Programmable multifunctional safety modules **CS MP**

Introduction

A **Gemnis** series module is a programmable safety devices, which allows several safety functions to be carried out simultaneously. This product series has been developed specifically to meet the needs of machinery manufacturers with a low to average number of safety functions. As an indication, these modules can manage small applications which are equivalent to the functions carried out by 3 to 4 traditional electromechanical safety modules, up to circuits with dozens of inputs.
Gemnis series safety modules can implement safety circuits with a safety category of up to SIL 3 acc. to EN 62061, PL e and category 4 acc. to EN ISO 13849-1.

The **Gemnis** series of safety modules has been updated to **version 11** which introduces new functions and improved hardware- and software-level performance.
This update considerably increases the application potential of these products.

The **Gemnis Studio** program is a graphic development environment for the creation, simulation and debugging of programs designed for insertion in Gemnis line modules.
This software is licensed to users wishing to program these modules, subject to prior registration at **www.gemnis.com**.
You can download the new **Gemnis Studio** software version (**Gemnis Studio 11**) from the site, which will allow you to program both current, **Gemnis K11**-designated modules, as well as previous ones.

General data of safety modules

Gemnis series modules can manage all of the following safety device types:
- Mechanic safety switches
- Switches with solenoid for guard locking
- Magnetic safety switches
- Optic safety barriers or optic safety sensors (in category 4)
- Safety sensors
- Emergency stop mushroom buttons
- Emergency stop rope switches
- Safety mats or safety bumpers with 4-wire technology
- Category IIIA or IIIC two-hand controls
- Safety selectors
- Enabling devices

NEW > • 4-20 mA analogue sensors (Gemnis Studio 11)
NEW > • 0-4 kHz frequency signals (Gemnis Studio 11)
NEW > • Two beam muting systems (Gemnis Studio 11).

This modules are also equipped with functionality allowing you to also implement:
- Safety timing
- Detection of various types of faults in safety devices or their connections
- Temperature limit checking inside module
- State communications via USB port.

Finally, Gemnis series modules can:
- Manage up to eight different electronic safety outputs or four relay outputs
- Manage various (unsafe) signalling outputs
- State information and data settings via the USB communication port.

Gemnis design safety modules can implement safety circuits with up to SIL CL3 acc. to EN ISO 62061, PL e and category 4 acc. to EN ISO 13849-1.

Website

This product line is supported online via the **www.gemnis.com** website, where you can:
- Download the gemnis studio installation package (following registration)
- Download support files
- Get the most up to date version of the instruction manual
- Get examples and other support information which will be added over time

NEW > • Watch videos illustrating Gemnis Studio 11 program operation.

Hardware structure of modules

Gemnis design modules are created with increased flexibility - even at the hardware level. These products are made up of various electronic circuit boards which are sold in various combinations, but which are always contained in a single housing and with one unique product code.
The Gemnis line modules have a general redundant and self monitoring type structure, they are controlled by a pair of processors which simultaneously run the application program and constantly monitor their operation and system integrity in parallel.

Each module is supplied in a single housing, of the minimum width required to house the boards which make up the module. 45 mm to 90 mm wide housings are available. The customer does not need to worry therefore about wiring the various parts.

The USB port integrated within the module is used for programming and debugging of the Gemnis Studio program module. Once a module is programmed, you can also use the USB port for communicating with a PC installed beside the machine, and for the exchange of information relating to the module state.

The main developments introduced at the hardware level by the safety module update to version 11 are:

NEW > • Ability to manage programs up to four times larger
NEW > • The ability, with new dedicated modules, to manage analogue and/or speed inputs
NEW > • Models with 8 safe electronic outputs
NEW > • New module configurations available (following table).

Module	I type inputs	J type inputs	C type inputs	F type inputs	T test signals	OS safety outputs	O signalling outputs	Port	Width (mm)	Page
CS MP201M0	8	-	-	-	8	3NO	4	USB	45	249
CS MP202M0	16	-	-	-	4	4 PNP	4	USB	45	250
CS MP203M0	12	-	-	-	4	3NO + 1NO	4	USB	45	251
CS MP204M0	12	-	-	-	4	3NO	4	USB	45	252
CS MP205M0	4	4	-	4	4	4 PNP	4	USB	45	253
CS MP206M0	8	-	-	-	4	4 PNP	12	USB	45	254
CS MP207M0	4	-	2	-	4	4 PNP	4	USB	45	255
CS MP208M0	16	-	-	-	4	8 PNP	-	USB	45	256
CS MP301M0	24	-	-	-	8	3NO	4	USB	67.5	257
CS MP302M0	24	-	-	-	12	4 PNP	4	USB	67.5	258
CS MP303M0	32	-	-	-	4	4 PNP	4	USB	67.5	259
CS MP304M0	28	-	-	-	4	3NO + 1NO	4	USB	67.5	260
CS MP305M0	24	-	-	-	4	4 PNP	12	USB	67.5	261
CS MP306M0	20	-	-	-	4	3NO + 1NO	12	USB	67.5	262
CS MP307M0	8	4	2	4	4	4 PNP	4	USB	67.5	263
CS MP308M0	24	-	-	-	4	8 PNP	8	USB	67.5	264
CS MP309M0	32	-	-	-	4	8 PNP	-	USB	67.5	265
CS MP401M0	40	-	-	-	4	4 PNP	12	USB	90	266
CS MP402M0	32	-	-	-	12	8 PNP	8	USB	90	267
CS MP403M0	40	-	-	-	4	8 PNP	8	USB	90	268

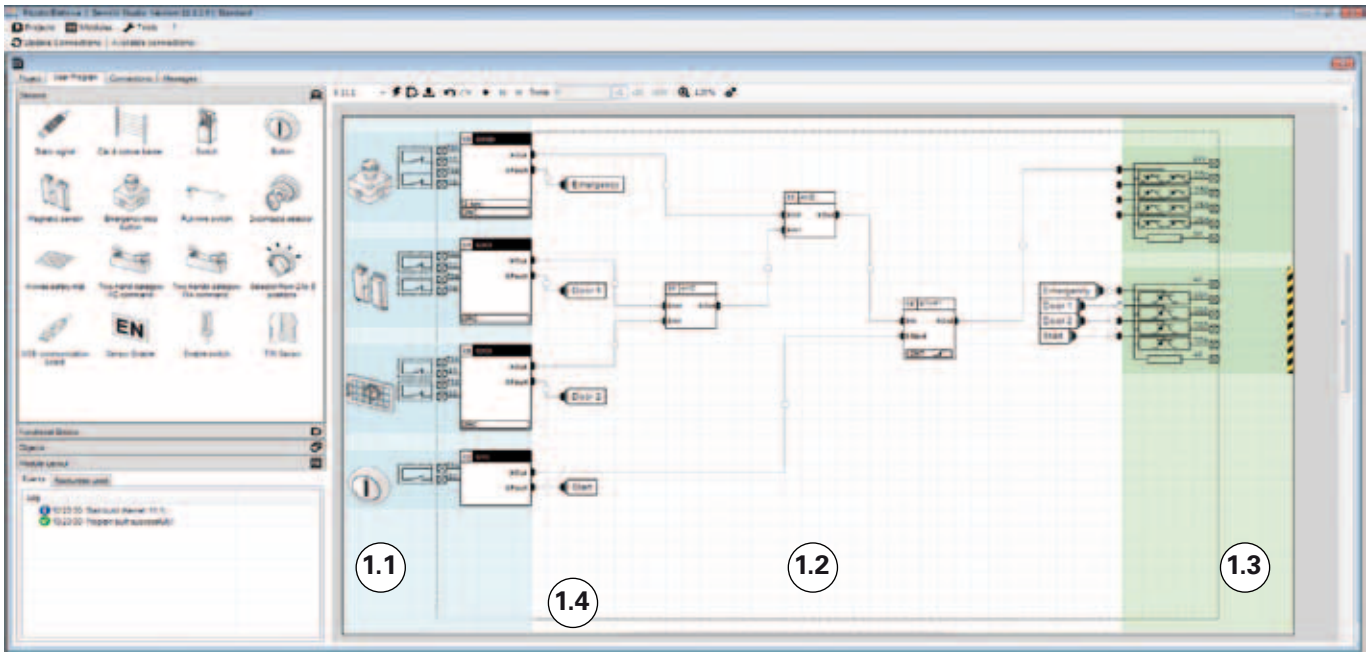
I = Digital inputs
J = Decoupled digital inputs
C = 4-20 mA type analogue signal inputs
F = 0 to 4 kHz frequency signal inputs

