roll. Rated Voltage 300/500V
Temperature: -50°C to 180°C



Code	Size mm ²	Amps
W120*	1.0	10
W121*	1.5	16
W122*	2.5	25
W123*	4.0	32
W124*	6.0	41

*Specify colours: W(White), BK(Black), BL(Blue), R(Red), GN(Green), Y(Yellow)

Solar Cable (100m coil)
Rated Voltage 600/1000VAC
900/1500VDC Stranded tin-plated copper insulated with XLPE under a PVC jacket



Code	Size mm ²	Amps
SW101	2.5mm ²	25
SW102	4mm ²	32
SW103	6mm ²	41

*Specify colours: W(White), BK(Black), BL(Blue), R(Red)

TV Leads 75Ω

Length	Code Male to Male	Code Male to Female	Code Female to Female
3m	TVC8071MM-3M	TVC8071MF-3M	TVC8071FF-3M
5m	TVC8071MM-5M	TVC8071MF-5M	TVC8071FF-5M
10m	TVC8071MM-10M	TVC8071MF-10M	TVC8071FF-10M



Coaxial Cable

Length	Code 75Ω White
10m	TVC8119-10
25m	TVC8119-25
50m	TVC8119-50
100m*	TVC8119-100

*Shrink wrapped rolls

Computer Cable

Code	Description
CAT5E-305-G	Light Grey UTP CAT5E cable 305m/roll
CAT5E-305-BK	Black UTP CAT5E cable 305m/roll
CAT5E-305-B	Blue UTP CAT5E cable 305m/roll
CAT5E-305-R	Red UTP CAT5E cable 305m/roll
CAT5E-305-Y	Yellow UTP CAT5E cable 305m/roll
CAT6-305-G	Light Grey UTP CAT6 cable 305m/roll
CAT6-305-BK	Black UTP CAT6 cable 305m/roll
CAT6-305-B	Blue UTP CAT6 cable 305m/roll
CAT6-305-R	Red UTP CAT6 cable 305m/roll
CAT6-305-Y	Yellow UTP CAT6 cable 305m/roll

Specifications:

CAT5E - 4 Pairs 0.5mm solid copper + 0.91mm HDPE + 5.0mm PVC jacket
CAT6 - 4 Pairs 0.565mm solid copper + 1.03mm HDPE + 6.2mm PVC jacket

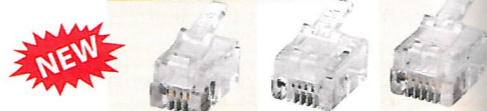
Patch Cables

Length	CAT5E	CAT6
1m	CAT5-P1M*	CAT6-P1M*
2m	CAT5-P2M*	CAT6-P2M*
3m	CAT5-P3M*	CAT6-P3M*
5m	CAT5-P5M*	CAT6-P5M*
10m	CAT5-P10M*	CAT6-P10M*
20m	CAT5-P20M*	CAT6-P20M*
30m	CAT5-P30M*	CAT6-P30M*

*Add colour to code eg. CAT5-P1M-G
G (Light grey), R (Red), BL (Blue), Y (Yellow)



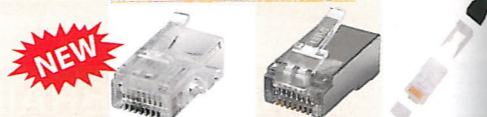
Telephone Plugs (Pack of 10)



Code	WT-6001-B	WT-6001-C	WT-6001-D
Description	RJ22 4P-4C	RJ11 6P-4C	RJ12 6P-6C

Housing material: transparent polycarbonate
Contacts: gold plated phosphor bronze
Wiring: 36 - 24 AWG

Data Network Plugs (Pack of 10)



Code	WT-6002-A	WT-6002-B	WT-6029
Description	RJ45 8P8C CAT5E	RJ45 Shielded CAT5E	RJ45 Shielded 8P8C CAT6

Housing material: transparent polycarbonate
Contacts: gold plated phosphor bronze
Wiring: 36 - 24 AWG

Boots - for data network plugs (Pack of 10)

Code	Description
BCAT5E-PVC*	CAT5E Boot
BCAT6-PVC*	CAT6 Boot

*Add colour to code: G (Grey), BK (Black), BL (Blue), R (Red), Y (Yellow)

WIRE

GP Wire Per 100m roll
SABS 600/1000V



Code	Size mm ²	Amps
W100*	1.0	14
W101*	1.5	17
W102*	2.5	24
W103*	4.0	32
W104*	6.0	41
W105*	10.0	50
W106*	16.0	66
W107*	25.0	87

*Specify colours

All sizes: Red, white, blue, black
Up to 2.5mm: Violet, orange, pink, brown, grey, yellow
Up to 6mm: Green/yellow

Solid Panel Wire per 100m roll



Code	Size mm ²	Amps
W518 R	1.0	14
W518 W	1.0	14

Submersible cable SABS 600/1000V



Code	Size mm ²	Amps	Length
A330	2.5 x 3 core	21	per m
A331	4 x 3 core	28	per m
A430	2.5 x 4 core	21	per m
A431	4 x 4 core	32	per m
A432	6 x 4 core	41	per m
A433	10 x 4 core	55	per m
A434	16 x 4 core	72	per m

Twin Flat & Earth (2+E)
Per 100m roll

Code	Size mm ²	Amps
W900	1.0mm 2+E	14
†W901*	1.5mm 2+E	17
†W902*	2.5mm 2+E	24
W903	4.0mm 2+E	32
W904	6.0mm 2+E	41

† Available in cut lengths 10m, 20m, 50m; Add 10M, 20M, 50M to part no. eg. W901-10M WH
*Specify colour: WH (White) BK (Black) e.g. W901 WH

Panel flex Per 100m roll
SABS 300/500V



Code	Size mm ²	Amps
W500*	0.2	1
W501*	0.5	3
SABS 600/1000V		
W502*	0.75	6
W503*	1.0	10
W504*	1.5	16
W505*	2.5	25
W506*	4.0	32
W507*	6.0	41
W516*	10.0	55

*Specify colours:

All sizes: Red, white, blue, black, grey, green
Up to 2.5mm: Orange, yellow, violet, pink, brown

Permweld Single Flex for welding or power cable
† Per metre

W508†	12 (Black)	55
W509†	16 (R, W, BL, BK, GN)	72
W510†	25 (Blue)	87
W511†	35 (Grey)	105
W511 BK†	35 (Black)	105
W511 BL†	35 (Blue)	105
W512†	50 (Red)	130
W512 BK†	50 (Black)	130
W512 BL†	50 (Blue)	130
W513†	70 (Brown)	160
W514†	95 (Yellow)	195
W515†	120 (Black)	220
W517†	150 (Black)	250

Surfix Cable (Round)
Per 100m roll

Code	Size mm ²	Amps
†W300*	1.5mm 2+E	17
†W301*	1.5mm 3+E	17
W302	1.5mm 4+E	17
†W303*	2.5mm 2+E	24
W304	2.5mm 3+E	24
W305	2.5mm 4+E	24
W306	4.0mm 2+E	32
W307	4.0mm 3+E	32
W308	4.0mm 4+E	32

† Available in cut lengths 10m, 20m, 50m; Add 10M, 20M, 50M to part no. eg. W300-10M WH
*Specify colour: WH (White), BK (Black) e.g. W303 WH

Cabtyre Per 100m roll
SABS 300/500V



Code	Size mm ²	Amps
W200*	0.5 x 2 core	3
W201*	0.5 x 3 core	3
W202*	0.5 x 4 core	3
SABS 600/1000V		
W205*	0.75 x 2 core	6
†W206*	0.75 x 3 core	6
W207*	0.75 x 4 core	6
W208*	0.75 x 5 core	6
W209	0.75 x 7 core	6
†W210*	1.0 x 2 core	10
†W211*	1.0 x 3 core	10
W212	1.0 x 4 core	10
W213*	1.0 x 5 core	10
†W214*	1.0 x 7 core	10
†W215*	1.5 x 2 core	16
†W216*	1.5 x 3 core	16
W217*	1.5 x 4 core	16
W218*	1.5 x 5 core	16
W219*	1.5 x 7 core	16
W220*	2.5 x 2 core	20
W221*	2.5 x 3 core	20
W222*	2.5 x 4 core	20
W223*	2.5 x 5 core	20
W224*	2.5 x 7 core	20
W225*	4.0 x 3 core	30
W226*	4.0 x 4 core	30
W254*	4.5 x 5 core	30

† Available in cut lengths 10m, 20m, 30m
Add 10M, 20M, 30M to part no. e.g. W210-10M BK
For all applications, contractors should compensate for voltage drop in accordance with SABS 0142

Ripcord
Per 100m roll

Code	Size mm ²
W401*	0.2mm
W403*	0.5mm
W404*	0.75mm
W406*	1.0mm
W407*	1.5mm

*Specify colours: BK (Black), WH (White), C (Clear)

Earth Wire



Code	Size mm ²	kg/Roll	Approx. Length
W130	1.5	5kg	382m
W131	2.5	5kg	234m
W132	4.0	5kg	145m
W133	6.0	5kg	97m
W134	10.0	25kg	288m
W135	16.0	25kg	181m
W136	25.0	-	1m
W137	35.0	-	1m

LIGHTNING & SURGE PROTECTION

Surge Protection for Ethernet in 19" Rack



Code	DL-CAT5E-*	DL-CAT6-*
Type	Rack Panel	Patch Panel
Connections	RJ45/RJ45 (Shielded)	LSA/ RJ45 (Shielded)
Maximum operating Voltage	8.1VDC/ 5.7VAC	
Nominal Discharge Current (8/20µs)	1.6kA	
Insertion Attenuation (100MHz)	1.5dB	

*Add number of ports: 8,16,24

Mains Voltage Surge Protection for use in 19" Racks



Code	X12
Nominal Voltage (Un)	230V
Maximum Operating Voltage (Uc)	275V
Nominal Load Current	10A/Outlet
Nominal Discharge Current (8/20µs)	3kA
Voltage protection Level (Up)	1.6kV

Antenna Surge Protection Device - 75Ω



Code	Working Frequency	Nominal Discharge 8/20µS
KA-F-450	400-500MHz	10kA
KA-F-900	800-1000MHz	10kA
KA-F-1800	1700-1900MHz	10kA

Connector: F-connector Transmission Power: 200W
Insertion loss: ≤0.3dB Size: 58L x Ø25.5mm

Co-axial Surge Protection Device - 75Ω



Code	Operating Voltage	Nominal Discharge 8/20µS
KS-BNC-10/3-5	5V	3kA
KS-BNC-10/3-12	12V	3kA

Size: 42 x 25 x 25mm Insertion loss: ≤0.5dB
Connector: BNC 75Ω Transmission Rate: 10 Mbit/s

Telecommunication Surge Protection Devices - Insertion loss: ≤0.5dB



Code	Operating Voltage	Nominal Discharge 8/20µS	Transmission Rate	Interface Type	Size (mm)
KS-RJ11-2/3-48	48V	3kA	2 Mbit/s	RJ11	70 x 25 x 25
KS-G3.81-2/3-48	48V	3kA	2 Mbit/s	Screw Term	59 x 25 x 25
KS-RJ45-100/3-12	12V	3kA	100 Mbit/s	RJ45	99 x 25 x 25

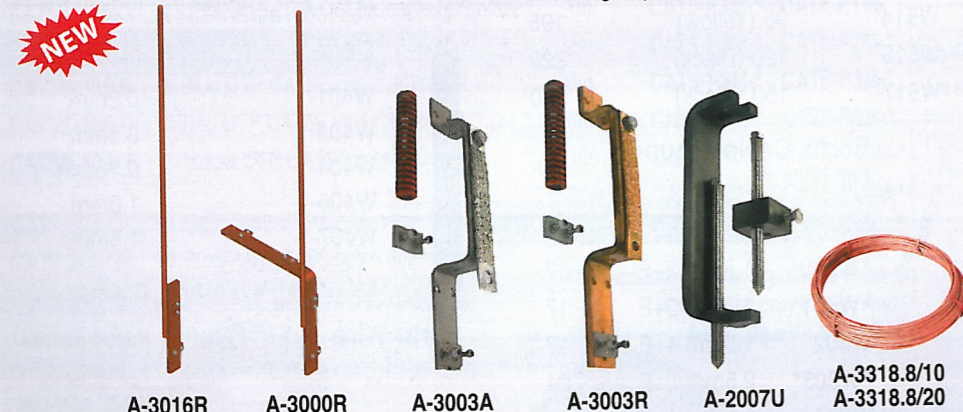
Isolating Spark Gap Arrestor



Description	Code
Bolt connection, 100kA @ 8/20 µs Impulse Sparkover voltage @ 1.2/50 µs ≤2.0kV AC Sparkover voltage ≤1kV	1RAOSPAK-1

New High Rise Lightning Protection

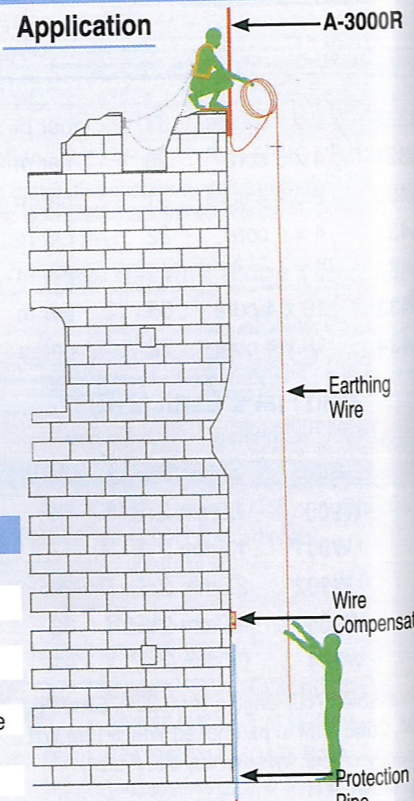
- Fast and easy to apply
- No scaffolding required for installation



* Note connectable wire size: 1 x Ø 8-10mm

Code	Description	Material
A-3016R	Junction Bar with lightning rod Ø 14 mm	Copper and stainless steel screws
A-3000R	L junction bar with lightning rod Ø 14 mm	Copper and stainless steel screws
A-3003A	Wire Compensator for downlead with spring	Stainless Steel
A-3003R	Wire Compensator for downlead with spring	Copper and stainless steel screws
A-2007U	Tool for wire compensator adjustment	Steel
A-2006P	Protection Pipe for downlead	Ø 20 mm for length of 2 m polycarbonate
A-3318.8/10M	Earthing wire/10 Metre, Coil/4.5kg	Soft Copper 8mm/10 Metre
A-3318.8/20M	Earthing wire/20 Metre, Coil/9kg	Soft Copper 8mm/20 Metre

Application



Earthing Rods see page 155

LIGHTNING & SURGE PROTECTION

Earth Rods

250 micron* Code	150 micron Code	Description	Material
ER1216	ER1216/1	1.2m x M16 Earth Rod	Copper Plated Steel
ER1516	ER1516/1	1.5m x M16 Earth Rod	Copper Plated Steel
ER1816	ER1816/1	1.8m x M16 Earth Rod	Copper Plated Steel
ER2416	ER2416/1	2.4m x M16 Earth Rod	Copper Plated Steel
ER3016	-	3.0m x M16 Earth Rod	Copper Plated Steel

*SABS 1063/85 with copper electroplated to 250 microns



Accessories

ERA01	Driving Cap	Case Hardened Steel
ERA02	Driving Tip	Case Hardened Steel
ERA03	Coupling	Brass
ERA04	70mm Clamp	Brass

Lightning Conductors Works with TELE-TESTER-S3

Code	Description
SAT-3C-*	SAT-3C was designed combining the lightning conductor and its tester. The SAT-3C is equipped with an on-board transmitter using a standard frequency which transmits a signal every 90 seconds to confirm the correct operation of the lightning conductor's electronics, incl. the polarisation of the tips.

