

## MTL MA05/10 range

Unique units combining filtering, surge and ring suppression for protection against the effects of electrical disturbances on ac power cabling

- Combines high quality filtering with 'ring' suppression
- Three different packages available, Wall/floor mounted (I)  
DIN-rail mounted (D)  
Standard filter case (SC)
- Added thermal fuse protection
- Unique design for EMC compliance – exceeding IEC61000-4-5, level 4



The MA05 and MA10 range protects electronic equipment and computer networks against the effects of 'noise pollution' induced in mains power supplies. A unique combination of circuit elements 'cleans up' the effects of industrial noise and surges caused by lightning, switching devices, thyristor controls, transmission system overloads and power-factor correction circuits.

The units are available in alternative versions – 'SC' suffixed models housed in standard filter 'cans with connections via safety-shrouded spade terminations'; 'Standard' I units for wall or floor mounting in a plastic enclosure with screw terminals inside; or 'D' suffixed units for G- or Top-hat section DIN-rail mounting. The 'SC' and 'I' units are useful for OEM incorporation into packaged systems as a superior alternative to conventional filters and also for retro-fitting to existing systems. The 'D' type units are ideally suited to protecting panel-mounted equipment.

With a unique 'three-stage' combination of protection elements, these units suppress conducted RFI and voltage surges. The circuit elements are; first, surge clipping components to absorb transient surges that may otherwise damage equipment; second, a filter to

suppress noise in the system; and third, 'ring' suppression. The third of these prevents surges causing the filter to 'ring' (oscillate) under low load conditions – an effect that actually accentuates interference in most commercially available filters. The 'Transient response' graph printed overleaf illustrates the typical output response of an MA10/D when a 6kV, 3kA standard 8/20 $\mu$ s surge is applied to the input.

The MA05 and MA10 devices operate in both signal directions and therefore reduce both electro-magnetic emissions and the susceptibility of the associated equipment to emissions from other sources. Thermal fusing is also incorporated into each device as an additional safety feature.

Manufactured in accordance with ISO9001, the performance of all units is tested before despatch and exceeds the requirements of IEC 61000-4-5, level 4. Since MA05/10 devices suppress conducted RFI and voltage surges they enable associated equipment to comply with this aspect of the European 'CE' mark standards.

## MA05/10 EMC/Surge Protection Devices

### Guide to applications and selection

#### Industrial Control Systems

Industrial control systems utilising programmable logic controllers (plc) and industrial computers are particularly vulnerable due to the aggressive electrical environments for which they are intended, such as process plants, factories and water treatment sites. Although industrial computers and plcs are designed to be rugged, protection against the extreme voltage surges caused by lightning activity and the switching of large electrical motors demands the extra protection provided by the DIN rail mounting MA05/D and MA10/D units. Typically used in the controls section of a motor control cubicle (MCC), this range provides voltage surge and RFI protected power.

