CS MP204M0 programmable multifunction safety module

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request
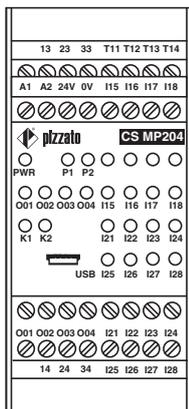
General data

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	
$MTTF_D$	134	
PFH_D	1.52E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	12	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Safety relay circuits	3NO	400 part 14

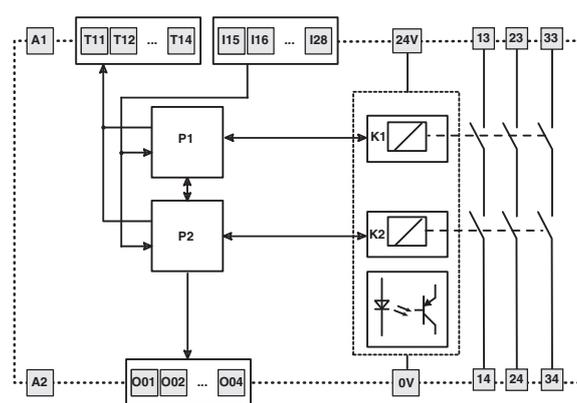## Quality marks:

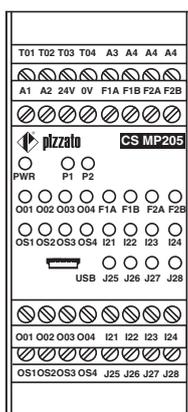CE 0123 c(UL)us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.УТ03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP204M0

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

CS MP205M0 programmable multifunction safety module

General 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	
$MTTF_D$	373	
PFH_D	2.19E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	4	399 part 6
Decoupled digital inputs (Jx)	4	399 part 7
Inputs for frequency signals from 0 to 4 kHz (Fx)	4	400 part 9
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
• Large selection of logical blocks for the management of external devices and programs
• Custom configured versions available on request

Quality marks:

CE c(UL)us CCC TÜV EAC UKCA
0123

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
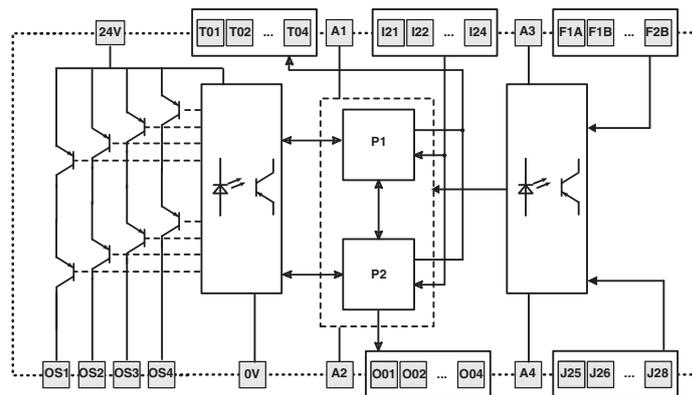EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP205M0

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

General 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	
$MTTF_D$	3314	
PFH_D	1.09E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	8	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	12	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
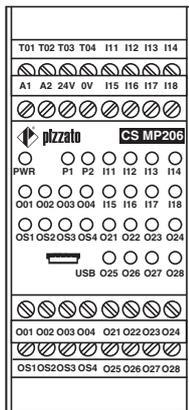- Custom configured versions available on request

Quality marks:

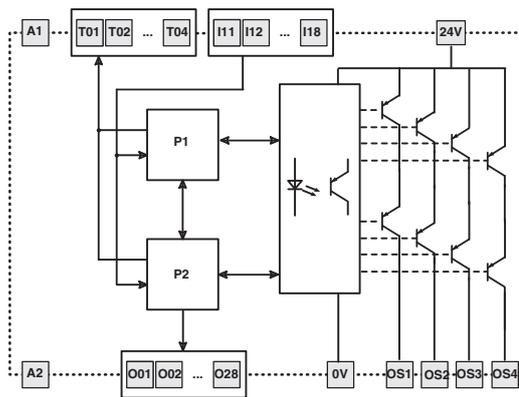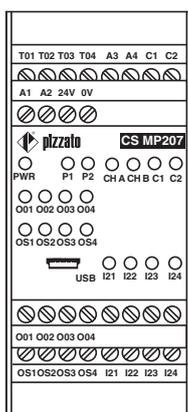$C \epsilon$ 0123 c(UL)us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

T01 T02 T03 T04 I11 I12 I13 I14
A1 A2 24V 0V I15 I16 I17 I18
pizzato   CS MP206
PWR P1 P2 I11 I12 I13 I14
O01 O02 O03 O04 I15 I16 I17 I18
OS1 OS2 OS3 OS4 O21 O22 O23 O24
USB O25 O26 O27 O28
O01 O02 O03 O04 O21 O22 O23 O24
OS1 OS2 OS3 OS4 O25 O26 O27 O28

Internal wiring diagram

A1 T01 T02 ... T04 I11 I12 ... I18 24V
P1
P2
A2 O01 O02 ... O28 0V OS1 OS2 OS3 OS4

Code structure

CS MP206M0

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

CS MP207M0 programmable multifunction safety module

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

CE $_{0 1 2 3}$ c(UL)us CCC TÜV EHC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
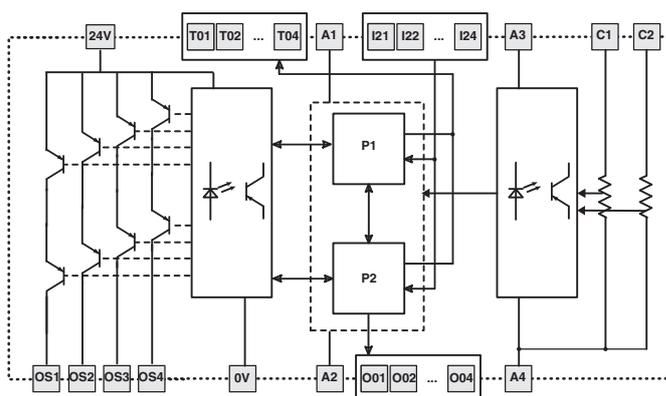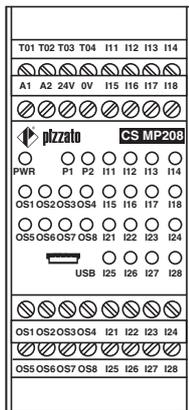EAC approval: RU C-IT.YT03.B.00035/19

General 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	
$MTTF_D$	431	
PFH_D	7.08E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	4	399 part 6
Inputs for 4-20 mA analogue signals (Cx)	2	399 part 8
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

Pin assignment

Internal wiring diagram

Code structure

CS MP207M0

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

General 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	
MTTF$_D$	633	
PFH$_D$	7.02E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	16	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor safety output circuits (OSx)	8 PNP	400 part 13

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

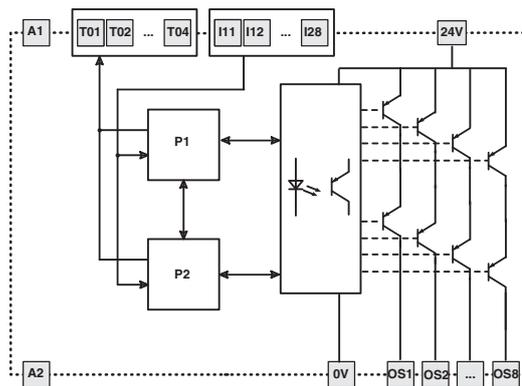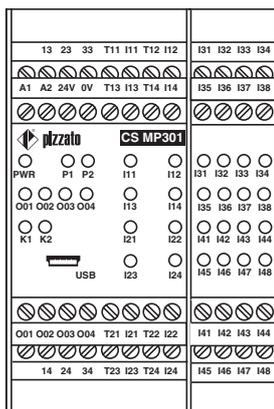**Quality marks:**

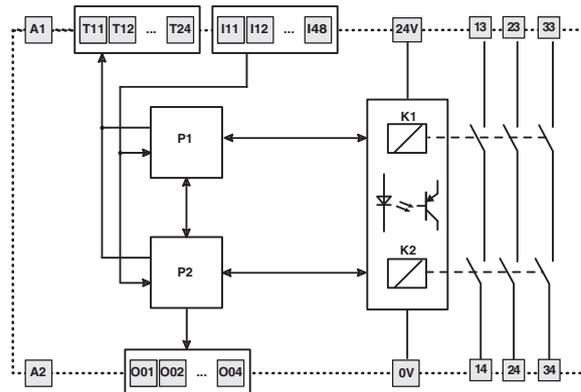CE 0123 c UL us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.ЯT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP208M0

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

CS MP301M0 programmable multifunction safety module

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

General data

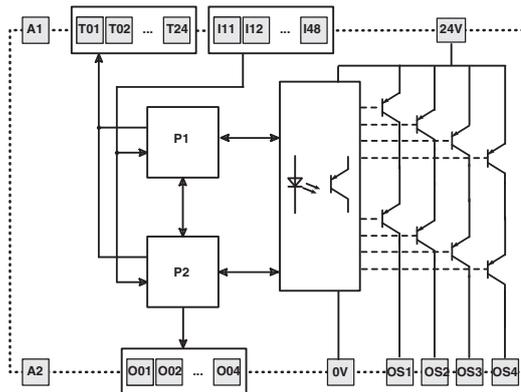| Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	128	
PFH_D	1.88E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	24	399 part 6
Test outputs (Tx)	8	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Safety relay circuits	3NO	400 part 14

Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP301M0

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

General 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	
$MTTF_D$	535	
PFH_D	1.57E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	24	399 part 6
Test outputs (Tx)	12	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

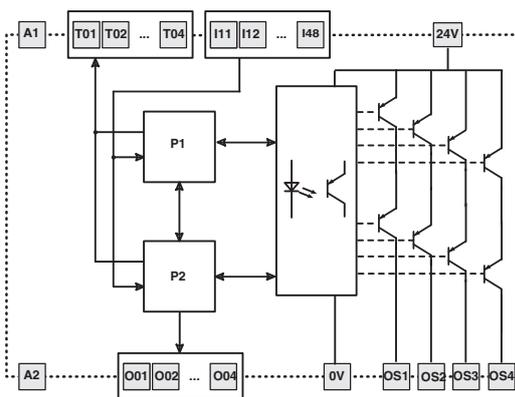CE 0123 c UL us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP302M0

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

General 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	
$MTTF_D$	485	
PFH_D	1.76E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	32	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

Quality marks:

CE 0123 c(UL)us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP303M0

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

CS MP304M0 programmable multifunction safety module

General 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	
$MTTF_D$	98	
PFH_D	2.05E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	28	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Safety relay circuits	3NO+1NO	400 part 14

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

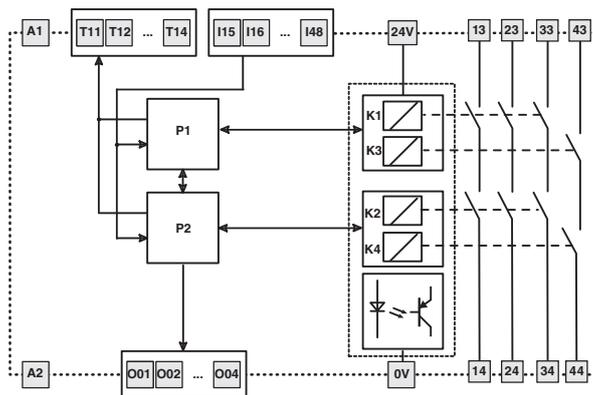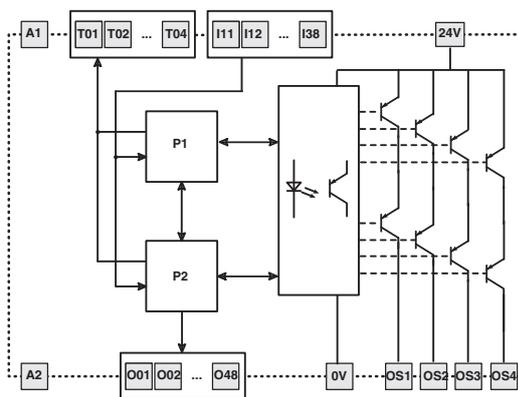CE 0123 c(UL)us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP304M0

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

General 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	
$MTTF_D$	535	
PFH_D	1.57E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	24	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	12	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

ϵ CE c(UL)us (CCC) TÜV (EHC) UK CA
0123

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP305M0

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

General 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	
MTTF$_D$	100	
PFH$_D$	1.86E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	20	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	12	400 part 11
Safety relay circuits	3NO+1NO	400 part 14

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:
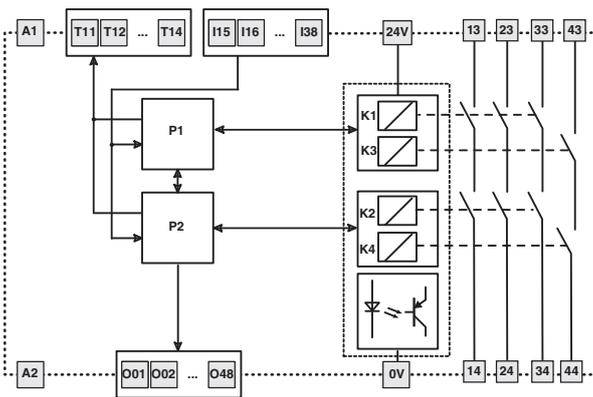
CE 0123 c(UL)us CCC TÜV SÜD EAC UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
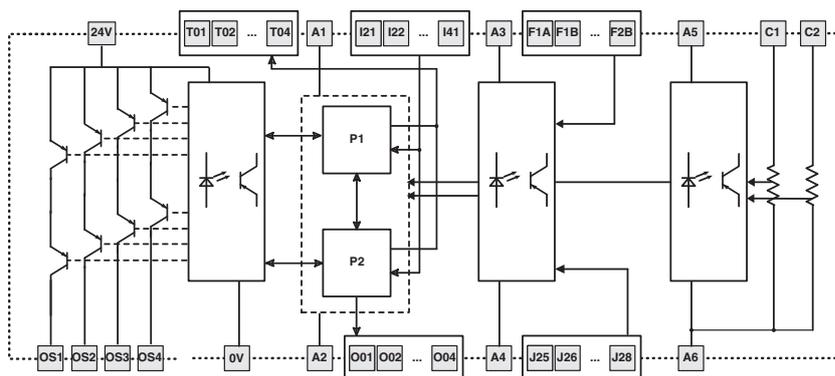EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP306M0

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

CS MP307M0 programmable multifunction safety module

General 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	
$MTTF_D$	289	
PFH_D	8.38E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	8	399 part 6
Decoupled digital inputs (Jx)	4	399 part 7
Inputs for 4-20 mA analogue signals (Cx)	2	399 part 8
Inputs for frequency signals from 0 to 4 kHz (Fx)	4	400 part 9
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP307M0

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

General 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	
$MTTF_D$	548	
PFH_D	7.27E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	24	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	8	400 part 11
Semiconductor safety output circuits (OSx)	8 PNP	400 part 13

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

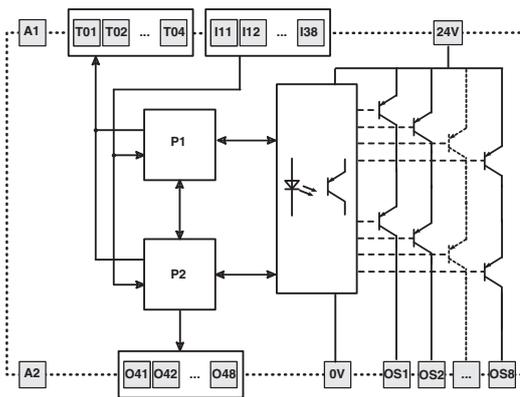CE c(UL)us CCC TÜV SÜD EAC UKCA
0123

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP308M0

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

CS MP309M0 programmable multifunction safety module

General 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	
$MTTF_D$	496	
PFH_D	7.46E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	32	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor safety output circuits (OSx)	8 PNP	400 part 13

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

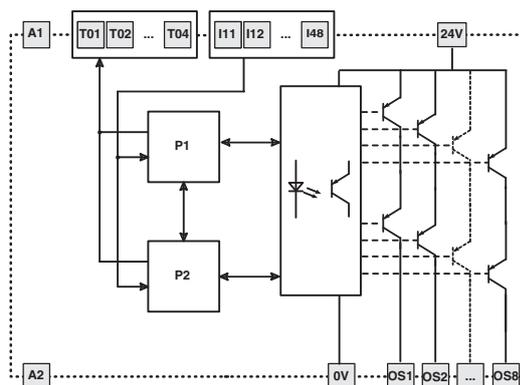## Quality marks:

CE 0123 c UL us CCC TÜV SÜD EAC UK CA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
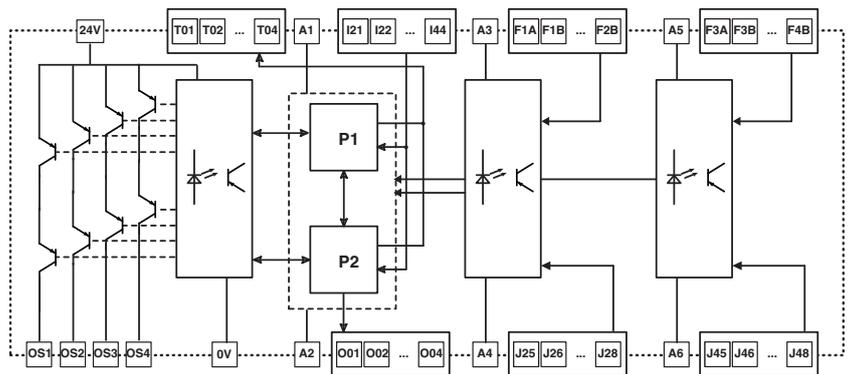EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP309M0

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

pizzato

General 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	
$MTTF_D$	288	
PFH_D	3.46E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	8	399 part 6
Decoupled digital inputs (Jx)	8	399 part 7
Inputs for frequency signals from 0 to 4 kHz (Fx)	8	400 part 9
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

CE 0 1 2 3   c(UL)us   CCC   TÜV SÜD   EAC   UKCA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP310M0

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

General 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	
$MTTF_D$	363	
PFH_D	7.52E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	20	399 part 6
Inputs for 4-20 mA analogue signals (Cx)	2	399 part 8
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

Quality marks:

CE $\underset{0\ 1\ 2\ 3}{}$ c(UL)us CCC TÜV EHC UK CA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
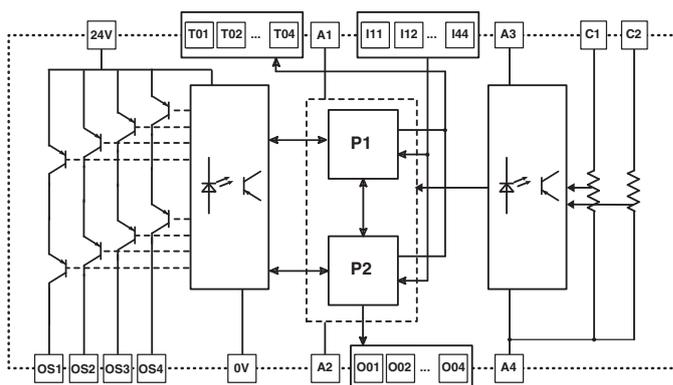EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP311M0

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

General 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	
$MTTF_D$	380	
PFH_D	8,20E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x67.5x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	16	399 part 6
Decoupled digital inputs (Jx)	4	399 part 7
Inputs for frequency signals from 0 to 4 kHz (Fx)	4	400 part 9
Test outputs (Tx)	8	400 part 10
Semiconductor safety output circuits (OSx)	8 PNP	400 part 12

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
- Large selection of logical blocks for the management of external devices and programs
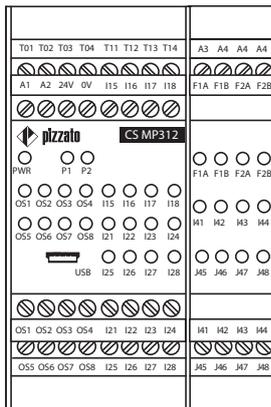- Custom configured versions available on request

Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
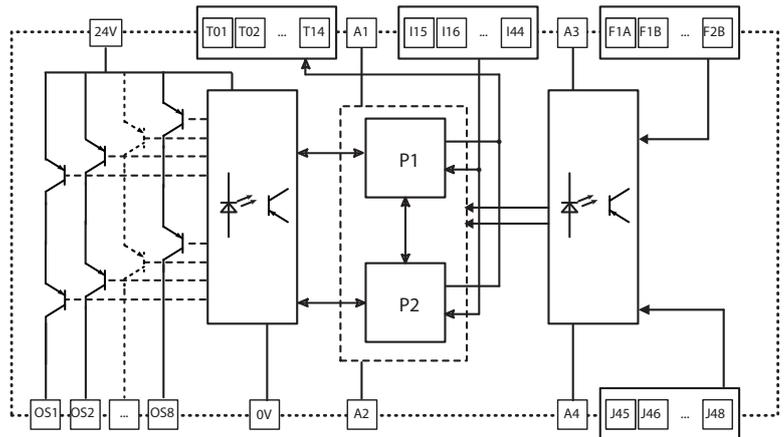EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP312M0

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

CS MP401M0 programmable multifunction safety module

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
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

General data

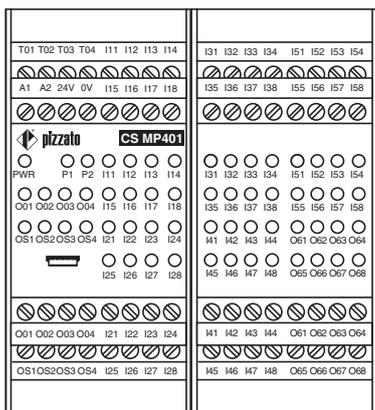| Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	434	
PFH_D	1.73E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	40	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	12	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
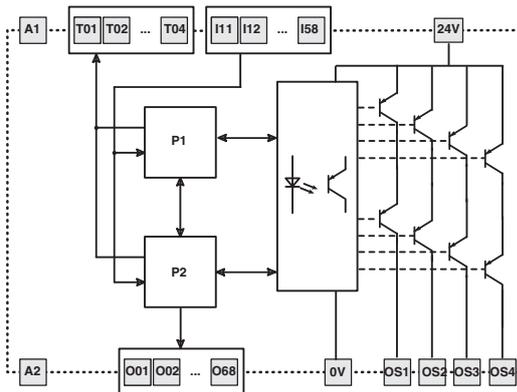EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP401M0

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

CS MP402M0 programmable multifunction safety module

General data

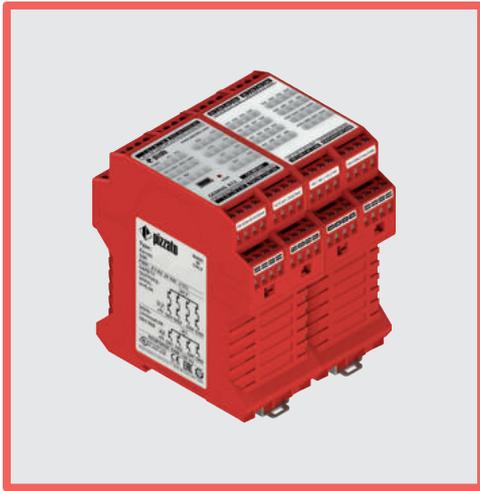| Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	478	
PFH_D	7.24E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	32	399 part 6
Test outputs (Tx)	12	400 part 10
Semiconductor signalling output circuits (Ox)	8	400 part 11
Semiconductor safety output circuits (OSx)	8 PNP	400 part 13

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
- Large selection of logical blocks for the management of external devices and programs
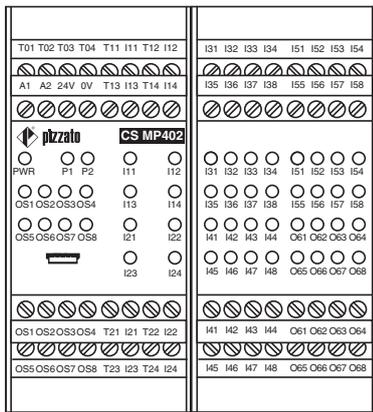- Custom configured versions available on request

Quality marks:

CE 0123 c(UL)us CCC TÜV SÜD EAC UKCA
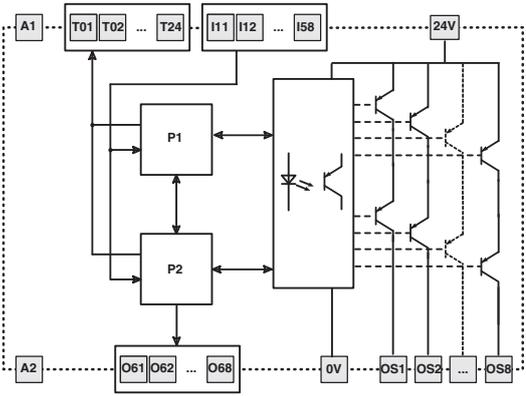
EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP402M0

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

CS MP403M0 programmable multifunction safety module

General 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	
$MTTF_D$	438	
PFH_D	7.42E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	40	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	8	400 part 11
Semiconductor safety output circuits (OSx)	8 PNP	400 part 13

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
- Large selection of logical blocks for the management of external devices and programs
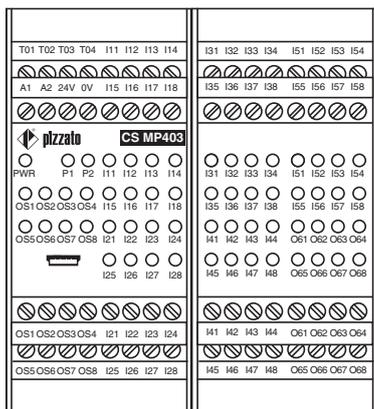- Custom configured versions available on request

Quality marks:

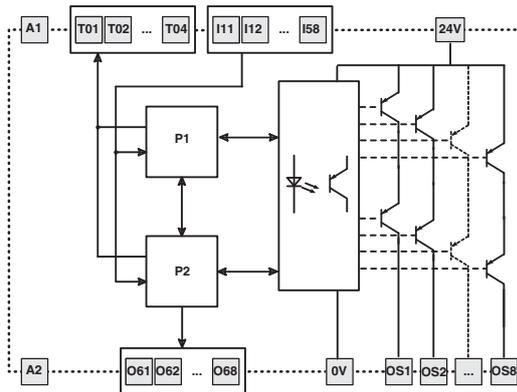CE 0123 c UL us CCC TÜV SÜD EAC UK CA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP403M0

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

CS MP406M0 programmable multifunction safety module

General 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	
$MTTF_D$	473	
PFH_D	1.54E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x90x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	32	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	20	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 13

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
- Large selection of logical blocks for the management of external devices and programs
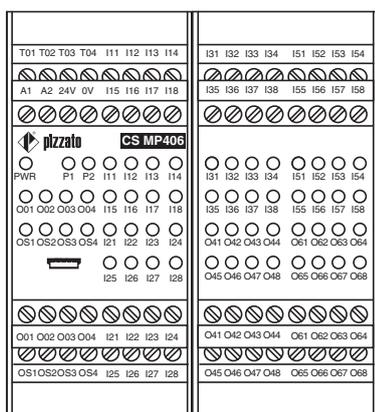- Custom configured versions available on request

Quality marks:

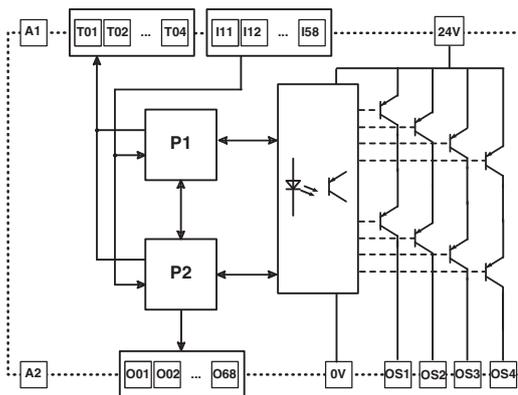CE 0123 c UL us CCC TÜV SÜD EAC UK CA

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

Pin assignment

Internal wiring diagram

Code structure

CS MP406M0

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

CS MP programmable multifunction safety modules

Technical data

1) Housing

Housing:	Polyamide PA 66, self-extinguishing V0 acc. to UL 94
Protection degree:	IP40 (housing)
	IP20 (terminal strip)
Dimensions, cable cross sections, terminal tightening torque:	Page 415, 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 (U_n):	24 Vdc
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Rated consumption (w/o load):	< 3 W
Protection against short circuits:	PTC resistance, Ih=1.5 A
PTC response time:	Response time > 100 ms, release time > 3 s
Internal protection against short circuits on outputs (Tx, Ox):	Electronic
Maximum current output of the module as the total current of the Ox and Tx outputs:	0.5 A
Self-test duration on startup:	< 2 s

4) Compliance with standards

EN 60947-1, EN 60947-5-1, EN 60204-1, EN ISO 13849-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 61326-3-1, EN 60664-1, EN 62061, EN IEC 63000, UL 508, CSA C22.2 No. 14, GB/T14048.5

Compliance with the requirements of:
Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.

Features approved by UL

Electrical ratings:

Input:	4-48 inputs rated 24 V dc, 5 mA
Relay output:	230/240 Vac, 4 A general use, C300 pilot duty
Semiconductor output (when relay is not available):	
	up to 4 outputs rated 24 V dc, 500 mA or up to 8 outputs rated 24 Vdc, 400 mA
Semiconductor auxiliary output:	
	up to 32 outputs rated 24 V dc, 500 mA max
Auxiliary analogic outputs: up to 4 rated 24 V dc, 20 mA max	

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb ln.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Features approved by TÜV SÜD

Rated supply voltage U_n: 24 Vdc (-15% … +15%)

Ambient temperature:	0°C … +55°C
Response time:	< 30 ms
	< 40 ms for versions with relay outputs

In compliance with standards: EN ISO 13849-1:2015 (Cat.4, PL e), EN 61508-1:2010 (SIL 3), EN 61508-2:2010 (SIL 3), EN 61508-3:2010 (SIL 3), EN 62061:2005/A1:2013/A2:2015 (SIL CL 3)

5) Gemnis Studio

The Gemnis Studio software is the graphic development environment for the creation, simulation and debugging of programs designed for upload to Gemnis line modules.

The software is licensed to users wishing to program these modules, subject to prior registration at **www.gemnis.com**.

From our website you can download the latest version of the software, which allows you to program the safety modules of the Gemnis family.

Gemnis Studio software minimum download requirements

Computer and processor:	X86 with clock frequency of 1 GHz
Memory:	256 MB
Hard disk:	150 MB
Monitor:	Monitor with 1280×800 resolution or higher
Operating system:	Microsoft Windows 10 or higher
	.NET 4.6.2
	Acrobat Reader

6) Input circuits (Ix)

Voltage and current in the input circuits:

	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 Ω
Maximum input capacitance:	470 nF to ground
	470 nF between two conductors

7) Decoupled input circuits (Jx)

Voltage and current in the input circuits:

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

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

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 (U_i):	500 V

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

9) Frequency input circuits (Fx)

Rated supply voltage:	24 Vdc ± 15 %
Voltage and current in the input circuits:	24 Vdc, 7 mA
Check of the supply voltage of the connected proximity sensors:	24 Vdc ± 20%
Maximum detectable frequency:	4 kHz
Minimum detectable frequency:	1 Hz
Frequency detection accuracy:	1 % ± 1 digit
Resolution:	0.1 Hz
Minimum time for standstill detection:	1 s
Galvanic separation:	Yes
Insulation voltage (U_i):	500 V

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

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 withstand voltage (U_{imp}):	0.8 kV
Rated insulation voltage (U_i):	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 withstand voltage (U_{imp}):	0.8 kV
Rated insulation voltage (U_i):	32 V
Short circuit detection between outputs:	Yes
Duration of the deactivation impulses at the 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 withstand voltage (U_{imp}):	0.8 kV
Rated insulation voltage (U_i):	32 V
Short circuit detection between outputs:	Yes
Duration of the deactivation impulses at the safety outputs:	< 300 µs

14) Safety relay circuits

Rated voltage 24V-0V:	24 Vdc
Contact type:	Forcibly guided contacts acc. to EN 50205
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230 Vac; 300 Vdc
Maximum current per contact:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Protection fuse:	4 A type gG
Maximum load:	1380 VA/W
Impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	500 V
Utilization category (EN 60947-5-1):	AC15 (Ue=230V, Ie=3A); DC13 (Ue=24V, Ie=4A) (6 op. cycl./min.)
Utilization category (UL 508):	C300
Contact resistance:	< 100 mΩ
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 355-364.

Introduction

An increasing number of users requires products which carry out several safety functions without needing the complex management of a safety PLC or the complex wiring of many traditional safety modules. Such problems arise mainly when the safety functions are typically greater than 3 or 4, and/or when managing a safety PLC software (software purchase, training courses, programming of all modules, software management and filing, updates etc.) turns out to be too great an overhead in relation to problem complexity.

Pizzato Elettrica introduces Gemnis, a series of electronic modules which are pre-programmed for specific customer applications or for generic safety macro-functions commonly used in industrial contexts. The following pages list some of the pre-programmed products for generic macro-functions commonly used in the industrial sector. These products are also available for individual purchase. Any customer requiring a product pre-programmed to their particular specification can contact the Pizzato Elettrica technical department (minimum volumes are requested).

The resulting advantages for customers typically include simplified product management (purchase of finished components) and reduced general costs (no software to be installed and managed, products are immediately operational).

All Gemnis series products are able to provide circuit solutions at SIL 3 (EN 62061), PL e (EN ISO 13849-1) or category 4 (EN ISO 13849-1) levels.

GEMNIS

Quality marks:

C€ c(UL)us (CCC) (TÜV) [HL] UK CA
0 1 2 3

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: **RU C-IT.УТ03.B.00035/19**

Code structure

CS MF<u>201</u><u>M</u><u>0</u>-P••

Hardware code		Program code	
•••	hardware code	P••	program code

Connection type		Supply voltage	
M	Connector with screw terminals	**0**	24 Vdc
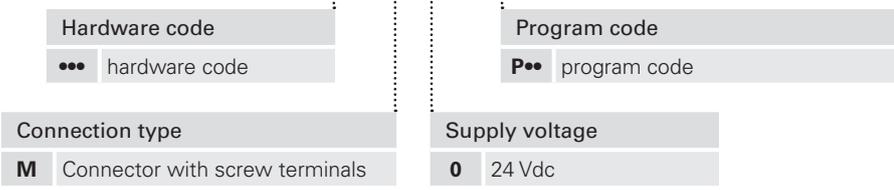
Product list

Product code	Functions executed		Safety outputs	Signalling outputs	Page
CS MF201M0-P1	Monitoring of 2 guards in AND and 1 emergency stop with automatic start or manual monitored start.		3 NO	4 PNP	403
CS MF202M0-P2	Monitoring of 4 guards in AND, 1 bypass selector, 1 emergency stop, automatic start or manual monitored start, general enabling signal.		4 PNP	4 PNP	404
CS MF202M0-P3	Monitoring of 6 guards in AND (2NC contacts), 1 emergency stop, automatic start or manual monitored start.		4 PNP	4 PNP	405
CS MF202M0-P4	Monitoring of 6 guards in AND (1NO+1NC contacts), 1 emergency stop, automatic start or manual monitored start.		4 PNP	4 PNP	406
CS MF202M0-P5	Monitoring of 4 guards with independent outputs, 1 bypass selector, 1 emergency stop, automatic start or manual monitored start, general enabling signal.		4 PNP	4 PNP	407
CS MF202M0-P6	Monitoring of 2 guards, 1 bypass selector, 1 emergency stop, automatic start or manual monitored start, general enabling signal. Three instantaneous outputs and one delayed output with selector switch with 4 times. Selectable On/Off delay.		4 PNP	4 PNP	408
CS MF202M0-P7	Monitoring of 4 guards (AND linked) with switches with guard locking, operating principle "D", 1 emergency stop, monitored start. Two instantaneous outputs and two delayed outputs with selector switch with 4 times.		4 PNP	4 PNP	409
CS MF202M0-P8	Monitoring of 4 guards in AND with switches with guard locking, operating principle "E", 1 emergency stop, monitored start. Two instantaneous outputs and two delayed outputs with selector switch with 4 times.		4 PNP	4 PNP	410
CS MF204M0-P10	Monitoring of 4 guards in AND (OSSD outputs) and 1 emergency stop with automatic start or manual monitored start.		3 NO	4 PNP	411

Legend:

Movable guard monitoring   Start function   Time selector

Monitoring of a movable guard with lock   Bypass selector   Enabling input

Emergency stop

CS MF201M0-P1 pre-programmed module

Product code
CS MF201M0-P1

Main functions
- Monitoring of 2 guards
- Monitoring of 1 emergency stop
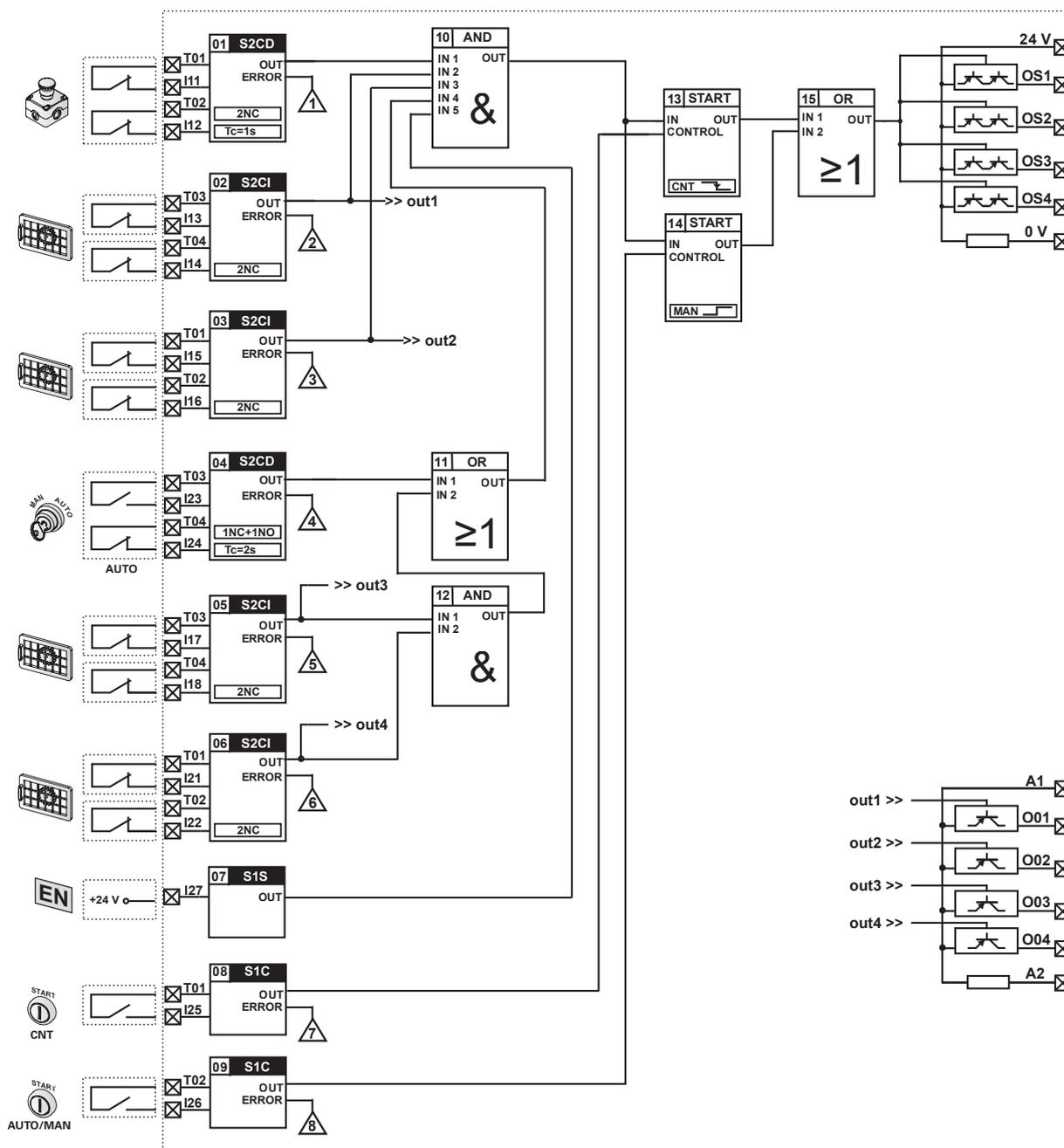- Automatic start or monitored manual start