*Add triggering advance value to code 25, 45, 60 See table for selection.
TELE-TESTER-S3 SAT-3C can be tested remotely, via radio signals. The TeleTester-S3 receives the information transmitted by SAT-3C and emits an audible signal confirming the installation is fully functional.



Lightning Conductors Works without TELE-TESTER-S3

Code	Description
SAT-G2-*	The SAT-G2-* is an Early Streamer Emission lightning conductor, known as a Zonal protector. In the event of descending lightning, a built-in triggering-device generates high-tension pulses at the conductor tip, protecting your structure from a lightning strike.

*Add triggering advance value to code 25, 45, 60 See table for selection



Order Information

Δ T(µs)	Description	TIP Height
25	25µs triggering advance	2.0m
45	45µs triggering advance	2.03m
60	60µs triggering advance	2.06m

Miracle Compound for Earthing - TEREC 3



Code	Description
TEREC 3	Terec is composed of molecules which, on energy intake accelerate ionic flow. It's electrical conductivity and its ability to absorb energy are essential qualities. Using it in the ground reduces resistivity by improving the existing ionic potential by developing distant links. Its presence lowers the freezing point of the ground to about -10°C (14°F)

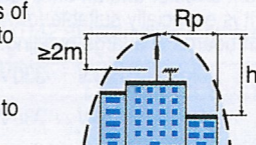
Lightning Strike Counter IP65



Code	Description
CCF4045	The CCF4045 lightning strike counter mounting is made in parallel on the down conductor with the help of two tightening clamps and 4 screws. Its protection level of IP65 makes it particularly suited to aggressive environments and extreme weather conditions. Records each strike between 0.4kA - 150kA

Calculation of Protected Areas

The radius of protection (Rp) of a Duval depends on the initiation advance (ΔT) of the Duval on the levels of protection I, II, III, calculated according to the lightning risk assessment and the height (h) of the lightning conductor over the area to be protected (minimum height = 2m).



- Rp : radius of protection in a horizontal plane located at a vertical distance h from the Duval tip
- h : height of the Duval tip above the surface(s) to be protected
- D : standardised striking distance
- ΔL = 10° · ΔT (initiation advance)
- Rp = √h (2D-h) + ΔL (2D + ΔL) (for h ≥ 5m)
- For h < 5m, see the radius of protection table opposite
- ΔT = initiation advance measured during efficiency tests

Duval radius of protection

Level of protection I (D = 20m)	II (D = 45m)			III (D = 60m)					
	25	45	60	25	45	60			
h(m)	Radius of protection RP(m)								
2	19	25	32	25	32	40	28	36	44
3	28	38	48	38	48	59	42	57	65
4	38	51	64	50	65	78	57	72	87
5	48	63	79	63	81	97	71	89	107
6	48	63	79	64	81	97	72	90	107
8	49	64	79	65	82	98	73	91	108
10	49	64	79	66	83	99	75	92	109
15	50	65	80	69	85	101	78	95	111
20	50	65	80	71	86	102	81	97	113
45	50	65	80	75	90	105	89	104	119
60	50	65	80	75	90	105	90	105	120

LIGHTNING & SURGE PROTECTION

NEW RANGE



Power Protection (With flag indicator) Class 2 protection

Code	Class	No. of Poles	I _{max} 8/20	I _n 8/20	U _p	U _c	U _n	Network	DIN Width	Aux
SLP-275V	2	1	40kA	20kA	<1.2kV	275V	230V	TN-S/TN-C/TT	1	N
SLP-275V/1+1	2	1P + N	40kA	20kA	<1.2kV	275V	230V	TN-S/TT	2	N
SLP-275V/3S+1	2	3P + N	40kA	20kA	<1.2kV	275V	230V/440V	TN-S/TT	4	Y
SLP-075V	2	1	40kA	20kA	<0.4kV	75V	-	TN-S/TN-C/TT	1	N
SLP-075V/2S	2	2	40kA	20kA	<0.4kV	75V	60V	TN-S	2	Y
SLP-130V	2	1	40kA	20kA	<0.6kV	130V	110V	TN-S/TN-C/TT	1	N
SLP-440V	2	1	40kA	20kA	<1.9kV	440V	400V	TN-S/TN-C/TT	1	N
SLP-550V	2	1	40kA	20kA	<2.2kV	550V	500V	TN-S/TN-C/TT	1	N

Varistor surge protection to protect the installation against overvoltage effects during a lightning strike and to prevent switching overvoltage. Replaceable varistor module. Back up MCB 160A.

Replacement Varistor Modules

Code	U _c
SLP-075V/0	75V
SLP-130V/0	130V
SLP-275V/0	275V
SLP-440V/0	440V
SLP-550V/0	550V

N-PE Module

Code	U _c
SLP-NPEV/0	300V

SLP/NPEV/0 is a spark gap arrester for connecting single pole SLP modules in 3 + 1 or 1 + 1 configuration.

Power Protection (With flag indicator) Class 1 + 2 Protection

Code	Class	No. of Poles	I _{imp} 10/350	I _{max} 8/20	I _n 8/20	U _p	U _c	U _n	Network	DIN Width	Aux
FLP-275V	1 + 2	1P	7kA	60kA	30kA	<1.2kV	275V	230V	TN-S/TN-C/TT	1	N
FLP-275V/1S+1	1 + 2	1P + N	7kA	60kA	30kA	<1.2kV	275V	230V	TN-S/TT	2	Y
FLP-275V/3S+1	1 + 2	3P + N	7kA	60kA	30kA	<1.2kV	275V	230V/440V	TN-S/TT	4	Y

Varistor lightning current arrester to prevent overvoltage effects during a lightning strike and to prevent switching overvoltage. Maximum overcurrent protection 160A (back-up MCB). Replaceable varistor module. Code: FLP-275V/0



Power Protection Class 1 & 2 (With flag indicator)

Code	Class	No. of Poles	I _{imp} 10/350	I _{max} 8/20	I _n 8/20	U _p	U _c	U _n	Network	DIN Width	Aux
FLP-B+C-MAXI	1 + 2	1P	25kA	60kA	30kA	<1.5kV	260V	230V	TN-S/TN-C/TT	2	N
FLP-B+C-MAXI/2	1 + 2	2P	25kA	60kA	30kA	<1.5kV	260V	230V	TN-S	4	N
FLP-B+C-MAXI/4	1 + 2	4P	25kA	60kA	30kA	<1.5kV	260V	230V	TN-S	8	N
FLP-B+C-MAXI/3S+1	1 + 2	3P + N	25kA	60kA	30kA	<1.5kV	260V	230/440V	TN-S/TT	8	Y

A combination of a highly efficient varistor lightning current arrester and an encapsulated high-performance spark gap. Maximum overcurrent protection 160A (back-up MCB). It is especially suitable for residential houses and small buildings with a low-voltage cable terminal or for secondary switch boards in a large building.

Code	Class	No. of Poles	I _{imp} 10/350	I _{max} 8/20	I _n 8/20	U _p	U _c	U _n	Network	DIN Width	Aux
FLP-B+C-GE	1 + 2	1P	20kA	60kA	30kA	<1.5kV	330V	230V	TN-S/TN-C/TT	2	N
FLP-B+C-GE/2	1 + 2	2P	20kA	60kA	30kA	<1.5kV	330V	230V	TN-S	4	N
FLP-B+C-GE/4	1 + 2	4P	20kA	60kA	30kA	<1.5kV	330V	230/440V	TN-S	8	N



Lightning Current Arrestors Type 1 (10/350)

Code	Class	No. of Poles	I _{imp} 10/350	U _p	U _c	U _n	Network	DIN Width	Aux
FLP-A100N	1	1	100kA	<1.5kV	255V	-	TN-S/TT	2	N

SPD type 1 encapsulated high-performance spark gap arrestors. FLP-A100N is a spark gap arrester for connecting N-PE in 3 + 1 or 1 + 1 configuration.

LIGHTNING & SURGE PROTECTION

NEW RANGE



Special Surge Protection for Invertors (e.g. Wind Turbines)

Code	Class	No. of Poles	Max. Discharge 8/20μS	U _p	U _c	Backup MCB	Network	DIN Width	Aux
SLP-880V/3	2	3	40kA	<3.2kV	880V	160A	TN-S/TN-C/TT	3	N

Photovoltaic System Protection

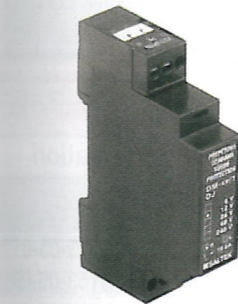
Code	No of Poles	Max Discharge 8/20μS	Nominal Discharge 8/20μS	U _p	U _c	U _{oc stc}	DIN Width
SLP-170PHV/2	2	40kA	15kA	0.8kV	170VDC	170VDC	2
SLP-500PHV/2	2	40kA	20kA	3.6kV	500VDC	580VDC	2
SLP-700PHV/3	3	40kA	20kA	2.4kV	350VDC	700VDC	3
SLP-1000PHV/3	3	40kA	20kA	3.6kV	500VDC	1000VDC	3

U_{oc stc} refers to the maximum voltage of the photovoltaic panel

Surge Protection for Telecommunication and Signalling Networks

Code	I _n 8/20μS	U _p	U _c	U _n	Band-width	DIN Width	Aux
DM-006-1RDJ	10kA	25V	8.1VDC	6VDC	1MHz	1	N
DM-012-1RDJ	10kA	35V	14.5VDC	12VDC	1.7MHz	1	N
DM-024-1RDJ	10kA	50V	29.1VDC	24VDC	3.4MHz	1	N
DM-048-1RDJ	10kA	80V	50.2VDC	48VDC	7MHz	1	N
DM-240-1RDJ	10kA	410V	256VDC	240VDC	20MHz	1	N

Designed to protect 2-wire telecommunication, data and other lines and the communication interface of M&C, ESS and EFS control systems against pulse overvoltage. Longitudinal overvoltage (core-earth) and lateral overvoltage (core-core) are prevented by a Two-level combination of coarse and fine protection.

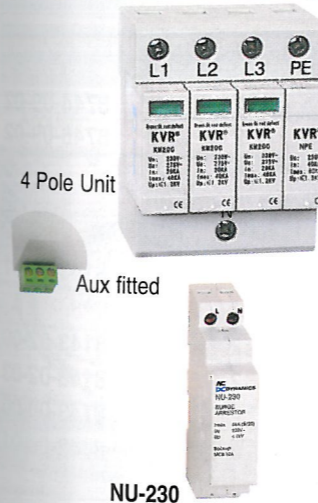


DIN Plug-In Mains Surge Protection

• Built-in thermal cut out

Poles	AC Voltage U _n	Peak Current (8/20 μs) I _{max}	Clamping Voltage V _c	Indication	Code with Aux 1 C/O	Code Standard no Aux	Width
2 (L+N)	230V	5kA	1200V	-	-	NU-230	1M
1 (L)	230V	65kA	1200V	Flag	-	BU1-1P 230V	1M
1 (L)	440V	65kA	1200V	Flag	-	BU1-1P 440V	1M
2 (L+N)	230V	40kA	1200V	Flag	KM20C/2-275	KM20/2-275	2M
2 (L+N)	230V	65kA	1200V	Flag	-	BU1-2P 230V	2M
4 (3L+N)	440V	40kA	1200V	Flag	KM20C/4-275	KM20/4-275	4M
4 (3L+N)	440V	65kA	1200V	Flag	-	BU1-4P 440V	4M

0142 Authorisation Certificate No. 0303038 for NU-230 only.



DB Board System IP65 Surface mount

Code	Description	Size H x W x D
Single Phase 220/250VAC		
LS-DB01	2 Pole (L+N) 230V 65kA Lightning Protection in surface mounting DB Board	210 x 143 x 100
Three Phase + N 400/440VAC		
LS-DB03	3 Pole + N 440V 65kA Lightning Protection in surface mounting DB Board	210 x 143 x 100



WHILE STOCKS LAST

LIGHTNING & SURGE PROTECTION

Power Protection – Plug-in Multi-pole

Type	Res	Max discharge 8/20	Up	Uc	Un	Backup MCB*	NetworkClass	DIN width	Code
3P+N C/W 1 C/O Alarm Contact @ 1A with Flag indication									
PM65D4	Res	65kA	1.5kV	250/400V	230V	25A	TT/TN-S 2	4	8149-02-07

*Ratings given for 'C' curve MCB. For fuse or other curves, contact AC/DC Dynamics

PLC, Data, Instrumentation, Telephone and Computer Communication Protection with Flag indication

See below for application guide. Rated current 20mA (100mA max), series connected.

Type	Max discharge 8/20	Up	Uc*	Un	Bandwidth	Class	DIN width	Code
PLTM 200FR 1 Pair	10kA	300V	220V	200V	3MHz	2	1	8148-05-00
PLTM 48V 1 Pair	10kA	70V	53V	48V	6MHz	2	1	8148-03-00

*Max voltage of signal to be transmitted

Telephone applications: 300kHz analogue telephone – PLTM 200FR, 64kbit/s dedicated modem line – PLTM 48V

BOS Optical Monitoring Kit

Each kit comprises a transmitter and receiver.