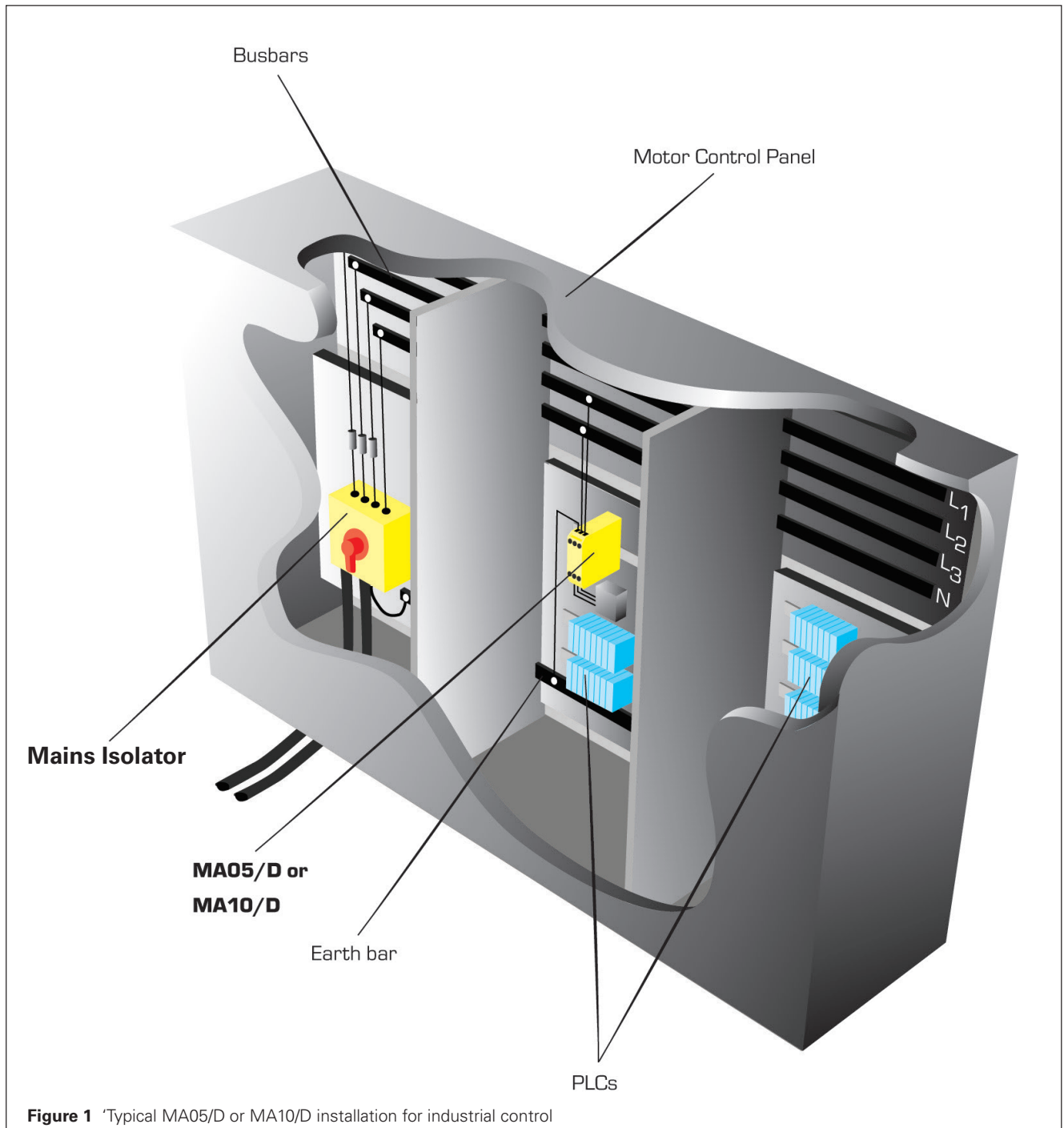
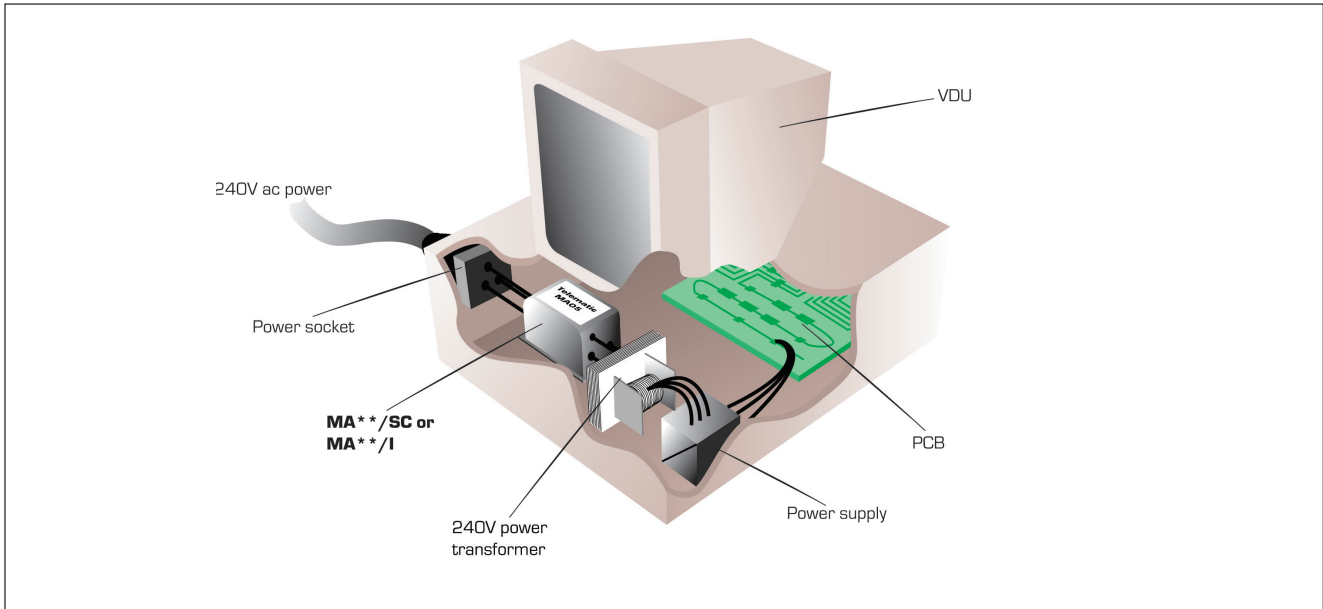


