

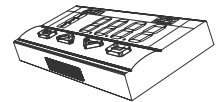
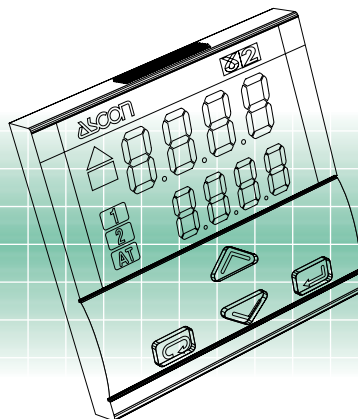
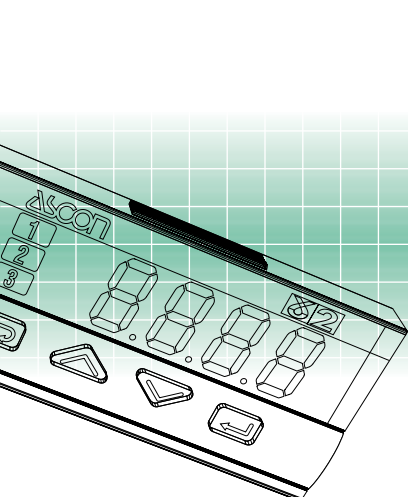
# Safety Limiter

## 1/32 DIN and 1/16 DIN

### gamma**due**<sup>®</sup> series C1 and M4 lines

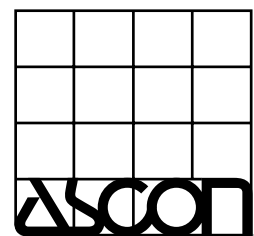
#### Safety and Reliability in a Small Package

The gamma**due**<sup>®</sup> Series C1 and M4 Safety Limiters are micro-processor based instruments used to safely limit temperatures in thermal applications where a runaway condition may compromise operator safety, equipment, or product. C1 and M4 Safety Limiters provide this protection cost effectively and with minimum panel space while providing standard features of IP65 front panel protection and FM approval. Options include a digital input (for remote reset, on M4 only), communications and DIN rail-mounting.



E

ISO 9001 Certified





# gammadue<sup>®</sup>

the right solution to your needs



## Safety limiter solution

In a typical 'High Limit' application the operator sets the limit threshold few degrees below the temperature that would cause an unsafe condition. If that temperature is reached, the Safety Limiter output relay contact opens to shutdown the heat source. The relay will not automatically reset after the temperature goes below the threshold value; the operator must manually either push the "reset" key or a remote reset switch. The Safety Limiter also includes a relay or SSR drive output to actuate a standard second alarm.

Features of the Safety Limiter include:

- Shutdown for High or Low Limit, Upscale or Downscale Burnout and power supply failure;
- Status Retention or Automatic Reset or Manual Reset on Power-On condition;
- Output relay energized under normal conditions;
- Protection against casual adjustment of threshold;
- Dedicated "reset" key and optional digital input for remote reset switch;
- LED for signaling the not acknowledged or acknowledged shutdown condition;
- Reset requires a manual action and is not possible until temperature is below the threshold;
- Approved in accordance with Factory Mutual (FM) Standard Temperature Limit Switches Class 3545.

Features of the standard second alarm output include:

- Absolute, Deviation or Band high/low alarm;
- Sensor break alarm;
- Direct/Reverse action;
- Automatic/Manual Reset;
- Latching;
- Blocking (start-up disabling);
- LED for signaling the alarm status.

The complete operation mode of the safety limiter is detailed in the table that follows:

Limiter status	OP1 contact	Led 1	Limiter can change status by:	
			Input condition	Reset
Non alarm status	Closed (Relay energized)	OFF	Non alarm condition	Transition to non-acknowledged status
			Remains in non alarm status	
Non-acknowledged status	Open (Relay De-energized)	Flashing	Reset	
			Ack	Non-Ack
Acknowledged status	Open (Relay De-energized)	Steady ON	Input condition	Remains in acknowledged status
			Non alarm condition	
			Returns to non alarm status	

When powered ON, the Limiter alarm (AL1) has three selectable behaviours.