Code **8142-07-00**

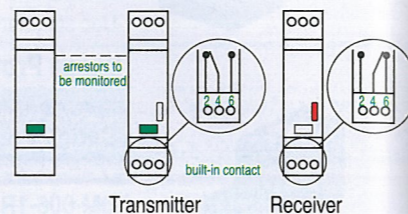
Size: 1+1 17.5mm Modules

Supply: 230VAC

Max. no of Modules to be monitored: 15 x 17.5mm

Contacts: 1C/O 5A

Indication: Red + Green LED's



Replacement Cartridges for Power Protection Plug-in Arresters with Flag indication

Type	Max discharge 8/20	Up	Uc	Un	Type	Class	Code
C15-230	15kA	1.2kV	250V	230V		2	8143-03-01
C65-230	65kA	1.5kV	250V	230V		2	8143-05-00
C Neutral	65kA	1.8kV	440V	230V		2	8143-05-11

Type	Max discharge 8/20	Up	Uc	Un	Backup MCB*	NetworkClass	DIN width	Code
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Power Protection - fixed multi-pole with flag indication

PSD: • 1 N/C alarm contact 1 Amp. • Test button.

PSD2	1 P+N	65kA	1.5kV	250V	230V	25A	IT	2	7	8744-09-02
PSD4	3 P+N	65kA	2kV	250V	230V	25A	IT	2	7	8746-09-02

Power Protection – Plug-in with Flag indication

(Reduce maintenance costs, replace only the affected cartridge and without disconnecting the power)

1 Pole

PU40D-230	40kA	1.2kV	250V	230V	10-25A	All	2	1	8143-01-01
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1 Pole C/W 1 C/O Alarm Contact @ 1A with Flag indication

PU65D-230	65kA	1.5kV	250V	230V	25A	All	2	1	8143-02-00
PU65D-400	65kA	2kV	440V	230V	25A	All	2	1	8143-02-03
PU100D-230	100kA	1.2kV	250V	230V	25A	All	2	2	8143-06-00
PU100D-N	100kA	1.2kV	440V	230V	25A	All	2	2	8143-06-01

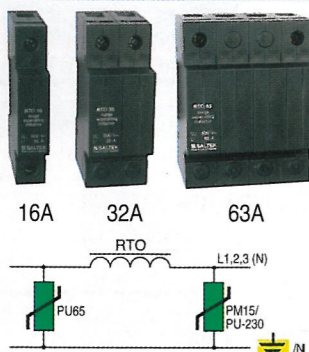
*Ratings given for 'C' curve MCB. For fuse or other curves, contact AC/DC Dynamics

Surge Separating Inductors (500V) IP20

Surge separating inductors are designed to co-ordinate the function of surge arrestors class I and II when the cable distance between them is less than 10m, such as when they are in the same or adjacent boards.

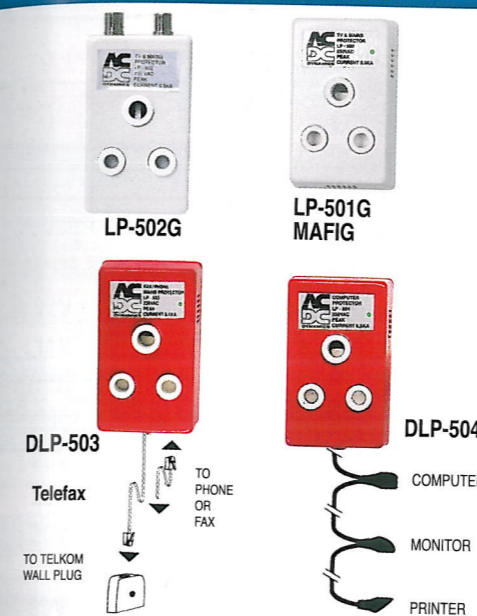
• 16 to 63A DIN DB mounting. • 125 to 250A are screw mounting.

Code	RTO16	RTO35	RTO63	RTO125	RTO200	RTO250
Nominal current	16A	35A	63A	125A	200A	250A
Nominal inductance				15µH +/-20%		
Cable size	6-25mm ²	6-25mm ²	6-25mm ²	–	–	–
Stud connection	–	–	–	8mm	10mm	12mm
Back-up fuse/MCB	16A	35A	63A	125A	200A	250A
DC resistance (mΩ)	6.8	4.1	3.0	1.1	1.1	1.1
Dimensions	1M DIN	2M DIN	4M DIN	100 x 105 x 80	138 x 135 x 110	138 x 135 x 120



LIGHTNING & SURGE PROTECTION

Now with green LED to confirm that you are protected!



Description	Code (white)	Code (red)
Plug-in types for home & small business		
Mains Plug Accepts any 15 Amp plug top. Withstands surge currents up to 6500 Amps.	LP-501G	DLP-501
TV Lightning Protector Protects against surges on mains and lightning on the TV antenna. Withstands surge currents up to 6500 Amps.	LP-502G	DLP-502
Fax Lightning Protector Protects both the mains power supply and telecoms. Suitable for fax, answering machines and modems. 6500 Amp surge current protection.	LP-503G	DLP-503
Computer Lightning Protector In addition to surge protection, this unit provides more efficient cable management and power distribution for small business and home computer use. 6500 Amp surge current protection.	LP-504G	DLP-504
Mains Filter Plug (RF/EMI Filter) High quality low pass line filter, provides protection against lightning transients, radio frequency and electrical noise. Max Load Current: 10A. Surge Current Protection: 6500A. RFI Attenuation: -50dB to -65dB over the range 100KHz-50MHz.	MAF1G	DMAF1

15A RSA PLUG TOPS WITH SURGE PROTECTION

Code	AP4026-SP	LP-600	LP-601	LP-603	LP-604
Plug & Adaptor. 6500 Amp Surge Protector. Protection between L-N, L-E and N-E with LED	15A Mains Plug. 6500A Surge Protector. Protection between L-N, L-E and N-E. Plus wiring check.	15A main surge protection without wiring check	15A dedicated Plug Features same as LP-600	13A British Standard with 6500 Amp Surge Protection.	

SURGE ARRESTER

Acoustic Signalling **NEW** CZ-275A

Remote Fault Signalling CZ-275S

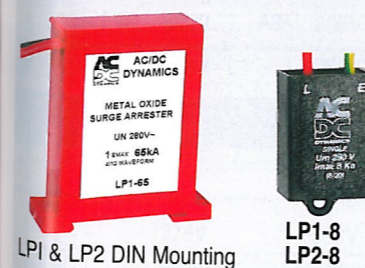
Type 3 Surge Arrester

Code	Class	No. of Poles	In	Up	Uc	Un	Fault Indication
CZ-275A	3	2P	1.5kA	1.5kV	275V	230V	Acoustic Signalling
CZ-275S	3	2P	1.5kA	1.5kV	275V	230V	LED indication & Aux Contact

Surge protection for additional installation in devices, equipment, etc. Designed to protect all types of low-voltage electric and electronic equipment against pulse over-voltage.

SURGE AND LIGHTNING PROTECTION

Economy Mains Protection Indoors/Outdoors – Ideal for gate motors!

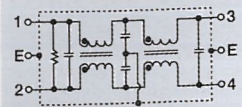


Type	Max Discharge 8/20	Clamping Voltage (Vc)	Response Time	V nominal Uc	Un	Code
Outdoors, 1 Pole (2 wire)	5kA	710V	<20nS	400V	230V	LP1-8
Outdoors, 2 Pole (3 wire)	5kA	710V	<20nS	400V	230V	LP2-8
Outdoors/DIN: 1 Pole (2 wire)	40kA	710V	<25nS	400V	230V	LP1-65
2 Pole (3 wire)	40kA	710V	<25nS	400V	230V	LP2-65
1 Pole (2 wire)	40kA	1240V	<25nS	680V	400V	LP1-40-4
2 Pole (3 wire)	40kA	1240V	<25nS	690V	400V	LP2-40-4
1 Pole (2 wire)	40kA	1650V	<25nS	950V	550V	LP1-40-5
2 Pole (3 wire)	40kA	1650V	<25nS	950V	550V	LP2-40-5

LINE FILTERS

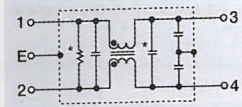
Circuit Diagrams

High performance filter

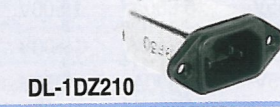
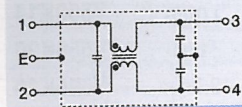


DL-3T1

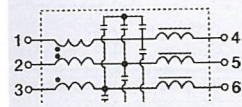
General Purpose



DL-30D1

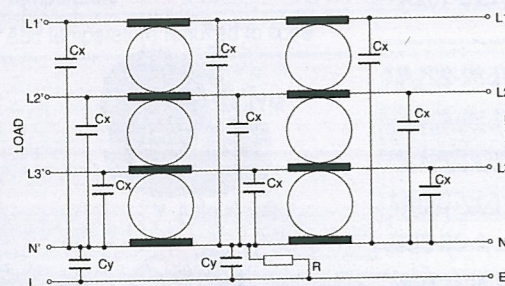
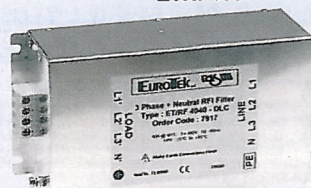


DL-1DZ210



DL-5EBK5

ETRF400



Line Filters for EMI/EMC (Noise)

Code	Rated Current	Test Voltage AC (V) One Minute, Line to Earth	Insulation Resistance (MΩ) 500V DC One Minute, Line to Earth	Leakage Current 250V-60Hz	Loss (V)
1 Phase 250V L + N + E					
DL-3T1	3A	1 500	≥300	≤0.5mA	3W
DL-10D1	10A	1 500	≥300	≤0.5mA	≤1.0
DL-20D1	20A	1 500	≥300	≤0.5mA	≤1.0
DL-30D1	30A	1 500	≥300	≤0.5mA	≤1.0
DL-50D3	50A	2 000	≥300	0.8mA	≤1.0
DL-100D3	100A	2 000	≥300	1.0mA	≤1.0
DL-150-D3	150A	2 000	≥300	1.0mA	≤1.0
DL-6DX36	6A	1 500	≥300	≤0.5mA	≤1.5
DL-1DZ210	1.0A	1 500	≥300	≤0.5mA	≤1.0
DL-3DZ210	3A	1 500	≥300	≤0.5mA	≤1.0
DL-6DZ210	6A	1 500	≥300	≤0.5mA	≤1.0

3 Phase 400V 3P+E

DL-5EBK5	5A	2 000	≥300	≤1.0mA	≤1.5
DL-10EBK5	10A	2 000	≥300	≤1.0mA	≤1.5
DL-25EBK5	25A	2 000	≥300	≤1.0mA	≤1.5
DL-50EBK5	50A	2 000	≥300	≤1.0mA	≤1.5

Temperature Rise ≤30°C
Operating Temperature: -25 ~ +85°C

Line Filters for EMI/EMC (Noise)

Code	Rated Current	Earth Leakage Min	Earth Leakage Max	Power Loss	Dimensions L x W x H
3 Phase with Neutral 480V 3P+N+E					
ETRF4016-MHU	16A	0.05mA	14mA	12W	308 x 60 x 142mm
ETRF4030-MHU	30A	0.05mA	28mA	26W	308 x 70 x 172mm
ETRF4042-MHU	42A	0.05mA	28mA	35W	308 x 70 x 172mm
ETRF4055-MHU	55A	0.05mA	28mA	46W	384 x 80 x 172mm
ETRF4075-MHU	75A	0.05mA	40mA	34W	427 x 80 x 185mm
ETRF4100-MHU	100A	0.05mA	40mA	38W	436 x 90 x 220mm
ETRF4130-MHU	130A	0.05mA	130mA	39W	542 x 200 x 160mm
ETRF4180-MHU	180A	0.05mA	130mA	42W	542 x 200 x 160mm

16A Mains Filter

Description

Mains Filter Plug (RFI/EMI Filter) Red Box
Mains Filter Plug (RFI/EMI Filter) Grey Box

Code

MAF1R
MAF1G

Features

High quality low pass line filter, provides protection against lightning transients, radio frequency and electrical noise.
Max Load Current: 10A.
Surge Current Protection: 6500A.
RFI Attenuation: -50dB to -65dB over the range 100KHz-50MHz.



MAF1G

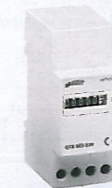
PANEL METERS

Running Hour Meters

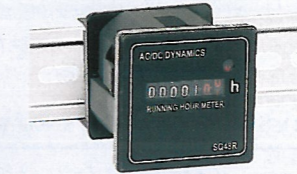
for LCD hour meters see page 20



SQ48R



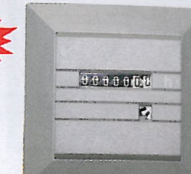
VP7474



SQ48RD



SQ72R/SQ96R



BZ142-1 c/w bezel

48mm ²	DIN	Economy DIN	72mm ²	96mm ²	48mm ² c/w bezel
SQ48R 24VAC		SQ48RD 24VAC	SQ72R 24VAC	SQ96R 24VAC	
SQ48R 48VAC		SQ48RD 48VAC	SQ72R 48VAC	SQ96R 48VAC	
SQ48R 110VAC	VP7474 110VAC	SQ48RD 110VAC	SQ72R 110VAC	SQ96R 110VAC	BZ142-2 NEW
SQ48R 230VAC	VP7474 230VAC	SQ48RD 230VAC	SQ72R 230VAC	SQ96R 230VAC	BZ142-1 NEW
SQ48R 400VAC		SQ48RD 400VAC	SQ72R 400VAC	SQ96R 400VAC	
SQ48R 12-36VDC		SQ48RD 12-36VDC	SQ72R 12-36VDC	SQ96R 12-36VDC	
SQ48R 10-80VDC		SQ48RD 10-80VDC	SQ72R 10-80VDC	SQ96R 10-80VDC	BZ142-3 NEW
SQ48R 110VDC		SQ48RD 110VDC	SQ72R 110VDC	SQ96R 110VDC	

Bezel for 50 x 50mm²

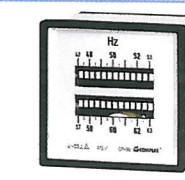
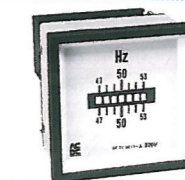
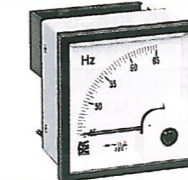
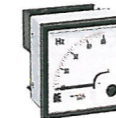
Bezel to change appearance from 48 to 72mm²

BW-50

BW-72



Frequency Meters



Pointer 230VAC

Reed 230VAC

Dual Reed 230VAC

Size:	48mm ²	72mm ²	96mm ²	72mm ²	96mm ²	96mm ²
45-55Hz	SQ48-HZ 45-55	SQ72-HZ 45-55	SQ96-HZ 45-55	SQ72-RDHz	SQ96-RDHz	SQ96-DHz 45-55
45-65Hz	SQ48-HZ 45-65	SQ72-HZ 45-65	SQ96-HZ 45-65	-	-	-