Figure 1 Typical MA05/D or MA10/D installation for industrial control

**Computer/OEM Equipment**

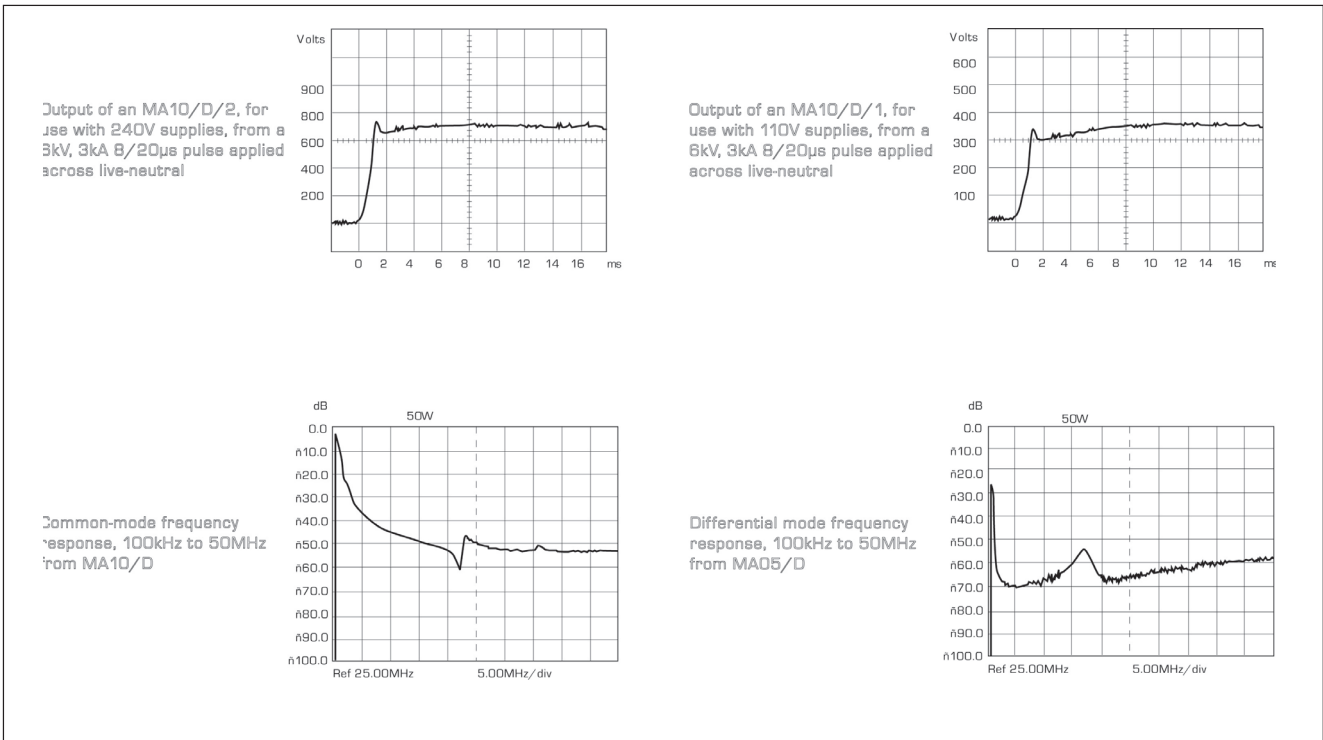
Increased reliance on computers in industry and the workplace, coupled with an increasingly 'noisy' electrical supply and a higher incidence of lightning activity has led to a higher risk of costly system downtime and disruption. In turn, this has led to the need to manufacture equipment that is resistant to voltage surges and radio frequency interference (RFI), as laid down in the EMC directives. The MA05/SC, MA10/SC, MA05/I and MA10/I units are designed to be easily incorporated into OEM equipment such as industrial computers, mobile telephone base stations, closed circuit tv (cctv) systems and can help with EMC compliance and 'CE' marking.



