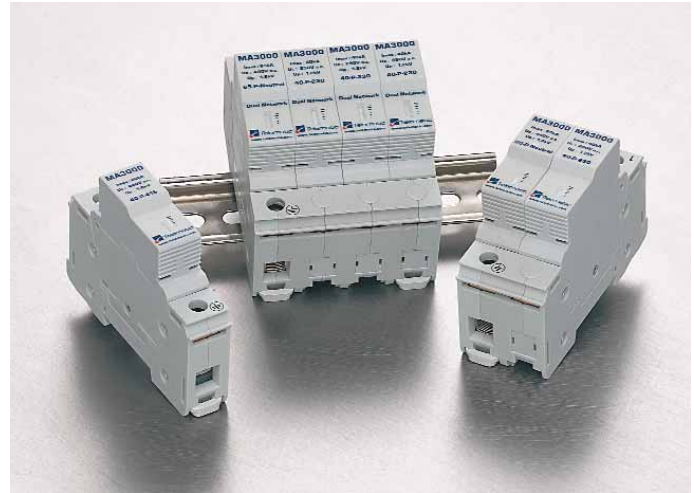


# MA3000 Series

Pluggable, DIN-rail mounting, ac mains devices



- Easy installation - simple DIN-rail mounting
- Multistage hybrid protection circuitry
- Range of voltage and current ratings
- Thermal disconnection
- Dual networking - indicates the condition of the unit
- Optional remote monitoring feature



The **MA3000 Series** surge protection devices prevent surges and transient overvoltages conducted through ac power distribution boards from damaging electronic systems such as instrumentation control panels, telemetry outstations and fire and security alarm installations. The MA3000 operates by limiting excess voltages to suitable lower levels.

**Fully automatic in operation**, the MA3000 reacts immediately, clamping voltage surges without causing undue leakage losses under normal operation. No operator intervention is required; the MA3000 resets itself automatically and is therefor maintenance free.

**Suitable for use on all sizes of distribution board**, the MA3000 is connected in parallel with the load via a short fused spur from a power distribution panel. Typically, each protector is fed from the distribution board.

**The MA3000 is a pluggable unit** in two parts consisting of a base element and a plug-in protection module. This allows the

protection module to be removed during insulation testing of the electrical installation. The MA3000 is available in 40kA and 65kA versions (MA3040 and MA3065). Single width modules, double width modules and four module width units are available.

**Continuity of protection** is ensured via the optional dual networking capability of the MA3000 range. An intrinsic safety feature of the MA3000 series, is the ability to thermally disconnect specific surge components in the event of a component failure. If Dual Networking is present, the MA3000 unit will continue to protect against further surges. Indication of a failure will be seen on the front of the unit and remotely, if the remote indication option has been installed.

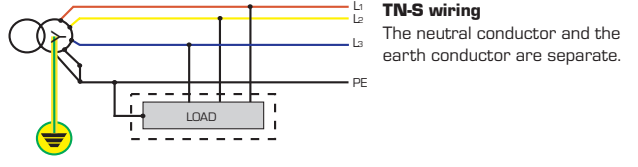
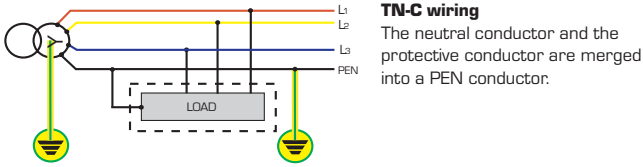
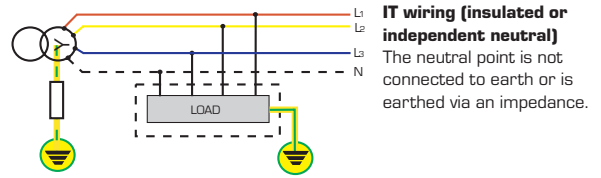
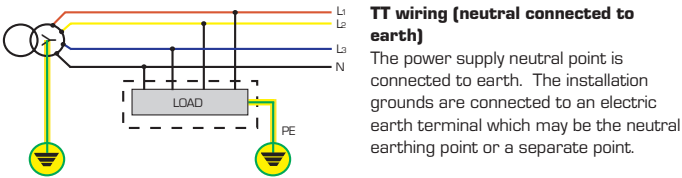
Additionally, when the module reaches the end of its working life, it can be isolated and replaced without disconnecting

the power (this operation should be carried out by a competent person).

**An optional monitoring block** is available from which detects the status of an MA3000 device, allowing up to 15 modules to be monitored. A volt-free contact will remotely indicate whether the protection element has failed or if the protection module has been removed. Alternatively, each module can be remotely monitored individually via volt-free contacts.