Power Factor Meter

Synchroscope Meter

Zero Voltmeter

Sequence Indicator



SQ96PF-5 400V+N



SQ72-SY 400V (3 Phase)
SQ96-SY 400V (3 Phase)

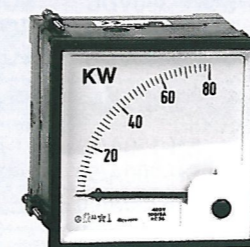


SQ96-ZV 230V
SQ96-ZV 400V



SQ72-SI 110-500V
SQ96-SI 110-500V

Watt Meters (for 400V non balanced 3 Phase + neutral systems)



Description

Meter only, 5A

Scale Plates to be ordered according to C/T Ratio

Code

SQ96-KW5

C/T Ratio	96mm ² Scale Plate	C/T Ratio	96mm ² Scale Plate
15/5A	SQ96SP-12KW	200/5A	SQ96SP-160KW
20/5A	SQ96SP-18KW	250/5A	SQ96SP-200KW
25/5A	SQ96SP-20KW	300/5A	SQ96SP-240KW
30/5A	SQ96SP-24KW	400/5A	SQ96SP-320KW
40/5A	SQ96SP-32KW	500/5A	SQ96SP-400KW
50/5A	SQ96SP-40KW	600/5A	SQ96SP-480KW
60/5A	SQ96SP-48KW	800/5A	SQ96SP-800KW
80/5A	SQ96SP-64KW	1000/5A	SQ96SP-1200KW
100/5A	SQ96SP-80KW	2000/5A	SQ96SP-1600KW
150/5A	SQ96SP-120KW	2500/5A	SQ96SP-2000KW

MAXIMUM DEMAND AMMETERS



SQ96-MD/5

- Time delay 15 mins
- 120% overscale

Description	Code	96 x 96	72 x 72
Max. demand ammeter c/w terminal shroud & black bezel, w/o scale plate:			
Combination Max. demand & instantaneous ammeter	SQ96-MD/5	SQ72-MD/5	
Max. demand ammeter (w/o instantaneous)	SQ96-M/5	SQ72-M/5	
Coloured bezel, if required red/white/blue (*specify colour with order)	SQ96B-*	SQ72B-*	

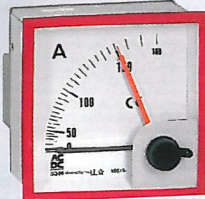
Scale Plate

For combination MD ammeter	SQ96MDSP*	SQ72MDSP*
For max. demand ammeter (w/o instantaneous)	SQ96MSP*	SQ72MSP*

*Add ratio from range below

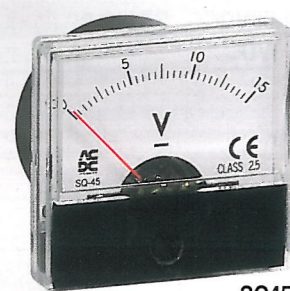
40/5A	80/5A	150/5A	300/5A	600/5A	1000/5A	2000/5A
50/5A	100/5A	200/5A	400/5A	750/5A	1200/5A	2500/5A
60/5A	125/5A	250/5A	500/5A	800/5A	1500/5A	3000/5A

Meter shown with optional coloured bezel

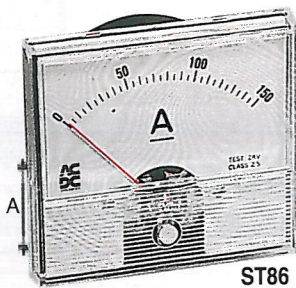


SQ96-M/5

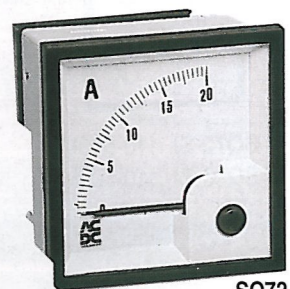
DC PANEL METERS & SHUNTS



SQ45



ST86



SQ72

Description	50 x 50 ∅ 45mm	60 x 60 ∅ 52mm	86 x 86 ∅ 60mm	DIN 72 x 72 67x67	DIN 96 x 96 92x92
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Ammeters - Direct reading

3A	SQ45-3A	-	-	-	-
5A	SQ45-5A	-	-	SQ72-5ADC	SQ96-5ADC
10A	SQ45-10A	ST60-10ADC	-	SQ72-10ADC	SQ96-10ADC
15A	SQ45-15A	-	-	SQ72-15ADC	SQ96-15ADC
20A	SQ45-20A	ST60-20ADC	-	SQ72-20ADC	SQ96-20ADC
25A	SQ45-25A	-	-	SQ72-25ADC	SQ96-25ADC
30A	SQ45-30A	ST60-30ADC	-	SQ72-30ADC	SQ96-30ADC
40A	-	-	-	SQ72-40ADC	SQ96-40ADC
50A	-	-	-	SQ72-50ADC/D	SQ96-50ADC/D

50mV Shunt connected

10A	-	-	-	SQ72-10ADC	SQ96-10ADC
15A	-	-	-	SQ72-15ADC	SQ96-15ADC
20A	SQ45-20A/50	-	-	SQ72-20ADC	SQ96-20ADC
30A	SQ45-30A/50	-	-	SQ72-30ADC	SQ96-30ADC
40A	-	-	-	SQ72-40ADC	SQ96-40ADC
50A	-	-	ST86-50A	SQ72-50ADC	SQ96-50ADC
75A	-	-	ST86-75A	SQ72-75ADC	SQ96-75ADC
100A	-	-	ST86-100A	SQ72-100ADC	SQ96-100ADC
150A	-	-	ST86-150A	SQ72-150ADC	SQ96-150ADC
200A	-	-	ST86-200A	SQ72-200ADC	SQ96-200ADC
300A	-	-	-	SQ72-300ADC	SQ96-300ADC
400A	-	-	-	SQ72-400ADC	SQ96-400ADC
500A	-	-	-	SQ72-500ADC	SQ96-500ADC
600	-	-	-	SQ72-600ADC	SQ96-600ADC
800A	-	-	-	SQ72-800ADC	SQ96-800ADC
1000A	-	-	-	SQ72-1000ADC	SQ96-1000ADC

Voltmeters

15V	SQ45-15VDC	-	-	SQ72-15VDC	SQ96-15VDC
30V	SQ45-30VDC	-	-	SQ72-30VDC	SQ96-30VDC
50V	SQ45-50VDC	-	-	SQ72-50VDC	SQ96-50VDC
60V	-	-	-	SQ72-60VDC	SQ96-60VDC
150V	-	-	-	SQ72-150VDC	SQ96-150VDC
300V	-	-	-	SQ72-300VDC	SQ96-300VDC
500V	-	-	-	SQ72-500VDC	SQ96-500VDC
600V	-	-	-	SQ72-600VDC	SQ96-600VDC

DC Shunts

Amps	Code 50mV	Code 60mV	Amps	Code 50mV	Code 60mV
10A	SH-10A/50	SH-10A/60	150A	SH-150A/50	SH-150A/60
15A	SH-15A/50	SH-15A/60	200A	SH-200A/50	SH-200A/60
20A	SH-20A/50	SH-20A/60	250A	SH-250A/50	SH-250A/60
30A	SH-30A/50	SH-30A/60	300A	SH-300A/50	SH-300A/60
40A	SH-40A/50	SH-40A/60	400A	SH-400A/50	SH-400A/60
50A	SH-50A/50	SH-50A/60	500A	SH-500A/50	SH-500A/60
75A	SH-75A/50	SH-75A/60	600A	SH-600A/50	SH-600A/60
100A	SH-100A/50	SH-100A/60	800A	SH-800A/50	SH-800A/60
			1000A	SH-1000A/50	SH-1000A/60



AC PANEL METERS

Description	Range	60 x 60	DIN 48 x 48	DIN 72 x 72	DIN 96 x 96
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Ammeters

Direct reading	5A	SQ60-5AAC	SQ48-5AD	SQ72-5AD	SQ96-5AD
	10A	SQ60-10AAC	SQ48-10AD	SQ72-10AD	SQ96-10AD
	15A	SQ60-15AAC	SQ48-15AD	SQ72-15AD	SQ96-15AD
	20A	SQ60-20AAC	SQ48-20AD	SQ72-20AD	SQ96-20AD
	25A	SQ60-25AAC	SQ48-25AD	SQ72-25AD	SQ96-25AD
	30A	SQ60-30AAC	SQ48-30AD	SQ72-30AD	SQ96-30AD
	40A	-	-	SQ72-40AD	SQ96-40AD
	50A	-	-	SQ72-50AD	-
	60A	-	-	SQ72-60AD	-

CT Driven: (w/o scale plate)

5A	SQ48-5	SQ72-5	SQ96-5
1A	SQ48-1	SQ72-1	SQ96-1

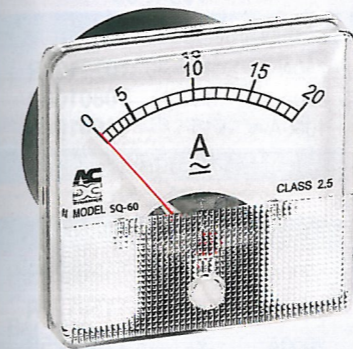
Scale plates 100% overscale

5A	SQ48SP 5/*A	SQ72SP 5/*A	SQ96SP 5/*A
10A	SQ48SP 10/*A	SQ72SP 10/*A	SQ96SP 10/*A
15A	SQ48SP 15/*A	SQ72SP 15/*A	SQ96SP 15/*A
20A	SQ48SP 20/*A	SQ72SP 20/*A	SQ96SP 20/*A
25A	SQ48SP 25/*A	SQ72SP 25/*A	SQ96SP 25/*A
30A	SQ48SP 30/*A	SQ72SP 30/*A	SQ96SP 30/*A
40A	SQ48SP 40/*A	SQ72SP 40/*A	SQ96SP 40/*A
50A	SQ48SP 50/*A	SQ72SP 50/*A	SQ96SP 50/*A
60A	SQ48SP 60/*A	SQ72SP 60/*A	SQ96SP 60/*A
75A	SQ48SP 75/*A	SQ72SP 75/*A	SQ96SP 75/*A
100A	SQ48SP 100/*A	SQ72SP 100/*A	SQ96SP 100/*A
150A	SQ48SP 150/*A	SQ72SP 150/*A	SQ96SP 150/*A
200A	SQ48SP 200/*A	SQ72SP 200/*A	SQ96SP 200/*A
250A	SQ48SP 250/*A	SQ72SP 250/*A	SQ96SP 250/*A
300A	SQ48SP 300/*A	SQ72SP 300/*A	SQ96SP 300/*A
400A	SQ48SP 400/*A	SQ72SP 400/*A	SQ96SP 400/*A
500A	SQ48SP 500/*A	SQ72SP 500/*A	SQ96SP 500/*A
600A	SQ48SP 600/*A	SQ72SP 600/*A	SQ96SP 600/*A
750A	SQ48SP 750/*A	SQ72SP 750/*A	SQ96SP 750/*A
800A	SQ48SP 800/*A	SQ72SP 800/*A	SQ96SP 800/*A
1000A	SQ48SP 1000/*A	SQ72SP 1000/*A	SQ96SP 1000/*A
1200A	-	SQ72SP 1200/*A	SQ96SP 1200/*A
1500A	-	SQ72SP 1500/*A	SQ96SP 1500/*A
2000A	-	SQ72SP 2000/*A	SQ96SP 2000/*A
2500A	-	SQ72SP 2500/*A	SQ96SP 2500/*A

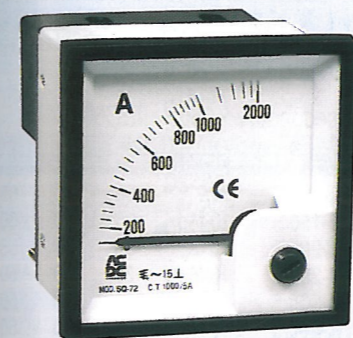
* Replace with '5' for 5A CT ratio or '1' for 1A CT ratio

Colour Bezels - SQ72B-* SQ96B-*

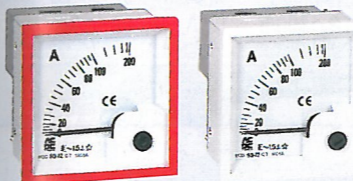
*Add colour to code: ● R (Red), ○ WH (White), ● BL (Blue)



SQ60 Ammeter



SQ72 Ammeter

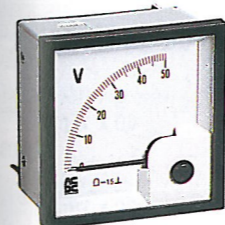


Choice of coloured bezels for Ammeters & Voltmeters

Description	Range	DIN 48 x 48	DIN 72 x 72	DIN 96 x 96
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Voltmeters

For 110/120V Monitoring	150V	SQ48-150VAC	SQ72-150VAC	SQ96-150VAC
For 220/240V Monitoring	300V	SQ48-300VAC	SQ72-300VAC	SQ96-300VAC
For 380/415 Monitoring	500V	SQ48-500VAC	SQ72-500VAC	SQ96-500VAC
For 525V Monitoring	600V	-	SQ72-600VAC	SQ96-600VAC
500V Meter with Red Line on 230V/400VAC	-	-	SQ72-500VACR	SQ96-500VACR
1000V Excluding VT-25VA 1000/300VAC Transformer	-	-	SQ72-1000VAC	-



SQ72 Voltmeter

Description	Plate marking	Code	Size
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Ammeter selector switches 10A

For connection to 3 CTs	O-R-S-T	AS34-A8	48 x 60
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Voltmeter selector switches

3 Phase	O-RS-ST-TR	VS33-V2	48 x 60
3 Phase + Neutral	TR-ST-RS-O-RN-SN-TN	VS34-V5	48 x 60

Voltmeter & Ammeter Switches 22mm Rear Door Mount - 12A

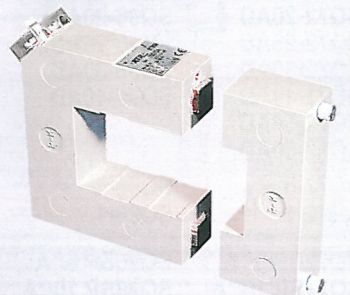
Voltmeter switch 3ph 3wire+off	0, L1-L2, L2-L3, L3-L1	CR0120016GT4	48 x 48
Voltmeter switch 3ph 4wire+off	L3-L1, L2-L3, L1-L2, 0, L1-N, L2-N, L3-N	CR0120018GT4	48 x 48
Ammeter selector switch 3ph	0, 1, 2, 3	CR0120022GT4	48 x 48