Outputs
- 3 NO safety outputs
- 4 PNP signalling outputs

Technical data: see CS MP201M0
Dimensions, cable cross sections, terminal tightening torque:
page 415, design C
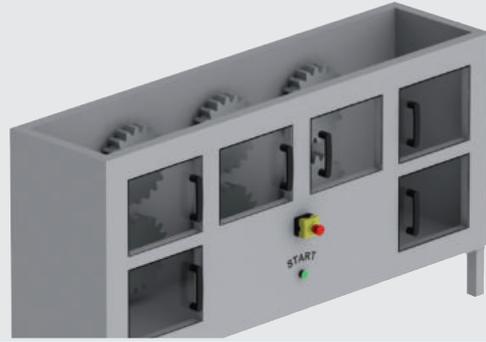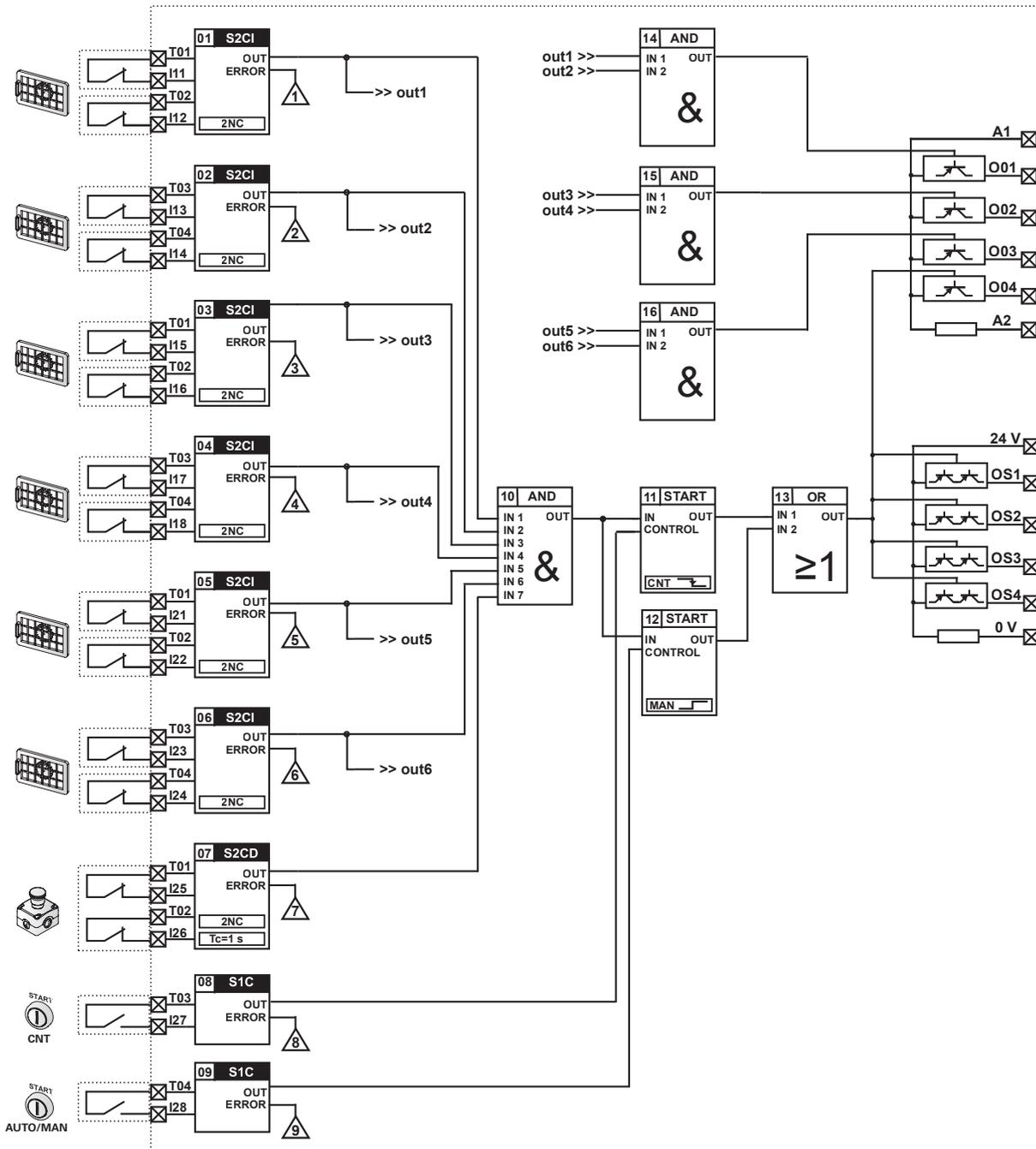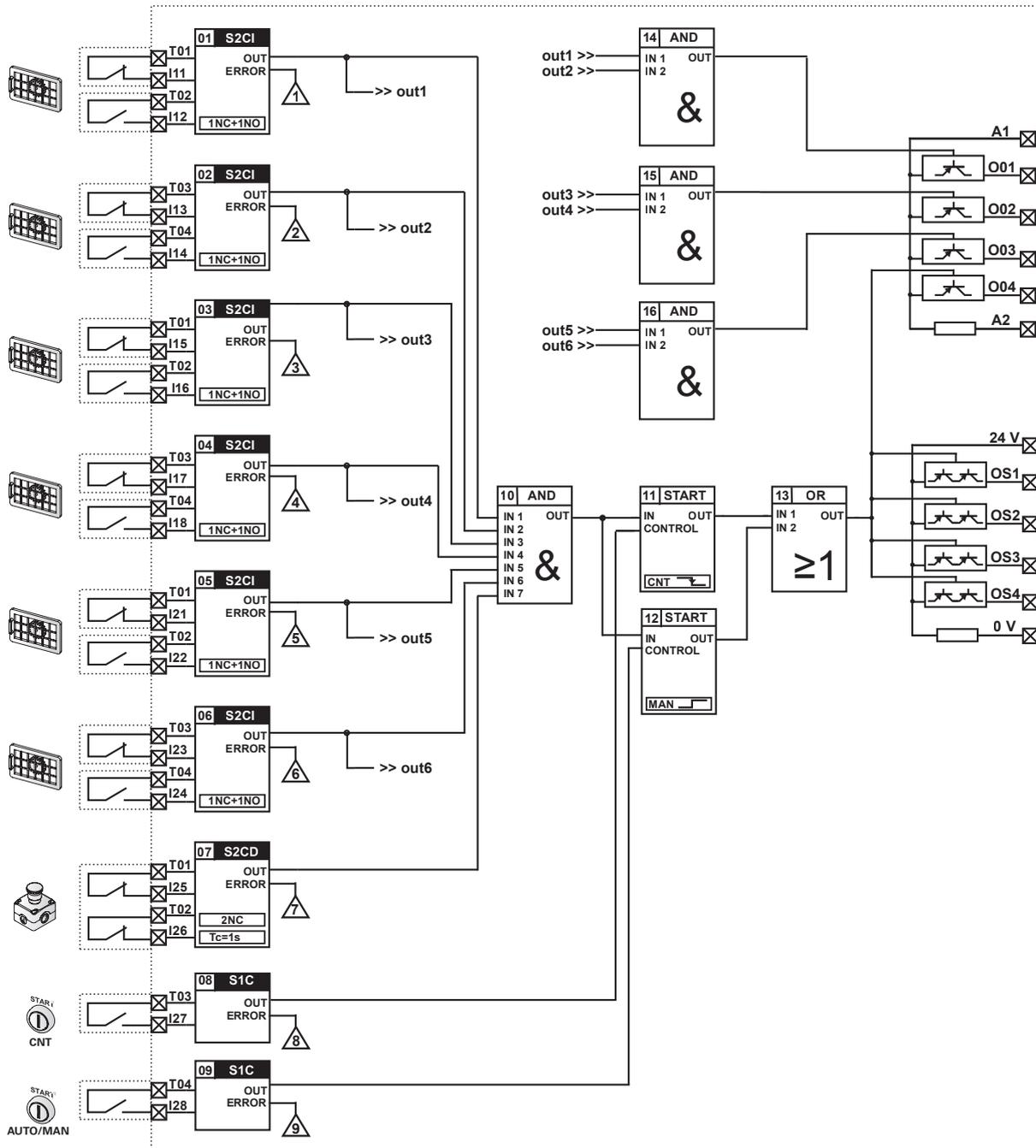Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P1

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:
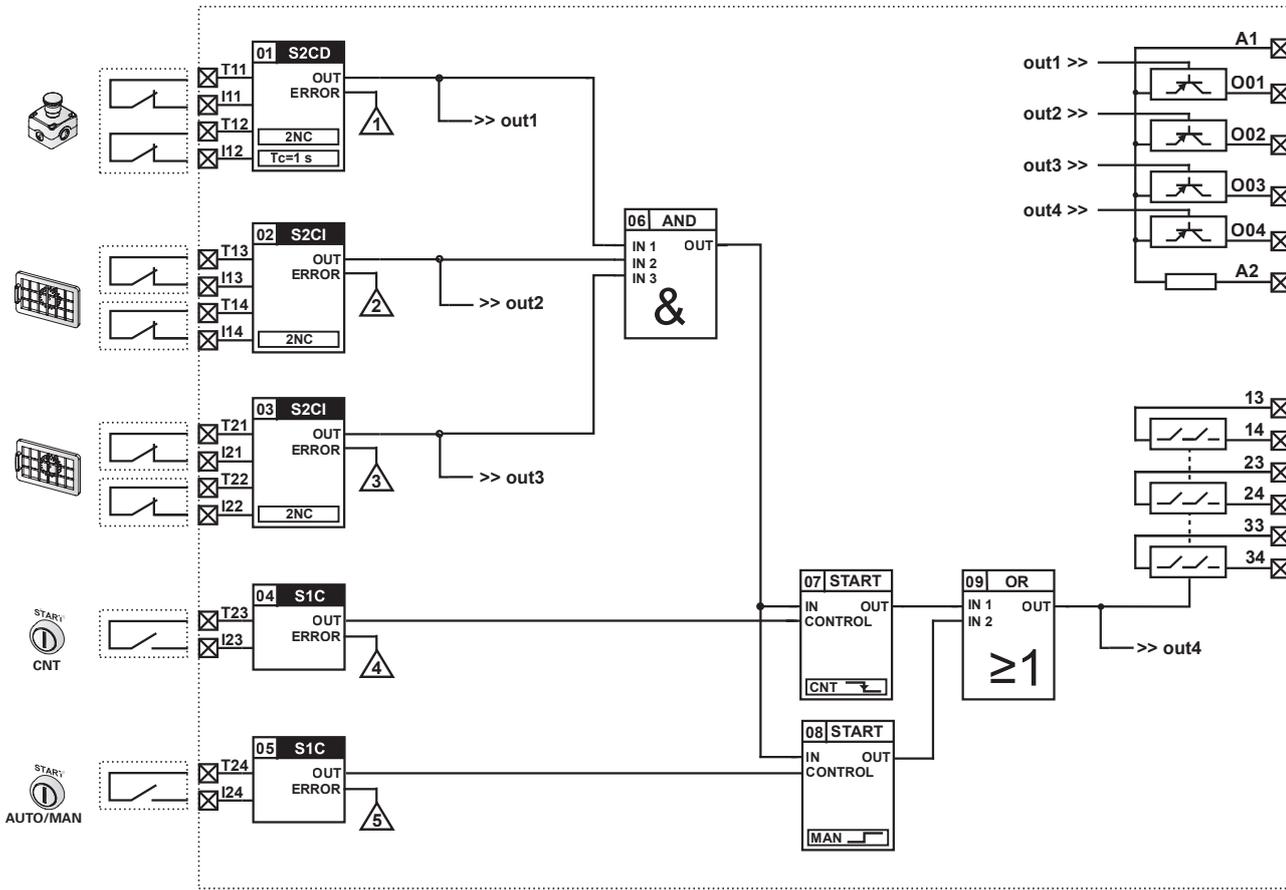
CS MF202M0-P2 pre-programmed module

Product code
CS MF202M0-P2

Main functions
- Monitoring of 4 guards
- 1 bypass selector
- 1 emergency stop
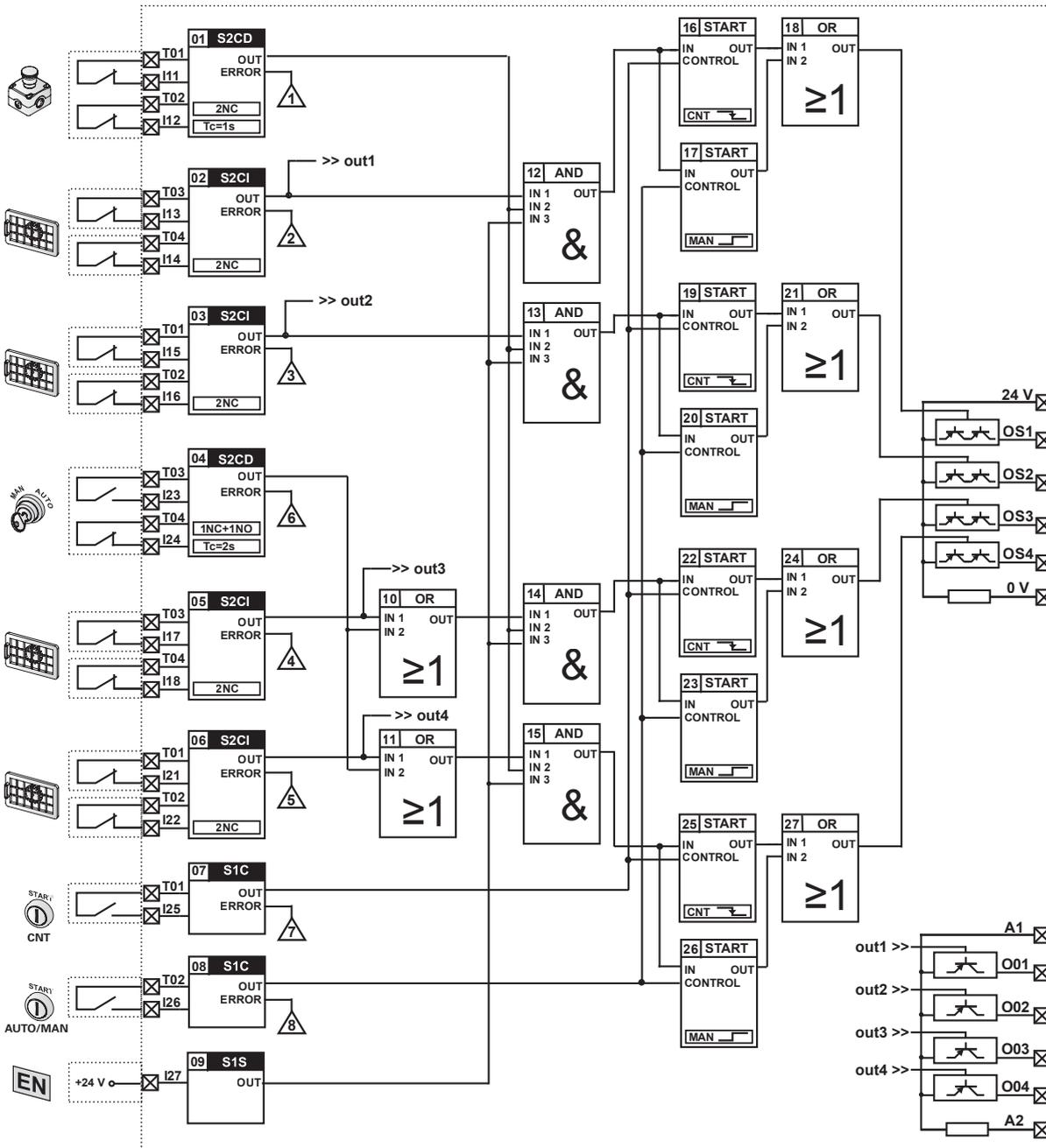- Automatic start or monitored manual start
- General enabling signal

Outputs
- 4 PNP safety outputs
- 4 PNP signalling outputs

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque:
page 415, design C
Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P2

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:

CS MF202M0-P3 pre-programmed module

Product code
CS MF202M0-P3

Main functions
- Monitoring of 6 guards (2NC contacts)
- 1 emergency stop
- Automatic start or monitored manual start

Outputs
- 4 PNP safety outputs
- 4 PNP signalling outputs

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque:
page 415, design C
Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P3

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:

CS MF202M0-P4 pre-programmed module

Product code
CS MF202M0-P4

Main functions
• Monitoring of 6 guards (1NC+1NO contacts)
• 1 emergency stop
• Automatic start or monitored manual start

Outputs
• 4 PNP safety outputs
• 4 PNP signalling outputs

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque:
page 415, design C
Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P4

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:

CS MF202M0-P5 pre-programmed module

Product code
CS MF202M0-P5

Main functions
• Monitoring of 4 guards with independent outputs
• 1 bypass selector
• 1 emergency stop
• Automatic start or monitored manual start
• General enabling signal

Outputs
• 4 PNP safety outputs
• 4 PNP signalling outputs

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque: page 415, design C
Internal wiring diagram: page 418
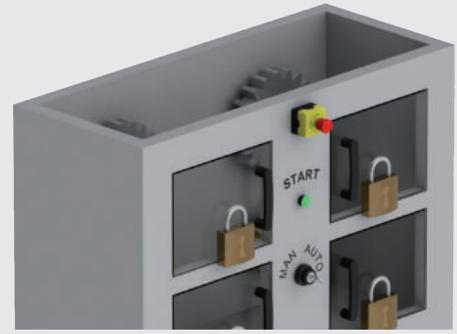Terminal layout: page 418

Application program: P5

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:

General Catalogue Safety 2023-2024

CS MF202M0-P6 pre-programmed module

Product code
CS MF202M0-P6

Main functions
- Monitoring of 2 guards
- 1 bypass
- 1 emergency stop
- Automatic start or monitored manual start
- General enabling signal
- Selectable On/Off delay
- Selector switch with 4 times

Outputs
- Three instantaneous outputs and one delayed PNP safety output
- 4 PNP signalling outputs

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque: page 415, design C
Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P6