## AC Power Protection

# Network Identification



## Selection Guide

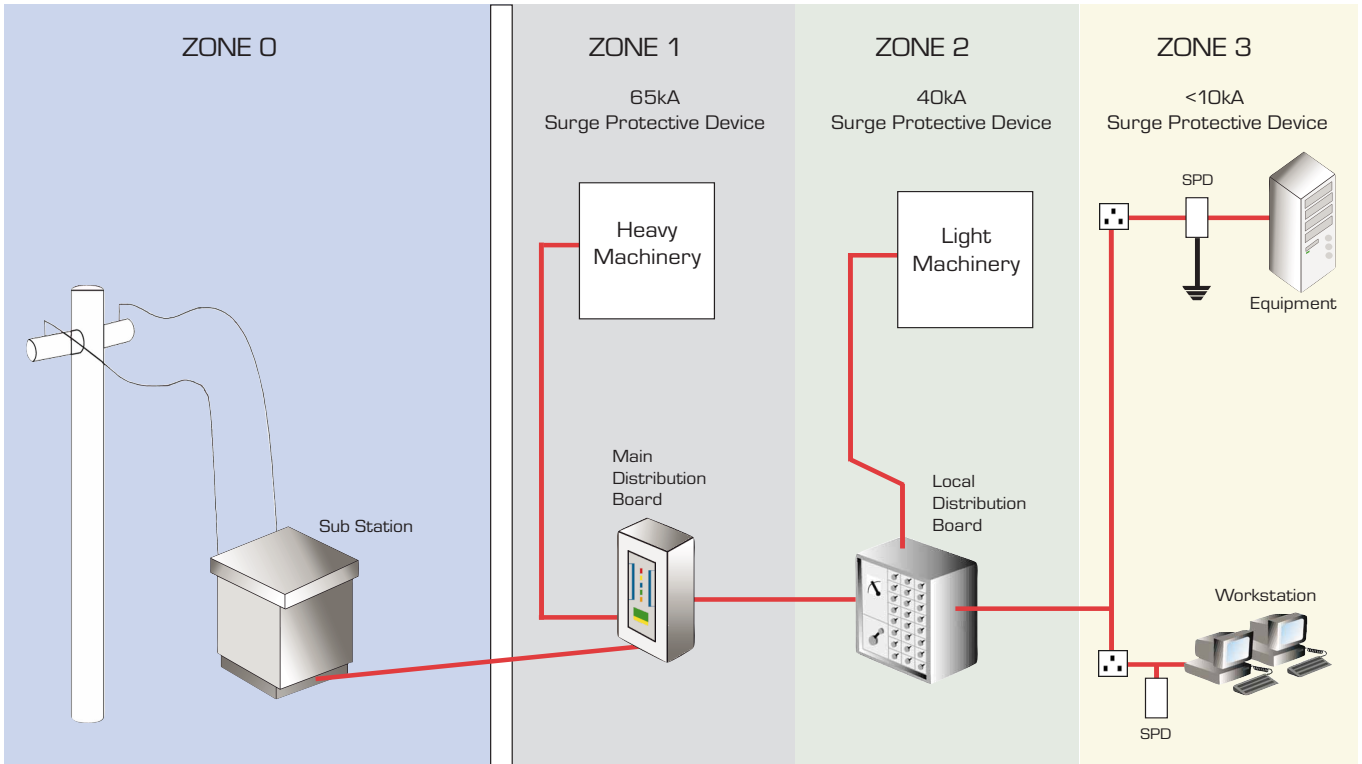
The type of surge protective device required is dependent on the network structure. Two protection modes are distinguished:

- Common mode: Protection between live conductors and earth
- Differential mode: Protection between live conductors (between phases and neutral)

	TT and TN-S wiring	IT wiring	TN-C wiring
Selection			
	<p><b>MA3040-P-230-2-S-O</b> 40kA, 230V, 2 module width</p> <p><b>MA3040-P-230-2-D-R</b> 40kA, 230V, 2 module width, Dual networking, Voltage contacts present</p> <p><b>MA3065-P-230-2-D-O</b> 65kA, 230V, 2 module width, Dual networking</p>	<p><b>MA3040-P-230-1-S-O</b> 40kA, 230V, 1 module width (line to neutral)</p> <p><b>MA3040-P-415-1-D-R</b> 40kA, 415V, 1 module width, Dual networking, Voltage contacts present</p> <p><b>MA3040-P-415-1-S-O</b> 40kA, 415V, 1 module width</p>	<p><b>MA3065-P-230-1-D-O</b> 65kA, 230V, 1 module width, Dual (line to neutral)</p> <p><b>MA3065-P-415-1-D-O</b> 65kA, 415V, 1 module width, Dual networking</p> <p><small>* refers to devices between line/neutral &amp; earth</small></p>
	<p><b>MA3040-P-415-4-S-O</b> 40kA, 415V, 4 module width</p> <p><b>MA3040-P-415-4-D-R</b> 40kA, 415V, 4 module width, Dual networking, Voltage contacts present</p> <p><b>MA3065-P-415-4-D-O</b> 65kA, 415V, 4 module width, Dual networking</p>	<p><b>MA3040-P-230-1-S-O</b> 40kA, 230V, 1 module width (line to neutral)</p> <p><b>MA3040-P-415-1-S-O</b> 40kA, 415V, 1 module width</p> <p><b>MA3040-P-415-1-D-R</b> 40kA, 415V, 1 module width, Dual networking, Voltage contacts present</p>	<p><b>MA3065-P-230-1-D-O</b> 65kA, 230V, 1 module width, Dual networking (line to neutral)</p> <p><b>MA3065-P-415-1-D-O</b> 65kA, 415V, 1 module width, Dual networking</p> <p><small>* refers to devices between line/neutral &amp; earth</small></p>

