

The CS series safety modules have been studied with clear aims of safety and reliability for the product. The design, development and production of these units have been faced with the passion for quality that distinguishes Pizzato Elettrica, adding further controls where possible. Maximum safety is the basic principle for this range of products.

During the design phase of these products, principles of over-sizing were adopted, and the circuit schemes have been checked by independent third party institutes. Also the selection of the components used has been made with accurate quality aims, and the basic parts, such as relays with forced guided contacts, have been chosen among the best brands existing. The production phase itself, completely developed within the company Pizzato Elettrica, is supervised with a

		For ap			Output contacts			Housing
Product code	Supply voltages	PL	SIL	Safety category	instantaneous	delayed	feedback.	thickness
Safety modules	for emergency stop and gat	e moni	toring					
CS AR-01	24 Vac/dc; 120 Vac; 230 Vac	е	3	4	2 NO + 1 NC	-	_	22,5 x 114 mi
CS AR-02	24 Vac/dc; 120 Vac; 230 Vac	e	3	4	3 NO	_	_	22,5 x 114 m
CS AR-04	24 Vac/dc; 120 Vac; 230 Vac	e	3	4	3 NO + 1 NC			22,5 x 114 m
CS AR-05	24 Vac/dc; 120 Vac; 230 Vac	e	3	4	3 NO + 1 NC	_	-	22,5 x 114 mi
S AR-06	24 Vac/dc; 120 Vac; 230 Vac 24 Vac/dc; 120 Vac; 230 Vac	e	3	4	3 NO + 1 NC	-	-	22,5 x 114 m
S AR-07	24 Vac/dc, 120 Vac, 230 Vac 24 Vac/dc	e	3	4	4 NO + 1 NC	-	-	22,5 x 114 m 22,5 x 129 m
S AR-08	24 Vac/dc; 120 Vac; 230 Vac	e	3	4	2 NO	-	-	22,5 x 129 m 22,5 x 114 m
S AR-20			3	3	2 NO	-	-	
S AR-20	24 Vac/dc; 120 Vac; 230 Vac	e	-		2 NO 2 NO	-	-	22,5 x 114 m
	24 Vac/dc; 120 Vac; 230 Vac	е	3	3		-	-	22,5 x 114 m
S AR-22	24 Vac/dc; 120 Vac; 230 Vac	е	3	3	3 NO + 1 NC	-	-	22,5 x 114 m
SAR-23	24 Vac/dc; 120 Vac; 230 Vac	е	3	3	3 NO + 1 NC	-	-	22,5 x 114 m
SAR-24	24 Vac/dc	е	3	3	4 NO + 1 NC	-	-	22,5 x 114 m
S AR-25	24 Vac/dc	е	3	3	4 NO + 1 NC	-	-	22,5 x 114 m
S AR-40	24 Vac/dc	d	2	2	2 NO	-	-	22,5 x 91 mr
S AR-41	24 Vac/dc	d	2	2	2 NO	-	-	22,5 x 91 mr
S AR-46	24 Vac/dc	С	1	1	1 NO	-	-	22,5 x 91 mi
S AR-51	24 Vac/dc	е	3	4	2 NO	-	-	22,5 x 114 m
S AT-03 S AT-13	24 Vac/dc; 120 Vac; 230 Vac 24 Vac/dc; 120 Vac; 230 Vac	e	3	4 (2) 4 (2)	2 NO + 1 NC 3 NO	2 NO 2 NO	-	45 x 114 mr 45 x 114 mr
CS AT-1 ③		e	3		3 NO	2 NO	-	45 x 114 mn
S AT-23	24 Vac/dc	е	3	4 (2)	2 NO	1 NO	-	22,5 x 114 m
S FS-03	24 Vac/dc; 120 Vac; 230 Vac	0	1	0	-	1 NO + 2 NC	-	22,5 x 114 mi
S FS-23	24 Vdc; 120 Vac	d	2	3	-	1 NO +1 NC +1 CO	-	45 x 114 mn
S FS-33	24 Vdc; 120 Vac	d	2	3		1 NO +1 NC +1 CO		45 x 114 mn
S FS-53	24 Vdc; 120 Vac	d	2	3	-	1 NO +1 NC +1 CO	-	45 x 114 mn
-	for bimanual controls or syn							
S DM-01	24 Vac/dc; 120 Vac; 230 Vac	III C ac	cording t	o EN 574	3 NO + 1 NC	-	-	22,5 x 114 m
Standstill monit	or safety module							
SAM-0	24 230 Vac/dc	d	2	3	2 NO + 1 NC	-	-	45 x 114 mn
Expansion modu	les with instantaneous con	tacts o	r delay	yed cor	ntacts at de-ei	nergizing		
S ME-01	24 Vac/dc	0	1	0	5 NO + 1 NC	-	1 NC	22,5 x 114 m
S ME-03	24 Vdc	1	1	1	3 NO	-	1 NC	22,5 x 91 mr
S ME-20VU24-5	24 Vdc	0	1	0	-	4 NO + 2 NC	1 NC	22,5 x 114 m
S ME-30VU24-6	24 Vdc	0	1	0	-	4 NO + 2 NC	1 NC	45 x 114 mn
S ME-31VU24-TS1		0	0	0	-	4 NO + 2 NC	1 NC	45 x 114 mn
Available with this Not available with t Dependent from th Safety category 4 f contacts, category 3 for dela	this product be base module for instantaneous 0 fixed time 1 from 0,3 to 3 2 from 1 to 10 2 from 2 to 20	s, step 0 s, step 1 s, step 3	,3 s s s	۱ N		ls screw terminals spring terminals	 S Releasing power supply TF0.5 0,5 s f TF1 1 s fix TF2 2 s fix TF3 3 s fix 	ixed time ed time ed time