SPLIT CORE CURRENT TRANSFORMERS



Ideal to retrofit with new power factor control systems.
Replace CT's without loosening busbars

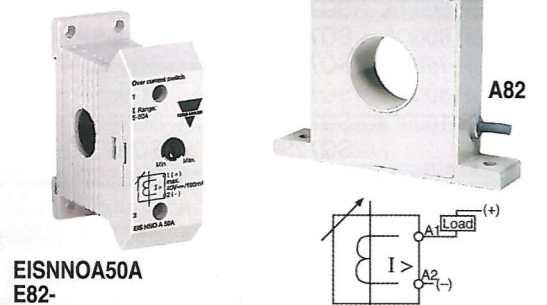
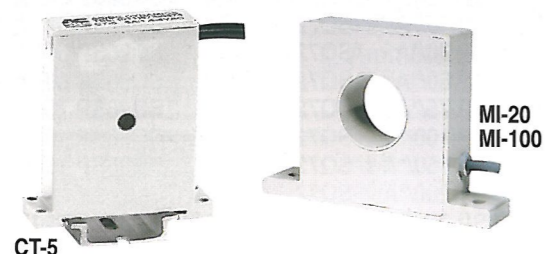
• Class 1. • 5 Amp secondary



Cable Size	Ø 20mm	Ø 50mm		Ø 80mm	
Bar Size	30 x 20	80 x 50		125 x 80	
Primary VA	Code	Primary VA	Code	Primary VA	Code
*100A	3.0 T010030R	250A	2.5 T025080R	1200A	20 T120125R
*150A	3.75 T015030R	300A	3.75 T030080R	1500A	30 T150125R
200A	2.5 T020030R	400A	3.75 T040080R	2000A	30 T200125R
		500A	5.0 T050080R	2500A	30 T250125R
		600A	7.5 T060080R	3000A	45 T300125R

*Class 3 all others Class 1

SPECIAL INSTRUMENT CT'S



Special Output Current Transformers

Voltage CT's To be used with VCT1 page 9

Code	Input Amps	Output
CT-5	5A AC	0,4-4VAC
MI-20	20A AC	0,4-4VAC
MI-100	100A AC	0,4-4VAC
MI-500	500A AC	0,4-4VAC

Signalling CT's Supply Volts 10-40VDC (Loop Voltage)

Code	Input Amps	Output
E82-20-25	5/10/25A AC	4-20mA
E82-20-50	20/30/50A AC	4-20mA
A82-20-100	100A AC	4-20mA
A82-20-250	250A AC	4-20mA
A82-20-500	500A AC	4-20mA

Switching CT's Supply 10-40VDC (see also DIA53 page 12)

EISNNOA50A 5-50A AC NPN, N/O 100mA
• 2 Wire Connection • Self Powered • Knob-adjustable set-point • DIN Rail Mount.

Metering CT Class 0.5

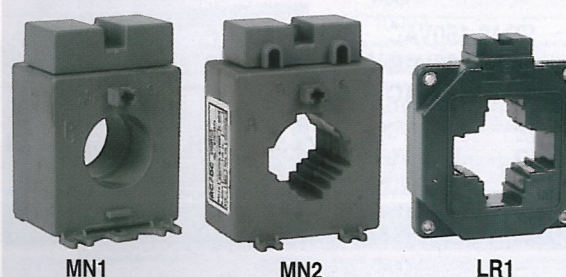
5A secondary • 660V • IEC60044-1

Code	Burden	ID x OD x W
CTR-100/5	5VA	36 110 65
CTR-150/5	10VA	36 110 60
CTR-200/5	10VA	36 110 55
CTR-250/5	10VA	36 110 50
CTR-300/5	10VA	36 110 50
CTR-400/5	10VA	57 110 50
CTR-500/5	10VA	57 125 50
CTR-600/5	10VA	57 125 40
CTR-800/5	10VA	57 125 45
CTR-1000/5	10VA	57 125 45



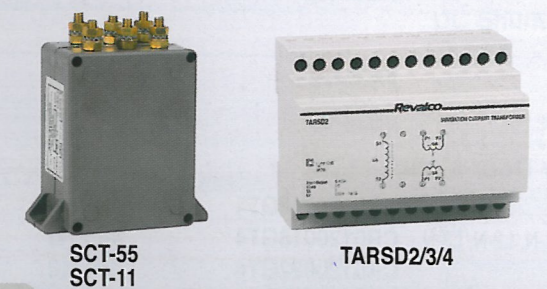
Current Transducer (4-20mA Output), loop powered 4-20mA (factory set).

Code	Input Amps	C/T ID	Busbar Size
MN1*	50-300	32mm	-
*Add Current: 50A, 100A, 200A, 250A, 300A			
MN2*	100-750	40mm	40 x 15mm
*Add Current: 100A, 150A, 200A, 250A, 300A, 350A, 400A, 500A, 600A, 750A			
LR1*	750-2500	50mm	80 x 28mm
*Add Current: 750A, 1000A, 1500A, 2000A, 2500A			
LR2*	1000-2000	60mm	-
*Add Current: 1000A, 1500A, 2000A			
LR3*	1500-2500	90mm	-
*Add Current: 1500A, 2000A, 2500A			



Summation Current Transformers

Code	Description	Burden	Class	Size
SCT-55	5 + 5 to 5A	10VA	0.5	117H x 100W x 50D
SCT-11	1 + 1 to 1A	10VA	1	117H x 100W x 50D
TARSD2	5 + 5 to 5A	6VA	0.5	DIN Mount (6 mod)
TARSD3	5 + 5 + 5 to 5A	6VA	0.5	DIN Mount (6 mod)
TARSD4	5 + 5 + 5 + 5 to 5A	6VA	0.5	DIN Mount (6 mod)



CURRENT TRANSFORMERS

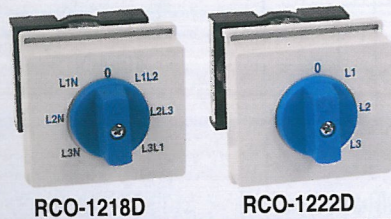
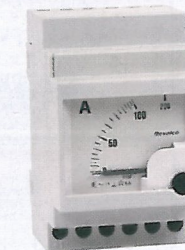
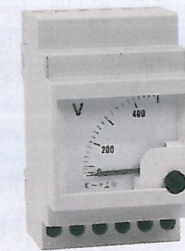
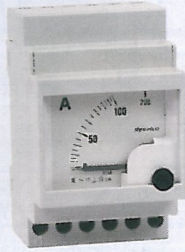
Current Transformers 600V Class 1

DIN and Chassis Mount	Ring	Ring	Ring	Ring	Ring	Ring	Ring	Ring	Ring	Primary Wound				
Hole Size	ID20mm	ID30mm	ID48mm	ID72mm	ID32mm	ID40mm	ID63mm	ID110mm	-	-				
Bar Size	-	41 x 11mm	61 x 21mm	102 x 21mm	-	40 x 15mm	62 x 22mm	-	-	-				
Primary Current	*Code 5A	*No of turns	VA	*Code 5A	VA	*Code 5A	VA	*Code 5A	VA	*Code 5A	VA	*Code 5A	VA	
5A	DS-55	10T	2.5									PW55	2.5	
10A	DS-105	10T	2.5									PW105	2.5	
15A	DS-155	4T	2.5									PW155	2.5	
20A	DS-205	3T	2.5									PW205	2.5	
25A	DS-255	2T	2.5									PW255	2.5	
30A	DS-305	1T	2.5									PW305	2.5	
40A	DS-405	1T	2.5									PW405	2.5	
50A	DS-505	1T	2.5	DS1-505	3				MR1-505	1.5				
60A	DS-605	2.5	2.5	DS1-605	3				MR1-605	2.0				
75A	DS-755	2.5	2.5	DS1-755	3				MR1-755	2.5				
80A	DS-805	2.5	2.5	DS1-805	3				MR1-805	2.5				
100A	DS-1005	2.5	2.5	DS1-1005	2.5				MR1-1005	1.5				
125A	DS-1255	2.5	2.5	DS1-1255	2.5				MR1-1255	3				
150A	DS-1505	2.5	2.5	DS1-1505	3				MR1-1505	5				
175A	DS-1755	2.5	2.5	DS1-1755	3				MR1-1755	7.5	MR2-1755	7.5		
200A	DS-2005	2.5	2.5	DS1-2005	3	DS2-2005	10		MR1-2005	7.5	MR2-2005	7.5		
250A	DS-2505	2.5	2.5	DS1-2505	3	DS2-2505	10		MR1-2505	10	MR2-2505	10		
300A				DS1-3005	3	DS2-3005	10		MR1-3005	15	MR2-3005	15	BR1-3005	7.5
400A				DS1-4005	3	DS2-4005	10		MR1-4005	15	MR2-4005	15	BR1-4005	10
500A				DS1-5005	3	DS2-5005	10				MR2-5005	15	BR1-5005	15
600A				DS1-6005	3	DS2-6005	10	DS3-6005	15		MR2-6005	15	BR1-6005	15
750A						DS2-7505	10	DS3-7505	15				BR1-7505	15
800A						DS2-8005	15	DS3-8005	15				BR1-8005	15
1000A						DS2-10005	15	DS3-10005	15				BR1-10005	20
1200A								DS3-12005	15				BR1-12005	25
1500A								DS3-15005	15					
1600A								DS3-16005	15					
2000A								DS3-20005	15					
2500A								DS3-25005	15					
3000A														
4000A														

*Above CTs are available with 1Amp Secondary. Replace Suffix '5' with '1' for order Code. *No of turns to be looped through CT

DIN AMMETER & VOLTMETERS

Size: All 2 DIN Module



DIN AC Ammeters

Type	Code	Description
5A	SQD-5A	Meter without scale plate
1A	SQD-1A	Meter without scale plate

Scale Plates: SQDSP-5/*, 10/*, 15/*, 20/*, 25/*, 30/*, 40/*, 60/*, 80/*, 100/*, 150/*, 200/*, 250/*, 300/*, 400/*, 500/*

*Replace with '5A' for 5A CT Ratio or '1A' for 1A CT Ratio

DIN AC Voltmeters

Type	Code
150V	SQD-150VAC
300V	SQD-300VAC
500V	SQD-500VAC

DIN DC Voltmeters

Type	Code
15VDC	SQD-15VDC
30VDC	SQD-30VDC
50VDC	SQD-50VDC
150VDC	SQD-150VDC

DIN AC Ammeters Direct

Type	Code
1A	SQD-1AAC
5A	SQD-5AAC
10A	SQD-10AAC
15A	SQD-15AAC
20A	SQD-20AAC
25A	SQD-25AAC
30A	SQD-30AAC

DIN DC Ammeters Direct

Type	Code
5A	SQD-5ADC
10A	SQD-10ADC
15A	SQD-15ADC
20A	SQD-20ADC
25A	SQD-25ADC
30A	SQD-30ADC
4-20mA	SQD-20MA/10
0-100% Scale	
4-20mA	
0-10% Scale	

Frequency Meter

Code	Range	Volts
SQD-45/65HZ	45-65Hz	230V

DIN Mount Ammeters Selector Switches

Code	Description
RCO-1218D	Voltmeter selector switch 7 position 3 Phase + N
RCO-1222D	Ammeter selector switch for 3CT's: Off, L1, L2, L3

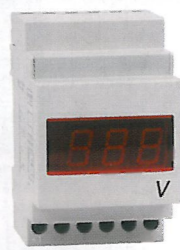
DIGITAL DIN METERS

AC Ammeter Direct

Code	DM-999AAC	Voltmeter DM-600VAC	Frequency DM-HZ
Range:	C/T Ratio: 15/5, 25/5, 40/5, 60/5, 99.9/5, 150/5, 250/5, 400/5, 600/5 & 999/5A • Selectable by DIP switches	0-600VAC	1-199Hz Input Voltage: 40-600VAC
Accuracy:		0.5%	
Supply:		110/230VAC	

DC Ammeter

Code	DM-999ADC	Voltmeter DM-100VDC	DM-300VDC
Range:	15A, 25A, 40A, 60A, 99.9A, 150A, 250A, 400A, 600A, 999A/60mV selectable by DIP switches	0-100VDC	0-300VDC
Supply:	230VAC		



NEW RANGE

DIGITAL PANEL METERS

Type	AC Voltage Meter	AC Ampere Meter	DC Voltage Meter	DC Ampere Meter	Frequency Meter
Size: 48 x 48mm Cutout: 45 x 45mm					

Code	DHC8P-VAC	DHC8P-AAC	DHC8P-VDC	DHC8P-ADC	DHC8P-HZ
Display	999 (3 digit) 0.56 inch LED	999 (3 digit) 0.56 inch LED	999 (3 digit) 0.56 inch LED	999 (3 digit) 0.56 inch LED	3 digit 0.56 inch LED
Power Supply	100-240VAC/ DC	100-240VAC/ DC	100-240VAC/ DC	100-240VAC/ DC	100-240VAC/ DC
Input	Direct: 600V, 99.9V, 9.99V, Selectable	CT(5A), 5A, 10A, 15A, 20A, 30A, 40A, 50A, 60A, 70A, 80A, 90A, 100A, 200A, 300A, 400A, 500A, 600A, 700A, 800A, 900A, 999A, Selectable	Direct: 600V, 99.9V, 9.99V selectable	Shunt (50mV) 5A, 10A, 15A, 20A, 30A, 40A, 50A, 60A, 70A, 80A, 90A, 100A, 150A, 200A, 300A, 400A, 500A, 600A, 700A, 800A, 900A, 999A, Selectable	0.2-400Hz
Accuracy	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.2% ± 1 digit (at 25°C)

Type	AC Voltage Meter	AC Ampere Meter	DC Voltage Meter	DC Ampere Meter	Frequency Meter
Size: 72 x 72mm Cutout: 68 x 60mm					

Code	DHC7P-VAC	DHC7P-AAC	DHC7P-VDC	DHC7P-ADC	DHC7P-HZ
Display	1999 (3½ digit) 0.8 inch LED	1999 (3½ digit) 0.8 inch LED	1999 (3½ digit) 0.8 inch LED	1999 (3½ digit) 0.8 inch LED	3 digit 0.8 inch LED
Power Supply	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA
Input	Direct: 600V, 199.9V, 19.9V, 1.999V, Selectable	Direct: 5A CT(5A), 10A, 15A, 20A, 50A, 100A, 150A, 200A, 500A, 1000A, 1500A, 1999A, Selectable	Direct: 600V, 199.9V, 19.99V, 1.999V, Selectable	Shunt (50mV): 5A, 10A, 15A, 20A, 50A, 100A, 150A, 200A, 500A, 1000A, 1500A, 1999A, Selectable	0.2-400Hz
Accuracy	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	Size: 96 x 48