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:
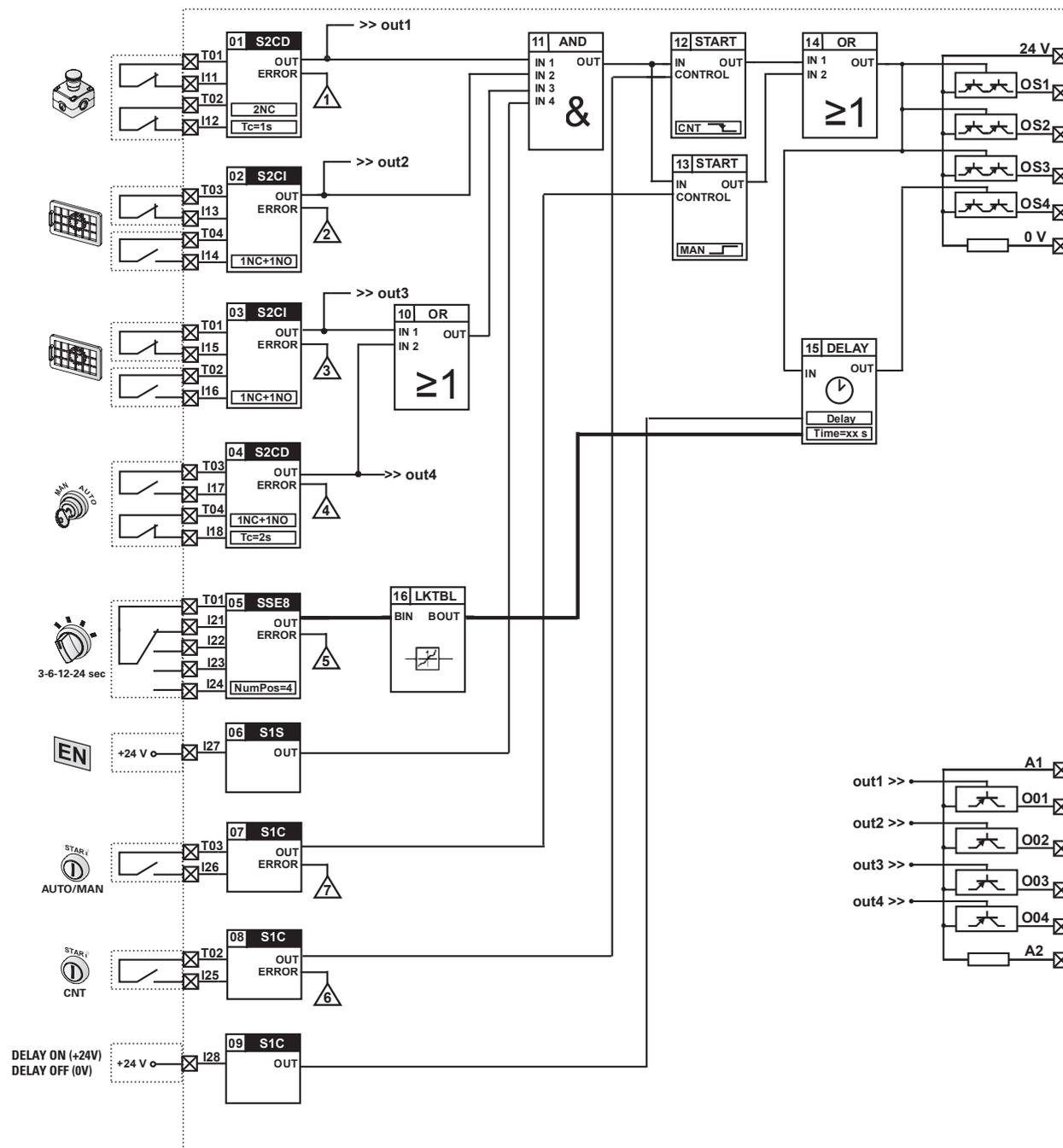
CS MF202M0-P7 pre-programmed module

Product code
CS MF202M0-P7

Main functions
- Monitoring of 4 guards with switches with guard locking, operating principle "D" (guard locked if solenoid is de-energised)
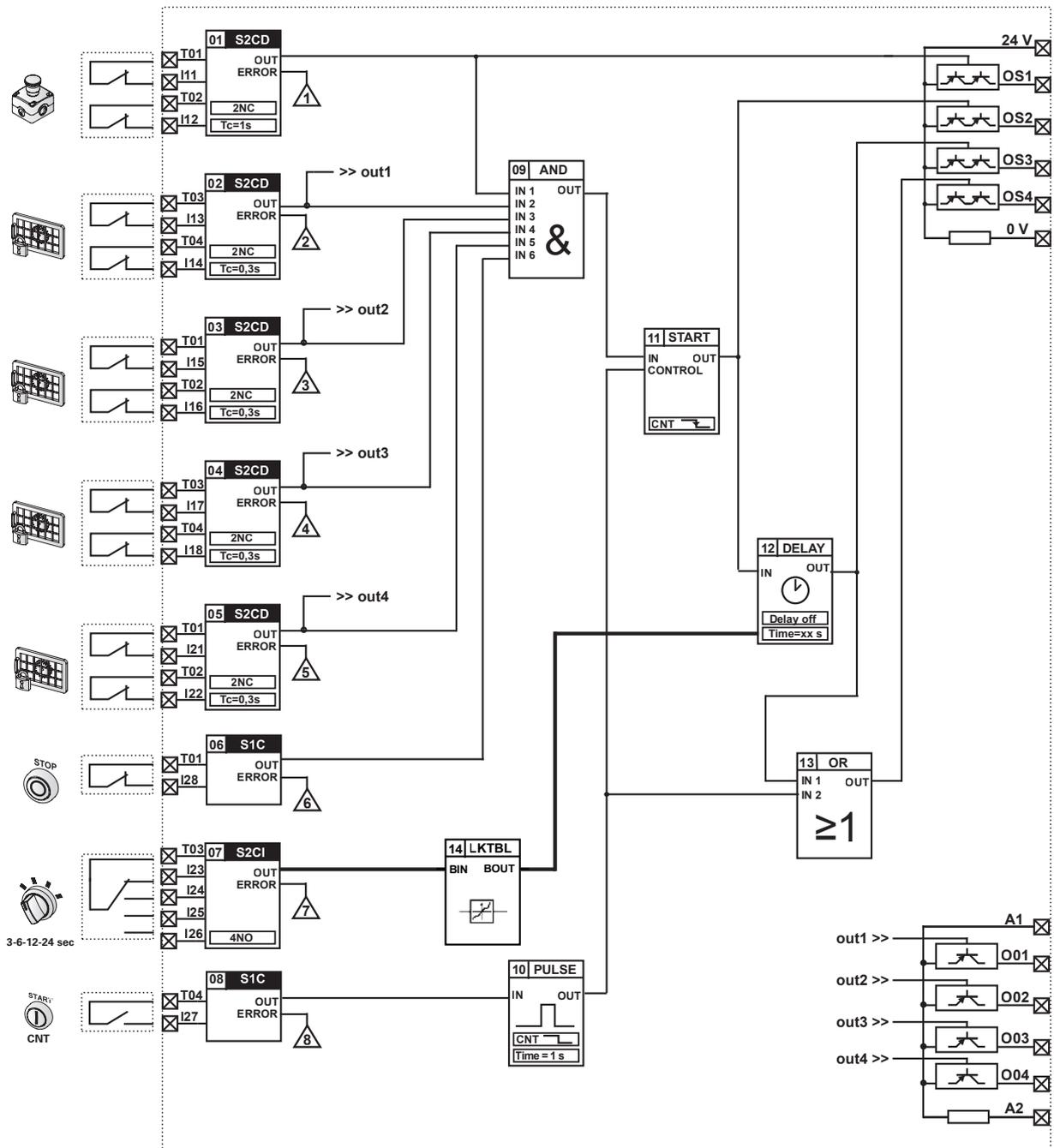- 1 emergency stop
- Monitored start

Outputs
- 2 instantaneous outputs and 2 delayed PNP safety outputs with selector switch with 4 times
- 4 PNP signalling outputs
- OS4 output for door locking control

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque: page 415, design C
Internal wiring diagram: page 418
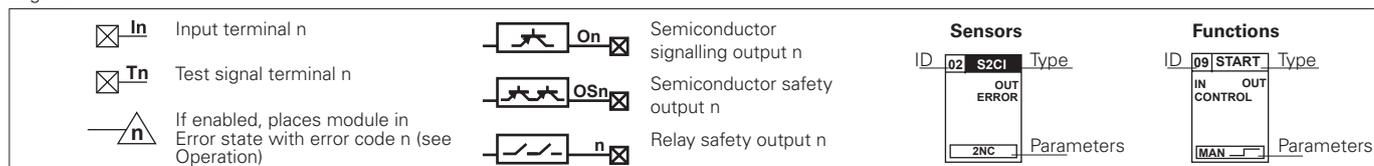Terminal layout: page 418

Application program: P7

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:

CS MF202M0-P8 pre-programmed module
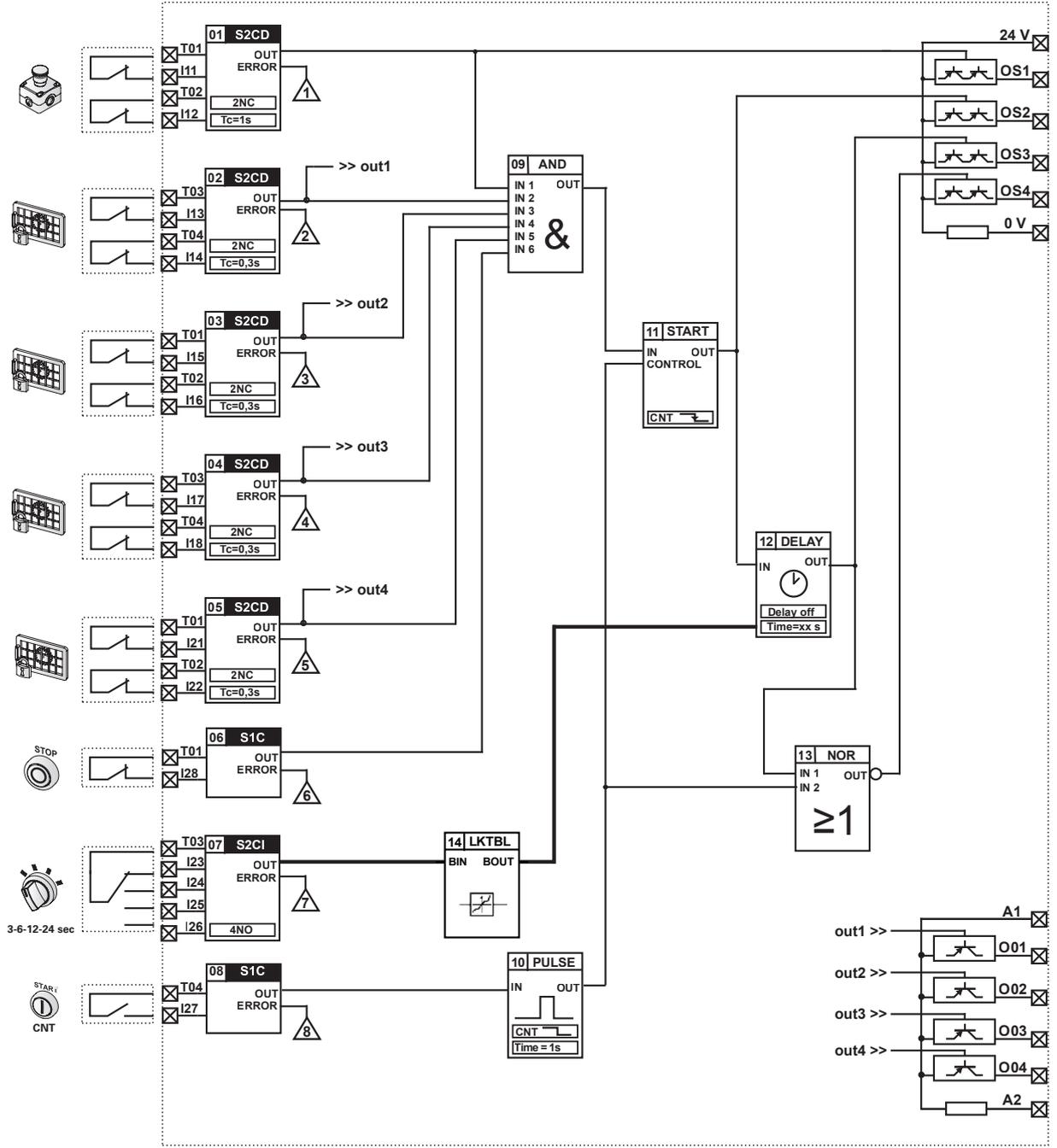
Product code
CS MF202M0-P8

Main functions
- Monitoring of 4 guards with switches with guard locking, operating principle "E" (guard locked if solenoid is energised)
- 1 emergency stop
- Monitored start

Outputs
- 2 instantaneous outputs and 2 delayed PNP safety outputs with selector switch with 4 times
- 4 PNP signalling outputs
- OS4 output for door locking control

Technical data: see CS MP202M0
Dimensions, cable cross sections, terminal tightening torque: page 415, design C
Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P8

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:

CS MF204M0-P10 pre-programmed module

Product code
CS MF204M0-P10

Main functions
- Monitoring of 4 guards in AND (OSSD outputs)
- 1 emergency stop
- Automatic start or monitored manual start

Outputs
- 3NO safety outputs
- 4 PNP signalling outputs

Technical data: see CS MP204M0
Dimensions, cable cross sections, terminal tightening torque: page 415, design C
Internal wiring diagram: page 418
Terminal layout: page 418

Application program: P10

The application program stored in the module executes one or more safety functions, as shown in the following block diagram:
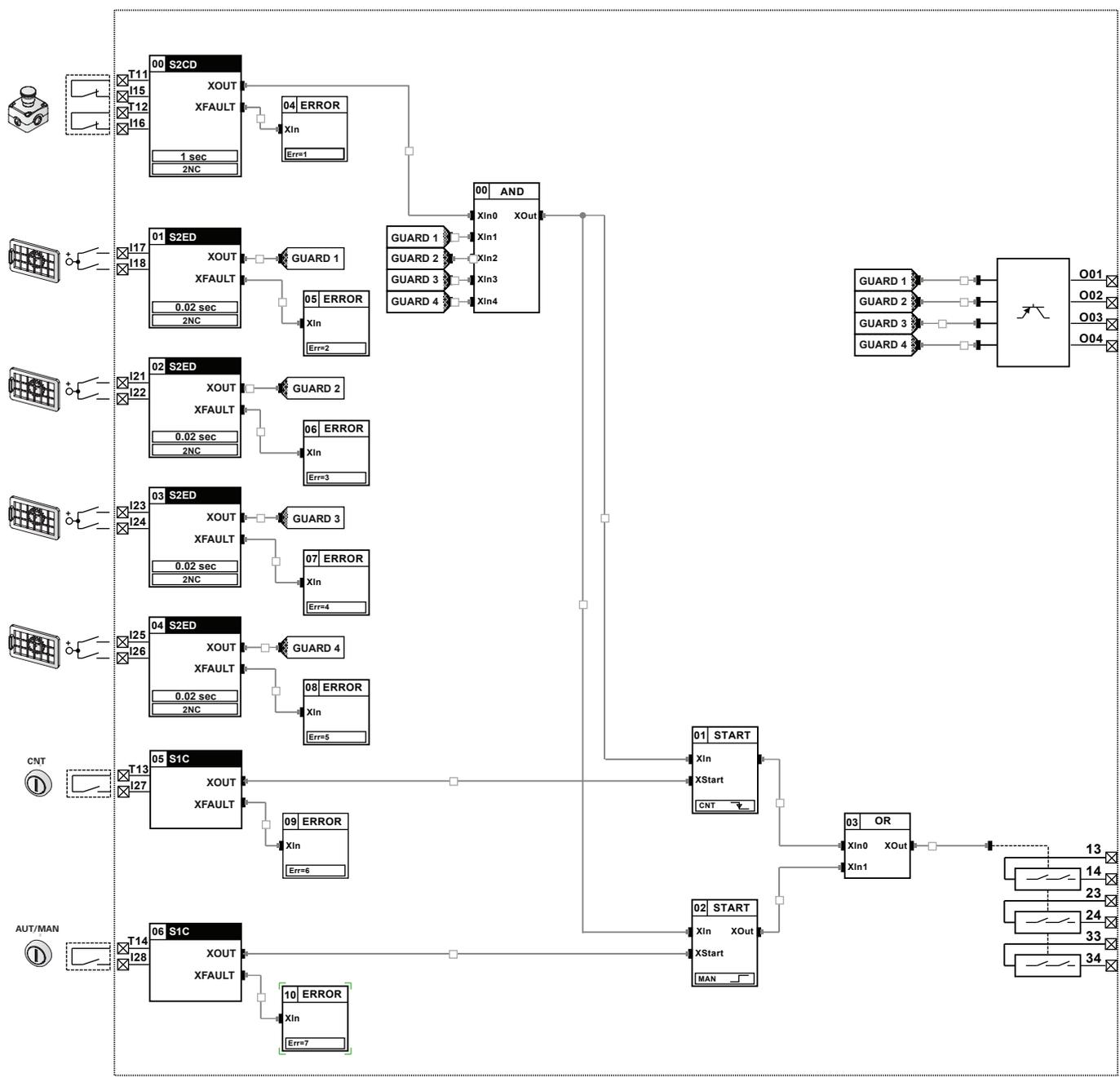
Notes

Notes: The positions of the contacts shown in the diagram are shown only as examples, and they refer to expected working conditions, with machinery in operation, guards closed, and safety devices not activated. For further explanations, please see documentation relating to each specific safety function (page 399).

Legend

In	Input terminal n	On	Semiconductor signalling output n	**Sensors**		**Functions**
Tn	Test signal terminal n	OSn	Semiconductor safety output n	ID `02` `S2CI` Type `OUT` `ERROR`		ID `09` `START` Type `IN` `OUT` `CONTROL`
n	If enabled, places module in Error state with error code n (see Operation)	n	Relay safety output n	`2NC` Parameters		`MAN` Parameters

---

Definitions

Application program: The internal software component of this module which is aimed at the application.
"Power On" state: The device state, which lasts from the time it is switched on until the end of the internal controls.
"Run" state: The device state on completion of the "Power-On" phase (if no errors have been detected) in which the Application program is run.
"Error" state: The device state when a fault is detected. In this state, the module switches to the safe state, i.e., all safety outputs are open.
Fault: A fault can be internal or external to the safety module. Internal faults are autonomously detected by the module thanks to its redundant and self-monitored structure. An external fault can be detected by the application program. It follows that the definition of external fault is strictly dependent on the application (see note A).

Operation

When supplied with power, the module enters the Power-On state and runs an internal self-diagnosis. In this phase, the two processor LEDs (P1, P2) remain illuminated red for about 1 second. If the internal tests are completed without malfunction, the two LEDs are switched off, the module enters the Run state, and runs the application program. If the start tests are not passed, the module enters the Error state and the malfunction is indicated by the processor LEDs remaining illuminated red.
The green LEDs relating to the power supply and the module inputs are not controlled by processors, and they immediately begin indicating the states of the respective inputs/outputs.
When the module is in the RUN state, and no faults are detected, the two LEDs (P1, P2) remain switched off.
In the Run state, the module can detect faults external to the module, for example caused by short circuits, or invalid input states (see note A). Depending on the fault type detected, the application program may place the module in error state, to indicate the malfunction. In this case, the application program can communicate an error code by making the LEDs (P1, P2) flash in sequence.
During the Run state, simultaneously with application program execution, the module constantly runs a series of internal tests to check for correct hardware operation. If a malfunction is detected, the module state changes to Error.
Once in Error state, the module is placed in a safe condition, that is with all the safety outputs open; the application program is no longer evaluated, and neither are the system inputs. Furthermore, the semiconductor signalling outputs are left unaltered (changes in inputs do not affect them) at the value imposed by the application program before entering the error state. To reset the module, just switch it off for the required duration (see technical data) and then switch it on again.

Note A: A short circuit is not always a fault. For example, in the case of an ordinary push button for emergency stops equipped with two NC contacts, contact opening is the signal to be evaluated and a short circuit between the two contacts is a fault. In contrast, in the case of a safety mat with 4-wire technology, the opposite is true, i.e. a short circuit between the wires is the signal to be evaluated whereas wire interruption is a fault.

Fault signalling

LED PWR		LED P1 and P2		Possible fault cause
Off	○	Off	○	No power supply, incorrect connections, power wires cut, external fuses broken. Module fault.
Green	●	Off	○	Normal operation.
Green	●	Red	●	Non-restorable fault. Recommended action: Send module for repair.
Green	●	Red x 1 Blue x 1	●))) 1 ●))) 1	Restorable fault: Overcurrent on Tx or Ox outputs. Recommended action: Disconnect the semiconductor signalling outputs (Ox) and the test outputs (Tx) to check whether an external short circuit is present.
Green	●	Red x 1 Blue x 2	●))) 1 ●))) 2	Restorable fault. Problem detected on OSx (short circuit towards earth or positive pole, or else short circuit between two OSx). Suggested action: Disconnect the safety outputs to check if there are any problems on the external connections of the OSx outputs.
Green	●	Red x 1 Blue x 3	●))) 1 ●))) 3	Restorable fault. Module temperature outside the limits. Recommended action: Restore module temperature to within permissible limits.
Green	●	Red x 1 Blue x 4	●))) 1 ●))) 4	Restorable fault: No power on 24V-0V terminals. Recommended action: Check the electrical connections.
Green	●	Blue x N	●))) N	Module entered Error state at the request of the application program. Error code N. Typically due to incorrect input conditions (external short circuits, status not permitted). Recommended action: Disconnect the inputs to find any short circuits. Check the documentation supplied with the application program for further details.

