

# SAFETY MODULE MS-ER MA R01



## GENERAL DESCRIPTION

The safety module in the **MS-ER MA R01** series is a logical block for emergency stop, with an integrated actuation unit, that can be used to implement electrical control systems associated with the functional safety of a machine. Typical applications are the control of emergency stop controls - limit switches for mobile safety guards - safety sensors and devices with solid-state outputs such as photo-electric safety curtains (ESPE). By connecting these devices appropriately to the inputs of the safety module, 2 channel control systems with integrity levels up to SIL “3” may be implemented according to EN 62061 and with performance levels up to PL “e”, according to EN ISO 13849-1. Single channel circuits can also be implemented but with integrity levels up to SIL “1” and performance characteristics to PL “c” levels. The module is also equipped with a dedicated START input, which when appropriately configured, allows for the implementation of AUTOMATIC START or MANUAL START functions.

## TECHNICAL CHARACTERISTICS

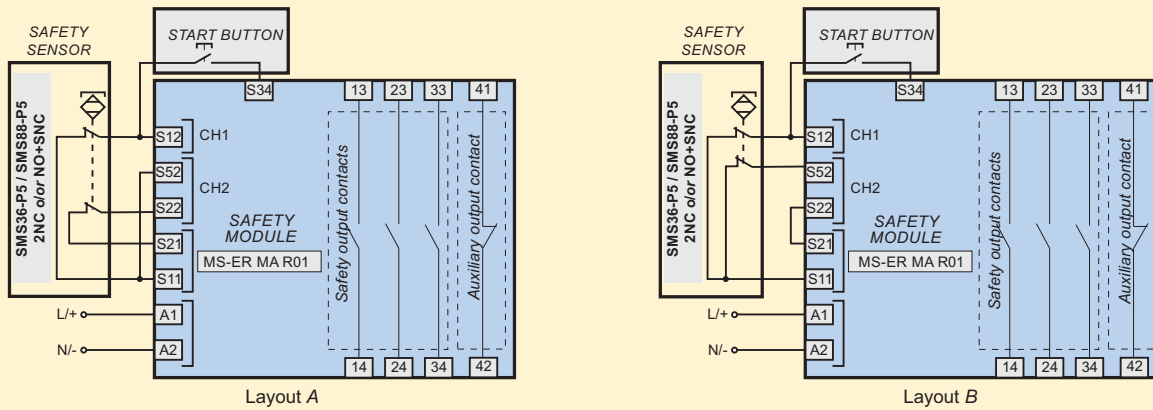
TYPE	MS - ER MA R01 24 QMS000001	MS - ER MA R01 120 QMS000002	MS - ER MA R01 230 QMS000003
Rated supply voltage Un	24Vdc/ac	120Vac	230Vac
Residual ripple in d.c.	10%		
Absorption	< 5 Va in AC		
Performance level PL	Up to PL e		
Safety integrity level SIL CL	Up to SIL 3		
Safety category	Up to category 4		
Ambient temperature	Operating -25°C to +55°C Storage		
Mechanical endurance	>10 million of cycles		
Electrical endurance	>100.000 cycles		
Pollution degree	3 external & 2 internal		
Rated impulse voltage Uimp	4 kW		
Rated impulse voltage Ui	250 V		
Overvoltage category	III		
Housing material	Polyamide PA & Vo class according to UL 94		
Protection degree IP	IP40 housing & IP20 terminal		
Weight (g)	250 g		
Short circuit protection	PTC resistor, Ih= 0.5 A		
PTC time	Operation for >100 ms, reset >3 s		
Max current for input	<30 mA		
Minimum duration of START impulse	<250 ms		
Activation time	<300 ms		
Releasing time	<15 ms		
Simultaneity time	Infinity		
Conforming to standards	EN 60947-1, EN 60947-5-1, EN 60947-5-2, EN 60947-5-3, IEC 60947-5		
Conforming to directives	2006/42/CE - Machinery directive - 2014/30/UE - CEM directive		
Approvals	Certificate n. IMQ CR 475 DM		
Output contacts	3 NO safety contacts + 1 NC auxiliary contact		
Output contacts type	Forcibly guided		
Output contacts material	Gold-flashed Ag-Ni alloy		
Output contacts max swicthing voltage	250Vac, 30Vdc		
Output contacts max swicthing current	6 A		
Output contacts free air thermal current	6 A		
Output contacts protection fuse	6 A type F		

# INSTALLATION AND USE INSTRUCTIONS

## CONNECTION OF ORE SENSOR TO THE SAFETY MODULES

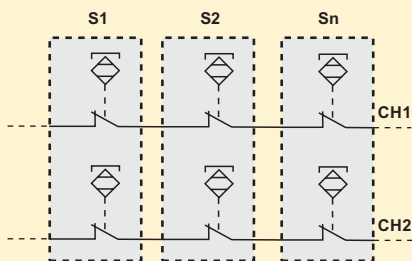
### 2 CHANNELS CONFIGURATION WITH MANUAL START

PLe/SIL3/Category 4 - only use sensors (SMS36 and SMS88) with 2NC or NO+2NC contacts



To realize a circuit with **automatic start**, replace the button with a jumper between terminals S12 and S34.

### CONNECTION OF MORE SENSORS TO SAFETY MODULE



S1, S2, Sn = safety magnetic sensor

CH1 = input channel 1 of the safety module

CH2 = input channel 2 of the safety module

It's possible to connect in series more safety magnetic sensors to the module MS-ER MA R01

The total resistance of the sensors and cables must not exceed the input resistance of the single channel of the safety module.

With this technique you can realize circuits up to category 3 according to ISO EN 13849-1.

## MECHANICAL DIMENSIONS (mm)