Type	AC Voltage Meter	AC Ampere Meter	DC Voltage Meter	DC Ampere Meter	Frequency Meter
Size: 48 x 96mm Cutout: 45 x 92mm					

Code	DHC3P-VAC	DHC3P-AAC	DHC3P-VDC	DHC3P-ADC	DP3-HZ
Display Digit	1999 (3½ digit) 0.56" LED	1999 (3½ digit) 0.56" LED	1999 (3½ digit) 0.56" LED	1999 (3½ digit) 0.56" LED	3 digit 0.56" LED
Power Supply	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA	AC/DC: 100~240V≤4VA
Input	Direct: 600V, 199.9V, 19.99V, 1.999V, Selectable	Direct (5A) CT(5A): 5A, 10A, 15A, 20A, 30A, 40A, 50A, 60A, 70A, 80A, 90A, 100A, 150A, 200A, 300A, 400A, 500A, 600A, 700A, 800A, 900A, 1000A, 1500A, 1999A selectable	Direct: 600V, 199.9V, 19.99V, 1.999V, Selectable	Shunt (50mV): 5A, 10A, 15A, 20A, 50A, 100A, 150A, 200A, 500A, 1000A, 1500A, 1999A, Selectable	0.2-400Hz
Accuracy	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.5% ± 1 digit (at 25°C)	≤0.1% ± 1 digit (at 25°C)

DIGITAL AMMETERS & VOLTMETERS



Type	Supply Voltage	Code 48 x 96	Code 72 x 72	Code 96 x 96	Code DIN Mount 3m
Voltmeter 1-Phase 10-600VAC	230VAC 110VAC	EVM-3-48 230V EVM-3-48 110V	EVM-3-72 230V EVM-3-72 110V	EVM-3-96 230V EVM-3-96 110V	EVM-R3 230V EVM-R3 110V
Voltmeter 1-Phase with contact output*	230VAC 110VAC	EVM-3C-48 230V EVM-3C-48 110V	EVM-3C-72 230V EVM-3C-72 110V	EVM-3C-96 230V EVM-3C-96 110V	EVM-R3C 230V EVM-R3C 110V
3 Phase Voltmeter (single display) 10-600VAC (L-L) 10-300VAC (L-N)	230VAC 110VAC	EVM-3S-48 230V EVM-3S-48 110V	EVM-3S-72 230V EVM-3S-72 110V	EVM-3S-96 230V EVM-3S-96 110V	EVM-R3S 230V EVM-R3S 110V
Ammeter 1-Phase	230VAC 110VAC	EPM-4D-48 230V EPM-4D-48 110V	EPM-4D-72 230V EPM-4D-72 110V	EPM-4D-96 230V EPM-4D-96 110V	EPM-R4D 230V EPM-R4D 110V
Ammeter 1-Phase with contact output*	230VAC 110VAC	EPM-4C-48 230V EPM-4C-48 110V	EPM-4C-72 230V EPM-4C-72 110V	EPM-4C-96 230V EPM-4C-96 110V	EPM-R4C 230V EPM-R4C 110V

- True RMS measurement
 - Non-flammable enclosure
 - Programmable current transformer ratio (5-10,000/5A)
 - * Meters have a set point and contact output (1NO, 5A). Can be programmed for over or under voltage or current
- Ammeters are CT-Driven with 5A ratio
• Class 1%



3 Phase Ammeters & Voltmeters - 96 x 96mm

Code	Description
EPM-34	3 Phase ammeter programmable. CT...../5A and/1A. Dual demand function (Time 0-60sec or 0-60min for max current demand display) Class 0.5%. Supply volts 24-250VAC/DC
EVM-35	3 Phase voltmeter. L-L & L-N. Class 0.5% Measurement voltage 0-600VAC. Supply volts 24-250VAC/DC

DIGITAL PANEL METERS

Programmable AC Ammeters or AC Voltmeters

Size	48 x 48	72 x 36	72 x 72
Code	ID48EA-G	ID76EA-G	ID72EA-G
Input Range Amps AC	0-5A ⁽¹⁾	0-5A ⁽¹⁾	0-5A ⁽¹⁾
Volts AC	0-600V	0-600V	0-600V
Display Digits	3 + Zero	3 + Zero	3 + Zero
LED Height	10mm	14mm	14mm
Supply	115/230V	115/230V	115/230V

Features:

- Accuracy: CL 0.5
- Continuous O/L: 2In, 1.2Vn
- Instant O/L: 10In, 2Vn
- Refresh: 2 per second
- Over Range: Flashing LED
- Power Supply: 3VA galvanic Isolation
- Fast on Terminals

⁽¹⁾Programmable set point and CT ratios

15.0	20.0	25.0	40.0	50.0	60.0	80.0	99.9
150	200	250	400	500	600	800	999
1500	2000	2500	4000	5000	6000	8000	9990



3 Digit Voltmeter/Ammeter with 1 setpoint

- Programmable for max or min relay output 1 C/O 10A @ 250VAC

Code	Description and Range
VM332400	Voltmeter: 0-600VAC Ammeter: 5A direct, 10/5, 15/5, 20/5, 25/5, 40/5, 50/5, 60/5, 100/5, 150/5, 200/5, 250/5, 400/5, 500/5, 600/5, 800/5, 1000/5, 1500/5, 2000/5, 2500/5, 4000/5A

DIGITAL PANEL METERS



Digital Panel Meters 48 x 96 Now with set point option

Code	Type	Digit	Input Range	Display
DPM48M*	Process ¹	3.5	4-20mA	¹ Specify calibration settings required
DPM48M4*	Process ¹	4	4-20mA	¹ Specify calibration settings required
DPM48M-1*	%	3.5	4-20mA	0-100%
DPM48RPM	RPM	4	Namur auto ranging 6 to 6000 rpm (M/m) 2 or 3 wire prox, contact or voltage input	
DPM48TOT*	Totaliser	6	6 Digit Up/Down Totaliser	
DM9648-HZ	Hz	3	1-199.9Hz	1-199.9Hz

*Specify supply voltage: AC - 24V, 110V or 230V, DC - 12V, 24V or 110V. For 110VDC or 220VDC power supply add Code DPM-2. Add suffix -S for setpoint and if for alarm purposes, specify if High or Low



Programmable DC Ammeter or Process Meter. Size 48 x 96

- Display reading set by user. (Trim Pot)
- Accuracy CL 0.5
- Decimal point selectable by DIP SW 1999, 19.99, 199.9

Code	Digit	DC Input	*Display
2RCTD48.4D*	4	1mA, 5mA, 2mA, 10mA, 4-20mA, 5A	V, A, %, KA, Hz, C, RPM, kW, M/MIN, BAR, m/sec, kg

*Add voltage to code: 230VAC, 110VAC, 24VDC, 24VAC

*Labels supplied to suit function



Programmable DC Ammeter or Process Meter. Size 48 x 96

- Accuracy CL 0.5
- Decimal point & range adjustable

Code	Description
DP3-SVA1	• Input: 4-20mA, 0-20mA, 0-1V, 0-5V, 1-5V, 0-10V, 0-200mV • Supply: 110-240VAC/DC 2.5VA • Output: 0-12-24VDC
DP3-SVA2	• As DP3-SVA1 with 4-20mA Re-transmission output
DP3-SVA3	• As DP3-SVA1 with high & low relay alarm output. N/O.

AC: 110 ~ 220V

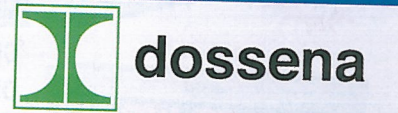
DP3-SVA2 terminals: 1 (Common Input), 2 (Voltage Input), 3 (Common Output), 4 (24V), 5 (12V), 6 (0V), 7 (4-20mA Output), 8 (Ampere Input), 9 (Common Input), 10 (Voltage Input)

VOLTMETER/AMMETER DUAL INDICATION. TRUE RMS

• Ammeter: 4 Digit Preset to C/T ratio is simple and quick, done by keyboard, e.g. CT ratio 1000/5 divide 1000 by 5 (1000 ÷ 5) = 200, enter this value in unit.

• 3 Phase display L1-L2-L3-N with auto scrolling every 2 seconds.

• Accuracy 1%



Size	96 x 96	72 x 72	Din Mount
1 Phase	DVA1Q	DVA1QE	DVA1D
3 Phase	-	-	DVA3MCD
3 Phase	DVA3Q	DVA3QE	DVA3D
3 Phase	-	-	DVA3NRG

• Supply 0-230-400VAC 3VA

• Voltmeter: 3 Digit 0-500VAC

Voltmeter & Ammeter Dual Indication
With historical consumption peak value, and alarm buzzer for pre-set value
With average value for voltage and current display (L1 + L2 + L3) / 3
Ammeter, Voltmeter with kW & kWh display

3 in 1 AC Digital Meters, 3 1/2 Digits 96 x 96

Code	Description	Code	Description
DMCP96-3V	3 Phase, 3 Display Voltmeter Volts: 0-600V Supply: 110/220V	DMCP96-3M	A-V-Hz Volts: 0-600V, 0-199.9Hz CT ratio dip switch selectable, see below Supply: 110/220V

CT Ratio Selectable (5A) 60, 100, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1000, 1200, 1500 & 1999

INSTRUMENTS

INSTRUMENTS

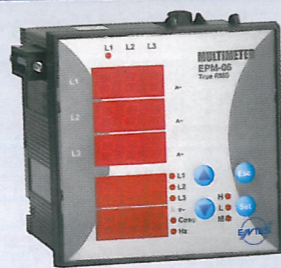
NEW RANGE

DIGITAL MULTIMETERS 3 PHASE

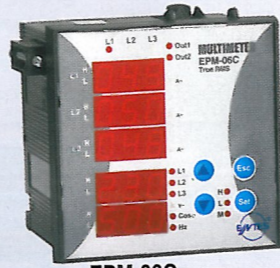
3 Phase
400VAC



EPM-04



EPM-06



EPM-06C

Size: 96 x 96

Code	EPM-04	EPM-04C	EPM-06	EPM-06C	EPM-06CS
3PH Voltage	✓	✓	✓	✓	✓
3PH Current	✓	✓	✓	✓	✓
Cos Ø			✓	✓	✓
Hz (Frequency)	✓	✓	✓	✓	✓
I neutral	✓	✓	✓	✓	✓
Max Demand	✓	✓	✓	✓	✓
Max. Values Display	✓	✓	✓	✓	✓
Min. Values Display	✓	✓	✓	✓	✓
Alarm Contact (5A)		✓	✓	✓	✓
Under/Over voltage protection		✓	✓	✓	✓
Under/Over current protection		✓	✓	✓	✓
Under/over frequency protection		✓	✓	✓	✓
5A CT-Driven	✓	✓	✓	✓	✓
Flush Mount	✓	✓	✓	✓	✓
Modbus (RS485)Communication					✓

100mm Universal Digital Display. Size 400(L) x 195(H) x 80(D)mm. Supply 230VAC

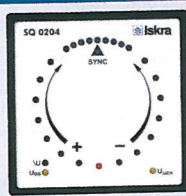
NEW



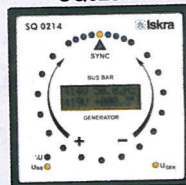
Code	Input	Display
DPM100-A	4-20mA	0-100%
DPM100-V	0-600VAC	0-600VAC
DPM100-C	24hr clock (c/w optional ambient temperature display)	
DPM100-T	PT100 Temperature Probe	0-100°C
DPM100-N	NAMUR	Count 0-1000

Standard units supplied powder coated white. Various finishes and input/ display options are available (eg. stainless steel). Please contact our sales team with your requirements.
Input Options: 4-20mA, 0-10VDC, 0-600VAC, 0-600VDC, J/ K/ PT100 Probe, NAMUR/ NPN/ PNP Proximity 6-Digit model also available

DIGITAL SYNCHRONISATION METERS

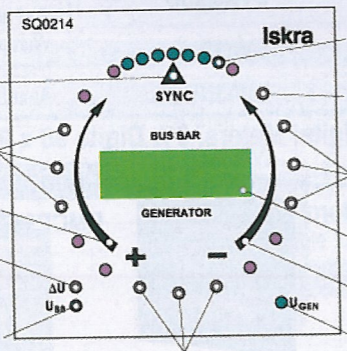


SQ0204



SQ0214

LED signals a synchronising pulse
These three LEDs flash if $f_{gen} > f_{bus}$ for more than 3Hz
A direction of rotation if $f_{gen} < f_{bus}$
LED signals an exceed of a preset U_{gen} , U_{bus} voltage difference
LED signals a presence of U_{bus}



Green LEDs in a circle represent magnified phase difference (resolution 5° el.)
Red LEDs in a circle represent a phase difference (resolution 20° el.)
These three LEDs flash if $f_{gen} < f_{bus}$ for more than 3Hz
LCD display (SQ0214 only)
A direction of rotation if $f_{gen} < f_{bus}$
LED signals a presence of U_{gen}

- Measuring phase angle between 2 or 3 phase systems
- Magnified display of phase difference
- Synchronising relay output
- 5 instruments in 1 (SQ0214)
 - Backlit LCD
 - Display of Generator & System Voltage or k Volts frequency
 - Warning messages
 - Actual Hz difference when $< 0.02\text{Hz}$

Code	Synchronising Meter	Size
SQ0204	Standard 400 Y + N 3Ph	96 x 96
SQ0214	With LCD display 400 Y + N 3Ph	96 x 96