1A

functional testing on 100% of the production. Every single piece produced is verified in a computerised testing station that prints the safety module label, identified from a unique serial number, only when the product passes every test.

Pizzato Elettrica has improved also the more practical aspects, using compact housings and with LED signals of the operation state of the modules. Particular attention has been paid to the connection possibilities, allowing the customer to choose between fixed clamps or plug-in connectors and screw or spring terminals. Finally, the range of products provides different supply tensions with a wide tolerance on nominal values to avoid any problem in the less industrialised countries.

Product code	Autom. or	Monitored	Opposite potentials	Equipoten-	Tyr	pe of i	nputs	(⑦)	Kind of	f connec	ction (④)	
roduct code	manual start	start	potentials inputs	tial inputs	7	$-\mathbf{k}$	\$\$\$-7		v	М	x	Page
CS AR-01				-		-	-	-				pag. 4/125
CS AR-02				-		-	-	-				pag. 4/127
CS AR-04				-		-	-	-				pag. 4/129
CS AR-05		-						-				pag. 4/131
CS AR-06	-							-				pag. 4/131
CS AR-07				-		-	-	-	-			pag. 4/133
CS AR-08								-				pag. 4/135
CS AR-20		-		-		-	-	-				pag. 4/139
CS AR-21	-			-		-	-	-				pag. 4/139
CS AR-22		-		-		-	-	-				pag. 4/141
CS AR-23	-			-		-	-	-				pag. 4/141
CS AR-24		-	-	-		-	-	-				pag. 4/143
CS AR-25	-		-	-		-	-	-				pag. 4/143
CS AR-40		-	-	-		-	-	-				pag. 4/145
CS AR-41	-		-	-		-	-	-				pag. 4/145
CS AR-46		-		-		-		-				pag. 4/147
CS AR-51				-		-	-					pag. 4/149
										i i i i i i i i i i i i i i i i i i i		
CS AT-03				-				-				pag. 4/151
CS AT-13				-				-				pag. 4/153
CS AT-23				-		-		-				pag. 4/155
CS FS-03	-	-		-		-	-	-				pag. 4/157
CS FS-23	-	-		-		-	-	-				pag. 4/159
CS FS-33	-	-		-		-	-	-				pag. 4/161
CS FS-53			-			-		-				pag. 4/163
CS DM-01	-	-		-		-	-	-				pag. 4/165
												M
CS AM-01	-	-	-	-		-	-	-				pag. 4/167
	1					1						
CS ME-01	-	-	1	0		-	-	-				pag. 4/169
CS ME-03	-	-	-				-	-				pag. 4/171
CS ME-20VU24-5	-	-	0	0		-	-	-				pag. 4/173
CS ME-30VU24-6	-	-	0	0		-	-	-				pag. 4/175
CS ME-31VU24-TS12	-	-	0	0		-	-	-				pag. 4/175
6 Releasing time in absence	е	⑦Type of in	nputs									
of power supply TF1 1 s fixed time		1	ctromechanical o	contacts								
		-K Elec	ctrosensible de [,]	vices with PNP o	output							
•••												
12 s fixed time		1	ety magnetic se	insor								



Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- Output contacts:
- 2 NO safety contacts,
- 1 NC auxiliary contact
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

Approval UL: F13178

Complying with the requirements requested by:

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

Code structure

CS AR-01V024

118

Kind of connection

- V screw terminals
- connector with screw terminals М
- X connector with spring terminals

Supply voltage			
024	24 Vac/dc	± 15%	
120	120 Vac	± 15%	
230	230 Vac	± 15%	

Technical data

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Housing Made of polyamide PA 6.6 self-extinguishing, cl Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 KV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz 10% ±15% of Un < 5 VA < 2 W
$\label{eq:control circuit} \begin{array}{l} \mbox{Protection against short circuits:} \\ \mbox{Operating time of PTC:} \\ \mbox{Max input resistance:} \\ \mbox{Current for each input:} \\ \mbox{Min. period of start impulse } t_{MIN} \\ \mbox{Operating time } t_{A} \\ \mbox{Releasing time } t_{RI} \\ \mbox{Releasing time in absence of power supply } t_{R} \\ \mbox{Simultaneity time } t_{C} \\ \end{array}$	resistance PTC, lh=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 100 ms 50 ms 20 ms 70 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ Ith²: Contacts resistance Contact protection fuse: contactors See page 4/169 - 4/176

2 NO safety c ontacts, 1 NC auxiliary contact forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 72 ≤ 100 mΩ 6 A

The number and the load capacity of output contacts can be increased by using expansion modules or

Items available on stock

CS AR-01V024

Data type approved by UL

Rated operating voltage (Un):

Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A

C300

Voles. Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. -Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.



Notes

1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

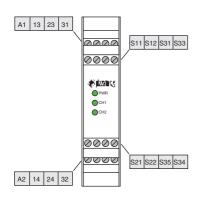
4A

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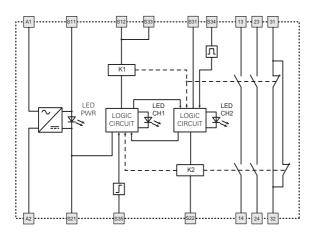
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Safety module CS AR-01

Terminals layout



Internal wiring diagram



iguration with automatic	c start	A1/A2 S11/S12 S21/S22 13/14, 23/24 31/32 t _R
iguration with monitore	d start	7
	t _{R1} t _{MIN} t _A	A1/A2 S11/S12 S21/S22 S33/S34 (START) 13/14, 23/24 31/32 t _R
iguration with manual s	tart	
		A1/A2 S11/S12 S21/S22 S33/S34 (START) 13/14, 23/24 31/32 t _R
	iguration with monitore	iguration with monitored start