# Zonal Concepts

The protection zone concept is described in IEC 61312-1, however, a simple example of a system is given in the figure below.



## Lightning protection zones

- Zone 0** Zone where items are subject to direct lightning strikes or where an unattenuated electromagnetic field occurs as a result of the strike.
- Zone 1** High surge current device typically MA3065. Zone where items are subject to low level direct lightning strikes. The conducted impulse lightning currents and/or switching surges are reduced compared with Zone 0.
- Zone 2** Medium surge current device typically MA3040. Remnants of lightning impulse currents and/or switching surges are reduced compared with Zone 1.
- Zone 3** Low surge current device typically MA05 or MA10. Surges, caused by oscillation effects, magnetic field couplings and internal switching surges are reduced compared with Zone 2.

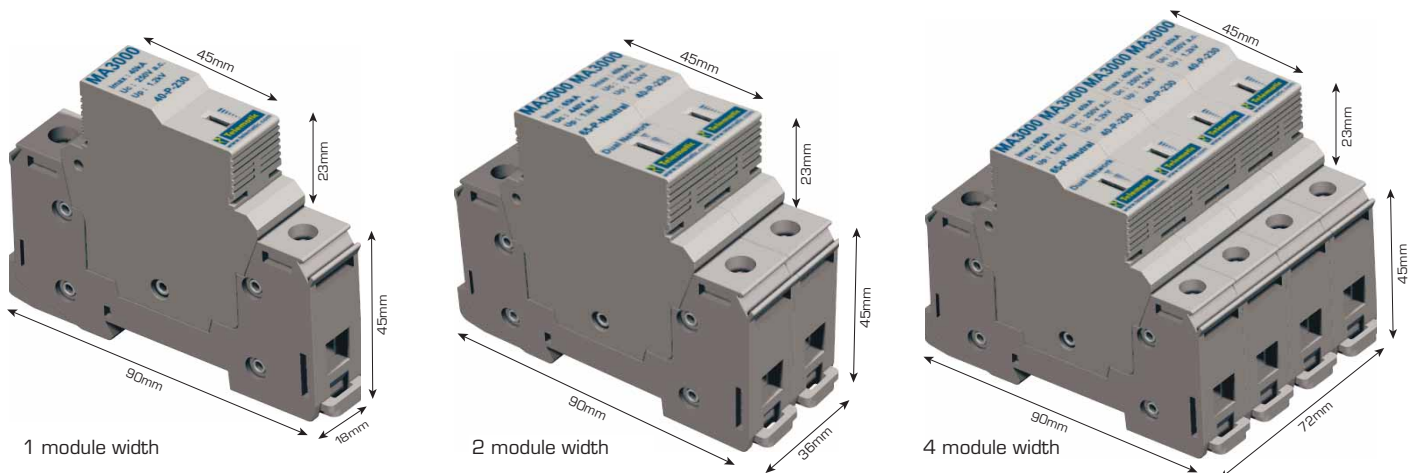
## Fusing

The MA3000 Series surge protective devices are fitted with a built-in thermal disconnect; however, they must be equipped with upstream protection against short-circuit currents and with a differential protection element for protection against indirect contact (generally already present in the installation).

The MA3000 Series must not be installed downstream of high sensitivity differential protection devices such as an RCB.