NEW RANGE

NETWORK ANALYSER



Size: 96 x 96mm



MPR-63



EPM-07S



MPR-53



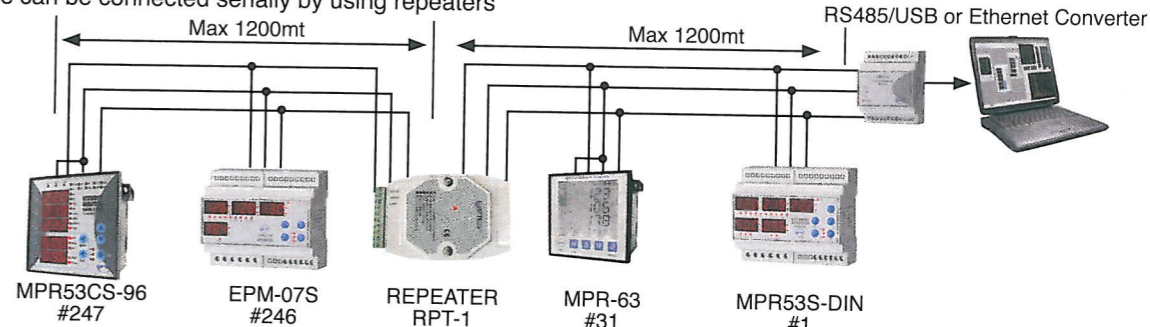
MPR-53S



MPR-53CS-96

Code	MPR-50	MPR-60S	MPR-63	MPR-63-42	EPM-07-96	EPM-07S-96	MPR-53-96	MPR-53S-96	MPR-53CS-96	
% THD1, THDV		✓	✓	✓				✓	✓	
2nd-31st Harmonics			✓	✓				✓	✓	
I Neutral	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Alarm Contact		✓	✓	✓				✓	✓	
Digital Input				✓	✓	✓	✓	✓	✓	
Energy Pulse Output		✓	✓		✓	✓	✓	✓	✓	
RS-485 Comm		✓	✓	✓		✓		✓	✓	
0(4)-20mA Output				✓(x2)				✓	✓	
Memory		✓		✓				✓	✓	
Real Time Clock		✓	✓	✓				✓	✓	
LCD Display	LCD	LCD	LCD	LCD	LED	LED	LED	LED	LED	
Dual Energy Meter					✓	✓	✓	✓	✓	
6 Different Calculation Methods					✓	✓	✓	✓	✓	
5A Ct-Driven	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Digital Hour Counter					✓	✓	✓	✓	✓	
Pulse Counter					✓	✓	✓	✓	✓	
Supply Voltage	85-265VAC/DC, 50/60Hz					230VAC ±10%, 45-65Hz				

247 Devices can be connected serially by using repeaters



Ethernet to RS-485 Modbus Gateway

Code	Description
EMG-10	Ethernet to RS-485 Modbus gateway for communication between PC and MPR or EPM Network analysers. (1 online connection)
EMG-12	Ethernet to RS-485 Modbus gateway for communication between PC and MPR or EPM network analysers (up to 4 online connections) <ul style="list-style-type: none"> Network interface 10/100 Mbps (auto-negotiate) 300-115200 bps baud rate (on serial port) Power supply: 9-24V AC/DC
RPT-1	Repeater for long distance (600m) or more than 31 devices

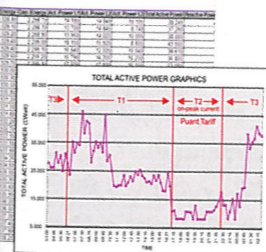
RS-485 to US Converter

Code	RS-USB2
RS-USB2	RS-485 to USB converter for communication between PC and MPR or EPM network analysers. <ul style="list-style-type: none"> USB 1.1 and USB 2.0 support 300-115200 bps baud rate (auto-detect) Powered from USB port



Software for Network Analysers

Code	Description
MPR-SW1	For single device (Free)
MPR-SW5	Between 2-5 devices
MPR-SW10	Between 6-10 devices
MPR-SW15	Between 11-15 devices
MPR-SW20	Between 16-20 devices
MPR-SW20+	More than 20 devices (Free if 20+ devices are used in a project)



ELECTRICAL MULTIFUNCTION ANALYSERS

control



EMA-96

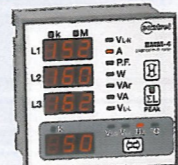


EMA-90



EMA-90H

Multifunction Meters



Input Range: 500V max

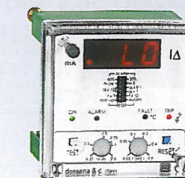
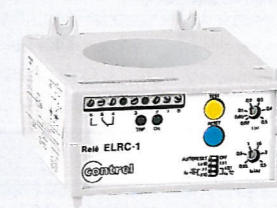
	Size 96 x 96			Size 96 x 96					Size 72 x 72			DIN (3m)		
	Code	EMA-96	EMA-90	EMA-90H	EMM-4	EMM-4H	EMM-4HP	EMM-4HP485	EMM-4HP485A	EMM-U4H	EMM-U4HP	EMM-U4H485	EMM-UD3H	EMM-UD3HP
Voltage Inputs		Direct up to 750 Vmax or VT												
Voltage V (Σ, L1, L2, L3, L12, L23, L31)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Current I (Σ, L1, L2, L3)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Neutral Current (In)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Isolated Current Inputs (3 x 5A CT)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Power Factor P.F. (Σ, L1, L2, L3)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active Power P (Σ, L1, L2, L3-average-max)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reactive Power Q (Σ, L1, L2, L3-average-max)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Apparent Power S (Σ, L1, L2, L3-average-max)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active & Reactive Energy Positive +Wh, +Varh (Σ, L1, L2, L3)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active & Reactive Energy Negative -Wh, -Varh (Σ, L1, L2, L3)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active & Reactive Energy subdivided in 4 time bands of 10 periods program (max 8 daily/hourly)				✓										✓
Frequency		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Total Harmonic Distortion THD In Volts (L1, L2, L3)		✓	✓	✓										
% THD in current (L1, L2, L3)		✓	✓	✓										
Numerical Harmonic Analysis				✓										
Graphic Harmonic Analysis visible directly on display				✓										
Temperature & phase sequence		✓	✓	✓										
Additional Inputs Parameters		✓	✓	✓										
Internal Clock Calendar		✓	✓	✓										
Graphic Visualisation			✓	✓										
Maximum instantaneous values (I, ΣP, ΣS)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Average Values (avg) I1, I2, I3, ΣP, ΣQ, ΣS, ΣP.F		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maximum Average Values (max. demand) I1avg, I2avg, I3avg		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maximum Average Values (max. demand) I1avg, I2avg, I3avg, ΣPavg, ΣSavg				✓										✓
Maximum Average Values Forecast (max. demand forecast) (ΣPavg, ΣQavg, ΣP.F.avg)				✓										✓
Analogue Output 0/4-20mA				✓										
Serial Outputs RS485/RS232		✓	✓	✓										
Communication Protocol ASCII		✓	✓	✓										
Communication Protocol MODBUS/RTU		✓	✓	✓										
Communication Protocol PROFIBUS/DP (with external module)		♦	♦	♦										
Digital outputs (for alarm max & min, re-emission energy pulse)		2	2	2				✓	✓	✓		✓	✓	✓
Digital inputs (per energy pulse counter or synchronisation)		2	2	2										
Internal Memory 128kb		✓	✓	✓										
Max Demand P,Q,S		✓ (P, Q)	✓	✓										
Optional Software		NRG*												
Auxiliary Supply		90-250VAC/DC			110/230/400V					400V		400V		

✓ = Standard
♦ = Optional

* Supervision and control software type NRG for managing, from a PC, of the data generated from the analysers EMA series, multifunction meters EMM series or energy meters EMC series. The software is very intuitive and simple to use. *Specify number of users with order: 2, 4, 8, 16, 32, 64, 128

EARTH FAULT RELAYS

control

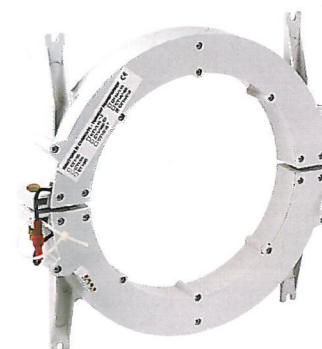


Type	DIN Mount 70mm	Base Mount Internal CT	Panel Mount 96 x 96		Panel Mount 96 x 96 3 Digit Display
Code	ELR-3C†	Ø 35 mm ELRC-1/35 Ø 60 mm ELRC-1/60 Ø 80 mm ELRC-1/80 Ø 110 mm ELRC-1/110	ELR-1†	*ELR-M2S†	DER2/V† DER2/VM† with 10 day memory for actual tripping current
Output Relay	Trip only	Trip only	Trip only	Trip & Alarm	Trip & Pre Alarm
Supply Volts	110VAC/DC, 230/400VAC				110/230/400VAC or 525VAC
Features:	<ul style="list-style-type: none"> Selectable current threshold adjustable 0.025mA to 25A Reset pushbutton Relay output 5A @ 250VAC Trip delay adjustable 0.025 to 5 seconds Standards IEC 255, IEC947.7 Test pushbutton 				

Toroidal transformers supplied separate

The toroidal current transformer to be coupled to any of the above (†) marked relays. Has two separate windings: Test and monitor.

Closed	Ø	Split-type
CT-1/35	35mm	
CT-1/60	60mm	CTA-1/60
CT-1/80	80mm	
CT-1/110	110mm	CTA-1/110
CT-1/160	160mm	CTA-1/160
CT-1/210	210mm	CTA-1/210



ENERGY METERS

	Code 96 x 96		Code DIN Width 6m	
	EMC-3B	EMC-3B485	EMC-D3B	EMC-D3B485
Input Range: 500Vmax. DIN Width: 1m = 17.5mm				
Active Energy + kWh	✓	✓		
Reactive Energy + kVarh	✓	✓		
Apparent Energy + kVAh	✓	✓		
Active Energy + kWh 2 time bands	✓	✓		
Reactive Energy + kVarh 2 time bands	✓	✓		
Average Values (avg) I1, I2, I3, ΣP, ΣQ, ΣS, ΣP.F	✓	✓		
Maximum Average Values (max. demand) I1avg, I2avg, I3avg, ΣPavg, ΣSavg	✓	✓		
Digital Input	✓	✓		
Digital Outputs (alarm or pulse re/emission)	✓	✓		
Serial Output RS485 (prof. MODBUS RTU)		✓		
Auxiliary Supply	110/230/400V			



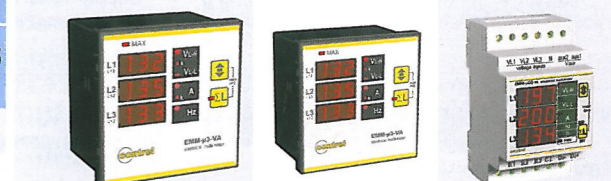
EMC-3B



EMC-D3

ELECTRICAL MULTIFUNCTION METERS

3-Phase Ammeter/Voltmeter + MD + Avg



Code	EEM-3VA	EEM-U3VA	EEM-UD3VA
Size	96 x 96	72 x 72	DIN (3M)

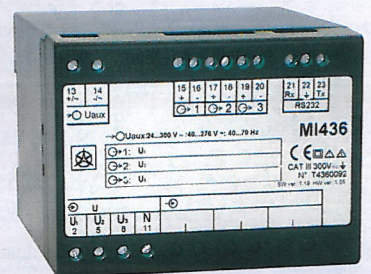
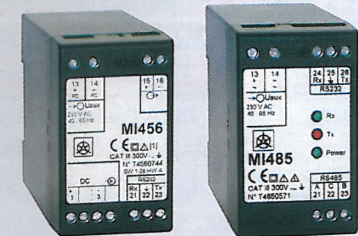
- Voltage V (Σ, L1, L2, L3, L12, L23, L31)
- Current I (Σ, L1, L2, L3)
- Frequency
- Maximum instantaneous values (I, V)
- Average values maximum (maximum demand) I1avg, I2avg, I3avg
- 2 digital outputs (alarm) – optional

Input Volts: 3 x 0-500VAC. Aux. Supply: 400V
Input Amps: 3 x 5A RMS 0.05 – 5A RMS
Programmable CT ratio

MEASURING TRANSDUCERS

Dedicated Function Transducers

- Supply Voltage 230VAC
- Programmable input range
- Programmable analogue output
- DIN rail mounting
- Accuracy class 0.5



Code	Input	Description	Power Supply	Output	Galvanic Isolation
MI406	50-500VAC	1PH mean AC Voltage	Self Powered	0-20mA	✓
MI416	50-500VAC	1PH True RMS AC Voltage	230V	Programmable	✓
MI408	0.5-5A AC	1PH mean AC Current	Self Powered	0-20mA	✓
MI418	0.5-5A AC	1PH RMS AC Current	230V	Programmable	✓
MI413-1B	50-500VAC/0.5-5 AC	1PH Active Power (Watts)	230V	Programmable	Current Only
MI414-1B	50-500VAC/0.5-5 AC	1PH Reactive Power (Vars)	230V	Programmable	Current Only
MI420	50-500VAC 40-70Hz	1PH Frequency	230V	Programmable	✓
MI421-1B	50-500VAC/0.5-5 AC	1PH Power Factor	230V	Programmable	Current Only
MI436	50-500VAC	3PH AC Voltage	40-276VAC	3xProgrammable	✗
MI438	0.5-5A AC	3PH AC Current	40-276VAC	3xProgrammable	✗
MI413-4U	50-500VAC/0.5-5 AC	3PH Active Power (Watts)	230V	Programmable	Current Only
MI414-4U	50-500VAC/0.5-5 AC	3PH Reactive Power (Vars)	230V	Programmable	Current Only
MI421-4U	50-500VAC/0.5-5 AC	3PH Power Factor	230V	Programmable	Current Only
MI456	50mV-500VDC	DC Voltage	230V	Programmable	✓
MI458	0-5ADC	DC Current	230V	Programmable	✓

Programmable analogue outputs can be configured with MASET software as:
 -1mA...1mA, -5mA...5mA, -10mA...10mA, -20mA...20mA, -1V...1V, -10V...10V
 • All programmable units complete with serial port RS485

Extra Charges:

MI485 RS485/RS232 Converter with 230V AC power supply

Accessories:

MASET Configuration and set-up software for measuring transducers
 MI-PRO Programming charge for MI transducers



3-Phase Multi-function Transducers

- Measurement of TRMS values of voltages and currents
- Multifunction – more than 50 measured parameters (TRMS voltage, TRMS current, kW, kvar, kVA, PF, Hz, MD, THD etc.)
- Modularity – max. three configurable analogue outputs
- RS232 or RS485 serial communication (MODBUS protocol)
- Programmable CT, VT ratios and outputs with MASET software
- Supply Volts: 24-300VDC/40-276VAC
- Programmable Outputs: 0-10V, 0-5mA & 0-20mA

Code	Input	Output	Galvanic Isolation
MI401-1-4U	50-500V/0.5-5A AC	1 Output Programmable	Current Only
MI401-2-4U	50-500V/0.5-5A AC	*2 Output Programmable	Current Only
MI401-3-4U	50-500V/0.5-5A AC	*3 Output Programmable	Current Only

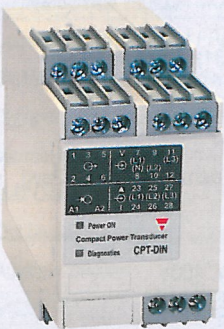
*Independently Programmable

Compact DIN Power Transducers

- Monitoring 3 phase 400-660V
- RS485 Class 2 Active Energy
- CT up to 5kA, VT up to 10kV
- TRMS measurements: W, Wdms, Wdmdmax, VAR, VA, VAdmd, PF, V, A, An, Admd, Amox Admdmax, Hz, kWh and kVarh
- Hour counter (5 + 2DGT)



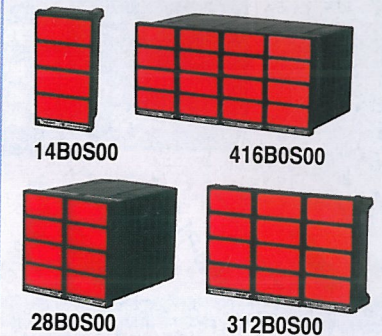
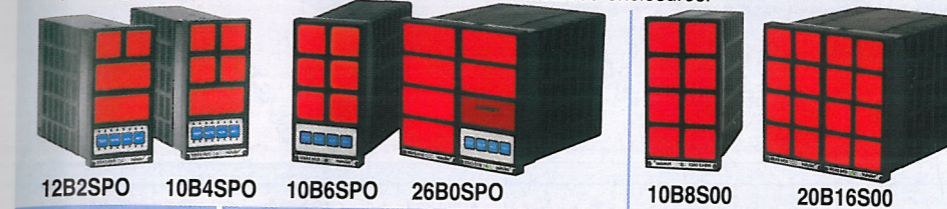
Code	Description
CPT-DINAV53HS1 BX	Compact power transducer 18-60VDC, 110/230V control
CPTBSOFT-KIT	Multi language software kit for programming and reading. Windows 95 to XP compatible, c/w communication cable



ALARM ANNUNCIATORS

Monitors potential free input contacts (NO or NC) 4 to 16, for any change of status (Abnormal) & activates one common output relay for audible device with respective flashing LED windows, thus indicating the "Alarm" status. This flashing annunciation window is "Acknowledged" & "Reset" (when returns back to normal) by external push buttons.

