

Control Transformers

MCL Range Data Sheet

Technical data _____

Control Transformer	Class 1 Isolation Transformer with Earth Screen between Primary and Secondary
Standard	IEC / BS-EN 61558
Primary Voltages	15-0-15-230-400V
Secondary Voltages	One of the following. 12V, 24V, 48V, 110V, 230V
Frequency	50/60Hz
Insulation Class	B
Insulation Resistance	> 5 Meg Ω
Dielectric Strength	Primary to Secondary. > 2.5kV Primary to Earth > 2.5kV Secondary to Earth > 2.5kV
Ambient Temperature	40° C

Transformer circuit protection

Transformers must be protected against short circuit and overload

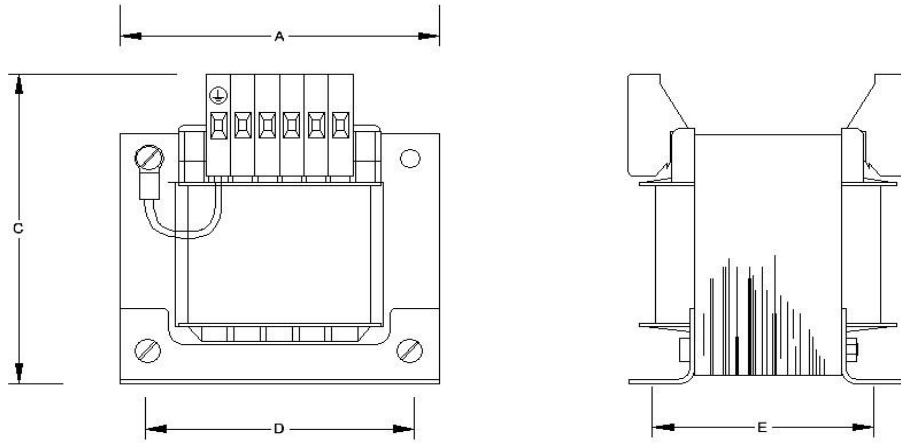
Primary circuit. The primary side of the Transformer should be protected against short circuit thereby cutting the supply voltage in the event of a short circuit fault.

The rating of the primary protection device has to take into account the high inrush current during energizing of the Transformer.

The table below gives suggested protection values to avoid nuisance tripping on inrush

Rating VA	Primary Volts	Amps	Fuse	Type C MCB	Type D MCB	Primary Volts	Amps	Fuse	Type C MCB	Type D MCB
50	230	0.21	1	1	1	415	0.12	500mA	1	1
75	230	0.27	1	1	1	415	0.15	500mA	1	1
100	230	0.43	1	2	1	415	0.24	1	1	1
150	230	0.65	2	2	1	415	0.36	1	1	1
200	230	0.86	2	6	2	415	0.48	1	2	1
250	230	1.09	3.15	6	2	415	0.60	2	2	1
300	230	1.2	3.15	6	3	415	0.72	2	2	2
500	230	2.17	4	10	6	415	1.20	3.15	6	4
750	230	3.26	6	10	6	415	1.80	3.15	6	4
1000	230	4.34	8	10	6	415	2.40	5	6	4
1500	230	6.52	10	16	10	415	3.61	6	10	6
2000	230	8.69	12	16	10	415	4.82	10	10	6
2500	230	10.86	16	25	16	415	6.02	10	16	10

Secondary circuit. The secondary circuit should be protected against short circuit and overload. The value of the protection should be the same or less than the rated output current.



Part No. VA	A	B	C	D	E	Weight Kg	% Reg.	Watts Loss	Inrush VA For 10% Volt drop	Inrush VA For 5% Volt drop	Np load loss
MCL25	66	68	77	50	44	0.7	11	6	48	36	2.9
MCL50	76	70	86	56	47	1.1	9.8	9	105	77	4.2
MCL75	76	76	86	56	53	1.5	8.9	11	135	102	6.5
MCL100	84	78	95	64	63	2.1	8.4	14	250	175	6.6
MCL150	96	76	102	84	65	2.25	6.7	18	375	260	10.3
MCL200	96	86	102	84	72	2.8	5.8	21	550	375	11.5
MCL250	96	101	102	84	90	3.7	5.6	27	720	470	13.3
MCL300	120	88	122	90	73	4.4	5.3	31	870	585	15.8
MCL400	120	100	122	90	85	5.3	5.0	30	1200	790	20
MCL500	120	120	122	90	106	6.5	4.1	31	1700	1100	20.5
MCL750	150	110	140	122	90	8.0	5.2	60	2200	1475	32.8
MCL1000	150	161	140	122	106	10.0	3.3	67	4000	2500	33
MCL1500	150	188	140	122	134	14.0	3.2	88	6200	3850	48
MCL2000	192	172	180	160	125	20.5	3.3	100	8060	5030	48
MCL2500	192	192	180	160	153	24.0	2.6	120	12100	7300	49

Voltage Options and Part No.

Winding	Voltage	Code
Primary	15-0-15-230-400V	
Secondary	0-12V	J
	0-24V	B
	0-48V	E
	0-110V	F
	0-230V	U

For a 100VA Transformer with an output of 110V the Part Number would be MCL100F

Power Rating Calculation

To choose the size of Transformer required for an application the total inrush VA must be calculated. This figure is then applied to the table above with the maximum allowable voltage drop taken into account.

eg. For a calculated inrush of 2100VA the appropriate Transformer is as follows

- 1) For 10% drop in output volts during inrush. Choose 750 VA
- 2) For 5% drop in output volts during inrush. Choose 1000 VA

Consideration must also be given to the continuous VA requirement.

Primary connection requirements

Part No. VA	Crimp type	Minimum cable size	Maximum cable size	Connection type	Connection tool	Connection torque
MCL25	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL50	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL75	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL100	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL150	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL200	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL250	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL300	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL400	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL500	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL750	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL1000	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL1500	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL2000	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL2500	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL3000	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm

Secondary connection requirements

Part No. VA	Crimp type	Minimum cable size	Maximum cable size	Connection type	Connection tool	Connection torque
MCL25	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL50	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL75	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL100	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL150	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL200	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL250	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL30024	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL300	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL40024	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL400	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL50024	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL500	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL75024	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL750	Bootlace	0.2mm ²	4mm ²	Screw terminal	Slotted M3	0.5-1.0 Nm
MCL1000	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL150024	Bootlace	2.5mm ²	35mm ²	Screw terminal	Slotted M6	2.5-5.0 Nm
MCL1500	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL200024	Bootlace	2.5mm ²	35mm ²	Screw terminal	Slotted M6	2.5-5.0 Nm
MCL2000	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL250024	Bootlace	2.5mm ²	35mm ²	Screw terminal	Slotted M6	2.5-5.0 Nm
MCL2500	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm
MCL300024	Bootlace	2.5mm ²	35mm ²	Screw terminal	Slotted M6	2.5-5.0 Nm
MCL3000	Bootlace	0.2mm ²	10mm ²	Screw terminal	Slotted M4	1.2-2.0 Nm