**Figure 2** 'Typical' MA\*\*/SC or MA\*\*/I installation in OEM equipment

**Typical RFI and surge protection performance  
MA05/D and MA10/D units**

The following graphs are prepared from test results made on typical units.



**Figure 3** Typical output response of an MA10/D

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September 2016

## SPECIFICATION

All figures typical at 77°F (25°C) unless otherwise stated

### Maximum surge current

6.5kA (8/20µs)

### Maximum leakage current

<0.3mA at working voltage

### Maximum continuous operating current

Rated

MA05 devices 5A at 30°C

MA10 devices 10A at 30°C

Derated

MA05 devices 1A/10°C above 35°C

MA10 devices 2A/10°C above 45°C

### Working voltage

MA\*\*/\*1 110V

MA\*\*/\*2 240V

### Maximum continuous operating voltage

110V versions 132V

240V versions 253V

### Limiting voltage

110V versions <400V

240V versions <800V

### Maximum attenuation (typical)

73dB (series mode);

70dB (common mode)

Bandwidth 50/60Hz

### Impulse energy absorption

110V versions 210J

240V versions 420J

### Ambient temperature limits

-13°F — +185°F (-25°C to +85°C)

### Humidity

5 to 95% RH (non-condensing)

### Casing

#### SC models

Cold-rolled steel casing, tin-plated

#### D models

Polyamide-PA, with G- or T-section

DIN-rail mounting foot UL94-V0

#### I models

Plastic ABS-VO IP50 rated

### Connectors

#### SC models

Low-profile safety spade terminators, or 'Faston' connectors

#### D and I models

Screw-clamp

### Terminals

#### D and I models

0.4" (2.5mm<sup>2</sup>) —12 AWG

### Weight

5.3 oz (150g) — SC models

3.5 oz (100g) — D models)

5.6 oz (160g) — I models

### Dimensions

See figures 4, 5 and 6

### Warning

These units must be protected by an external fuse

### Maximum fuse rating

MA05 5A

MA10 10A

Fuse rating may need to be reduced depending on power supply capability or equipment fitted downstream of SPD