- Powerful Microprocessor Circuit.
- Optically Isolated input Circuit.
- Low Power Consumption.
- Two Window Sizes, Big & Small.
- Built-in system watchdog LED.
- Super Bright LEDs.
- Fully integrated construction.
- NO/NC selectable input configuration.
- AC/DC auxiliary supply.
- DIN standard panel cutouts.
- Front replaceable windows & Inscriptions.
- Moulded enclosures.



	With Pushbuttons	Cutout Size	Small Window no Pushbuttons	Cutout Size	Large Window no Pushbuttons	Cutout Size
4 Points	12B2SPO-*	68x138	-	-	14B0S00-*	68x138
5 Points	10B4SPO-*	68x138	-	-	-	-
6 Points	10B6SPO-*	68x138	-	-	-	-
6 Points	26B0SPO-*	138x138	-	-	-	-
8 Points	-	-	10B8S00-*	68x138	28B0S00-*	138x138
12 Points	-	-	-	-	312B0S00-*	210x138
14 Points	20B14SPO-*	138x138	-	-	-	-
16 Points	-	-	20B16S00-*	138x138	416B0S00-*	282x138
22 Points	30B22SPO-*	210x138	-	-	-	-
24 Points	-	-	30B24S00-*	210x138	624B0S00-*	2x(210x138)

*Add supply Voltage: A: 230VAC, B: 24VDC

*Supplied with separate power supply

Specifications

Aux. Supply:	24/48V DC / 110/220V AC	LED:	Colour Red (Amber/Green on request)
Input:	Potential Free Contacts (NO or NC Site Configurable)	Interrogation Voltage:	12V DC
Output:	1 NO for Audible Hooter	Response Time:	25m.sec. ±10m.sec
Rating:	5A, 230V AC Resistive	Power Consumption:	1.5W/Window
Facia Window Size:	Big: 60 x 30mm Small: 30 x 30mm	Grouping (Trip/Non Trip):	Optional
Flash Rate:	Fast: 60 Flash/Min. Slow: 30 Flash/Min.		

Printing of Front Replaceable Windows

Code	Description
AL-30	30 x 30mm transparent film
AL-60	60 x 30mm transparent film

• Black letters on transparent film to be sandwiched between front & rear difusers

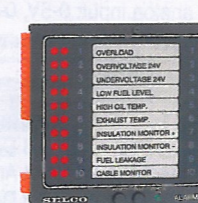
Accessories

Code	Description	Code	Description
AL-3030-R	Red Perspex window 30x30mm c/w LED Block	AL-6030-R	Red Perspex window 60x30mm c/w LED Block
AL-3030-Y	Yellow Perspex window 30x30mm c/w LED Block	AL-6030-Y	Yellow Perspex window 60x30mm c/w LED Block
AL-3030-G	Green Perspex window 30x30mm c/w LED Block	AL-6030-G	Green Perspex window 60x30mm c/w LED Block

SELCO



M4100



M1000

8 & 10 Channel Alarm Annunciator

- Input contact type NO/NC and delays 0-15 secs are selectable individually on all channels.
- Two common output relays for siren and alarm with voltage free contacts.
- Legend can be typewritten on the label easily accessible behind front plate.
- Two integrated push buttons for siren reset/lamp test and alarm accept.
- Remote individual selectable blocking with adjustable unblocking delay 0-15 secs.
- Plug-in terminal block for easy service.
- DC or AC supply voltage.

Specifications for M4100

- Consumption: 0.15A
- Temp Range: -20° to +70°C
- Minimum input delay: 50ms

Specifications for M1000

- Output relay :Max. 220V AC/2A
- Output :Max. 150mA per channel
- LED flash frequency :Slow Flashing Light 0.8Hz ±10%
Quick Flashing Light 8Hz ±10%
- Programming :Switches on rear of unit
- Reset/Lamp Test :Via Pushbuttons
- Power Consumption :180mA

Description	Supply	Size	Code
8-Channel Annunciator	12VDC/AC ±30%	96x96	M4100-12
8-Channel Annunciator	24VDC/AC ±30%	96x96	M4100-22
10-Channel Annunciator	12-24VDC	144x144	M1000-24-00C

Accessories for M4100

Front cover with handle IP54 M0846-00 Front cover with key IP54 M0846-01

MICRO PLCs

M90 extended family of PLCs extends to 158 I/O, GSM and MODbus communication, with embedded graphic operator panel. PLC & HMI programmed with one programme! All models supplied with software, instruction manual, cable & connectors.

M90-R1	M90-R1-CAN	M90-R2-CAN	M90-T1	M90-TA2-CAN	V120-12-R1	V120-12-R2C	V120-12-UN2	V230-13-B21	V260-16-B21
1 line x 16 characters				8 lines x 22 characters 128 x 64p				128 x 64p	240 x 64p
80				255				100	
15				16				33	
2048 words				16k words				16k words	
Real-time clock functions (date and time) with 7 year battery backup – all models									
256				1024				2048	
256				1024				1600	
-				256				256	
64				128 (32 bit)				192	
-				64 (32 bit unsigned)				64 (32 bit unsigned)	
12µsec				0.8µsec				0.8µsec	
1 port				2 ports				2 ports	
RS232/485 converter supplied				1 port				1 port	
-				1 port				1 port	
-				Master/slave protocol				Master/slave protocol	
Up to 6 phone numbers, up to 1k of user defined messages				Up to 8 phone numbers				Up to 8 phone numbers	
8 PNP				10 PNP				16 PNP/NPN	
2 (16 bit)				3 (32 bit)				2 (32 bit)	
1 ²				2 ²				3 ³	
-				2 ⁶				-	
6				-				10	
-				11				8	
-				1 (0-10V)				-	
-				1 (1.5kHz)				-	
Up to 64 extra I/O via 8 expanders				Up to 128 I/O extra via 8 expanders				Up to 128 I/O extra via 8 expanders	
24VDC				12/24VDC				12/24VDC	
96 x 96				96 x 96				218 x 184	
								260 x 184	

Display
Resolution (Pixels)
HMI display

Keyboard
No. of keys

Programme
PLC size
Real time clock
Coils
Registers/integers
32 bit integers
Timers
Double word
Execution time

Communication
RS232
RS485
CANbus
MODBUS
GSM
I/Os
Digital inputs
High speed input
Analog input
Thermocouple/PT100
Relay outputs
pnp outputs
Analog outputs
Highspeed output
I/O expansion

General
Power supply
Size mm

IP65 when panel mounted

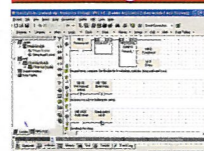
Notes: 1) High speed counter/shaft encoder/frequency measurer of normal digital inputs, 10kHz max. Can be used as normal digital input. 2) 10 bit analog input: 0-5V, 0-10V, 0-20mA, 4-20mA. 3) 10 bit analog input: 0-10V, 0-1mA, 4-20mA, 4-20mA. 4) 10 bit analog input: 0-5V, 0-10V. 5) 10 bit analog input: 0-10V. 6) 14 bit universal input for thermocouple, PT100, 0-10V, 0-20mA, 4-20mA.

Communication Options



- RS232/485 Up to 64 mixed M90 family units
- CANbus
- MODBUS
- GSM/SMS control
- Remote access with any phone-line modem

VisiLogic Ladder Software



One Windows-based program for both PLC & HMI

Expansion Modules



Note: when using expansion modules expansion adaptor must be installed

- EX-A1 Expansion Adaptor
- IO-DI8-TO8 8 Digital Inputs, 8 Transistor Outputs
- IO-AI4-AO2 4 Analog Inputs, 2 Analog Outputs
- IO-DI8-RO4 8 Digital Inputs, 4 Relay Outputs
- IO-DI16 16 Digital Inputs
- IO-TO16 16 Transistor Outputs
- IO-RO8 8 Relay Outputs
- EX90-DI18-RO8 8 Digital Inputs, 8 Relay Outputs
- IO-PT4 4 PT100 Inputs, -42 to 112°C

Accessories

- OPLC-GSM-K1 GSM modem, magnet antenna, cables and adaptors
 - M90-19-R4 RS232 to RS422/485 converter
 - V200-19-ET1 Ethernet module for PLC V230 & V260 only
- For power supplies, see page 69.

LM MICRO SERIES PLCs

The Lm Micro Series PLC is comprised of various modules. The basic functional configuration requires a CPU module working as a basic unit, in complement with optional expansion modules such as communication modules, digital I/O modules and analogue I/O modules

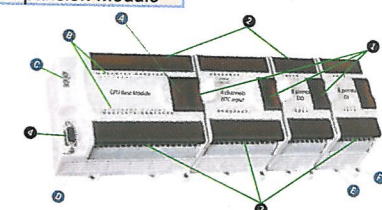
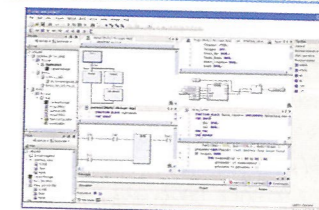
LM3104	LM3105	LM3106	LM3107E	LM3109	LM3230-EDMT	LM3231-EDMR	LM3330-EAM	HT6600C	HT6800T
CPU Modules					Expansion Modules			HMI Display	
24VDC	240VAC	24VDC	240VAC	240VAC	50(L) x 90(W) x 70(H)mm			21-28VDC	
125(L) x 90(W) x 70(H)mm					12 bit A/D			192 x 138mm/224 x 161mm	
Unlimited number of counters, 15 bits counting range					10 000 000 Open/ Close			320 x 240 640 x 480	
Unlimited number of timers, 1ms to 49days					<10ms			10 000hrs	
0.37µs per instruction					<10ms			200MHz RISC	
Real time clock function, 10 years back-up					65 535 words			128k Words	
60 000 words									
1	1	1	1	1	-	-	-	Communication	
-	-	-	-	1	-	-	-	RS232	
Yes	Yes	Yes	Yes	Yes	-	-	-	RS485	
Yes	Yes	Yes	Yes	Yes	-	-	-	Modbus	
								G-Mode	
								I/Os	
5	5	11	9	21	4	4	-	Digital Inputs	
3	3	3	3	3	-	-	-	Digital High Speed Inputs	
-	-	-	2	-	-	-	4	Analog Input	
-	6	-	8	16	-	4	-	Relay Outputs	
6	-	10	-	1	4	-	-	PNP Outputs	
-	-	-	1	-	-	-	-	Analog Output	
1 Point, 20kHz	-	2 Points, 20kHz	-	-	-	-	-	Pulse Output	
2	2	4	4	7	-	-	-	Max Expansion Module	

Connections

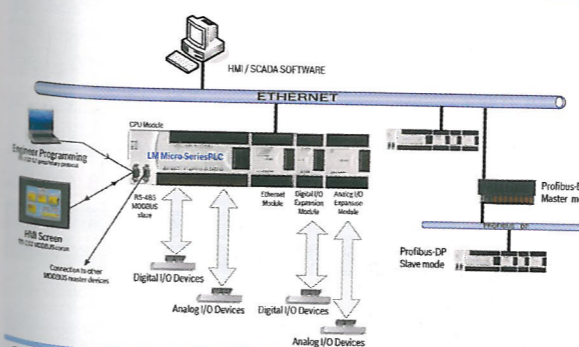
- Connection to expansion modules
- Wiring terminal for output + input power supply
- Wiring terminal for input + output power supply
- RS-232/RS-485 communication port
- RUN/STOP operation switch + analogue presets
- I/O channels status indicator
- PLC status indicator - Run, Stop, Com, Error
- Heat radiator
- DIN Rail fastener
- Hole for backplane or wall mounting

Programming Languages

- Instruction List (IL)
- Sequence Function Chart (SFC)
- Ladder Diagram (LD)
- Function Block Diagram (FBD)
- Structural Text (ST)
- Continuous Function Chart (CFC)



Communication Options



Expansion Modules

Code	Description
LM3210-EDI	8 Digital 24VDC input module
LM3211-EDIA	8 Digital 230VAC input module
LM3220-EDOT	8 Digital 24VDC solid state output module
LM3222-EDOR	8 Digital 230VAC /24VDC relay output module
LM3221-EDOT	16 Digital 24VDC solid state output module
LM3223-EDOR	16 Digital 230VAC/24VDC relay output module
LM3310-EAI	4 Channel Analog input module
LM3320-EAO	4 Channel Analog output module
LM3401	Profibus DP slave interface module
LM3403	Ethernet interface module

Catalogues & Manuals

- LD3000 LM Micro Series PLC - Hardware Manual
- LD3001 LM Micro Series PLC - Software Manual
- LD3002 LM Micro Series PLC - Instruction Manual
- HT6101 HMI User Guide
- LM3101 Complete software & info
- HMI101 Complete software & info

Accessories

- LS3601 LM PLC & HMI Programming Software CD
- LA3801-COM-300 LM Communication Cable - RS-232 Cable (2m)
- LA3810 LM Expansion Module (500mm length)
- HT6100 HMI USB Programming cable
- HD2100 RS-232 Serial programming cable