T = Test signals
OS = OSSD (PNP) safety outputs
nn = Relay safety outputs
O = PNP signalling outputs

Gemnis Studio software

Gemnis Studio is software designed to allow the user to program a module belonging to the Gemnis line. This software has a graphical interface to visually display, in a natural and intuitive way, the assembly of operations that the application program will execute, once loaded to the module. Gemnis Studio allows you to attach supporting information and useful notes to the configuration information, for overall understanding of the program. Gemnis Studio also allows you to check correct application program operation prior to sending it to the module via the simulation.
Finally, Gemnis Studio allows you to carry out monitoring and detection operations, and to graphically represent the state of an actively operational device in real time.

Desktop



The Gemnis Studio software has been designed with the objective of making Gemnis series module operation as immediate and visual as possible. With this aim, we decided to create a work environment – the Desktop – where, as far as possible, the user can amass all the information required to actually "view" and not just "imagine" the behaviour of the project under development. This is the reason we have made room for graphical object representations, of the physical characteristics of the module in use, and immediate interaction, by means of simulation, with the created program.
The desktop is the main user work area, the zone where the flow and processing to be applied to the data detected by the module are defined using the graphical program interface.

The desktop is divided into three parts:
1.1) the sensors zone
1.2) the functional blocks zone
1.3) the outputs zone

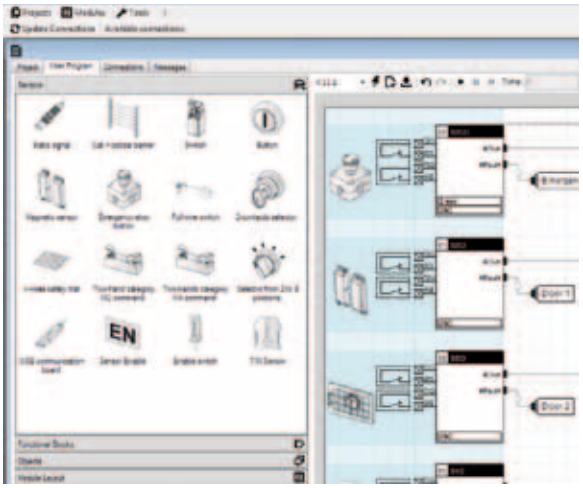
In the sensor zone (1.1) the user indicates the external device types connected to the module terminals, and all the parameters needed to define them.
In the output zone (1.3) all the output devices present in the selected module (relays, transistors etc.) are immediately shown.
In the function block zone (1.2) the user will enter all the logical functions needed to process the flow of data coming from the sensors, and will proceed to make the connections to transfer this data between the objects in the desktop and finally to the outputs.
The desktop includes a dotted box (1.4) which represents the area "occupied by the module", or, everything enclosed within the physical module, from terminals to code. The area outside this box, meanwhile, is occupied by images of the physical devices external to the module (switches, buttons, etc.), illustrating their expected internal structure and any description.
At the user's request, the desktop content is compiled and, provided there are no errors, it is translated into the application program. If a module is connected to the computer, you can immediately transfer the application program to it, and thereby check its effective operation in the field.
Otherwise it is possible to simulate application program operation directly on the desktop, by interacting with the sensors and evaluating their effects graphically.

Project
The collection of information required to configure a module and describe its activities is called a "Project". Using Gemnis Studio, the user can assemble the textual and graphical information required to elaborate and comment the functions which will be carried out by the program, once installed on a Gemnis line module.

Printing
Gemnis Studio can generate a Connection Report, which includes all module terminals connections, and a user Program Report, allowing you to print the Application Program.

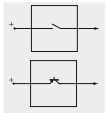
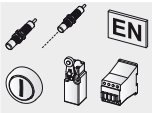
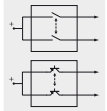
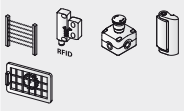
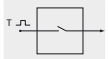
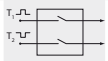
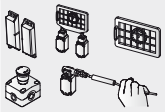
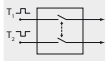
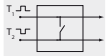
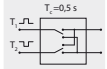
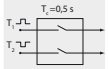
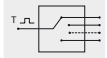
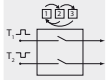
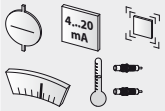
Password
The password gives the option of protecting a module's interaction capacity, and the ability to modify the project file.

Sensors

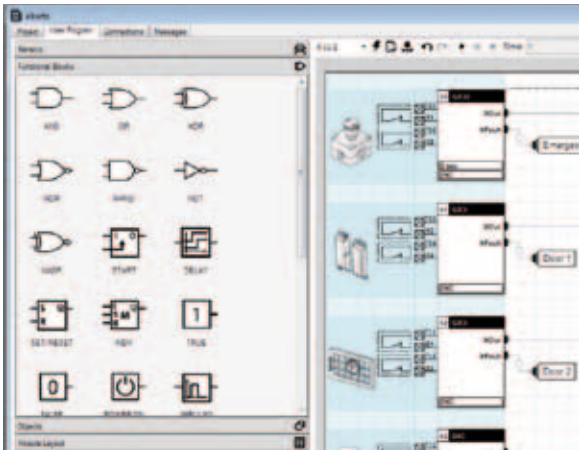


The sensor zone indicates the external device types which can be connected to the module terminals, and all the parameters needed to define them.
Each sensor created displays a view of the internal contact configuration and of how the contacts are connected to the module terminals, a box with the associated safety function, and the parameters selected for the function.
From the sensor panel, you can select a sensor using the mouse and drag it into the dedicated desktop area.
A full list of available sensors is shown to the side here.