Quick description of the main safety functions (CS MF•••••)

SENSORS

Sensor	S1C	Monitoring of one contact
Outputs	OUT	The OUT output is active when the input is closed and there is no error
	ERROR	The ERROR output is active in the case where an electrical malfunction is detected in the input signal
Parameters	None	
Examples		Start button; Stop button; Simple contact

Sensor	S1S	Monitoring of one static signal
Outputs	OUT	The OUT output is active if 24 Vdc is applied to the input
Parameters	None	
Examples		Generic sensors with PNP output; Enabling signals

Sensor	S2CD	Monitoring of two dependent contacts
Outputs	OUT	The OUT output is active when both inputs are in normal or safety state and there is no error
	ERROR	The ERROR output is active in the case where simultaneity times are not respected, or in the case where an electrical malfunction is detected at the input signals
Parameters	2NC / 1NO+1NC	Contact position in normal or safety state
	Tc	Max. time of simultaneity in seconds
Examples		Emergency stop button; rope switch; switch with two connected contacts; mode selectors with two settings, changeover; two individual switches with a time dependency

Sensor	S2CI	Monitoring of two independent contacts
Outputs	OUT	The OUT output is active when both inputs are in normal or safety state and there is no error
	ERROR	The ERROR output is active in the case where an electrical malfunction is detected in the input signals
Parameters	2NC / 1NO+1NC	Contact position in normal or safety state
Examples		Two switches; Magnetic sensor

Sensor	SSE8	Mode selector with 2 to 8 positions
Outputs	OUT	The output gives a numerical value of 1 to 8 corresponding to the active input, 0 in case of error
	ERROR	The ERROR output is active if multiple inputs are active or if no input is active, or if an electrical failure is detected in the input signals
Parameters	NumPos	Number of input signals (2 to 8)
Examples		Mode selectors with a common contact and between 2 and 8 outputs

FUNCTIONS

Function	AND	AND logical function
Outputs	OUT	The OUT output is only active if all IN input signals are present

Function	DELAY	Delayed process activation/deactivation
Outputs	OUT	The OUT output is activated if a signal is present at the IN input with a delay of Td (parameter type Don)
		If the signal at the IN input drops out, the OUT output is deactivated with a delay of Td (parameter type Doff)
Parameters	Don / Doff	Delay type, Don (delay on) on activation or Doff (delay-off) on cut-off
	Td	Length of delay on activation or cut-off

Function	NOR	NOR logical function
Outputs	OUT	The OUT output is only active in the absence of all IN input signals

Function	OR	OR logical function
Outputs	OUT	The OUT output is only active if at least one IN input signal is present

Function	PULSE	Activation of a process for a short time
Outputs	OUT	The OUT output is activated on the IN signal falling edge and remains active for the time set by Tp
Parameters	Tp	Pulse duration

Function	START	Activation of a process
Outputs	OUT	The OUT output is activated by the edge (see parameters) of the CONTROL signal if the IN input signal is present.
		Thus, it remains active as long as the signal is present at IN
Parameters	MAN / CNT	MAN = activation on rising edge, CNT = activation on falling edge

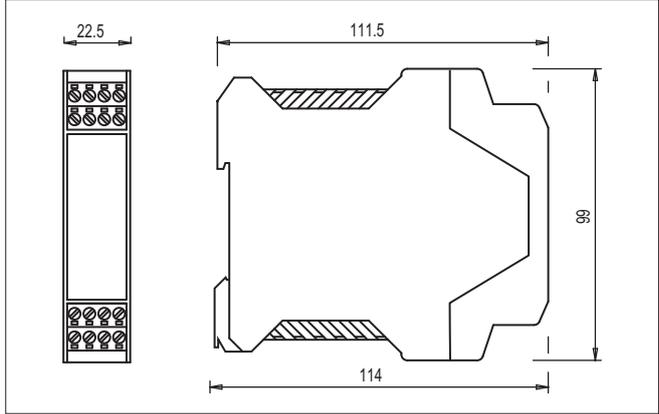| Function	LKTBL	Lookup table; Conversion table between data of the same type
Outputs	BOUT	Converted data at output. Initial value = 0
Parameters	Number of data	Number of data present in the table

Design A, housing width 22.5 mm

Connection data
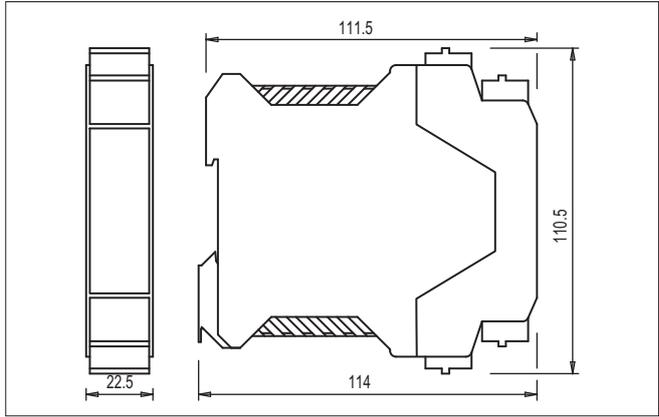Terminal tightening torque: 0.5 … 0.6 Nm
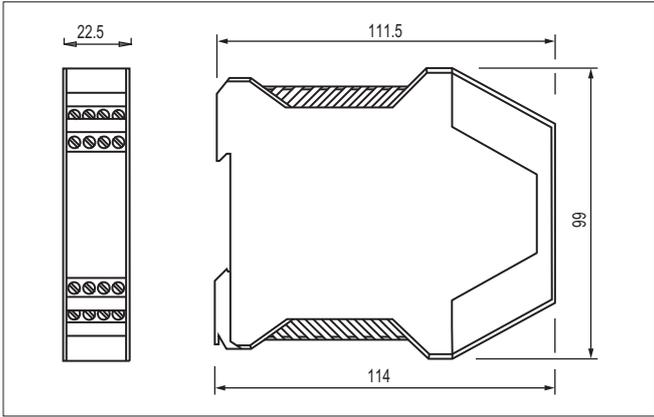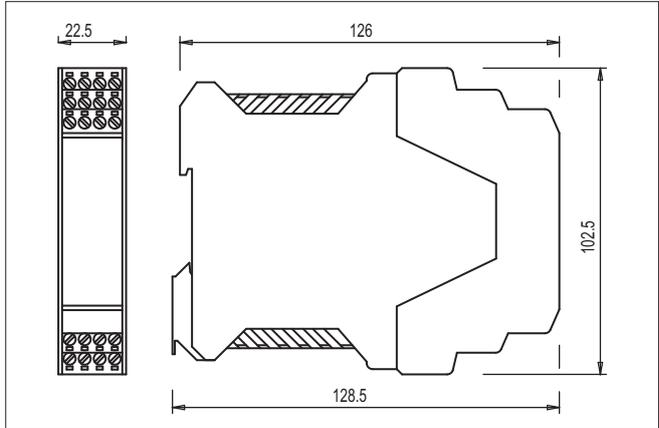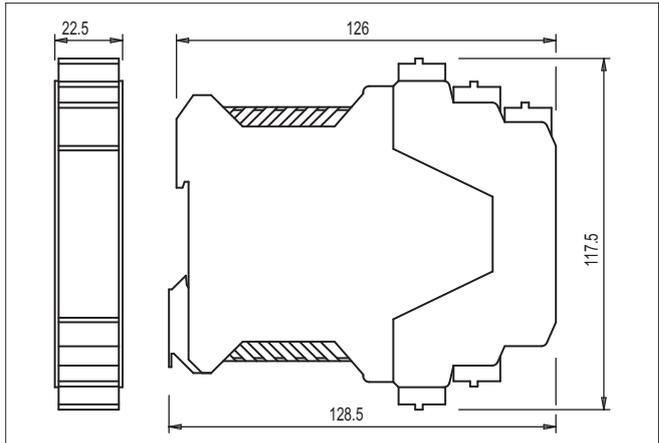Cable cross section: 0.2…2.5 mm²
     24…12 AWG

Installation
Snap-mounting on DIN rails

Connector with screw terminals

Screw terminals

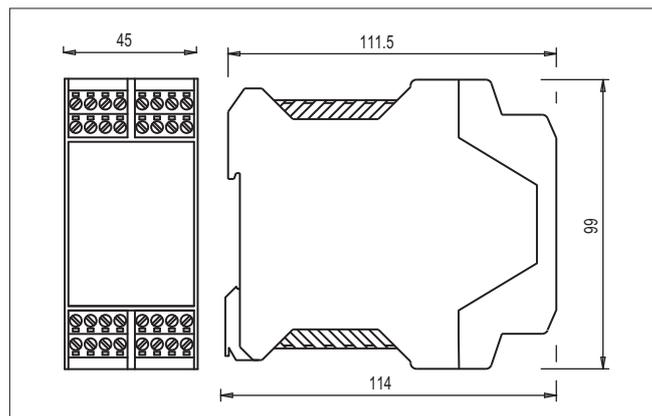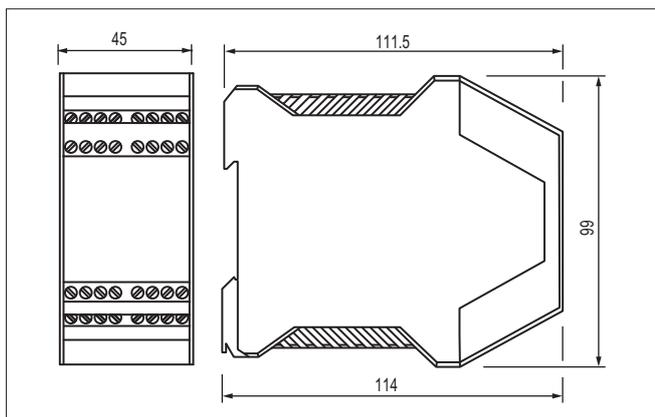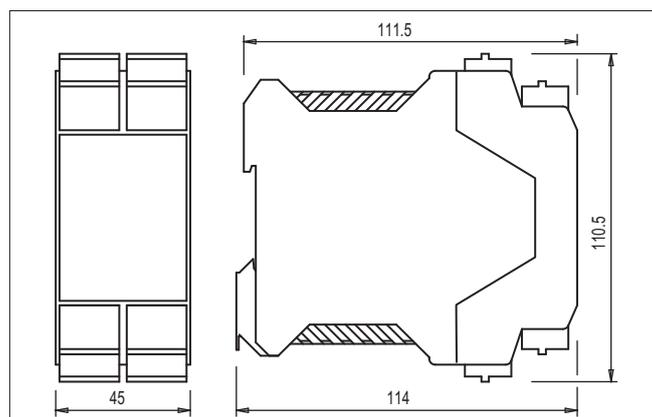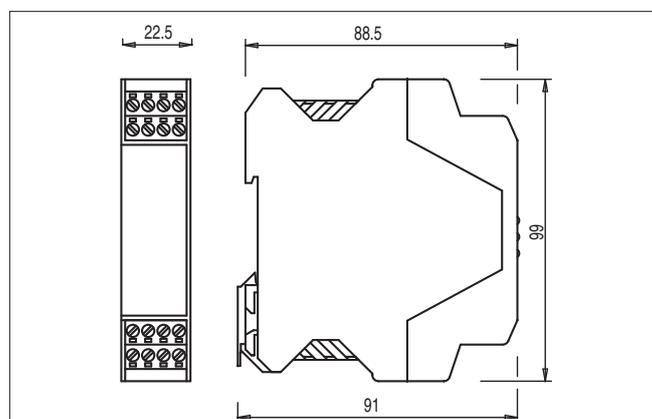Connector with spring terminals

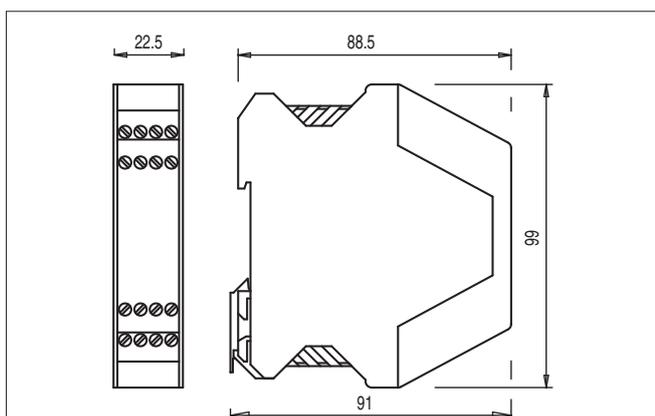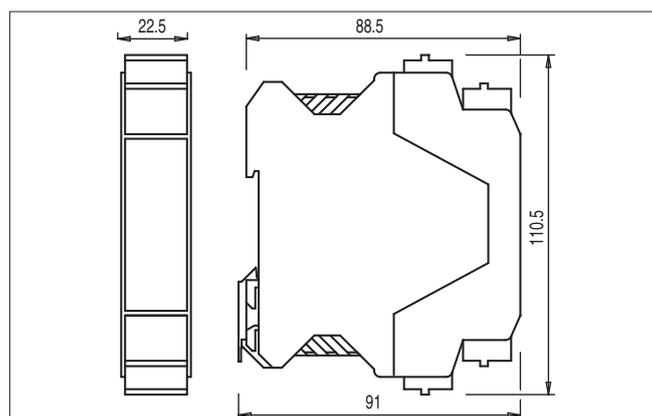## Design B, housing width 22.5 mm

Connection data
Terminal tightening torque: 0.5 … 0.6 Nm
Cable cross section: 0.2…2.5 mm²
     24…12 AWG

Installation
Snap-mounting on DIN rails

Connector with screw terminals

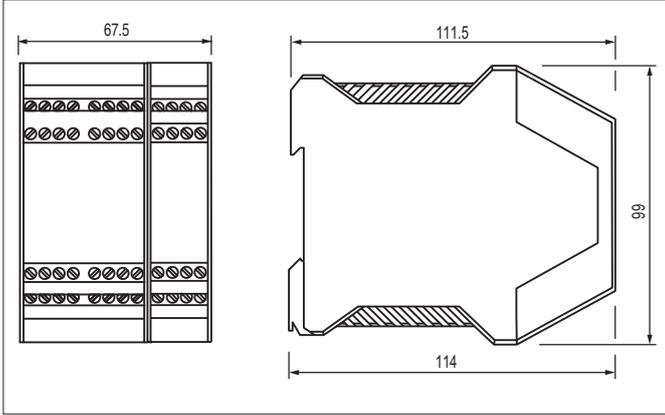Connector with spring terminals

All values in the drawings are in mm

Design C, housing width 45 mm

Connection data
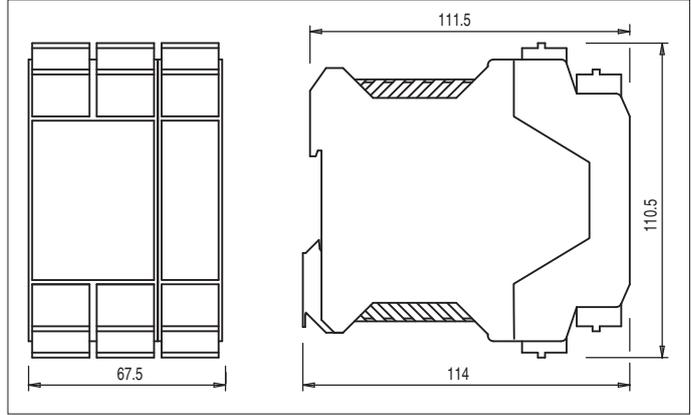Terminal tightening torque: 0.5 … 0.6 Nm
Cable cross section: 0.2…2.5 mm²
  24…12 AWG

Installation
Snap-mounting on DIN rails

Connector with screw terminals

Screw terminals

Connector with spring terminals

Design D, housing width 22.5 mm

Connection data
Terminal tightening torque: 0.5 … 0.6 Nm
Cable cross section: 0.2…2.5 mm²
  24…12 AWG

Installation
Snap-mounting on DIN rails

Connector with screw terminals

Screw terminals
All values in the drawings are in mm

Connector with spring terminals

Design E, housing width 67.5 mm

Connection data
Terminal tightening torque: 0.5 … 0.6 Nm
Cable cross section: 0.2…2.5 mm²
    24…12 AWG

Installation
Snap-mounting on DIN rails
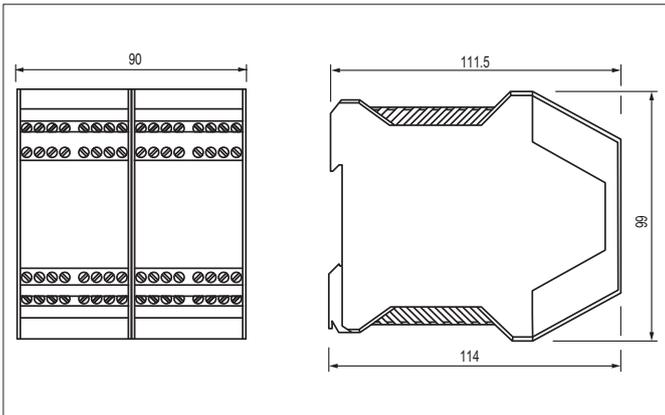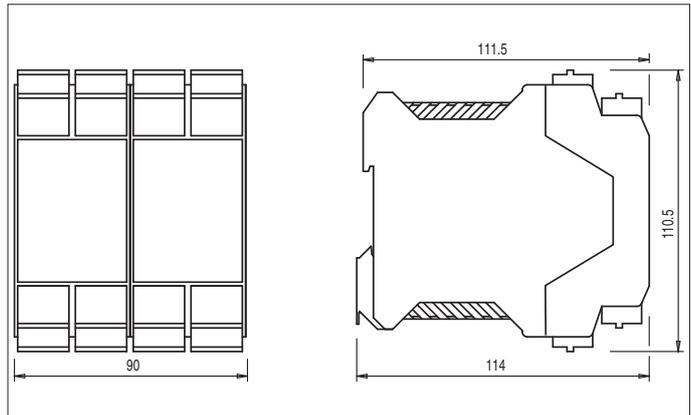
Screw terminals

Connector with spring terminals

Design F, housing width 90 mm

Connection data
Terminal tightening torque: 0.5 … 0.6 Nm
Cable cross section: 0.2…2.5 mm²
    24…12 AWG

Installation
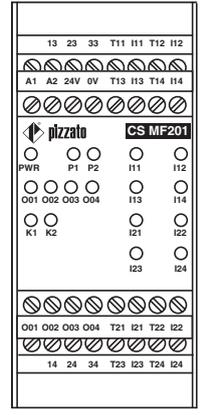Snap-mounting on DIN rails

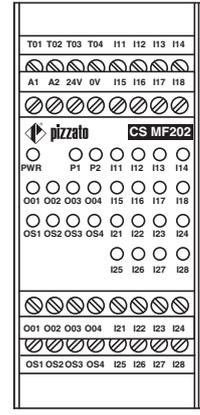Screw terminals

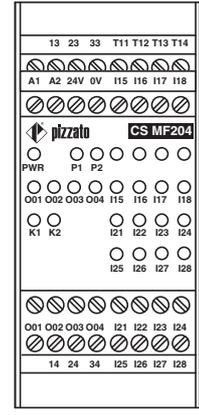Connector with spring terminals

All values in the drawings are in mm

Pin assignment CS MF series

CS MF201 CS MF202 CS MF204

CS MF series internal block diagram

CS MF201 CS MF202

CS MF204

M12 connectors

M12 connectors, for series connections

M23 connectors

M8 connectors

Cable glands and adapters

Tampering protection for M12 connectors

LED signalling lights

Fixing screws and plates

Junction box for series connections

M12 male connectors with cable

Features:
- Polyurethane connector body
- Class 6 copper conductors acc. to IEC 60228 - mobile installation
- Gold-plated contacts
- Anti-vibration self-locking ring nut
- High flexibility cable with oil resistant PVC or PUR sheath suitable to be used in drag chains, acc. to IEC 60332-1-2

Max. operating voltage:	250 Vac / 300 Vdc (4/5-pole)
	30 Vac / 36 Vdc (8/12-pole)
Max. operating current:	4 A (4-5-pole); 2 A (8-pole); 1.5 A (12-pole)
Protection degree:	IP67 acc. to EN 60529, IP69K acc. to ISO 20653
	(Protect the cables from direct high-pressure and high-temperature jets)
Ambient temperature:	-25°C … +80°C, PVC sheath, fixed installation
	-15°C … +80°C, PVC sheath, mobile installation
	-40°C … +80°C, PUR sheath, fixed installation
	-25°C … +80°C, PUR sheath, mobile installation
Wire cross-sections:	0.34 mm^2 (22 AWG) for 4-pole
	0.25 mm^2 (23 AWG) for 5/8-pole
	0.14 mm^2 (26 AWG) for 12-pole
Minimum bending radius:	> cable diameter x 15
Tightening torque of the ring:	0.6 … 0.8 Nm

Pin assignment

5 poles		8 poles	
Pin	Colour	Pin	Colour
1	Brown	1	White
2	White	2	Brown
3	Blue	3	Green
4	Black	4	Yellow
5	Grey	5	Grey
		6	Pink
		7	Blue
		8	Red
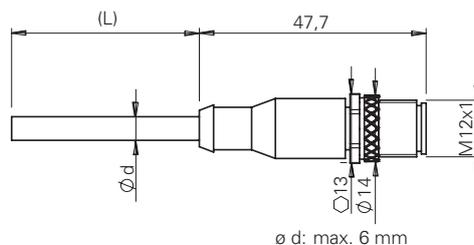
(L)   47,7

Ø d   ⬡13   Ø 14   M12x1

ø d: max. 6 mm

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article   options

VF CF5PD3M-X

No. of poles	
4	4 poles
5	5 poles
8	8 poles
12	12 poles

Cable sheath	
P	PVC (standard)
U	PUR

Connector type	
D	straight (standard)
G	angled

Connection type	
M	M12x1

Cable length (L)	
1	1 metre
2	2 metres
3	3 metres (standard)
4	4 metres
5	5 metres (standard)
...	
10	10 metres (standard)
Other lengths on request.	

