REER

Your future's safe!



MOSAIC

MOdular SAfety Integrated Controller

Short form

MOSAIC

MOdular SAfety Integrated Controller



SAFETY LEVEL

SIL 3

SIL 3 - SILCL 3
PL e - Cat. 4

EN 8120/50

RoHS Compliant

RV Range
ATEX and HAZLOC certified versions

A unique safety controller: modular, expandable and configurable

Key features

Mosaic is a safety hub able to manage all safety functions of machinery.
Configurable and scalable, Mosaic provides cost reductions and minimal wiring.
The new Mosaic M1S COM master unit integrates 2 RJ45 network connectors for connections to the field bus and / or to the network for remote control.

Modules also available with **ATEX Zone 2** and **HAZLOC** certification. The RV range includes M1S RV and M1S COM RV main units and MI8O4 RV, MA4 V and MBC V expansion modules.

new

Mosaic can manage safety sensors and signals such as

Light curtains, photocells, laser scanners, emergency stops, electromechanical switches, guard-lock safety door switches, magnetic switches, RFID switches, safety mats and edges, two-hands controls, hand grip switches, encoders, proximities for safety speed control and analogue sensors (i.e. loading cells, pressure switches, temperature measurement, flow and level measurement, etc.).

Advantage

- Reduces the number of devices and wiring used to minimize the overall size of the project
- Accelerates control panel construction
- Possibility of remote control with the new Mosaic M1S COM master unit
- Adding or removing safety function blocks at any stage of the machine design process
- Ability to check the logic configuration of the application at any point from the design phase through the Simulation and Monitor functionalities
- Allows tamper-proof system configurations
- Better performance and safety level through the use of fewer electromechanical components
- The project report provides the actual values of PFHd, DCavg, and MTTFd according to EN 13849-1 and EN 62061

MSD
MOSAIC SAFETY DESIGNER

Provides logic configurations via a quick and easy-to-use software (MSD, Mosaic Safety Designer) provided with each Master Unit at no additional cost. Machine designers are always able to change the configuration logic through a graphic interface. No more tedious wiring is needed as with traditional solutions





Communication



MBx MCT

Speed Monitoring



MV0 MV1 MV2

Safety



MR2 MR4 MR8

MBx

Field-bus units

MBP Profibus DP
MBD DeviceNET
MBC CANopen
MBEI EthernetIP
MBEC EtherCAT
MBEPL Ethernet Powerlink
MBEP PROFINET
MBMR Modbus RTU
MBEM Modbus TCP
MBU USB
MBCCL CC-Link
MBE COM Ethernet IP, EtherCAT, PROFINET, Modbus TCP

MCT

Interface connection units

Interface module allowing the connection of remote expansions via the proprietary MSC bus

MCT1
1 connection interface (1 I/O cable)

MCT2
2 connection interface (2 I/O cables)

MV0/MV1/MV2

Speed monitoring units

Safety speed monitoring (up to PL e) for: Zero speed control, Maximum speed control, Speed range control, Direction

MV0
Input for 2 proximity switches

MV1
Input for 1 incremental encoder (TTL, HTL or SIN/COS) and 2 proximity switches

MV2
Input for 2 incremental encoders (TTL, HTL or SIN/COS) and 2 proximity switches

MR2/MR4/MR8

Safety relay output units

Safety relays with guided contacts:
2 (MR2), 4 (MR4), 8 (MR8)

NO contacts:
2 (MR2), 4 (MR4), 8 (MR8)
NC contacts:
1 (MR2), 2 (MR4), 4(MR8)
(250 VAC 6 A)

NC contacts for EDM feedback:
1 (MR2), 2 (MR4), 4 (MR8)

MOR4/MOR4S8

Safety relay output units

MOR4

4 safety relays with guided contacts

4 NO contacts (250 VAC 6 A)

4 inputs for Start/Restart interlock and EDM

It is possible to select two different configurations via MSD:

- 4 independent single channel outputs
- 2 dual channel outputs

MOR4S8
As MOR4, with 8 status outputs (PNP 100 mA)

Connect up to 14 expansion units to the Master Unit

Relays



MOR4 MOR4S8

Master Units



Additional I/O



MI8O2 MI8O4

	Mosaic M1	Mosaic M1S	Mosaic M1S COM
	Standard	*Enhanced*	*Enhanced interface fielbus*
Digital inputs	8	8	8
Inputs for Start/ Restart interlock and EDM	2	4	4
Safety outputs (PNP 400 mA)	2 pairs OSSD	4 single OSSD or 2 double	4 single OSSD or 2 double
Status outputs (PNP 100 mA)	2 (SIL 1, PL c)	4 (SIL 1, PL c)*	4 (SIL 1, PL c)*
Test Outputs	4	4	4
Fieldbus interfaces	With MBx	With MBx	Integrated. Protocols: Ethernet IP, EtherCAT, PROFINET, Modbus TCP

MI8O2/MI8O4

Input/Output unit

MI8O2/MI8O4*

8 digital inputs

2 (*4) inputs for Start/Restart interlock and EDM

2 pairs (*4 single or 2 pairs) OSSD safety outputs (PNP 400 mA)

2 (*4) status outputs (PNP 100 mA)

4 test outputs (for short-circuits monitoring)

Features of the system (Master + 14 expansion unit)	Mosaic M1	Mosaic M1S Mosaic M1S COM
MSD Operators	64	128
Fieldbus imputs	8	32
Safety outputs	16	32
Status outputs	32	48
Timer	32	48
Muting	4	8
Safety guard lock	4	8
Probes	16	32
Footprint map for fieldbus modules	-	Yes

New operators

Timer and delay with longer limits.

2 steps restart.

Multi-level thresholds for speed monitor, timers, etc. (comparators).

New restart including signal for the push button light (flashing for restart request, off for other conditions).

* Status outputs can be converted in feedback inputs (up to 4 feedback input for the 4 single-channel outputs).

Additional Inputs

Additional Outputs



MA2 MA4 MI8 MI16 MI12T8 MO2 MO4 MO4L MO4L HC S8 POWER MOS8 MOS16

MA2/MA4

Analogue input unit

2 (MA2) or 4 (MA4) independent isolated analogue channels (500 V)

Each channel can supply 24 VDC up to 30 mA

Each channel can detect a 4-20 mA current or a 0-10 V voltage (selectable via software)

Individual channels can be paired-up to allow sensor reading redundancy

MI8/MI16/MI12T8

Input units

MI8
8 digital inputs

4 test outputs

MI16
16 digital inputs

4 test outputs

MI12T8*
12 digital inputs

8 test outputs
(in all module short-circuits monitoring)

** Can manage up to 4 independent safety mats/edges*

MO2/MO4

Output units

MO2
2 pairs OSSD safety outputs (PNP 400 mA)

2 inputs for Start/Restart interlock and EDM

2 status outputs (PNP 100 mA)

MO4
4 pairs OSSD safety outputs (PNP 400 mA)

4 inputs for Start/Restart interlock and EDM

4 status outputs (PNP 100 mA)

MO4L

Output unit

4 single (or 2 pairs) OSSD safety outputs (PNP 400 mA)

4 inputs for Start/Restart interlock and EDM

4 status outputs (PNP 100 mA)

MO4L HC S8 POWER

High current output unit

4 single (or 2 pairs) OSSD safety outputs (PNP 2,0 A)

4 inputs for Start/Restart interlock and EDM

8 status outputs (PNP 100 mA)

POWER 2A

MOS8/MOS16

Additional status output units*

MOS8
8 status outputs (PNP 100 mA)

MOS16
16 status outputs (PNP 100 mA)

** Safety level: SIL 1 - SILCL 1 - PL c*

RV RANGE UNITS

new

With ATEX Zone 2 and HazLoc certifications, as well as compliance with international standards.