Sensor list

Electrical type	Diagram	Examples	
Sensor with 1 non-testable channel			
Sensor with 2 non-testable channels and interdependent signals			
Sensor with 1 tested channel			
Sensor with 2 independent tested channels			
Sensor with 2 dependent tested channels			
Sensor with 2 always-closed tested channels and short circuit permitted between the channels			
Sensor with 2 tested channels which can be crossed			
Sensor with 2 tested channels which cannot be crossed			
Sensor with 2 to 8 tested channels which cannot be crossed and which may only be active one at a time			
Sensor with 2 tested channels which cannot be crossed and which must follow a very precise activation/deactivation sequence made up of three states: rest, work, stop			
Dual temperature sensor integrated in module			< NEW
Monitoring of a pair of analogue sensors with 4-20 mA output in both 2-wire and 3-wire versions			< NEW
Monitoring of a pair of signals in frequencies up to 4 KHz			< NEW

Function blocks

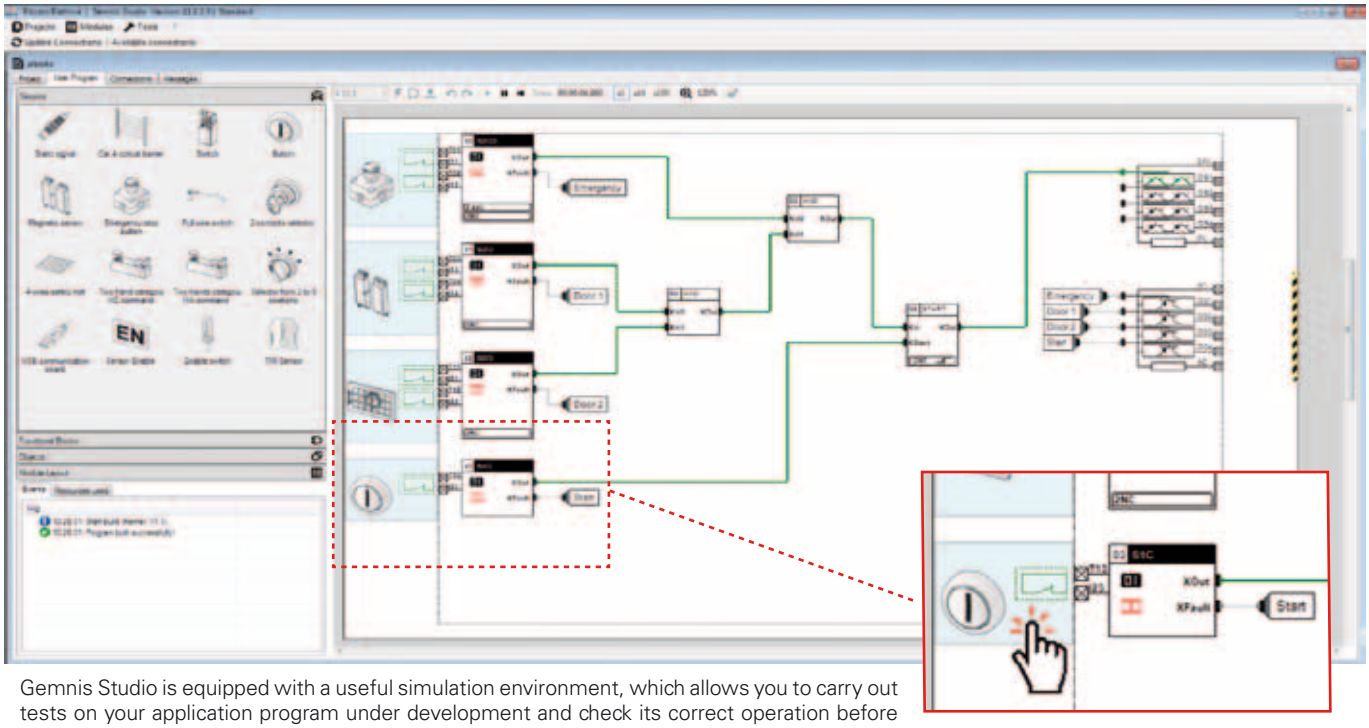


The function blocks represent all the logic functions required to process the data flow between sensors and outputs.
From the function block panel, a block can be selected using the mouse and dragged into the dedicated desktop area.
A full list of available function blocks is shown to the side here.

Block list

- AND — Basic boolean function
- OR — Basic boolean function
- XOR — Basic boolean function
- NOR — Basic boolean function
- NAND — Basic boolean function
- NOT — Basic boolean function
- NXOR — Basic boolean function
- START — Control function
- DELAY — Returns a Delay Off or Delay On-type signal
- SET/RESET — Basic logical memory function
- TRUE / FALSE — Basic boolean function
- POWER ON — Active signal at first execution cycle
- PULSE — Returns a Delay Off-type signal on the preselected input edge
- CLOCK — Generates pulses at pre-established fixed intervals
- ERROR — Puts the module into Error State
- LKTBL — Conversion table between same type data
- GEQ/EQU/LEQ — Carries out a numerical comparison between two B or W-type values and displays the result in boolean format (X)
- MESSAGE — Transmits a message on the USB and COM ports
- COUNTER — Pulse counter
- TRIGGER — Detects the edge, either rising or falling, of an input signal
- FILTER — Filters a signal from interference for a duration lower than set time
- LDC — Upstream function block for monitoring of a door-locking system
- WAVE — Generates a waveform with variable period and ON time < NEW
- MUTE2 — Upstream function block for monitoring of a 2-beam muting system < NEW

Simulation



Gemnis Studio is equipped with a useful simulation environment, which allows you to carry out tests on your application program under development and check its correct operation before you install it to a module. To run an application program simulation during the development phase, simply press the Start button on the toolbar at the top of the desktop. If the application program cannot compile, the simulation will not run.

The launch of the simulation phase transforms the desktop and how you interact with it. During this phase you can simulate module operation by interacting with the sensors and recreating real world conditions or operations. Clicking on the sensors will make them execute, in sequence, the standard events for each sensor. Each of these interactions modifies the state of the sensor output variables which, via the connectors, will become the input variables of the function blocks, which will evaluate them and so on, until the data arrives at the outputs that will or will not activate. This simulates exactly what will happen in the module.

Transmission of the information via the connectors is visible via colour change of the connectors.

Monitor

You can monitor operation of one or more Gemnis modules in real time using the Monitor function.
You can observe the overall operation state of the module and various data relating to the program being executed, including a list of most recently saved programs. You can view real time implementation status of the module program, inputs and outputs. In Gemnis Studio 11 the video data update has been made faster and for the analysis of large projects, graphical pan & zoom functions are also available in the Monitor.

Technical support

A technical support service is currently provided free of charge to users who have registered on the site and have activated Gemnis Studio using the activation process.
Gemnis Studio can operate in two modes: Demo mode and Standard mode.

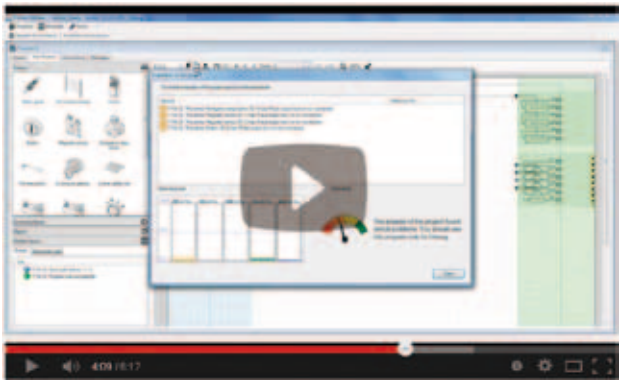
The version downloaded from the site operates initially in demo mode, which does not allow saving of projects or sending of a new project to a Gemnis series module.
Demo mode still allows creation and simulation of a project or sending of an existing project to a Gemnis series module. The demo version is almost a fully functional product but the only support provided is via the online help, and any other information which is freely available on the www.gemnis.com site.