Fixing ring	
	knurled ring (standard)
X	stainless steel hex ring nut

Stock items

VF CF5PD3M
VF CF8PD3M

Attention! For items not in stock the minimum order quantity is 100 pcs**.**

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➜ The 2D and 3D files are available at **www.pizzato.com**

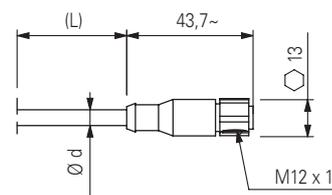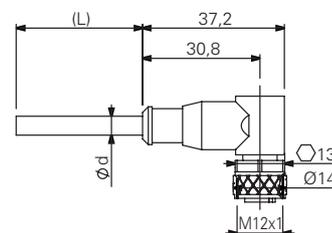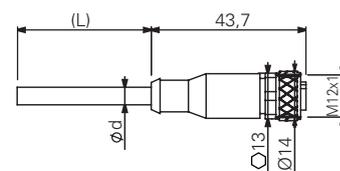## M12 female connectors with cable

Features:
- Polyurethane connector body
- Class 6 copper conductors acc. to IEC 60228 - mobile installation
- Gold-plated contacts
- Anti-vibration self-locking ring nut made of nickel-plated brass, available on request in AISI 316L stainless steel hex version
- High flexibility cable with oil resistant PVC or PUR sheath suitable to be used in drag chains, acc. to IEC 60332-1-2

Max. operating voltage:	250 Vac / 300 Vdc (4/5-pole)
	30 Vac / 36 Vdc (8/12-pole)
Max. operating current:	4 A (4-5-pole); 2 A (8-pole); 1.5 A (12-pole)
Protection degree:	IP67 acc. to EN 60529, IP69K acc. to ISO 20653
	(Protect the cables from direct high-pressure and high-temperature jets)
Ambient temperature:	-25°C … +80°C, PVC sheath, fixed installation
	-15°C … +80°C, PVC sheath, mobile installation
	-40°C … +80°C, PUR sheath, fixed installation
	-25°C … +80°C, PUR sheath, mobile installation
Wire cross-sections:	0.34 mm² (22 AWG) for 4-pole
	0.25 mm² (23 AWG) for 5/8-pole
	0.14 mm² (26 AWG) for 12-pole
Minimum bending radius:	> cable diameter x 15
Tightening torque of the ring:	0.6 … 0.8 Nm

Pin assignment

4 poles		5 poles		8 poles		12 poles	
Pin	Colour	Pin	Colour	Pin	Colour	Pin	Colour
1	Brown	1	Brown	1	White	1	Brown
2	White	2	White	2	Brown	2	Blue
3	Blue	3	Blue	3	Green	3	White
4	Black	4	Black	4	Yellow	4	Green
		5	Grey	5	Grey	5	Pink
				6	Pink	6	Yellow
				7	Blue	7	Black
				8	Red	8	Grey
						9	Red
						10	Purple
						11	Grey-Pink
						12	Red-Blue

ø d: max. 6 mm

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CA4PD3M-X

article — options

No. of poles
- **4** 4 poles
- **5** 5 poles
- **8** 8 poles
- **12** 12 poles

Cable sheath
- **P** PVC (standard)
- **U** PUR

Connector type
- **D** straight (standard)
- **G** angled

Connection type
- **M** M12x1

Cable length (L)
- **1** 1 metre
- **2** 2 metres
- **3** 3 metres (standard)
- **4** 4 metres
- **5** 5 metres (standard)
- **...**
- **10** 10 metres (standard)

Other lengths on request.

Fixing ring
- knurled ring (standard)
- **X** stainless steel hex ring nut

Stock items
- VF CA4PD3M
- VF CA4PD5M
- VF CA4PD10M
- VF CA5PD3M
- VF CA5PD5M
- VF CA5PD10M
- VF CA8PD3M
- VF CA8PD5M
- VF CA8PD10M
- VF CA8PD20M
- VF CA12PD3M
- VF CA12PD5M
- VF CA12PD10M
- VF CA12PD20M
- VF CA12PD30M
- VF CA8UD5M-X
- VF CA8UD10M-X
- VF CA12UD10M-X

Attention! For items not in stock the minimum order quantity is 100 pcs.

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

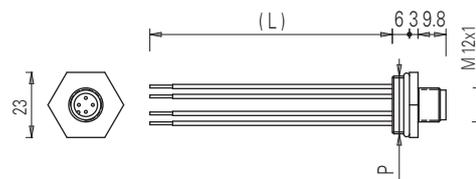➔ The 2D and 3D files are available at **www.pizzato.com**

M12 male connectors for panel mounting

Features:
- Technopolymer or metal connector body
- Gold-plated contacts
- Wires with crimped ferrules
- Directly installable on the device, these ensure quick replacement, reducing machine down time

Max. operating voltage:	250 Vac / 300 Vdc (4/5-pole)
	30 Vac / 36 Vdc (8/12-pole)
Max. operating current:	4 A (4/5-pole)
	2 A (8-pole)
	1.5 A (12-pole)
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
Ambient temperature:	-25°C … +80°C
Tightening torque:	1 … 1.5 Nm
Wire cross-sections:	0.5 mm² (20 AWG) for 4/5-pole
	0.25 mm² (23 AWG) for 8-pole
	0.14 mm² (26 AWG) for 12-pole
Contact type:	gold-plated

Pin assignment

4 poles		5 poles		8 poles		12 poles	
Pin	Colour	Pin	Colour	Pin	Colour	Pin	Colour
1	Brown	1	Brown	1	White	1	Brown
2	White	2	White	2	Brown	2	Blue
3	Blue	3	Blue	3	Green	3	White
4	Black	4	Black	4	Yellow	4	Green
		5	Grey	5	Grey	5	Pink
				6	Pink	6	Yellow
				7	Blue	7	Black
				8	Red	8	Grey
						9	Red
						10	Purple
						11	Grey-Pink
						12	Red-Blue

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article — options

VF CNM5MM-L100

Body material

M	metal
P	plastic

No. of poles

4	4 poles
5	5 poles
8	8 poles
12	12 poles

Connector thread (P)

M	M20 x 1.5 (standard)
P	PG 13.5

Connection type

M	M12x1

Wire length (L)

	8.5 cm (standard)
L16	16 cm
L100	100 cm
L200	200 cm

Stock items

VF CNP4MM
VF CNP4PM
VF CNP5MM
VF CNP5PM
VF CNP8MM
VF CNM4MM
VF CNM4PM
VF CNM5MM
VF CNM5PM
VF CNM8MM
VF CNM8PM
VF CNM12MM-L16

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.
Note: the 12-pole connector is only available in metal with M20x1.5 thread and 16 cm wires.

All values in the drawings are in mm

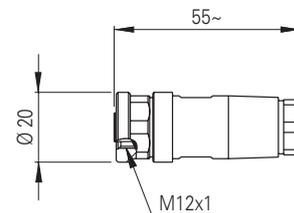➜ The 2D and 3D files are available at **www.pizzato.com**

Field wireable M12 female connectors

Features:
- Technopolymer connector body
- Gold-plated contacts
- Screw terminals for cable screw fittings

Max. operating voltage: 250 Vac/dc (4 and 5-pole)
                           30 Vac/dc (8-pole)
Max. operating current: 4 A (4 and 5-pole)
                           2 A (8-pole)
Protection degree: IP67 acc. to EN 60529
Ambient temperature: -25°C ... +85°C
Wire cross-sections: 0.25 mm² (23 AWG) … 0.5 mm² (20 AWG)
Tightening torque of the ring: 0.6 … 0.8 Nm

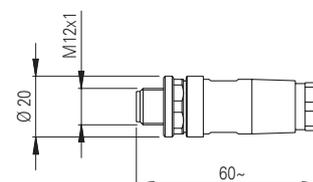| Article	Description	no. of poles
VF CBMP4DM04	Field wireable M12 female connector, straight, for Ø 4 … 6.5 mm multipolar cables	4
VF CBMP5DM04	Field wireable M12 female connector, straight, for Ø 4 … 6.5 mm multipolar cables	5
VF CBMP8DM04	Field wireable M12 female connector, straight, for Ø 4 … Ø 7 mm multipolar cables	8

Field wireable M12 male connectors

Features:
- Technopolymer connector body
- Gold-plated contacts
- Screw terminals for cable screw fittings

Max. operating voltage: 250 Vac/dc (5-pole)
                           30 Vac/dc (8-pole)
Max. operating current: 4 A (5-pole)
                           2 A (8-pole)
Protection degree: IP67 acc. to EN 60529
Ambient temperature: -25°C ... +85°C
Wire cross-sections: 0.25 mm² (23 AWG) … 0.5 mm² (20 AWG)
Tightening torque of the ring: 0.6 … 0.8 Nm

Article	Description	no. of poles
VF CCMP5DM04	Field wireable M12 male connector, straight, for Ø 4 ... Ø 6.5 mm multipolar cables	5
VF CCMP8DM04	Field wireable M12 male connector, straight, for Ø 4 ... Ø 7 mm multipolar cables	8

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➜ The 2D and 3D files are available at **www.pizzato.com**

Series connection with Y-shaped M12 connectors

To facilitate and simplify the series wiring of the safety devices, a variety of accessories designed specifically for this purpose are available. With the help of the proven M12 round connector, safety equipment of Category 4, SIL 3 and PL e with up to 32 elements connected in series is possible. All of which is possible without the risk of connection errors and with a high IP67 protection degree.

The safety circuits consist of a 24 Vdc power supply unit, a number of extensions to the installed devices, Y connectors for branching out from the chain to each individual device and a terminating plug.

In addition to the power supply unit, a suitable safety module is used to assess the state of the safety outputs within the safety chain.

Devices suitable for series connection

The series may consist both of devices that are identical to one another (homogeneous series) or that belong to different series (mixed series).

The following Pizzato Elettrica devices may be connected in series using the Y connectors:

- ST series RFID safety sensors: ST ••31•M•, ST ••71•M•.
- NG series RFID safety switches with lock: NG •••••••••-K950, NG •••••••••-K951, NG •••••••••-K952.
- NS series RFID safety switches with lock: NS ••••••Q•.
- HX series safety hinge switches: HX BEE1-••M.

Electrical connection of the chain

Pin	Colour	Connection	
1	Brown	A1	Supply input +24 Vdc
2	White	OS1	Safety output
3	Blue	A2	Supply input 0 V
4	Black	OS2	Safety output
5	Grey	I4	Solenoid activation input

Note: By activating/deactivating input I4, all switches of the NG and NS series in the chain simultaneously block/open all guards. Activation and deactivation of input I4 has no effect on the ST sensors and HX hinges in the chain.
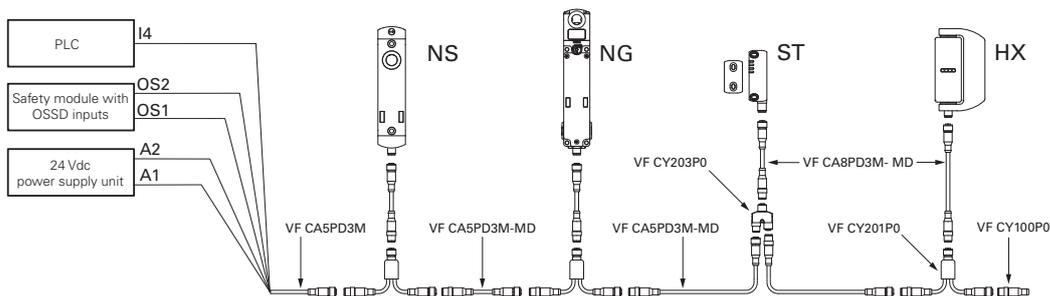
Attention! For proper operation of the devices connected in series via cables or Y connectors, it is necessary to pay particular attention to the voltage drop that occurs in the circuit. Pay particular attention to the currents and cross-sections/lengths of the used cables to ensure that the supply voltage of the components at the end of the series connection remains within the specified limit values during effective operation.

M12 extension cables

Features:
- Polyurethane connector body
- Class 6 copper conductors acc. to IEC 60228
- Gold-plated contacts
- Anti-vibration self-locking ring nut
- High flexibility cable with oil resistant PVC sheath suitable to be used in drag chains, acc. to IEC 60332-1-2

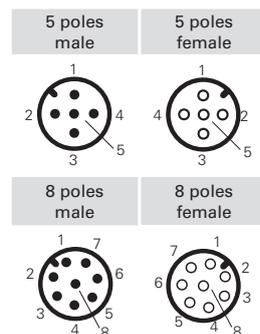|	
Max. operating voltage:	250 Vac / 300 Vdc (5-pole)
	30 Vac / 36 Vdc (8-pole)
Max. operating current:	4 A (5-pole), 2 A (8-pole)
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 2653
	(Protect the cables from direct high-pressure and high-temperature jets)
Ambient temperature:	-25°C … +80°C for fixed installation
	-15°C … +80°C for mobile installation
Wire cross-sections:	0.5 mm² (20 AWG) (5-pole)
	0.25 mm² (23 AWG) (8-pole)
Minimum bending radius:	> cable diameter x 15
Tightening torque of the ring:	0.6 … 0.8 Nm

ø d: 6.4 mm for 5-pole
6 mm for 8-pole
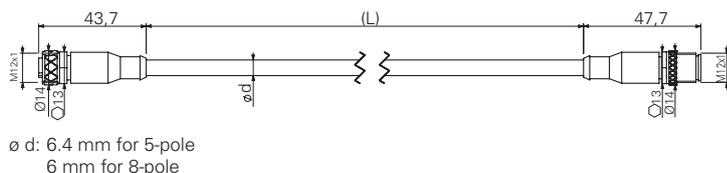
Code structure

VF CA5PD3M-MD

No. of poles	
5	5 poles
8	8 poles

Cable sheath	
P	PVC

Connector type	
D	straight

Connection type	
M	M12x1

Cable length (L)	
3	3 metres (standard)
5	5 metres (standard)
10	10 metres (standard)
Other lengths on request.	

Pin assignment

5 poles male	5 poles female

8 poles male	8 poles female

Stock items

VF CA5PD3M-MD
VF CA5PD5M-MD
VF CA5PD10M-MD
VF CA8PD3M-MD
VF CA8PD5M-MD
VF CA8PD10M-MD

Attention! For items not in stock the minimum order quantity is 100 pcs.

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm
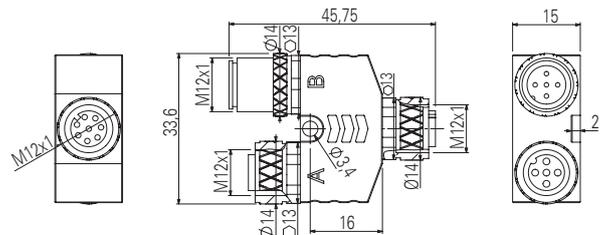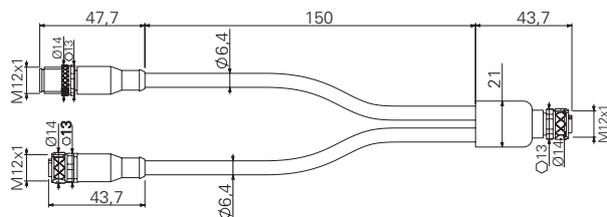
➜ The 2D and 3D files are available at **www.pizzato.com**

M12 connectors, Y-shaped, for series connections

Article	Description
VF CY201P0	M12 connector, Y-shaped, for series connections with 150 mm cable length

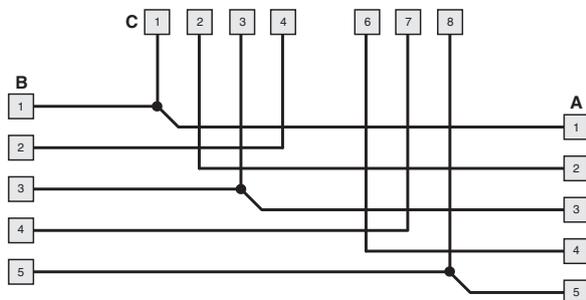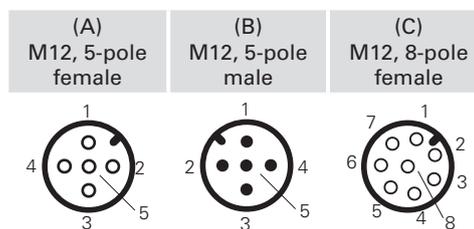| Article	Description
VF CY203P0	M12 connector, Y-shaped, for series connections without cable

Features:
- Polyurethane connector body
- Gold-plated contacts
- Anti-vibration self-locking ring nut
- Class 6 copper conductors acc. to IEC 60228
- High flexibility cable with oil resistant PVC sheath suitable to be used in drag chains, acc. to IEC 60332-1-2

Max. operating voltage: 30 Vac / 36 Vdc
Max. operating current: 4 A (5-pole)
2 A (8-pole)
Protection degree: IP67 acc. to EN 60529
Ambient temperature: -25°C … +80°C for fixed installation
-15°C … +80°C for mobile installation
Wire cross-sections: 0.5 mm² (20 AWG)
Minimum bending radius: > cable diameter x 15
Tightening torque of the ring: 0.6 … 0.8 Nm

Internal block diagram, Y-shaped connector

Pin assignment

(A) M12, 5-pole female	(B) M12, 5-pole male	(C) M12, 8-pole female

IMPORTANT: When used in safety applications, the Y connectors must be installed in a location that is not directly accessible, so as to avoid shocks or tampering.
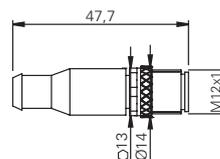
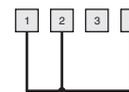## M12 terminating plugs for series connections

Features:
- Polyurethane connector body
- Gold-plated contacts
- Anti-vibration self-locking ring nut

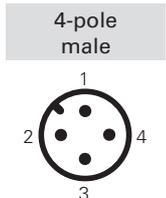Max. operating voltage: 250 Vac / 300 Vdc
Max. operating current: 4 A
Protection degree: IP67 acc. to EN 60529
Tightening torque of the ring: 0.6 … 0.8 Nm

Internal block diagram of the terminating plug

Pin assignment
4-pole male

Article	Description
VF CY100P0	M12 terminating plugs for series connections, 4-pole

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

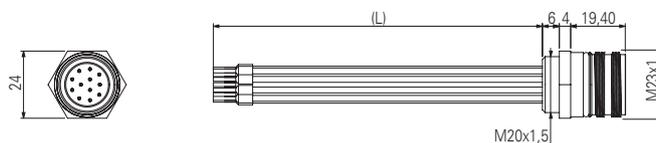➔ The 2D and 3D files are available at **www.pizzato.com**

M23 male connectors for panel mounting
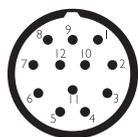
Features:
- Threaded connection M20 for installation on switches with M20 cable entry (for example: FG series and NG series)
- Nickel-plated metal connector body
- Gold-plated contacts
- 12-pole or 19-pole versions
- Wires with pre-insulated ferrules
- Directly installable on the device, these ensure quick replacement, reducing machine down time

Max. operating voltage:	250 Vac (12-pole)
	100 Vac (19-pole)
Max. operating current:	3 A
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
Ambient temperature:	-25°C … +80°C
Tightening torque:	1 … 1.5 Nm
Wire cross-section:	0.34 mm² (22 AWG)
Contact type:	gold-plated

Pin assignment

12 poles	19-pole

Pin	Colour	Pin	Colour	Pin	Colour
1	White	1	White	13	White-Green
2	Brown	2	Brown	14	Brown-Green
3	Green	3	Green	15	White-Yellow
4	Yellow	4	Yellow	16	Yellow-Brown
5	Grey	5	Grey	17	White-Grey
6	Pink	6	Pink	18	Grey-Brown
7	Blue	7	Blue	19	White-Pink
8	Red	8	Red		
9	Black	9	Black		
10	Purple	10	Purple		
11	Grey-Pink	11	Grey-Pink		
12	Red-Blue	12	Red-Blue		

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CNM12MT-L10

Body material	
M	metal

No. of poles	
12	12 poles
19	19-pole

Wire length (L)	
L10	10 cm
L16	16 cm

Note:
For applications with NG series switches, use connectors with L10 wire length.
For applications with FG series switches, use connectors with L16 wire length.

