technical datasheet

MA3350

Cost effective surge protection for integration into OEM applications or AC cabinets

- Smallest 3 phase 50kA (8/20µs) SPD available
- 3 phase protection in a package only 38mm wide
- Full range covering TNS, TNC-S, IT and TT systems
- Highest fault current clearing, 100kA without backup fuses
- Easy DIN rail mounting
- Perfect for OEM or cabinet applications
- Single pole version with 50kA (10/350µs), 200kA (8/20µs) rating

The MA3350 is ideal for AC applications where high surge current surge protection is needed in a small space. Typical three phase DIN rail mounting SPDs are 89mm wide, the MA3350, at 38mm wide, is a remarkable 64% thinner. Each mode in the MA3350 is rated to a full 50kA (8/20 µs). In the three phase unit there are 4 such modes giving a total unit rating of 200kA.

The MA3350 carries a suite of diagnostics that are more sophisticated than typical devices with a mechanical flag. Each unit has positive indication showing both the presence of AC power and the status of the unit. Red and green LED's leave the user in no doubt of the MA3350's operational readiness. Remote monitoring of the MA3350 is possible using the standard voltage free contacts.

All modules are DIN rail mounted and are supplied complete with hook-up cables for ease of installation.

The single pole MA3350 carries the highest surge current ratings. Ratings of 200kA (8/20 µs) and 50kA (10/350µs) mean that this device will perform as both a Class I and Class II device in accordance with IEC 61643-1.

In addition to industry-leading surge current ratings **the MA3350 also carries industry leading fault clearing ratings**. The MA3350 can be used on power systems with up to 100kA prospective fault currents.

COOPER Crouse-Hinds

www.mtl-inst.com enquiry@mtl-inst.com

MA3350	120-1R	240-1R	240-2R	480-2R	120-3R	240-3R	480-3R	120-4R	240-4R	120-XR	240-XR
EU and Japan models	100-1R	200-1R	200-2R	380-2R 415-2R	100-3R	200-3R	380-3R 415-3R	100-4R	200-4R	100-XR	
Protected wires Circuit diagram	L1, N, E A	L1, N, E A	L1, L2, E B	L1, L2, E B	L1, L2, N, E C	L1,L2,L3, E D	L1,L2,L3, E D	L1,L2,L3, N, E E	L1,L2,L3, N, E E	1 pole device F	1 pole device F
Typical application	Single Phase	Single Phase	Delta/ TT /IT	Delta/ TT /IT	Split Phase	Delta/ TT /IT	Delta/ TT /IT	Wye/ TNC-S	Wye/ TNC-S	All	All
IEC category	II	II	II	II	II	II	II	II	II	I	I
Nominal voltage U_n (Line to Neutral)	120V AC	240V AC			120V AC			120V AC	240V AC	120V AC	240V AC
Nominal voltage U_n (Line to Line)			240V AC	480V AC	240V AC	240V AC	480V AC	240V AC	415V AC		
Max. Continuous voltage U_c (AC)	150V	320V	(300V)*	(600V)*	150V, (300)*	(300V)*	(600V)*	150V, (300V)*	300V, (600V)*	150V	300V
Leakage current to PE at U_n	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA	<0.3mA
Lightning test current I_{imp} (10/350µs) I_{imp}	15kA	15kA	15kA	15kA	15kA	15kA	15kA	15kA	15kA	50kA	50kA
Max discharge surge current I_{max} (8/20µs) per mode	50kA	50kA	50kA	50kA	50kA	50kA	50kA	50kA	50kA	200kA	200kA
Nominal discharge surge current I_n (8/20µs) per mode	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	40kA	40kA
Protection level at 3000A (8/20µs) L to N	485V	870V	(920V)	(1690V)	485V (920V)	(920V)	(1690V)	485V (920V)	870 (1690V)	435V	870V
Protection level U_p at I_n (10,000A)	<800V	<1200V	<1200V	<2000V	<800V	<1200V	<2000V	<800V	<1200V	<900V	<1500V
Response time t_a	<5ns										
Short circuit withstand (no backup fuse required)	100kA										
Temperature range	-40ºC to 80ºC										
Protection type according to IEC 60529/EN60529	IP20										
Remote indication contacts (NO/NC)	62.5VA AC, 60W DC, 1A Max.										
Duty cycle	20kA – >4,000; 10kA – >6,000									100kA – >4; 10kA – >15,000	
Long duration 10/1000µs	3,600A									5,800A	
Lead cross section	3mm² (#12 AWG)									8mm² (#8 AWG)	