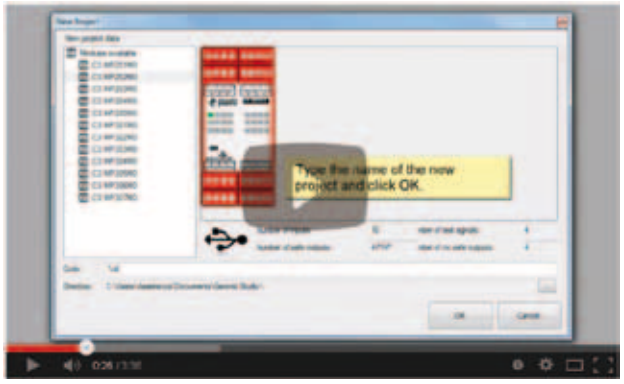
The Gemnis Studio demo version program is enabled in standard mode, i.e. becomes fully operational, via an activation process that requires direct connection (via USB) with any Gemnis series module. This procedure generates a code that must be provided when requesting technical assistance.

In practice, the purchase of a module allows full operation of the Gemnis Studio program (including saving the project) and enables the user to request additional information from the Pizzato Elettrica Help Desk. The information requested must be relevant to the functionality of the module. We do not provide a consulting service based on the customer's application.

Online support

The site www.gemnis.com contains video tutorials illustrating Gemnis Studio 11 program operation (for example how to activate the program and then go from the DEMO version to STANDARD Gemnis Studio or how to create a new project).





Programmable multi function safety module **CS MP201M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

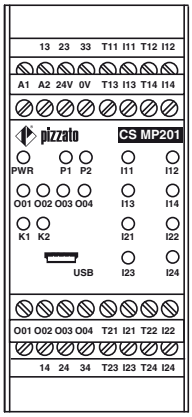
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	133	
PFHd	4.54E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	8	269 s. 6
Test outputs (Tx)	8	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Relay safety output circuits	3NO	270 s. 14
Weight	300 g	

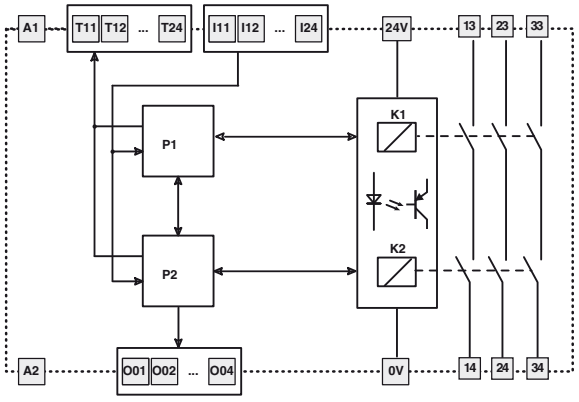
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP201M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

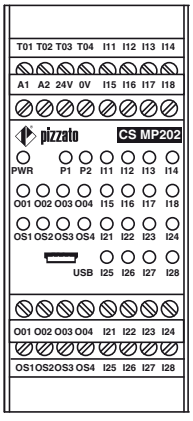
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	573	
PFHd	4.73E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	16	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	250 g	

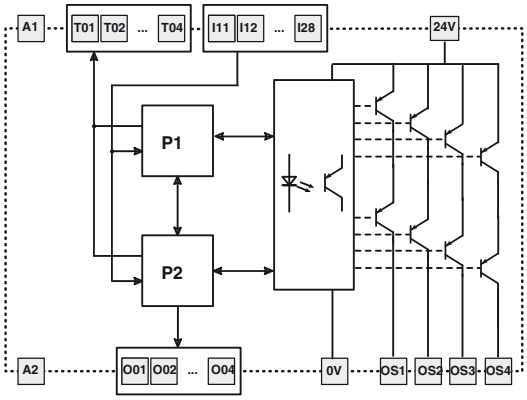
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP202M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Stock items

CS MP202M0

Programmable multi function safety module **CS MP203M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

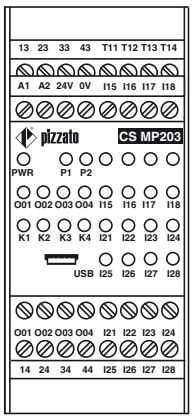
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	101	
PFHd	5.74E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	12	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Relay safety output circuits	3NO+1NO	270 s. 14
Weight	300 g	

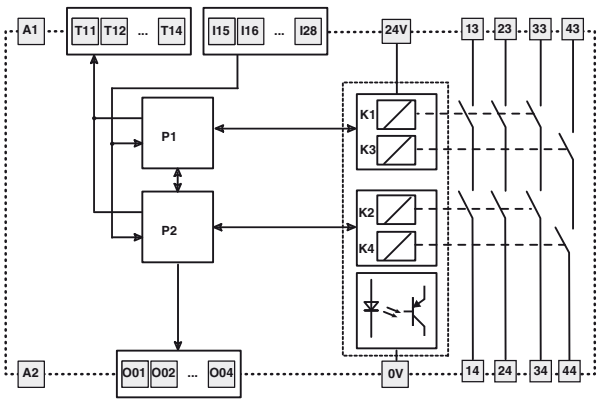
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP203M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

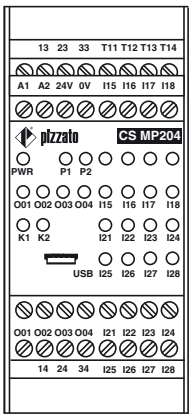
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	132	
PFHd	5.32E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	12	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Relay safety output circuits	3NO	270 s. 14
Weight	300 g	

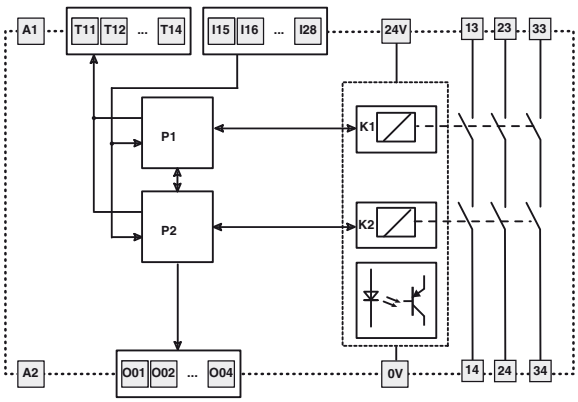
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP204M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP205M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

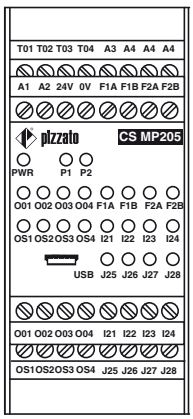
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

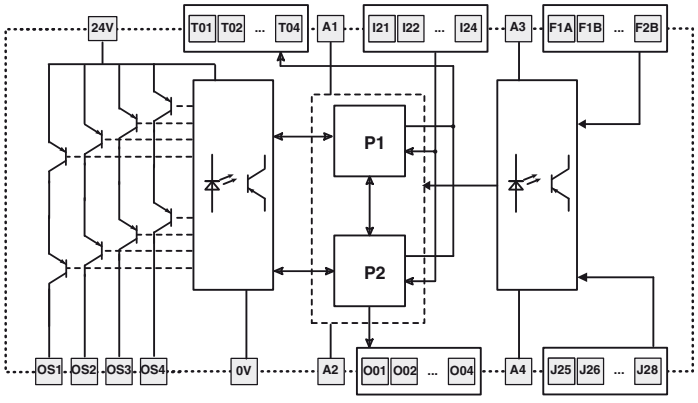
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	406	
PFHd	4.83E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	4	269 s. 6
Decoupled digital inputs (Jx)	4	269 sez. 7
Inputs for frequency signals from 0 to 4 kHz (Fx)	4	269 sez. 9
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	250 g	