Operation diagrams

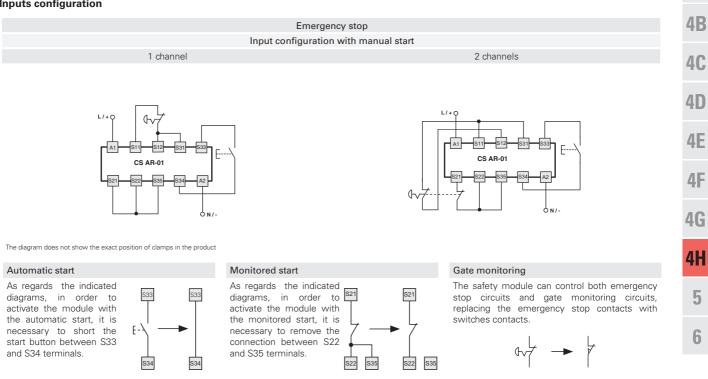
t_c: t_A: Simultaneity time Operating time

Releasing time in absence of t.: power supply

Note:

The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the $t_{n,1}$ time referred to S11/S12 input, the t_n time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the \mathbf{t}_{MIN} time referred to the start.

Inputs configuration





Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- Output contacts:
- 3 NO safety contacts
- Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

us E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing Made of polyamide PA 6.6 self-extinguishing, cla Protection degree: Dimensions:	ass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz 10% ±15% of Un < 5 VA < 2 W
$\label{eq:control circuit} \begin{array}{l} \mbox{Protection against short circuits:} \\ \mbox{Operating time of PTC:} \\ \mbox{Max input resistance:} \\ \mbox{Current for each input:} \\ \mbox{Min. period of start impulse } t_{MIN} \\ \mbox{Operating time } t_{A} \\ \mbox{Operating time } t_{R} \\ \mbox{Releasing time in absence of power supply } t_{R} \\ \mbox{Simultaneity time } t_{c} \\ \end{array}$	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 100 ms 50 ms 20 ms 70 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	3 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	72
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts c	an be increased by using expansion modules or
contactors See page 4/169 - 4/176	

Code structure

CS AR-02V024

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

Supply voltage				
024	24 Vac/dc	± 15%		
120	120 Vac	± 15%		
230	230 Vac	± 15%		

Data type approved by UL

Rated operating voltage (Un):

	120 Vac; 5060 Hz
	230 Vac; 5060 Hz
Rated power consumption AC:	< 5 VA
Rated power consumption DC:	< 2 W
Max switching voltage:	230 Vac
Max switching current per contact:	6 A
Utilization category	C300
Nataa	

Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.



24 Vac/dc; 50...60 Hz



A1/A2

S11/S12

S21/S22

A1/A2

A1/A2 S11/S12

S21/S22

S11/S12 S21/S22

S33/S34 (START) 13/14, 23/24, 33/34

13/14, 23/24, 33/34

1

1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

4F

4G

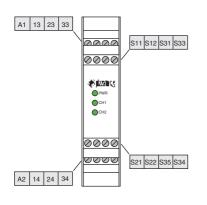
4H

5

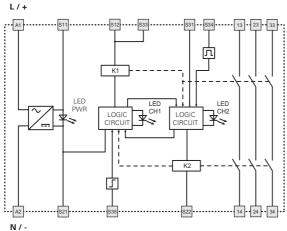
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Safety module CS AR-02