"Automatic Reset". The Limiter status at power ON only depends on the status of the input. If the input is in safe operating range the Limiter automatically enters in the non alarm status. If the input is in the unsafe operating range the Limiter enters in the non-acknowledged alarm status.

"Manual Reset". The Limiter status at power ON is forced to the non-acknowledged alarm status.

"Status retention". The Limiter status at power ON is forced to the same status the Limiter had before power switch OFF as described in the following table.

Limiter Status at previos power OFF	Input AL1 condition at new power ON	Limiter Status at new power ON	OP1 Relay contact	LED 1
Non alarm status (normal operation)	Normal operation	Non Alarm status	Close	Steady OFF
	Alarm condition true	Non Acknowledged alarm	Open	Flashing
Non Ancknowledged alarm	Normal operation	Ancknowledged alarm	Open	Flashing
	Alarm condition true			
Ancknowledged alarm	Normal operation	Non Alarm status	Close	Steady OFF
	Alarm condition true	Ancknowledged alarm	Open	Steady ON

The behaviour of the second alarm (AL2) is independent from the AL1 Limiter alarm. AL2 status on power ON depends on the status of the input.

## Resources

### Main universal input



PV



C1

OP1



### Digital input (option for M4 only)



IL



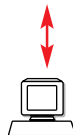
M4

OP2



M4 only

### Digital input connected functions (option for M4 only)



**Modbus RS485**  
Parameterisation  
Supervision  
(option)

## Operating mode

Safety Limiter      Supervisory switch (AL2 alarm)

OP1      OP2





S E R I E S

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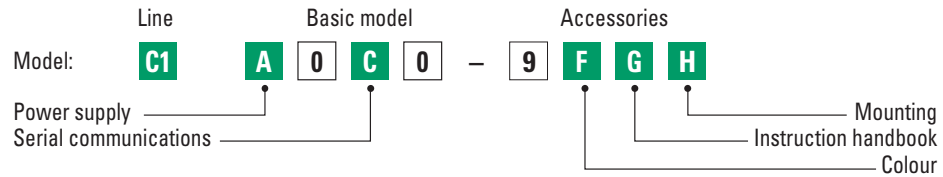
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## Ordering codes



Line	C 1
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Power supply	A
100-240V~ (-15% +10%)	3
24V~ (-25% +12%) or 24V- (-15% +25%)	5

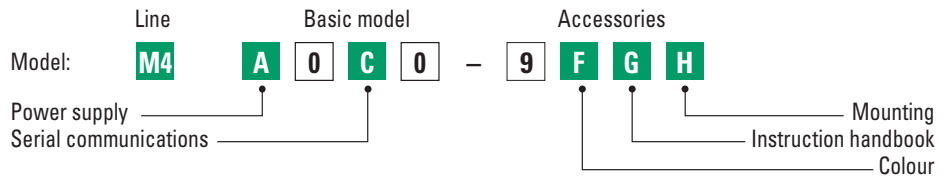
Serial communications	C
Not fitted	0
RS485 Modbus/Jbus protocol	5

Instruction handbook	F
Italian-English (std)	0
French-English	1
German-English	2
Spanish-English	3

Front case colour	0/4... 20 mA Input Shunt Resistor	G
Dark grey (std)	Standard resistor	0
Beige	Standard resistor	1
Dark grey (std)	High accuracy resistor	2
Beige	High accuracy resistor	3

Mounting	H
Panel Mounting	0
DIN Rail Mounting	1

If not differently specified the controller will be supplied with standard version  
**Model: C1 3000-9000**



Line	M 4
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Power supply	A
100-240V~ (-15% +10%)	3
24V~ (-25% +12%) or 24V- (-15% +25%)	5

Serial communications/Options	C
Not fitted	0
RS485 Modbus/Jbus protocol	5
Digital Input	9

Instruction handbook	F
Italian-English (std)	0
French-English	1
German-English	2
Spanish-English	3

Front case colour	0/4... 20 mA Input Shunt Resistor	G
Dark grey (std)	Standard resistor	0
Beige	Standard resistor	1
Dark grey (std)	High accuracy resistor	2
Beige	High accuracy resistor	3

Mounting	H
Panel Mounting	0
DIN Rail Mounting	1

If not differently specified the controller will be supplied with standard version  
**Model: M4 3000-9000**