Terminal layout



Internal diagram



Code structure

CS MP205M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

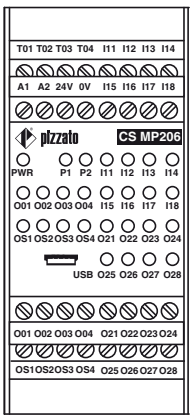
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	643	
PFHd	2.85E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	8	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	12	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	250 g	

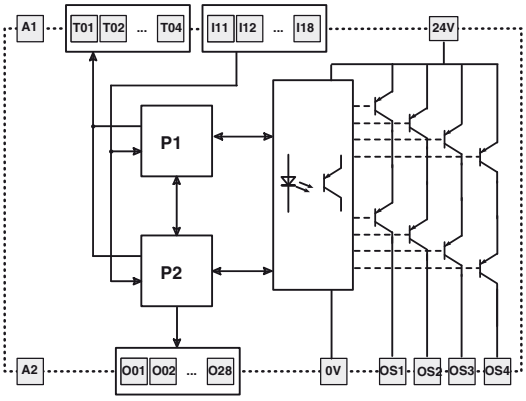
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.В.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP206M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP207M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

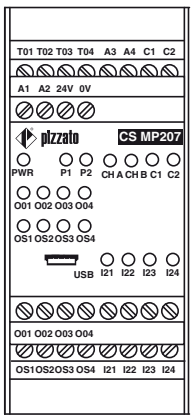
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

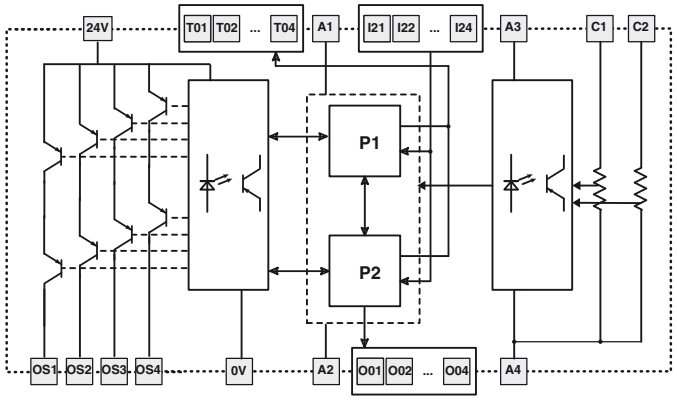
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	407	
PFHd	5.39E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	4	269 s. 6
4-20 mA type analogue signal inputs (Cx)	2	269 sez. 8
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	250 g	

Terminal layout



Internal diagram



Code structure

CS MP207M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

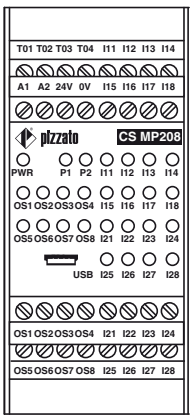
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	588	
PFHd	6.17E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	16	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor safety output circuits (OSx)	8 PNP	270 s. 13
Weight	250 g	

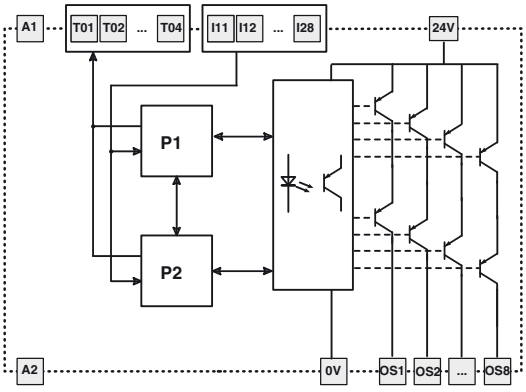
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP208M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP301M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

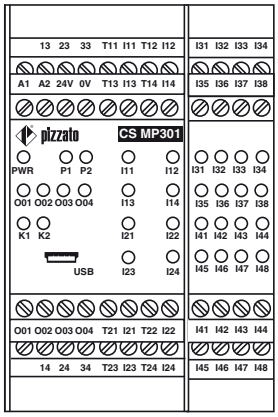
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	126	
PFHd	8.92E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	24	269 s. 6
Test outputs (Tx)	8	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Relay safety output circuits	3NO	270 s. 14
Weight	400 gr	

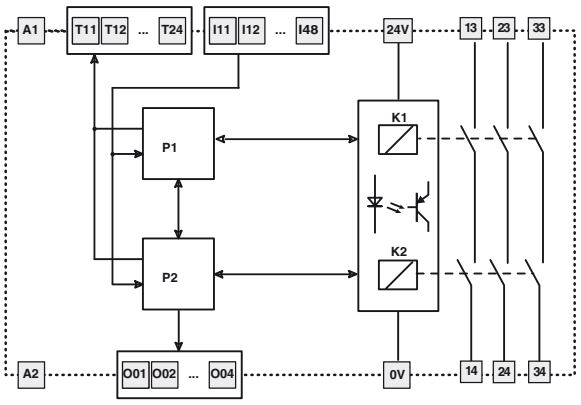
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP301M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

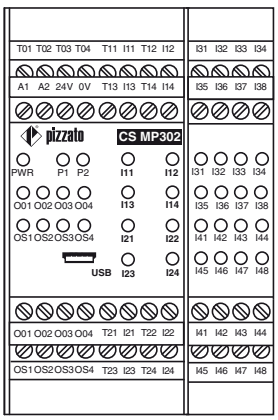
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	604	
PFHd	3.45E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	24	269 s. 6
Test outputs (Tx)	12	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	350 gr	

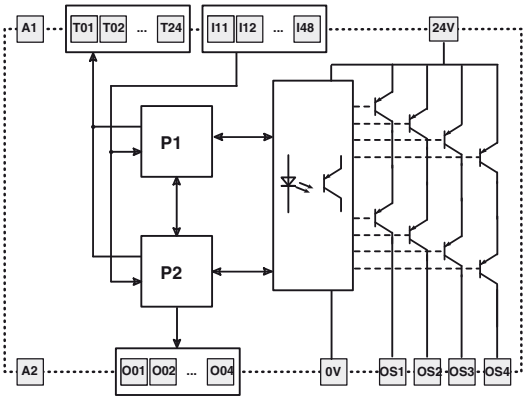
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP302M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP303M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

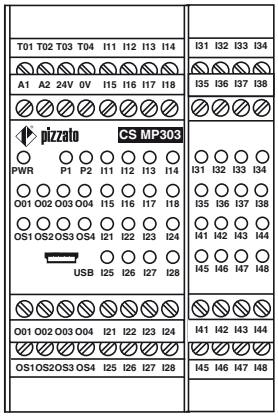
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	459	
PFHd	9.11E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	32	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	350 gr	

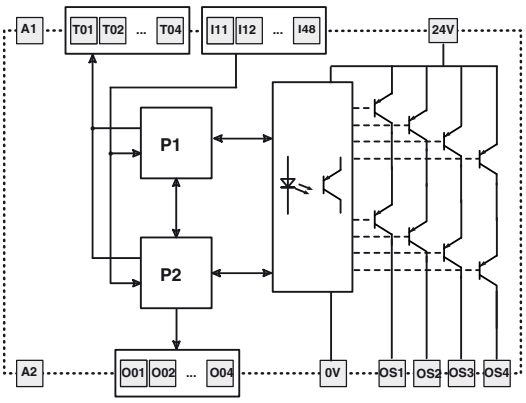
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP303M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