* = a result in ( ) indicates a measurement L-L

MA3350-120-1R
MA3350-240-1R
MA3350-100-1R
MA3350-200-1R

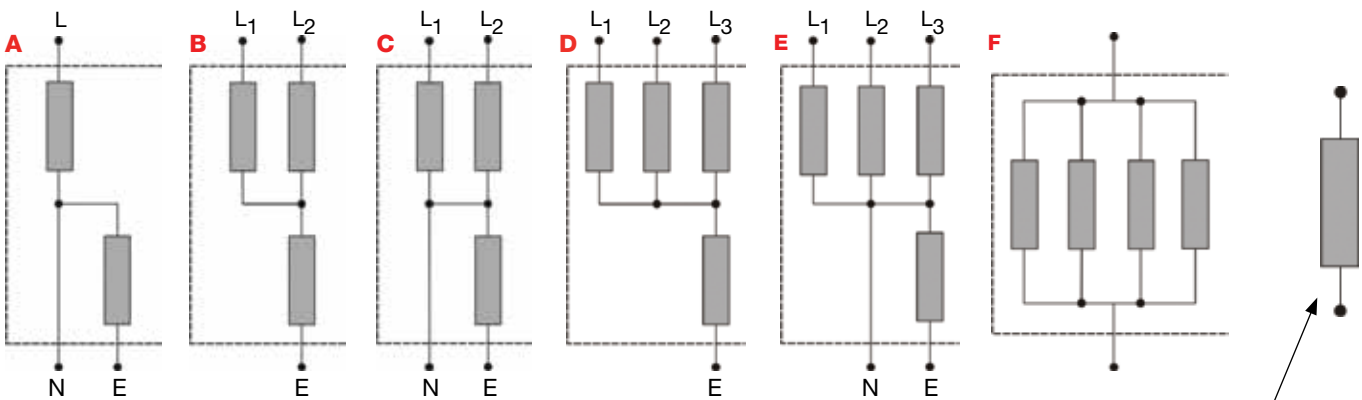
MA3350-240-2R
MA3350-480-2R
MA3350-200-2R
MA3350-380-2R
MA3350-415-2R

MA3350-120-3R
MA3350-100-3R

MA3350-240-3R
MA3350-480-3R
MA3350-200-3R
MA3350-380-3R
MA3350-415-3R

MA3350-120-4R
MA3350-240-4R
MA3350-100-4R
MA3350-200-4R

MA3350-120-XR
MA3350-240-XR
MA3350-100-XR
MA3350-200-XR



This symbol represents individual, high surge-capacity, surge protection devices, fuses capable of interrupting high (100kA AIC) prospective fault arrestor and state-of-the-art status monitoring electronics.

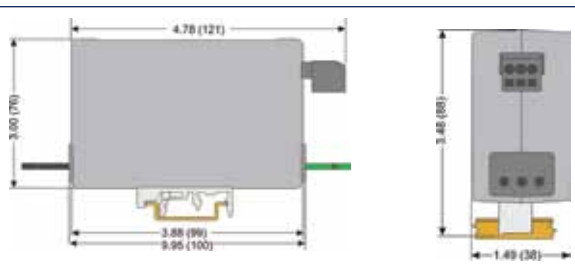


Figure 1 Dimensions

The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.

EUROPE (EMEA): +44 (0)1582 723633
enquiry@mtl-inst.com

THE AMERICAS: +1 800 835 7075
csinfo@mtl-inst.com

ASIA-PACIFIC: +65 6 645 9888
sales.mtlsing@cooperindustries.com

technical datasheet

MA3350 DC

for integration into OEM applications or DC cabinets

- 12kA (10/350µs) per pole Type I
- Only 38mm wide
- Highest fault current clearing, 100kA without backup fuses
- Thermal and short-circuit fusing
- Easy DIN-rail mounting
- Perfect for OEM or cabinet applications and photovoltaic (PV) applications

The MA3350DC is designed for use where high surge current protection is needed along with a small footprint. The device is ideal for use in solar power applications by protecting the DC/AC inverter from damage resulting from nearby lightning activity. Often located in the combiner enclosure, the MA3350DC's small profile takes up less space than other solutions. With no restriction on load-current, the MA3350DC is a versatile device designed for a multitude of applications requiring high surge-capacity in a compact casing.

Each module is rated to a full 40kA (8/20µs) and 12kA (10/350µs) pulse and provides protection in all types of exposed locations and environments. The high surge-capacity is provided by voltage limiting elements which ensure accurate and reliable performance for the lifetime of the product. Fully automatic in operation the MA3350DC reacts immediately, clamping voltage surges without causing undue leakage losses in normal operation.

The MA3350DC can be specified with either an LED (2R-version) to monitor operation or alternatively, with a remote contact (2C-version) to signal operation faults. During normal powered operation the LED remains lit but will extinguish should a fault develop. The 2C variant provides signalling via remote contacts. The contacts open to signal normal operation, but close if a fault should occur, irrespective of whether the module is powered or not.