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➔ The 2D and 3D files are available at **www.pizzato.com**

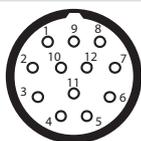## M23 female connectors for panel mounting

Features:
- Threaded connection M20
- Nickel-plated metal connector body
- Gold-plated contacts
- 12-pole or 19-pole versions
- Wires with pre-insulated ferrules
- Directly installable on the device, these ensure quick replacement, reducing machine down time

Max. operating voltage:	250 Vac (12-pole)
	100 Vac (19-pole)
Max. operating current:	3 A
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
Ambient temperature:	-25°C … +80°C
Tightening torque:	1 … 1.5 Nm
Wire cross-section:	0.34 mm² (22 AWG)
Contact type:	gold-plated

Pin assignment

12 poles		19-pole			
Pin	Colour	Pin	Colour	Pin	Colour
1	White	1	White	13	White-Green
2	Brown	2	Brown	14	Brown-Green
3	Green	3	Green	15	White-Yellow
4	Yellow	4	Yellow	16	Yellow-Brown
5	Grey	5	Grey	17	White-Grey
6	Pink	6	Pink	18	Grey-Brown
7	Blue	7	Blue	19	White-Pink
8	Red	8	Red		
9	Black	9	Black		
10	Purple	10	Purple		
11	Grey-Pink	11	Grey-Pink		
12	Red-Blue	12	Red-Blue		

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CPM12MT-L10

Body material	
M	metal

No. of poles	
12	12 poles
19	19-pole

Wire length (L)	
L10	10 cm
L20	20 cm

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

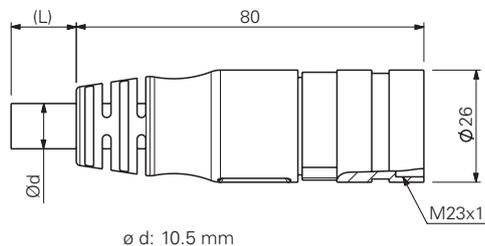➜ The 2D and 3D files are available at **www.pizzato.com**
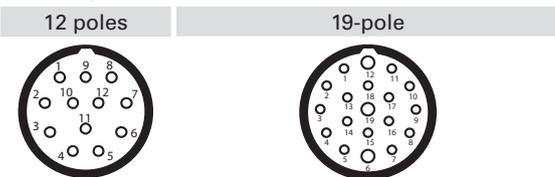
M23 female connectors with cable

Features:
- Polyurethane connector body
- Class 5 tin-plated copper conductors acc. to IEC 60228 (12-pole)
- Class 5 tin-plated copper conductors acc. to IEC 60228 (19-pole)
- Gold-plated contacts
- Anti-vibration self-locking ring nut
- Cable with PVC sheath acc. to IEC 60332-1-2 (flame retardant)

Max. operating voltage:	160 Vac (12-pole)
	63 Vac (19-pole)
Maximum operating current with 12 poles:	5 A x 0.5 mm² (20 AWG), the currents are per conductor
Maximum operating current with 19 poles:	8 A x 0.75 mm² + 4 A x 0.34 mm² (22 AWG), the currents are per conductor
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
	(Protect the cables from direct high-pressure and high-temperature jets)
Ambient temperature:	-5°C ... +70°C
Wire cross-section:	12x0,5 mm² (12-pole)
	17x0.34 mm² + 2x0.75 mm² (19-pole)
Minimum bending radius:	> cable diameter x 15
Tightening torque of the ring:	1 … 1.5 Nm

(L) 80
Ø 26
Ø d
M23x1
ø d: 10.5 mm

Pin assignment

12 poles	19-pole		

Pin	Colour	Pin	Colour	Pin	Colour
1	White	1	White	13	White-Green
2	Brown	2	Brown	14	Brown-Green
3	Green	3	Green	15	White-Yellow
4	Yellow	4	Yellow	16	Yellow-Brown
5	Grey	5	Grey	17	White-Grey
6	Pink	6	Pink	18	Grey-Brown
7	Blue	7	Blue	19	White-Pink
8	Red	8	Red		
9	Black	9	Black		
10	Purple	10	Purple		
11	Grey-Pink	11	Grey-Pink		
12	Red-Blue	12	Red-Blue		

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CA12PD20S

No. of poles	
12	12 poles
19	19-pole

Cable sheath	
P	PVC

Connector type	
D	straight

Connection type	
S	M23x1

Cable length (L)	
5	5 metres
10	10 metres
20	20 metres
30	30 metres

Other lengths on request.

📦 **Stock items**

VF CA12PD10S
VF CA12PD20S
VF CA12PD30S
VF CA19PD5S
VF CA19PD10S
VF CA19PD20S
VF CA19PD30S

Attention! For items not in stock the minimum order quantity is 50 pcs.

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➔ The 2D and 3D files are available at **www.pizzato.com**

Field wireable M23 female connectors

Features:
- Nickel-plated metal connector body
- Gold-plated contacts
- 12-pole or 19-pole versions

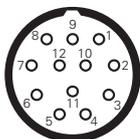|	
Max. operating voltage:	250 Vac (12-pole)
	100 Vac (19-pole)
Max. operating current:	8 A
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
Ambient temperature:	-40°C ... +125°C
Tightening torque of the ring:	1 … 1.5 Nm
Pollution degree:	3
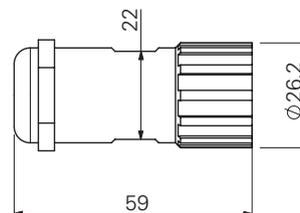
Pin configuration

12 poles

clockwise numbering   counterclockwise numbering

19-pole
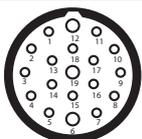
clockwise numbering

Article	Description
VF AC2205	Mounting key

Note: Article required for opening and wiring of connector.

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CBSM12TC07

Connection type

S	M23x1

Body material

M	metal

No. of poles

12	12 poles
19	19-pole

Connector type

T	clockwise numbering (standard)
D	counterclockwise numbering

Cable diameter

07	Ø 7 … 12 mm

Pin connection type

C	crimp connection (standard) 0.34 … 1 mm²
S	solder connection 0.34 … 1 mm²

Note: Use appropriate crimp pliers for crimp connections (e.g., Knipex, article number 97 52 63).

📦 **Stock items**
VF CBSM12TC07
VF CBSM19TC07
VF CBSM12TS07

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➜ The 2D and 3D files are available at **www.pizzato.com**

M23 extension cables with male and female connector

Features:
- Polyurethane connector body
- Class 5 tin-plated copper conductors acc. to IEC 60228
- Gold-plated contacts
- Anti-vibration self-locking ring nut
- Cable with PVC sheath acc. to IEC 60332-1-2 (flame retardant)

|	
Max. operating voltage:	63 Vac
Maximum operating current with 19 poles:	8 A x 0.75 mm² + 4 A x 0.34 mm² (22 AWG), the currents are per conductor
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
	(Protect the cables from direct high-pressure and high-temperature jets)
Ambient temperature:	-5°C ... +70°C
Wire cross-section:	17x0.34 mm² + 2x0.75 mm²
Minimum bending radius:	> cable diameter x 15
Tightening torque of the ring:	1 … 1.5 Nm
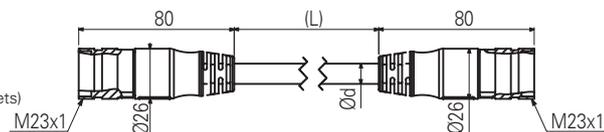
Pin assignment

19-pole male	19-pole female
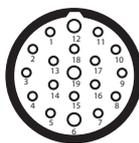
Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CA19PD5S-SD

No. of poles		Connection type	
19	19-pole	**S**	M23x1

Cable sheath		Cable length (L)	
P	PVC	**5**	5 metres
		10	10 metres
Connector type		**20**	20 metres
D	straight		

Other lengths on request.

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➔ The 2D and 3D files are available at **www.pizzato.com**

M8 female connectors with cable

Features:
- Polyurethane connector body
- Class 6 copper conductors acc. to IEC 60228
- Gold-plated contacts
- Anti-vibration self-locking ring nut
- High flexibility cable with oil resistant PVC or PUR sheath suitable to be used in drag chains, acc. to IEC 60332-1-2

Max. operating voltage:	60 Vac / 75 Vdc
Max. operating current:	4 A
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
	(Protect the cables from direct high-pressure and high-temperature jets)
Ambient temperature:	-25°C … +80°C for fixed installation
	-15°C … +80°C for mobile installation
Wire cross-sections:	0.25 mm² (23 AWG)
Minimum bending radius:	> cable diameter x 15
Tightening torque of the ring:	0.3 … 0.5 Nm

(L)   30.3~   Ø 10   Ø 4.2   M8 x 1

Pin assignment

4 poles

4 2
3 1
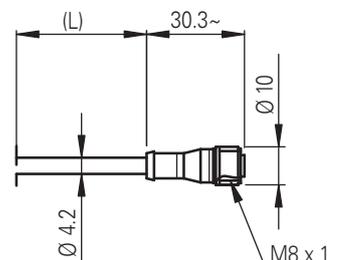
Pin	Colour
1	Brown
2	White
3	Blue
4	Black

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

VF CA4PD3K

No. of poles	
4	4 poles

Cable sheath	
P	PVC (standard)
U	PUR

Connector type	
D	straight

Connection type	
K	M8x1

Cable length (L)	
1	1 metre
2	2 metres
3	3 metres (standard)
4	4 metres
5	5 metres (standard)
...	
10	10 metres

Other lengths on request.

Stock items

VF CA4PD3K
VF CA4PD5K

Attention!
For items not in stock the minimum order quantity is 100 pcs.

ATTENTION: always disconnect the power supply before removing the connector. The connector is not suitable for separation of electrical loads.

All values in the drawings are in mm

➜ The 2D and 3D files are available at **www.pizzato.com**

Strain relief cable glands

This particular design ensures high resistance to traction of the cable glands. All cable glands are also suitable for a wide range of cable diameters.
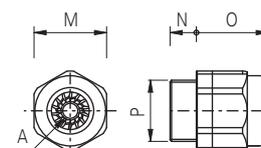Suitable for circular cross-section cables only.

Features:
Body and ring material: technopolymer without halogen
Protection degree: IP67 acc. to EN 60529
Tightening torque: 3 … 4 Nm (PG 13.5/M20)
2 … 2.5 Nm (PG 11/M16)

	Article	Description	A	⬡M	N	O	P
Metric threads	VF PAM25C7N	M25x1.5 cable gland for one cable Ø 10 … 17 mm	◯	33	10	31	M25x1.5
	VF PAM20C6N	M20x1.5 cable gland for one cable Ø 6 … 12 mm	◯	24	9	24	M20x1.5
	VF PAM20C5N	M20x1.5 cable gland for one cable from Ø 5 … 10 mm	◯	24	9	24	M20x1.5
	VF PAM20C3N	M20x1.5 cable gland for one cable Ø 3 … 7 mm	◉	24	9	24	M20x1.5
	VF PAM16C5N	M16x1.5 cable gland for one cable Ø 5 … 10 mm	◯	22	7.5	23	M16x1.5
	VF PAM16C4N	M16x1.5 cable gland for one cable Ø 4 … 8 mm	◉	22	7.5	23	M16x1.5
	VF PAM16C3N	M16x1.5 cable gland for one cable Ø 3 … 7 mm	◉	22	7.5	23	M16x1.5
	VF PAM20CBN	M20x1.5 multi-hole cable gland for 2 cables Ø 3 … 5 mm	◉	24	9	23	M20x1.5
	VF PAM20CDN	M20x1.5 multi-hole cable gland for 3 cables Ø 1 … 4 mm	◉	24	9	23	M20x1.5
	VF PAM20CEN	M20x1.5 multi-hole cable gland for 3 cables Ø 3 … 5 mm	◉	24	9	23	M20x1.5
	VF PAM20CFN	M20x1.5 multi-hole cable gland for 4 cables Ø 1 … 4 mm	◉	22	9	23	M20x1.5
PG threads	VF PAP13C6N	PG 13.5 cable gland for one cable from Ø 6 … 12 mm	◯	24	9	24	PG 13.5
	VF PAP13C5N	PG 13.5 cable gland for one cable from Ø 5 … 10 mm	◯	24	9	24	PG 13.5
	VF PAP13C3N	PG 13.5 cable gland for one cable from Ø 3 … 7 mm	◉	24	9	24	PG 13.5
	VF PAP11C5N	PG 11 cable gland for one cable from Ø 5 … 10 mm	◯	22	7.5	23	PG 11
	VF PAP11C4N	PG 11 cable gland for one cable from Ø 4 … 8 mm	◉	22	7.5	23	PG 11
	VF PAP11C3N	PG 11 cable gland for one cable from Ø 3 … 7 mm	◉	22	7.5	23	PG 11

Thread adapters

Thread adapters make it possible to fulfil requests for switches with a different thread to those generally found in stock. This means it is possible to offer customers a single product type with various threaded connections, while only having to stock the product itself and many kinds of adapters.

Features:
Body material: glass fibre reinforced technopolymer
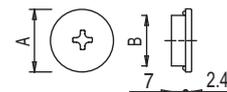Tightening torque: 3 … 4 Nm
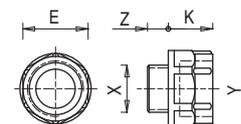
Article	Description	X	Y	Z	K	⬡E
VF ADPG13-PG11	Adapter from PG 13.5 to PG 11	PG 13.5	PG 11	9	12	22
VF ADPG13-M20	Adapter from PG 13.5 to M20x1.5	PG 13.5	M20x1.5	9	14	24
VF ADPG13-1/2NPT	Adapter from PG 13.5 to 1/2 NPT	PG 13.5	1/2 NPT	9	14	24
VF ADPG11-1/2NPT	Adapter from PG 11 to 1/2 NPT	PG 11	1/2 NPT	7	14	24
VF ADPG11-PG13	Adapter from PG 11 to PG 13.5	PG 11	PG 13.5	7	14	24
VF ADM20-1/2NPT	Adapter from M20x1.5 to 1/2 NPT	M20x1.5	1/2 NPT	9	14	24

All values in the drawings are in mm

➜ The 2D and 3D files are available at **www.pizzato.com**

Protection caps

Features:
Body material: technopolymer, self-extinguishing
Protection degree: IP67 acc. to EN 60529
                         IP69K acc. to ISO 20653
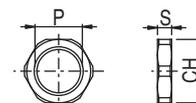Tightening torque: 1.2 … 1.6 Nm
Cross-recessed screw: PH3

Article	Description	A	B
VF PTM20	Protection cap M20x1.5	24	M20x1.5
VF PTG13.5	Protection cap PG13.5	24	PG 13.5

Threaded nuts

Features:
Tightening torque: 1.2 … 2 Nm

	Article	Description	S	CH	P
Plastic	VF DFPM25	M25x1.5 threaded technopolymer nut	6	32	M25x1.5
	VF DFPM20	M20x1.5 threaded technopolymer nut	6	27	M20x1.5
	VF DFPM16	M16x1.5 threaded technopolymer nut	5	22	M16x1.5
	VF DFPP13	PG13.5 threaded technopolymer nut	6	27	PG 13.5
Metal	VF DFMM20	M20x1.5 threaded nut in nickel-plated brass	3	23	M20x1.5

Chock plugs

Features:
Body material: technopolymer
Protection degree: IP54 acc. to EN 60529
Tightening torque: 0.8 … 1 Nm
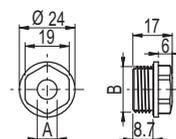
Note: Use a socket wrench for tightening.

Article	Description	A	B
VF PFM20C8N	Chock plug for one cable Ø 8 … 12 mm, threaded, M20x1.5	7.5	M20x1.5
VF PFM20C4N	Chock plug for one cable Ø 4 … 8 mm, threaded, M20x1.5	3.5	M20x1.5

All values in the drawings are in mm

Tampering protection for M12 connectors

Features:

These tampering protections are composed of two identical snap-on shells. They are applied to the device connectors, thereby making them inaccessible. The shells can only be removed by breaking them. Thus, any attempt to tamper with them will be immediately evident.

The protection can be installed quickly and easily by pressing the two shells lightly into place.

The protections are suitable for all devices with an M12 connector (e.g. NS, ST, SR series) but they can also be used for junctions between cables with male - female connectors.

A version made of detectable plastic is available for the food industry, and it can easily be detected during the process using common optical vision technologies, X-rays or metal detectors.

Installation:
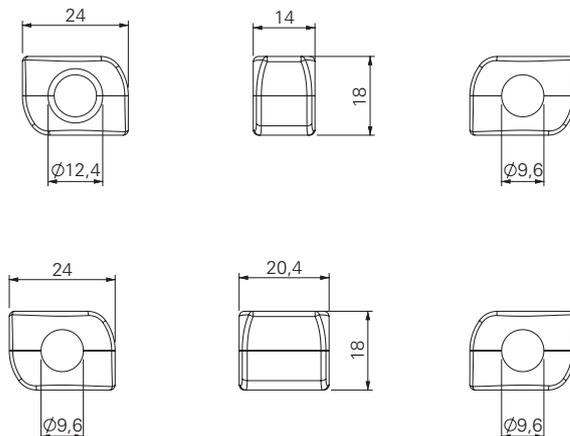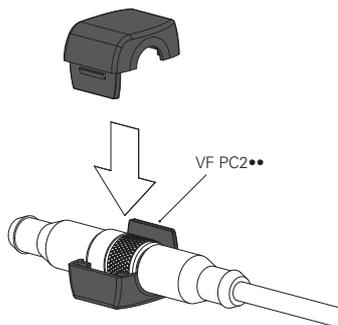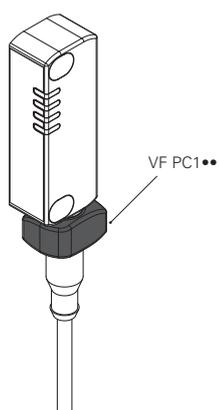
Article	Description	Colour / material
VF PC1A9	Tamper-proof protection for device-side connector	⬤ Grey technopolymer
VF PC2A9	Tamper-proof protection for male - female connector	⬤ Grey technopolymer
VF PC1B6	Tamper-proof protection for device-side connector	🔵 Blue detectable technopolymer
VF PC2B6	Tamper-proof protection for male - female connector	🔵 Blue detectable technopolymer

Door holding magnets

Article	Description
SM H9ZF	Door holding magnet (holding force 40 N)
SM H9ZQ	Door holding magnet (holding force 40 N, opposite polarity to SM H9ZF)

Holding magnets for use on machinery doors. The magnets are sealed inside a plastic cover and will not rust even in damp environments.