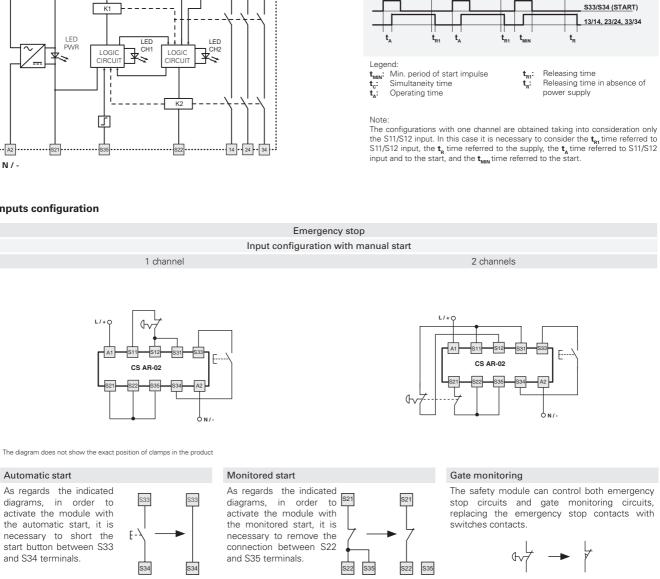
Terminals layout



Internal wiring diagram



Inputs configuration



Operation diagrams

Configuration with automatic start

Configuration with monitored start

Configuration with manual start



Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- Output contacts:
- 3 NO safety contacts,
- 1 NC auxiliary contact
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 current: DC13 (6 operations/minute) Direct Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE Approval UL:

E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,3 Kg
24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz 10% ±15% of Un < 5 VA < 2 W
resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 100 ms 50 ms 20 ms 70 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 nº 14-95

Output circuit

Output contacts:	3 NO safety contacts
	1 NC auxiliary contact
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts ca contactors See page 4/169 - 4/176	an be increased by using expansion modules or

Code structure

CS AR-04V024

US

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

Supply voltage				
024	24 Vac/dc	± 15%		
120	120 Vac	± 15%		
230	230 Vac	± 15%		

Items available on stock

CS AR-04V024

Data type approved by UL

Rated operating voltage (Un):

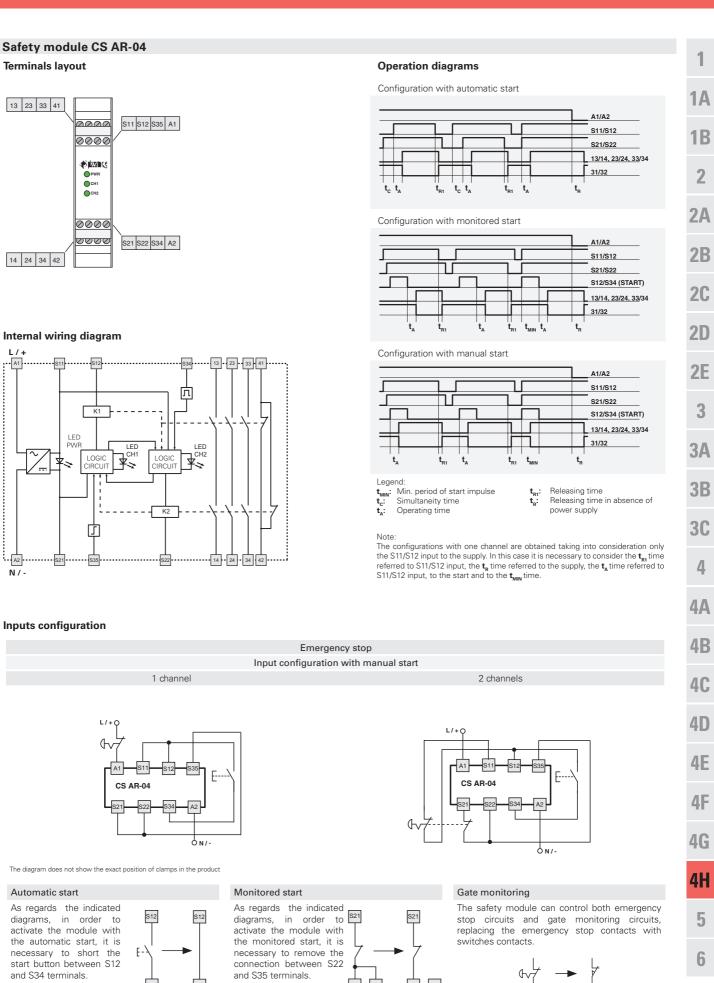
Rated power consumption AC:
Rated power consumption DC:
Max switching voltage:
Max switching current per contact:
Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A

C300

Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.