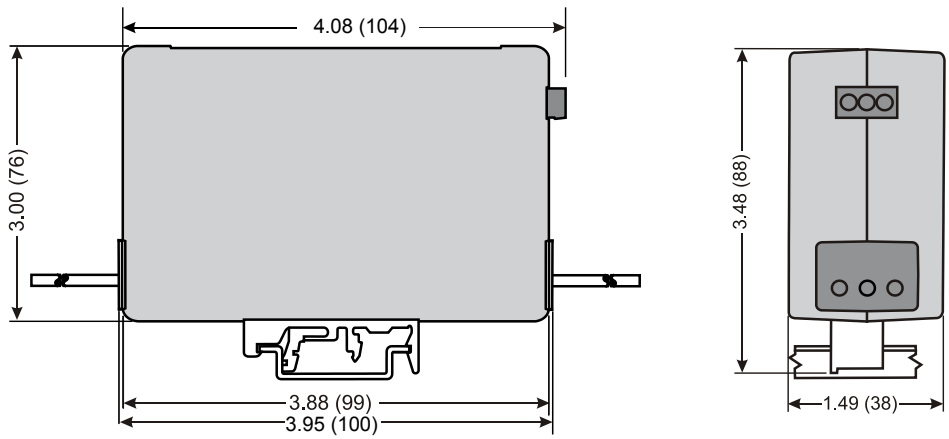
All modules are DIN-rail mounted (35mm top hat or asymmetric rail) and supplied with cables for ease of installation. The MA3350DC is a class-leading 38mm in width and offers complete protection for a 2-wire DC system.

In addition to industry-leading surge-current ratings the MA3350 also provides industry-leading fault-current ratings. The MA3350DC can be used on power systems with up to 100k AIC prospective fault-current ratings. This removes the need for cumbersome and costly additional fuse protection.

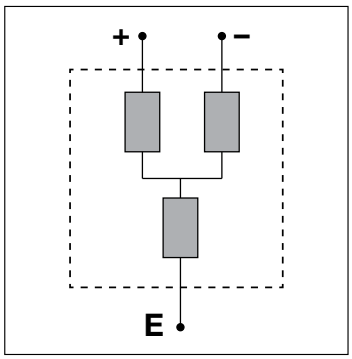
The products come with an unrivalled 10-year, "no fuss" warranty giving the user total confidence in the range of products. The MA3350DC exceeds the demands of IEC61643-11 and can be classified as a combined Class I & Class II device.

MA3350 DC models	MA3350DC-500-2R MA3350DC-500-2C	MA3350DC-600-2R MA3350DC-600-2C	MA3350DC-1000-2R MA3350DC-1000-2C
Protected wires	+, —, E	+, —, E	+, —, E
Typical application	DC Power	DC Power	DC Power
IEC category	**I/II**	**I/II**	**I/II**
Nominal voltage U_n	500V DC	600V DC	1000V DC
Max. Continuous voltage U_c (DC)	575V DC	675V DC	1200V DC
Leakage current to PE at U_n	<0.3mA	<0.3mA	<0.3mA
Lightning test current I_{imp} (10/350µS)	12kA	12kA	12kA
Max discharge surge current I_{max} (8/20) per mode	40kA	40kA	40kA
Nominal discharge surge current I_n (8/20) per mode	10kA	10kA	10kA
Protection level at 3kA + to - PE	<1.2kV	<1.5kV	<3.0kV
Protection level U_p at I_n (10kA)	<1.7kV	<2.0kV	<4.0kV
Response time t_a	<5ns	<5ns	<5ns
Short circuit withstand	100k AIC	100k AIC	100k AIC
Temperature range	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C
Protection type (IEC 60529/EN60529)	IP20	IP20	IP20
LED Failure Indication	**MA3350DC-500-2R**	**MA3350DC-600-2R**	**MA3350DC-1000-2R**
Remote contact failure indication	**MA3350DC-500-2C** NO contacts, 0.6W DC@50mA DC max	**MA3350DC-600-2C** NO contacts, 0.6W DC@50mA DC max	**MA3350DC-1000-2C** NO contacts, 0.6W DC@50mA DC max
Duty cycle	20kA — >4,000 10kA — >6,000	20kA — >4,000 10kA — >6,000	20kA — >4,000 10kA — >6,000
Long duration (10/1000µs)	3,600A	3,600A	3,600A
Lead cross section	3mm^2 (#12 AWG)	3mm^2 (#12 AWG)	3mm^2 (#12 AWG)
Lead length (standard)	20 ± 1" (508 ± 2.5mm)		
Extended lead length - 24"(610mm) - Order code:	**MA3350DC-500-2RL** **MA3350DC-500-2CL**	**MA3350DC-600-2RL** **MA3350DC-600-2CL**	**MA3350DC-1KV-2RL** **MA3350DC-1KV-2CL**

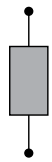
DIMENSIONS



SURGE PROTECTION



MA3350 DC basic protection circuit



This symbol represents the individual high surge-capacity protection devices with fuses capable of interrupting high (100k AIC) prospective fault currents combined with state-of-the-art status monitoring electronics.