Master units: M1S RV - M1S COM RV
Expansion units: MI8O4 RV - MA4 V - MBC V

Designed to operate in environments with potentially hazardous atmospheres.

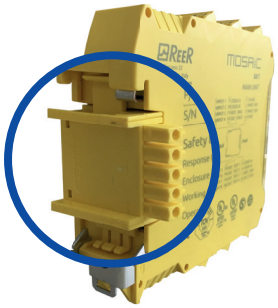
Protective Coating for Marine Environments: The conformal coating shields electronic components from humidity and atmospheric agents, extending device longevity



MCM

Mosaic Configuration Memory

Removable memory card. Ideal for saving Mosaic configuration data for subsequent transfer to a new device (without connecting to a PC) or for backup



MSC

Mosaic Safety Communication

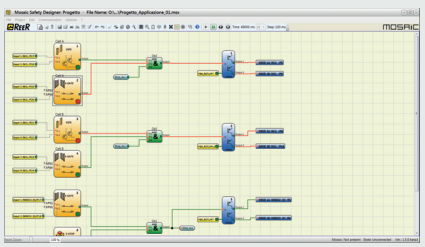
Allows communication between the various units through a proprietary high-speed safety bus

MSD

MOSAIC SAFETY DESIGNER

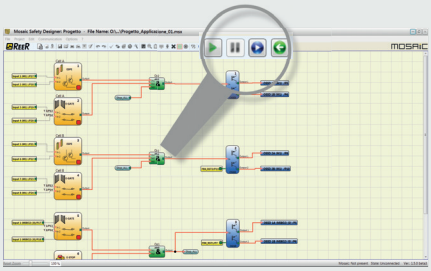
Easy-to-use designer software included with Mosaic M1 and Mosaic M1S Master Units. Drag & Drop functionality allows to easily create all logic scenarios in a machine directive compliant environment.

Built-in Monitor



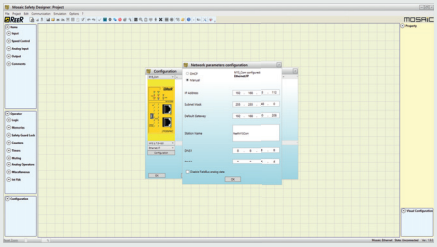
- Drag & Drop
- User-frendly
- Real-time monitor

Built-in Simulator



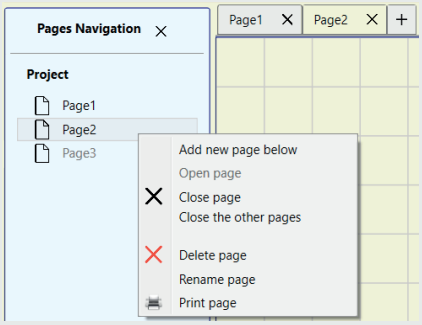
- Design validation
- Simulation
- Security password

Remote control



- Reports and log files
- Project information

Multipage management



- New multipage function available.

  This function allows to split the Mosaic project into pages.
  In this case, the user will have multiple pages of fixed size in which to place components and connections.

MTB

Screw Terminal Blocks



Removable terminal blocks with screw contacts

MTBC

Clamp Terminal Blocks



Removable terminal blocks with clamp contacts

MCT

Remote Interface Units

Interface module allowing the connection of remote expansion units via the MSC safety bus



Your future's safe!

More than 60 years of quality and innovation

Founded in Turin, Italy in 1959, ReeR prides itself in its strong commitment to innovation and technology.

ReeR's steady growth since its inception is a result of being a leader in the global safety automation industry.

Today, the Safety Division is a world leader in the development and manufacturing of safety optoelectronic sensors and controllers.

ReeR is ISO 9001, ISO 14001 and ISO 45001 certified.

Made in Italy
since 1959

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