S22 S35

S35 S22

pizzalo dell'risa General Catalog 2009-2010

S34

S34

A1

• A2

N/-



Module for emergency stop, gate monitoring, Electro-sensitive protection devices (ESPE) and magnetic safety sensor

Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-05 only) or monitored start (CS AR-06 only)
- Connectible to ESPE, to electromechanical contacts or to magnetic safety sensor
- Output contacts: 3 NO safety contacts,
- 1 NC auxiliary contact
- Supply voltages: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

C E

Approval UL: E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing Made of polyamide PA 6.6 self-extinguishing, cl Protection degree: Dimensions:	ass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz 10% ±15% of Un < 5 VA < 2 W
$\label{eq:control circuit} \begin{array}{l} \mbox{Protection against short circuits:} \\ \mbox{Operating time of PTC:} \\ \mbox{Max input resistance:} \\ \mbox{Current for each input:} \\ \mbox{Min. period of start impulse } t_{MIN} \mbox{:} \\ \mbox{Operating time } t_{A} \mbox{:} \\ \mbox{Releasing time in absence of power supply } t_{R} \mbox{:} \\ \mbox{Simultaneity time } t_{c} \mbox{:} \end{array}$	resistance PTC, lh=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 250 ms 200 ms 15 ms 70 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 nº 14-95

Output circuit

Output contacts:	3 NO safety contacts
	1 NC auxiliary contact
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts c contactors See page 4/169 - 4/176	an be increased by using expansion modules or

Code structure

CS AR-05V024

US

Kind of start

- 05 manual or automatic start
- 06 monitored start

Kind of connection

- V screw terminals
- Μ connector with screw terminals
- Х connector with spring terminals

Supply voltage		
024	24 Vac/dc	± 15%
120	120 Vac	± 15%
230	230 Vac	± 15%

Data type approved by UL

Rated operating voltage (Un):

Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A



and limited energy.

C300



1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

4F

4G

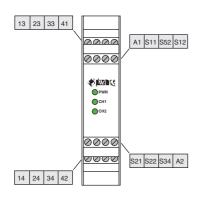
4H

5

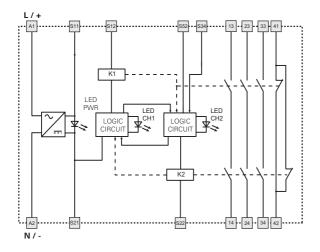
6

Safety module CS AR-05-06

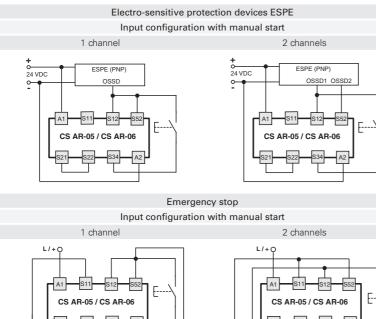
Terminals layout



Internal wiring diagram



Inputs configuration

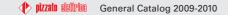


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0N/-

The diagram does not show the exact position of clamps in the product

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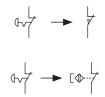


0 N/-

Operation dia	agrams	
Configuration w	rith automatic start (CS AR-05 only	y)
		A1/A2 S11/S12 (+/S12) S21/S22 (+/S52) 13/14, 23/24, 33/34 41/42
Configuration w	ith monitored start (CS AR-06 onl	V)
		A1/A2 S11/S12 (+/S12) S21/S22 (+/S52) S12/S34 (START) 13/14, 23/24, 33/34 41/42 t _R
Configuration w	rith manual start (CS AR-05 only)	
		A1/A2 S11/S12 (+/S12) S21/S22 (+/S52) S12/S34 (START) 13/14, 23/24, 33/34 41/42 t _R
_egend: t _{mn} : Min. period o t _c : Simultaneity t _A : Operating tim	time t _R : Releasing	g time in absence of
the CH1 input. In the nput, the t _n time r	with one channel are obtained taking his case it is necessary to consider the referred to the supply, the \mathbf{t}_{A} time referred to the start.	t _{B1} time referred to CH1
Д	Automatic start (CS AR-05 only)	
d a tł n s	is regards the indicated liagrams, in order to ctivate the module with he automatic start, it is ecessary to short the tart button between S12 nd S34 terminals.	S12 S12 S34 S34
\	Nonitored start	
	Jse the CS AR-06 module followin he manual start.	ig the diagram for

Gate monitoring and safety magnetic sensors.