All values in the drawings are in mm

➔ The 2D and 3D files are available at **www.pizzato.com**
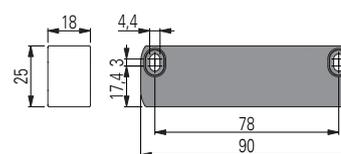
LED signalling lights

These signalling lights with high luminosity LEDs are used for signalling that an electric contact has changed its state inside the switch. They can be installed on switches of the FL, FX, FZ, FW, FG, FY, NG or FS series by screwing them on one of the conduit entries not used for electric cables. They can be used for many different purposes: for example, to signal, from a distance, whether the switch has been actuated; whether the guard has closed correctly; or whether the guard is locked or unlocked.
The inner part can rotate in such a way that it can be wired and screwed on the switch without any risk of twisting the wires.

Features:

|	
Protection degree:	IP67 acc. to EN 60529
	IP69K acc. to ISO 20653
Ambient temperature:	-25°C … +70°C
Operating voltage U_n:	24 Vac/dc (10 mA)
	120 Vac (20 mA)
	230 Vac (20 mA)
Tolerance on the supply voltages:	±15% of U_n
Operating current:	10 mA
Connection system:	PUSH-IN spring type
Cross-section of rigid/flexible wires w. wire-end sleeve:	min. 1 x 0.34 mm^2 (1 x AWG 24)
	max. 1 x 1.5 mm^2 (1 x AWG 16)
Wire cross-section with pre-insulated wire-end sleeve:	min. 1 x 0.34 mm^2 (1 x AWG 24)
	max. 1 x 0.75 mm^2 (1 x AWG 18)
Tightening torque.	1.2 … 2 Nm
Wire stripping length (x):	min.: 8 mm
	max.: 12 mm
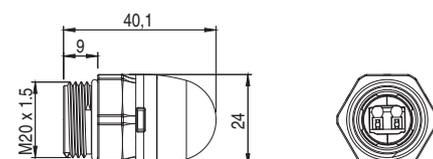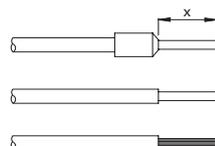
Application examples
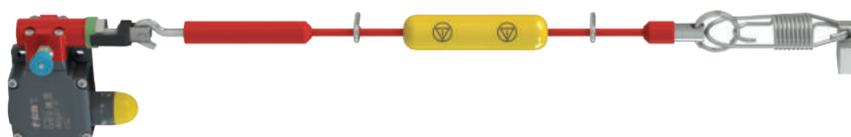
Status indicator for safety rope switches

Indication of unlocked door

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office

VF SL1A3PA1

Operating voltage

1	24 Vac/dc
3	120 Vac
4	230 Vac

Type of light source

A	Standard LED with continuous light

Body design

A	Total height 40 mm, spherical lens, threading M20x1.5 mm

Connection type

P	PUSH-IN terminal strip

Lens colour

2	White
3	Red
4	Green
5	Yellow

Stock items

VF SL1A3PA1
VF SL1A5PA1

All values in the drawings are in mm

➜ The 2D and 3D files are available at **www.pizzato.com**

Fixing plates

Metal fixing plate, for fixing rope switches on the ceiling.
The plate is provided with bore holes for fasting switches of the FD, FL, FC, FP, FR, FM, FZ, FX, FK series. It is supplied without screws.

Article	Description
VF SFP2	Ceiling fixing plate

Fixing plates

Fixing plate (complete with fastening screws) provided with long slots for adjusting the operating point.
Each plate is provided with two pairs of mounting holes, one for standard switches and one for switches with reset device. The actuator thus always has the same actuating point.

Article	Description
VF SFP1	Fixing plate (FR series)
VF SFP3	Fixing plate (FX series)

Torx safety screws   Packs of **10 pcs.**

Pan head screws with Torx fitting and pin, stainless steel.
Use a thread locker where required for applications acc. to. EN ISO 14119.

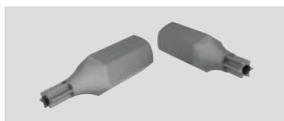| Article	Description
VF VAM4X10BX-X	M4x10 screw, with Torx T20 fitting, AISI 304
VF VAM4X15BX-X	M4x15 screw, with Torx T20 fitting, AISI 304
VF VAM4X20BX-X	M4x20 screw, with Torx T20 fitting, AISI 304
VF VAM4X25BX-X	M4x25 screw, with Torx T20 fitting, AISI 304
VF VAM4X30BX-X	M4x30 screw, with Torx T20 fitting, AISI 304
VF VAM5X10BX-X	M5x10 screw, with Torx T25 fitting, AISI 304
VF VAM5X15BX-X	M5x15 screw, with Torx T25 fitting, AISI 304
VF VAM5X20BX-X	M5x20 screw, with Torx T25 fitting, AISI 304
VF VAM5X25BX-X	M5x25 screw, with Torx T25 fitting, AISI 304
VF VAM5X35BX-X	M5x35 screw, with Torx T25 fitting, AISI 304
VF VAM5X45BX-X	M5x45 screw, with Torx T25 fitting, AISI 304

OneWay safety screws   Packs of **10 pcs.**

Pan head screws with OneWay fitting in stainless steel.
This screw type cannot be removed or tampered with using common tools. Ideal for fixing safety device actuators in accordance with EN ISO 14119.

Article	Description
VF VAM4X10BW-X	M4x10 screw, with OneWay fitting, AISI 304
VF VAM4X15BW-X	M4x15 screw, with OneWay fitting, AISI 304
VF VAM4X20BW-X	M4x20 screw, with OneWay fitting, AISI 304
VF VAM4X25BW-X	M4x25 screw, with OneWay fitting, AISI 304
VF VAM5X10BW-X	M5x10 screw, with OneWay fitting, AISI 304
VF VAM5X15BW-X	M5x15 screw, with OneWay fitting, AISI 304
VF VAM5X20BW-X	M5x20 screw, with OneWay fitting, AISI 304
VF VAM5X25BW-X	M5x25 screw, with OneWay fitting, AISI 304

Bits for Torx safety screws

Bits for Torx safety screws with pin, with ¼″ hexagonal connection.

Article	Description
VF VAIT1T20	Bits for M4 screws with Torx T20 fitting
VF VAIT1T25	Bits for M5 screws with Torx T25 fitting
VF VAIT1T30	Bits for M6 screws with Torx T30 fitting

All values in the drawings are in mm

➔ The 2D and 3D files are available at **www.pizzato.com**

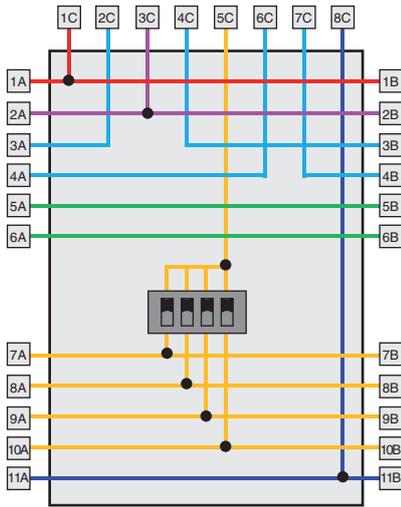## Junction box for series connection of up to 4 devices

This accessory allows easy and precise series connection of up to 4 devices. Thanks to the numbered terminals and to the internal circuit, it is sufficient to connect the conductors in the slots provided with the practical and fast PUSH-IN spring connections.

Thanks to the four internal microswitches, it is possible to easily and immediately direct the device signalling outputs (open or closed, locked or unlocked) to one of the four available auxiliary channels and then manage the information independently for each channel through a PLC.

Features:

Material:	Self-extinguishing shock-proof polycarbonate with double insulation, UV-resistant and glass fibre reinforced
Material of the screws:	Stainless steel
Protection degree:	IP67 acc. to EN 60529, IP69K acc. to ISO 20653, with cable gland of equal or higher protection degree
Conduit entries:	2x M20 - 1/2 NPT knock-out side entries
	2x M20 - 1/2 NPT - M25 knock-out side entries
	2x M16 knock-out base entries
Ambient temperature:	-40°C … +80°C

Tightening torque of the cover screws: 1 … 1.4 Nm

|	
Connection system:	PUSH-IN spring type
Cross-section of rigid/flexible wires w. wire-end sleeve:	min. 1 x 0.34 mm^2 (1 x AWG 24)
	max. 1 x 1.5 mm^2 (1 x AWG 16)
Wire cross-section with pre-insulated wire-end sleeve:	min. 1 x 0.34 mm^2 (1 x AWG 24)
	max. 1 x 0.75 mm^2 (1 x AWG 18)
Wire stripping length (x):	min.: 8 mm
	max.: 12 mm

Pin assignment

Article	Description
VF CY302P0	Junction box for series connection of up to 4 devices

Terminal box	Connection		Terminal box	Connection	
1A / 1B	A1	Supply input +24 Vdc	1C	A1	Supply input +24 Vdc
2A / 2B	A2	Supply input 0 V	2C	OS1	Safety output
3A / 3B	OS1 / IS1	Safety output / safety input	3C	A2	Supply input 0 V
4A / 4B	OS2 / IS2	Safety output / safety input	4C	IS1	Safety input
5A / 5B		Auxiliary connection	5C	O3	Signalling output, actuator inserted
6A / 6B		Auxiliary connection		O4	Signalling output, actuator inserted and locked
7A / 7B	OAUX1	Auxiliary output Oaux1			
8A / 8B	OAUX2	Auxiliary output Oaux2	6C	OS2	Safety output
9A / 9B	OAUX3	Auxiliary output Oaux3	7C	IS2	Safety input
10A / 10B	OAUX4	Auxiliary output Oaux4	8C	I4	Solenoid activation input
11A / 11B	I4	Solenoid activation input			

Example of series connection of 4 NG series switches

NG 2D1D411A-F31   NG 2D1D411A-F31   NG 2D1D411A-F31   NG 2D1D411A-F31
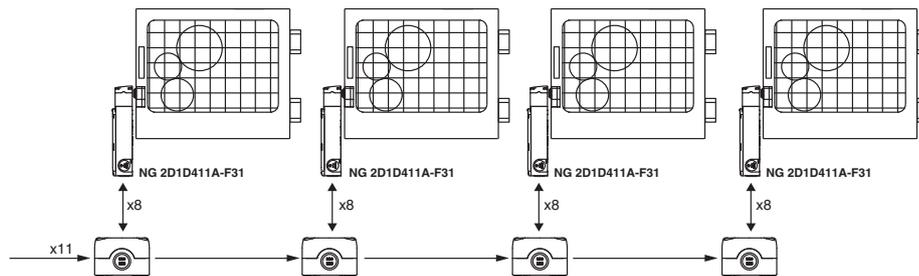
Wiring diagram
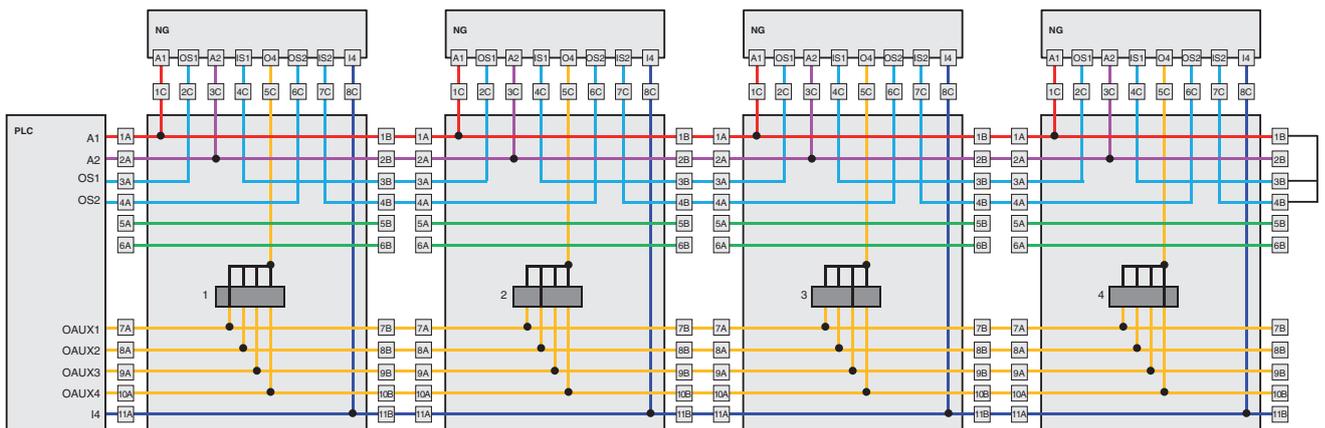
Installation of single switches with safety functions

- Use **only** switches with the symbol ⊕ (see figure on the side).
- Connect the safety circuit to **the NC normally closed contacts (11-12, 21-22 or 31-32).**
- **The NO normally open contacts (13-14, 23-24, 33-34)** should be used **only for signalling**; these contacts are not to be connected with the safety circuit. However, if two or more switches are used on the same guard, a connection can be established between the NO contacts and the safety circuit.
  In this case at least one of the two switches must have positive opening and a normally closed contact NC (11-12, 21-22 or 31-32) must be connected to the safety circuit.
- Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol ⊕.
- The actuation system must be able to exert a force that is greater than the **positive opening force**, as specified in brackets below each article, next to the minimum force value.
- The device must be affixed in compliance with EN ISO 14119.

Whenever the machine guard is opened and during the whole opening travel, **the switch must be pressed directly** (fig. 1) **or through a rigid connection** (fig. 2)**.**
Only in this way the positive opening of the normally closed NC contacts (11-12, 21-22, 31-32) is guaranteed.
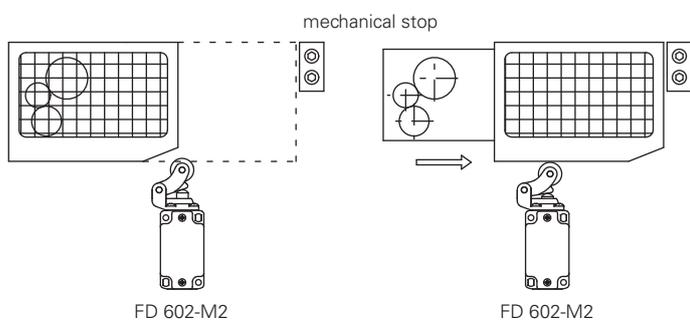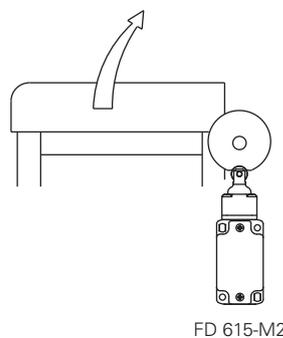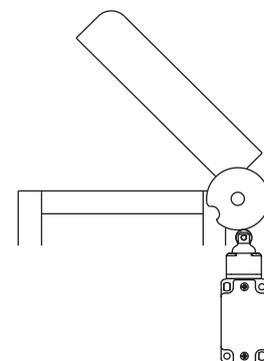
mechanical stop

FD 602-M2   FD 602-M2   FD 615-M2   FD 615-M2
Fig.1   **Fig.2**

In safety applications with only one switch for each guard, the switches **must never be activated by a release** (fig. 3 and 4) **or through a non rigid connection** (i.e. by a spring).
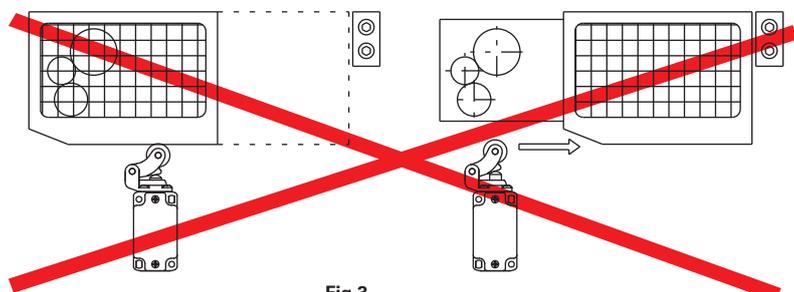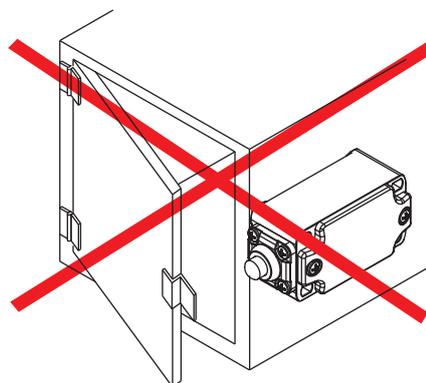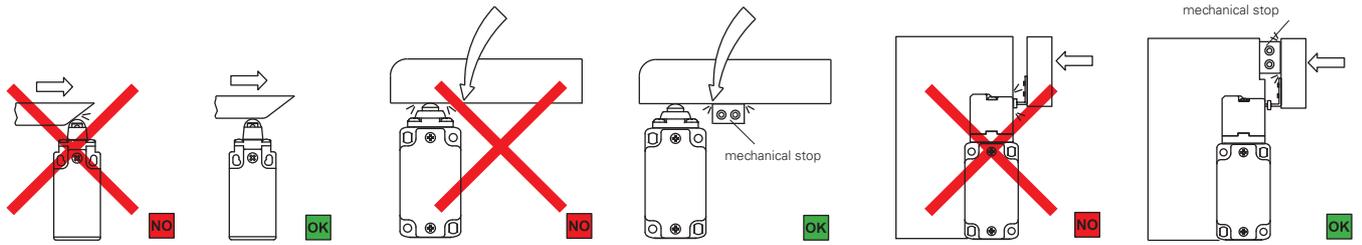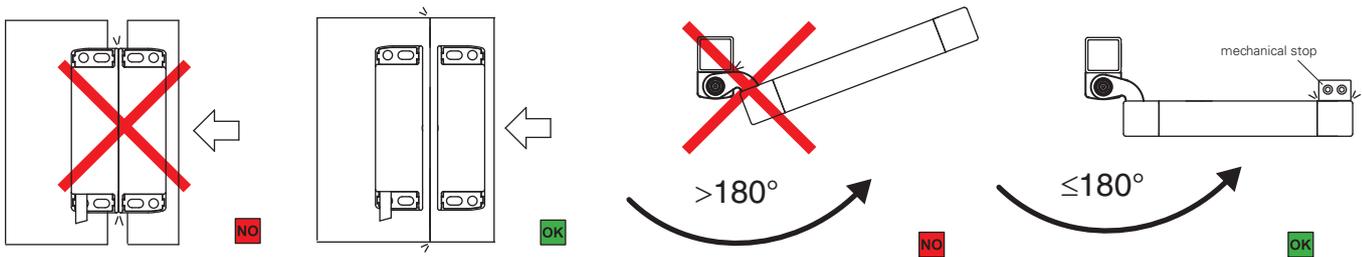
Fig.3

Fig.4

Mechanical stop

Acc. to EN ISO 14119 paragraph 5.2 letter h) the position sensors must not be used as mechanical stop.

The actuator must not exceed the max. travel as indicated in the travel diagrams.

The guard must not use the switch head as a mechanical stop.

The actuator must not strike directly against the switch head.

The actuator must not strike directly against the magnetic sensor.

The opening angle of safety hinge switch HP, HC and HX series must not exceed 180°.

Actuation modes

Recommended application	Application to avoid This application is possible, but increased mechanical stress may shorten the operating life of the switch	Forbidden application