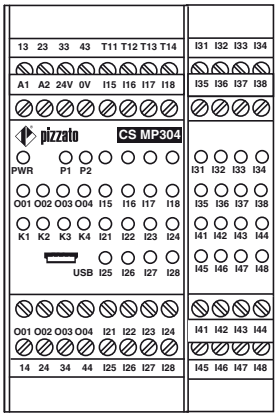
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	97	
PFHd	1.01E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	28	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Relay safety output circuits	3NO+1NO	270 s. 14
Weight	400 gr	

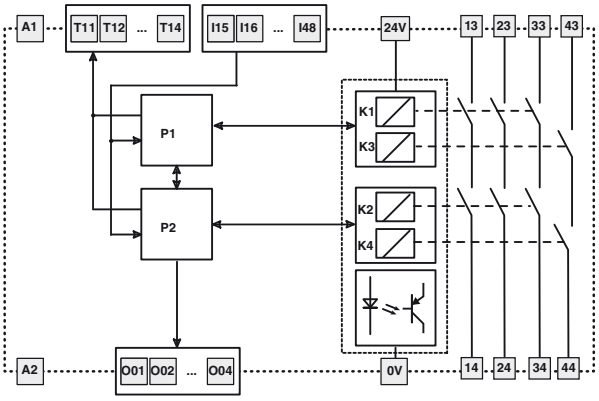
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP304M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP305M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

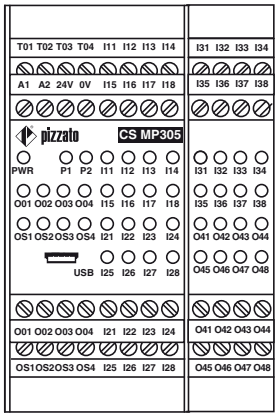
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	503	
PFHd	7.24E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	24	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	12	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	350 gr	

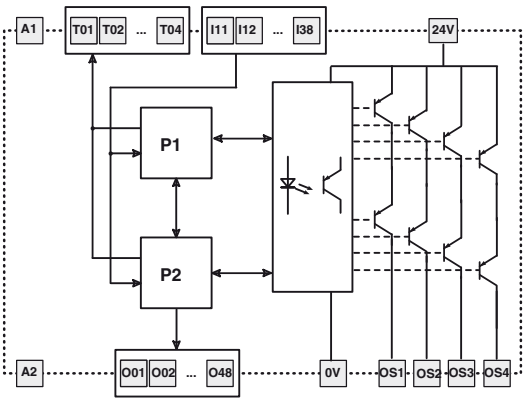
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP305M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

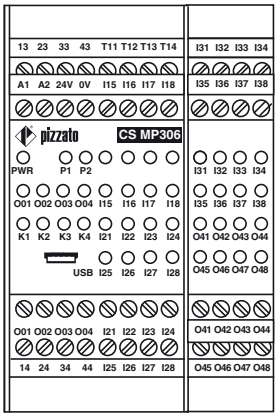
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	99	
PFHd	8.25E-10	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	20	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	12	270 s. 11
Relay safety output circuits	3NO+1NO	270 s. 14
Weight	400 gr	

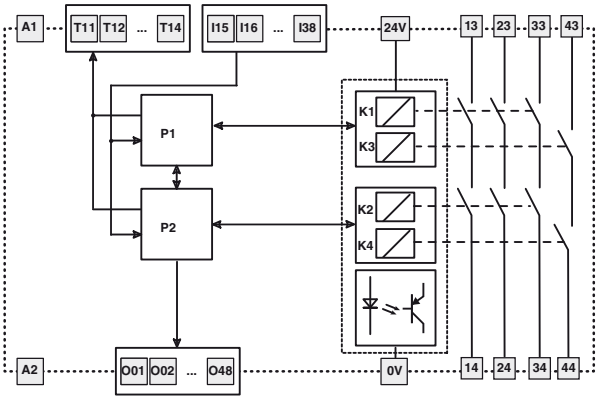
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.В.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP306M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP307M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

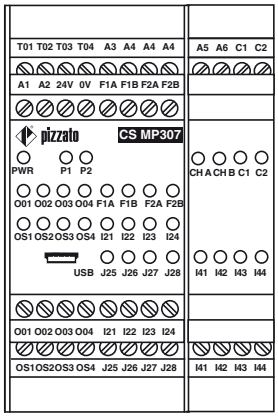
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

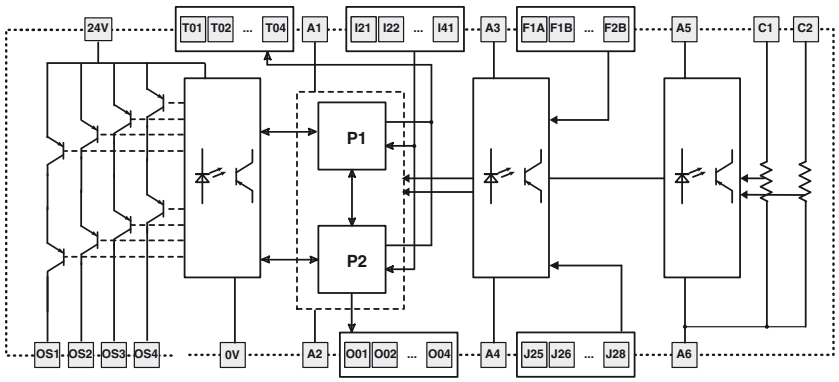
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	276	
PFHd	5.84E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	8	269 s. 6
Decoupled digital inputs (Jx)	4	269 sez. 7
4-20 mA type analogue signal inputs (Cx)	2	269 sez. 8
Inputs for frequency signals from 0 to 4 kHz (Fx)	4	269 sez. 9
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	4	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	350 gr	

Terminal layout



Internal diagram



Code structure

CS MP307M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

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- For safety applications up to SIL CL 3/PL e
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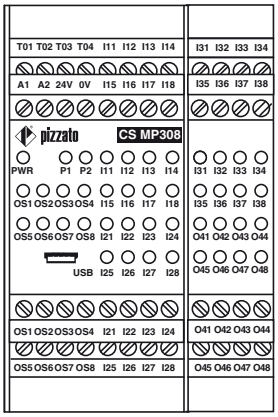
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	514	
PFHd	6.42E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	24	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	8	270 s. 11
Semiconductor safety output circuits (OSx)	8 PNP	270 s. 13
Weight	350 gr	

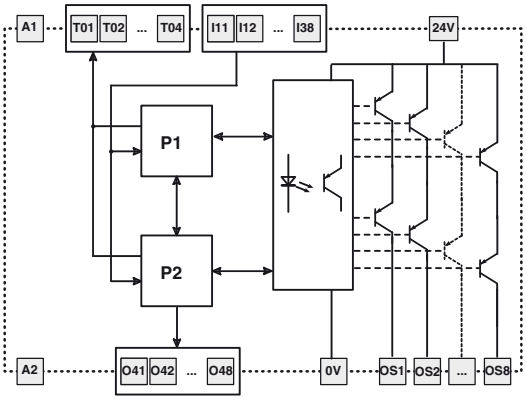
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP308M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP309M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
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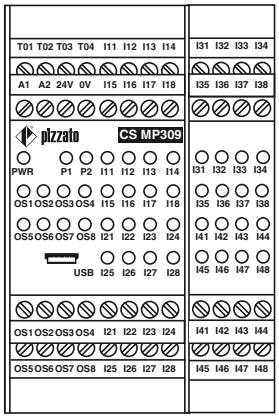
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	469	
PFHd	6.61E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	32	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor safety output circuits (OSx)	8 PNP	270 s. 13
Weight	350 gr	