Model	Recommended fuse		Recommended circuit breaker
	14 x 51 (mm)	22 x 58 (mm)	
MA3040	-	40A	25A curve C
MA3040	50A	40A	10A curve C 25A curve B or C

## Dimensions



# Specification

(all figures typical at 25°C unless otherwise stated)

Model	Maximum discharge current (Imax.) (kA)	Nominal discharge current (In) (kA)	Maximum leakage current (mA)	Working voltage (V)	Limiting voltage (6kV/3kA) (V)	Maximum continuous operating voltage (Uc) (V)	Phase	Number of modules
MA3040-P-230-1-S-O	40	10	<1	230	840	250	Single	1
MA3040-P-415-1-S-O	40	10	<1	415	<1000	440	Single	1
MA3040-P-415-1-D-R	40	10	<1	415	<1000	440	Single	1
MA3040-P-230-2-S-O	40	10	<1	230	840	250	Single	2
MA3040-P-230-2-D-R	40	10	<1	230	840	250	Single	2
MA3040-P-415-4-S-O	40	10	<1	415	840	440	Three	4
MA3040-P-415-4-D-R	40	10	<1	415	840	440	Three	4
MA3065-P-230-1-D-O	65	20	<1	230	<1000	250	Single	1
MA3065-P-415-1-D-O	65	20	<1	415	<1300	440	Single	1
MA3065-P-230-2-D-O	65	20	<1	230	<1000	250	Single	2
MA3065-P-415-4-D-O	65	20	<1	415	<1000	440	Three	4

## Definitions of terminology used in table

### 1 Maximum discharge current

This discharge current is a single shot 8/20µs waveform

### 2 Nominal discharge current

This discharge current is a multi shot (20 times) 8/20µs waveform

### 3 Maximum leakage current

Maximum current drawn by the SPD at the working voltage

### 4 Working voltage

Maximum voltage between lines or lines/ground for the specified leakage current

### 5 Limiting voltage

Peak output voltage after injection of test impulse from 6kV/3kA combination waveform generator (often known as 'let-through' voltage)

### 6 Maximum continuous operating voltage

Maximum voltage that can be applied to the protected terminals without damage

## MA3000 Units

### Indication

- Clear: Unit fully operational
- Partial red: Reduced level of protection (with dual networking option)
- All red: Module failed/disconnected

### Relay

- Rating: 6Vdc 10mA minimum  
250Vac 5A maximum
- Status: CLOSED – unit fully operational  
OPEN – protection module failed/disconnected

### Ambient temperature limits

- 20 to +70°C (working)
- 40 to +80°C (storage)

### Humidity

- 5 to 95% RH (non-condensing)

### Enclosure

- Polycarbonate with 20% fibreglass
- Flammability rating: UL 94 V1

### Terminals

- 16mm<sup>2</sup> (Stranded)
- 25mm<sup>2</sup> (Solid)

### Mounting

- T-section DIN rail (345mm x 7.5mm x 15mm rail)

### Weight

- 1 module: 125g approximately
- 2 modules: 220g approximately
- 4 modules: 460g approximately

### EMC compliance

- To Generic Emission standard EN50081 Part 1 and Generic Immunity Standard EN50082 Part 2

## Approvals

Country	Standard	Classification
Europe	IEC 61643-1	Class 2
UK	BS6651: 1999 (meets requirements of Annex C)	Category C high
France	NFC 61-740(95)	Class 2
Germany	VDE 06-75	Class 2

Note: In accordance with our policy of continuous improvement, Telematic reserves the right to change the product's specification without notice.

## Monitoring Block (MA3000-N-OPT-2-N-R)

### Remote monitoring voltage

- DC 6V @ 10mA (min)
- AC 250V @ 5A (max)

### Indication

- Full protection: Green indicator
- Replace unit: Red indicator

### Fusing

- 2A

### Ambient temperature limits

- 20 to +70°C (working)
- 40 to +80°C (storage)

### Humidity

- 5 to 95% RH (non-condensing)

### Enclosure

- Polycarbonate with 20% fibreglass
- Flammability rating: UL 94 V1/VO

### Terminals

- 2.5mm<sup>2</sup> wire size

### Mounting

- T-section DIN rail (345mm x 7.5mm x 15mm rail)

### Weight

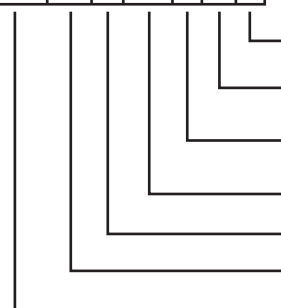
- 120g approximately (both units)

### EMC compliance

- To Generic Emission standard EN50081 Part 1 and Generic Immunity Standard EN50082 Part 2

## To order specify -

MA30 40 P 415 4 D O



- O = Voltage Contacts not present  
R = Voltage Contacts present
- S = No Dual Networking Function  
D = Dual Networking fitted
- 1 = 1 module width  
2 = 2 module width  
4 = 4 module width
- 230 = operating voltage  
415 = operating voltage
- P = Pluggable module
- 65 = 65kA Surge Rating  
40 = 40kA Surge Rating
- MA30 = (Product Range Name)