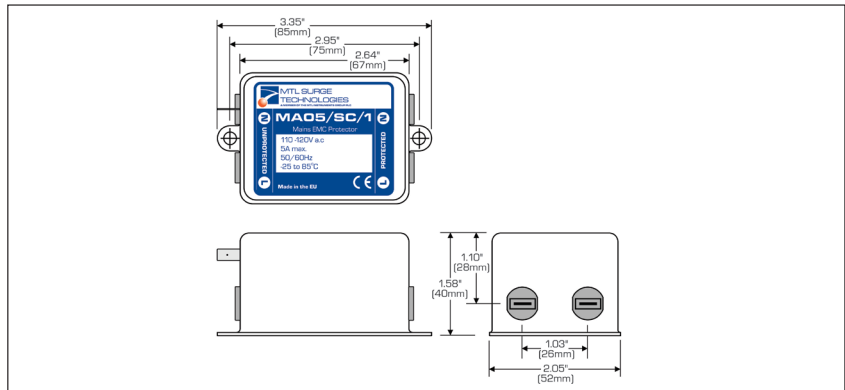


Figure 4 Dimensions and mounting — MA05/SC and MA10/SC

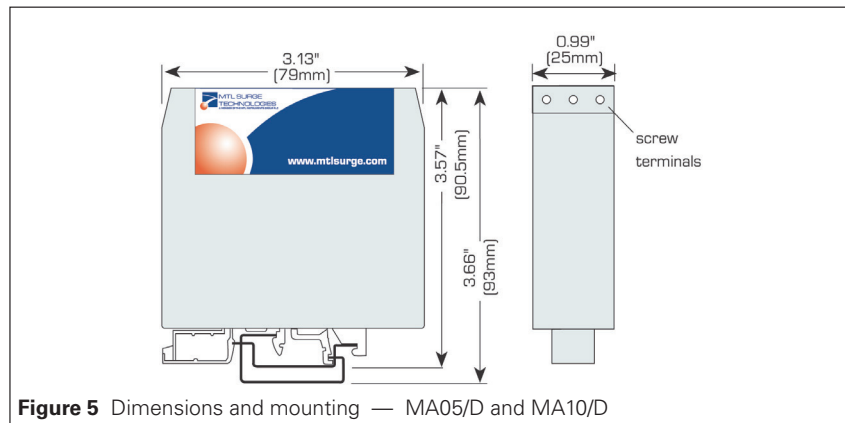


Figure 5 Dimensions and mounting — MA05/D and MA10/D

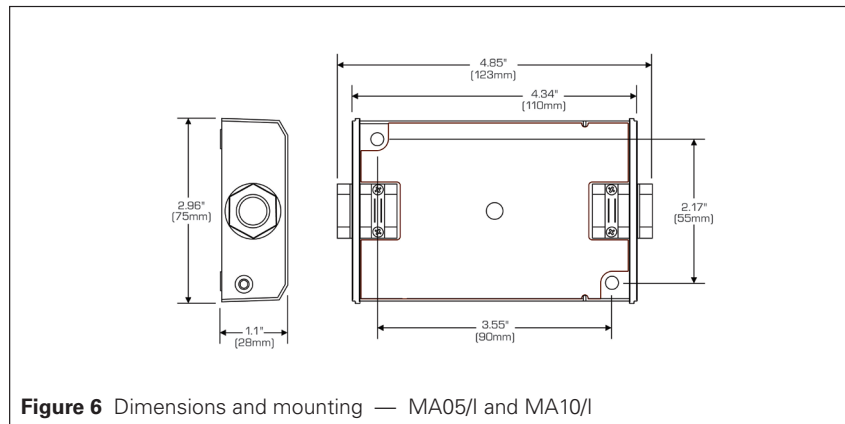


Figure 6 Dimensions and mounting — MA05/I and MA10/I

### To order specify -

MA05/SC/1	'filter-can' 110V, 5Amp	MA05/D/2	'DIN-rail' 240V, 5Amp
MA10/SC/1	'filter-can' 110V, 10Amp	MA10/D/2	'DIN-rail' 240V, 10Amp
MA05/SC/2	'filter-can' 240V, 5Amp	MA05/I/1	Wall/floor mounting 110V, 5Amp
MA10/SC/2	'filter-can' 240V, 10Amp	MA10/I/1	Wall/floor mounting 110V, 10Amp
MA05/D/1	'DIN-rail' 110V, 5Amp	MA05/I/2	Wall/floor mounting 240V, 5Amp
MA10/D/1	'DIN-rail' 110V, 10Amp	MA10/I/2	Wall/floor mounting 240V, 10Amp

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