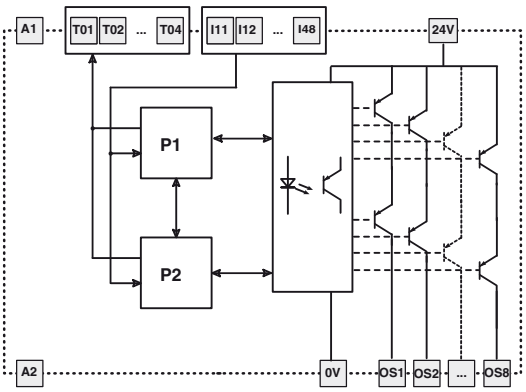
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



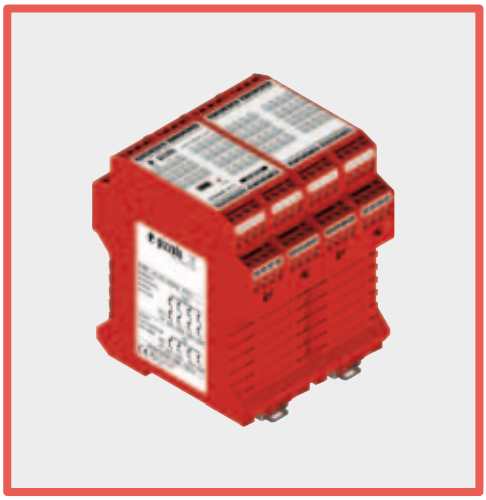
Internal diagram



Code structure

CS MP309M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals



Main features
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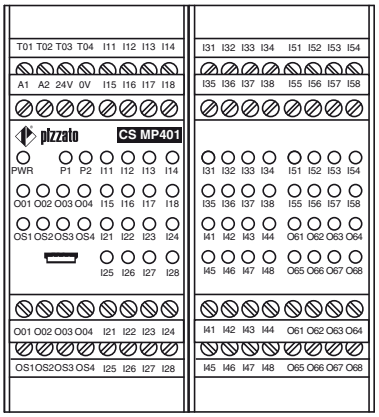
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	413	
PFHd	1.16E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	40	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	12	270 s. 11
Semiconductor safety output circuits (OSx)	4 PNP	270 s. 12
Weight	500 gr	

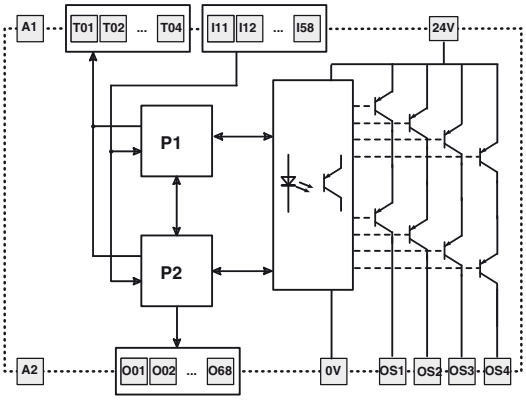
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP401M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Programmable multi function safety module **CS MP402M0**

Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Wide availability of logical blocks for the management of external devices and programs
- Custom configured versions available on request

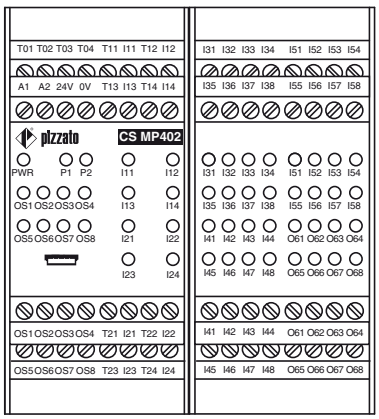
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	452	
PFHd	6.67E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	32	269 s. 6
Test outputs (Tx)	12	269 s. 10
Semiconductor signalling output circuits (Ox)	8	270 s. 11
Semiconductor safety output circuits (OSx)	8 PNP	270 s. 13
Weight	500 gr	

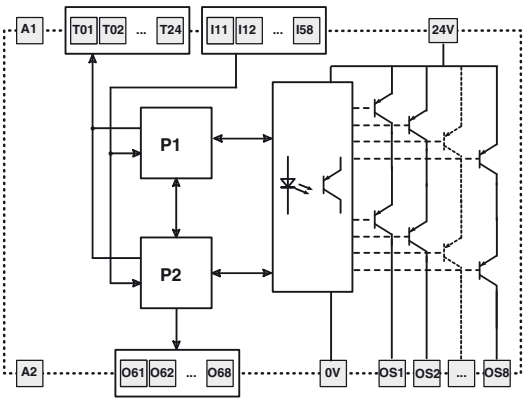
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



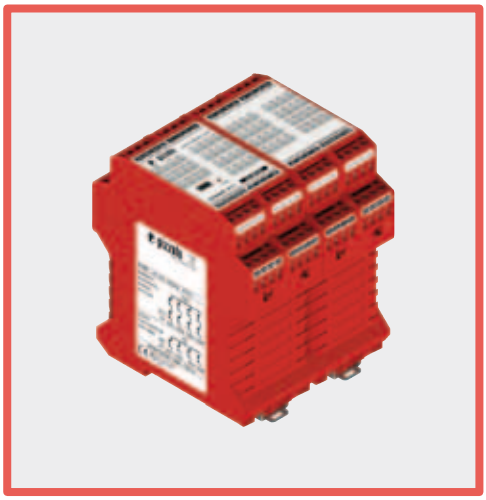
Internal diagram



Code structure

CS MP402M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals



Main features
- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
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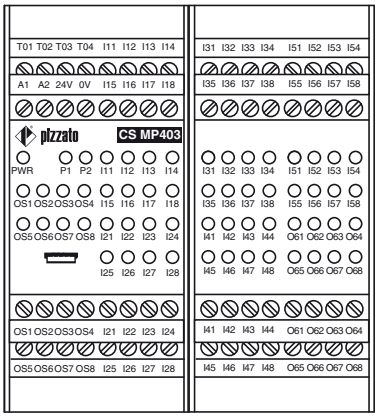
General technical data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
MTTFd	416	
PFHd	6.86E-09	
Response time of the system	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		269 s. 1
Environmental data		269 s. 2
Supply		269 s. 3
In conformity with standards		269 s. 4
Programming software	Gemnis Studio	269 s. 5
USB port	Yes	
Safety inputs (Ix)	40	269 s. 6
Test outputs (Tx)	4	269 s. 10
Semiconductor signalling output circuits (Ox)	8	270 s. 11
Semiconductor safety output circuits (OSx)	8 PNP	270 s. 13
Weight	500 gr	

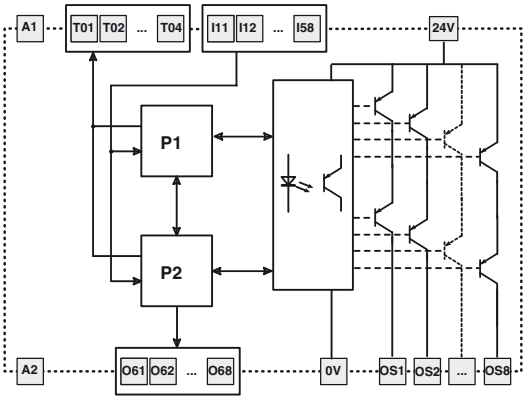
Markings and quality marks:

UL approval: E131787
EAC approval: RU C-IT.ДМ94.B.01024
TÜV SÜD approval: requested

Terminal layout



Internal diagram



Code structure

CS MP403M0

Connection type	
M	connector with screw terminals
X	connector with spring terminals

Technical data

1) Housing

Housing:	polyamide PA 6.6, self-extinguishing V0 according to UL 94
Protection degree:	IP40 (housing) IP20 (terminal strip)
Dimensions, cable cross sections, terminal tightening torque:	pages 284-285 design C/E

2) Environmental

Operating temperature:	0°C ... +55°C
Storage temperature:	-20°C ... +70°C
Pollution degree:	external 3, internal 2
Overvoltage category:	II

3) Power supply

Rated voltage A1-A2 (Un):	24 Vdc
DC maximum residual ripple:	10%
Supply voltage tolerance:	±15% of Un
Rated consumption (w/o load):	< 3 W
Protection against short circuits:	resistance PTC, Ih=0.5 A
PTC triggering time:	Intervention > 100 ms, reset > 3 s
Internal protection against short circuits on outputs (Tx, Ox):	Electronic
Maximum current generation ability of module as a sum of the Tx and Ox type outputs:	0.5 A
Self-test time on startup:	< 2 s

4) In conformity with standards

EN 60947-1, EN 60947-5-1, EN 60204-1, EN ISO 13849-1, EN ISO 13855, EN 1037, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 61326-1, EN 61326-3-1, EN 60664-1, EN 62061, EN 61131-6, UL 508, CSA C22.2 n°14-95.

In conformity with the requirements of:

Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
EMC Directive 2004/108/EC

Characteristics approved by UL

Rated supply voltage: 24 Vdc
DC consumption: < 3 W

Relay output:
- maximum switching voltage: 230/240 Vac,
- maximum current: 4 A
- utilization category: C300 pilot duty

Semiconductor output:
- maximum switching voltage: 24 V dc
- maximum current: 500 mA

Notes:
- Use 60° or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 30-12.
- Terminal tightening torque of 5-7 Lb In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. (Supply from Remote Class 2 Source or limited voltage limited energy).

5) Gemnis Studio

The **Gemnis Studio** software is the graphic development environment for the creation, simulation and debugging of programs suitable to be included in the modules belonging to the Gemnis line.
This software is licensed to users wishing to program these modules, subject to prior registration at **www.gemnis.com**.
You can download the latest **Gemnis Studio** software version from the site, which will allow you to program Gemnis line safety modules.

Gemnis Studio software minimum download requirements

Computer and processor:	x86 with clock frequency of 1 GHz
Memory:	512 MB
Hard disk:	200 MB
Screen:	Monitor with resolution of 1024 × 768 or higher.
Operating system:	Microsoft Windows XP+SP3, Microsoft Seven or Microsoft Windows 8.1 Microsoft Framework .NET 3.5 or higher Microsoft Report Viewer

6) Input circuits (Ix)

Input circuits voltage and current:	24 V, 5 mA
Input signals:	0-8 V (Off), 12-24 V (On)
Galvanic separation:	No
Minimum duration of input signal:	10 ms
Input signal filtering:	Yes, maximum interference period 0.4 ms
Maximum input resistance:	100 Ohm
Maximum input capacitance:	470 nF to ground 470 nF between the two conductors

7) Decoupled input circuits (Jx)

Input circuits voltage and current:	24 V, 5 mA
Input signals:	0-8 V (Off), 12-24 V (On)
Galvanic separation:	Yes
Insulation voltage (Ui):	500 V
Minimum duration of input signal:	10 ms
Input signal filtering:	Yes, maximum interference period 0.4 ms
Maximum input resistance:	100 Ohm
Maximum input capacitance:	470 nF to ground 470 nF between the two conductors

NB: Voltage and current values indicated refer to the power supply terminals (Ax, see each module individually) of the board housing the Jx type terminals

8) Analogue input circuits (Cx)

Rated supply voltage:	24 Vdc ± 15 %
Analogue input type:	4-20 mA current loop
Measurement range:	0 ... 25 mA
Accuracy over entire measurement range:	1 % ± 1 digit
Resolution:	0.01 mA
Input resistance:	100 Ohm
Maximum applicable current:	30 mA
Managed sensors:	"source" type with 2/3 wires
Galvanic separation:	Yes
Insulation voltage (Ui):	500 V

NB: Voltage and current values indicated refer to the power supply terminals (Ax, see each module individually) of the board housing the Cx type terminals

9) Frequency input circuits (Fx)

Rated supply voltage:	24 Vdc ± 15 %
Input circuit voltage and current:	24 Vdc, 7 mA
Supply voltage check of proximity sensors on power supply:	24 Vdc ± 20 %
Maximum detectable frequency:	4 kHz
Minimum detectable frequency:	1 Hz
Frequency detection accuracy:	1 % ± 1 digit
Resolution:	0.1 Hz
Minimum detection time closed tree:	1 s
Galvanic separation:	Yes
Insulation voltage (Ui):	500 V

NB: Voltage and current values indicated refer to the power supply terminals (Ax, see each module individually) of the board housing the Fx type terminals

10) Circuits with Test signals (Tx)

Signal type:	Pulsed 100 Hz 24V/0V, duty cycle 50%
Max. total current:	See Supply
Protected against short circuit:	Yes

11) Semiconductor signalling output circuits (Ox)

Output type:	PNP
Maximum current per output:	0.5 A
Max. total current:	see Supply
Impulse voltage (Uimp):	0.8 kV
Rated insulation voltage (Ui):	32 V
Protected against short circuit:	Yes
Galvanic separation:	No

12) Semiconductor safety output circuits (OSx) with 4 safety outputs

Rated voltage 24V-0V:	24 Vdc
Number of outputs:	4
Output type:	PNP
Maximum current per output:	0.5 A
Max. total output current:	2 A
Minimum current:	10 mA
Maximum capacitive load to ground per output:	400 nF
Maximum inductive load per output:	500 mH
Protection fuse:	2 A type gG
Galvanic separation:	Yes
Impulse voltage (Uimp):	0.8 kV
Rated insulation voltage (Ui):	32 V
Short circuit detection between outputs:	Yes
Deactivation pulse duration on safety outputs:	< 300 µs

13) Semiconductor safety output circuits (OSx) with 8 safety outputs

Rated voltage 24V-0V:	24 Vdc
Number of outputs:	8
Output type:	PNP
Maximum current per output:	0.4 A
Max. total output current:	3 A
Minimum current:	10 mA
Maximum capacitive load to ground per output:	400 nF
Maximum inductive load per output:	500 mH
Protection fuse:	4 A type gG
Galvanic separation:	Yes
Impulse voltage (Uimp):	0.8 kV
Rated insulation voltage (Ui):	32 V
Short circuit detection between outputs:	Yes
Deactivation pulse duration on safety outputs:	< 300 µs

14) Relay safety output circuits

Rated voltage 24V-0V:	24 Vdc
Contact type:	Guided contacts according to EN 50205
Contact material:	gold-plated silver alloy
Maximum switching voltage:	230 Vac; 300 Vdc
Maximum current per contact:	6 A
Max. total current Σ Ith^2:	36 A^2
Minimum current:	10 mA
Protection fuse:	4 A type gG
Max. load:	1380 VA/W
Impulse voltage (Uimp):	4 kV
Rated insulation voltage (Ui):	500 V
Utilization category (EN 60947-5-1):	AC15 (Ue=230V, Ie=3A); DC13 (Ue=24V, Ie=4A (6 op. cycles/minute)
Utilization category (UL 508):	C300
Contact resistance:	< 100 mOhm
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Galvanic separation:	Yes

The number and the load capacity of output contacts can be increased by using expansion modules or contactors.
See pages 231 - 240.