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts.



page **4/132**



Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- Output contacts:
- 4 NO safety contacts,
- 1 NC auxiliary contact
- · Supply voltages: 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

C E

Approval UL: E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

н

Housing Made of polyamide PA 6.6 self-extinguishing, Protection degree: Dimensions:	class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape B
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; 5060 Hz 10% ±15% of Un < 5 VA < 2 W

Control circuit

Protection against short circuits: resistance PTC, Ih=0,5 A Operating time of PTC: intervention > 100 ms, reset > 3 s Max input resistance: ≤ 50 Ω Current for each input: 30 mA Min. period of start impulse t_{MIN}: 100 ms 70 ms Operating time t_A: Releasing time t_{B1} 40 ms Releasing time in absence of power supply t_B: 80 ms Simultaneity time t_c: infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 nº 14-95

Output circuit

output onoun	
Output contacts:	4 NO safety contacts
	1 NC auxiliary contact
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 220 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	72
Contacts resistance:	≤ 100 m Ω
Contact protection fuse:	6 A
The number and the load capacity of output contacts can	be increased by using expansion modules or
contactors See page 4/169 - 4/176	

Code structure

CS AR-07M024

US

Kind of connection

M connector with screw terminals

X connector with spring terminals

Suppry	vonage	

Supply voltage

±15% 024 24 Vac/dc

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

Notes Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy



1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

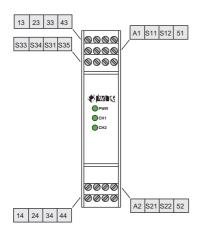
4A

5

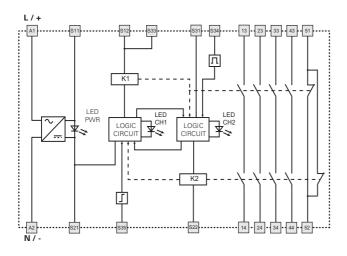
6

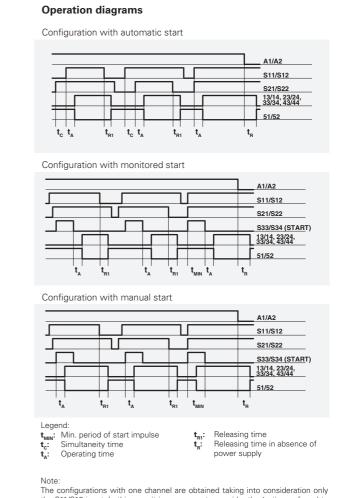
Safety module CS AR-07

Terminals layout



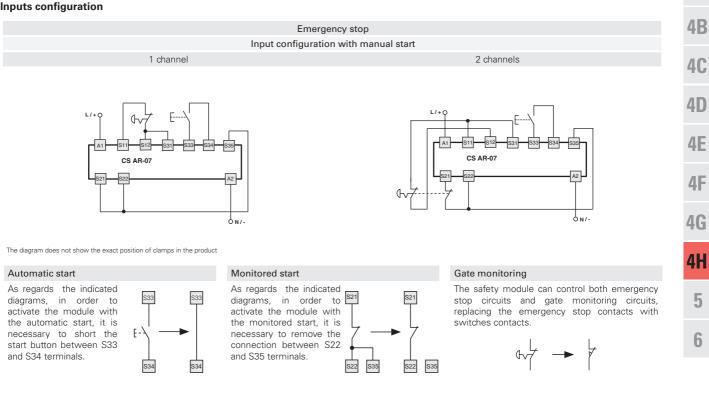
Internal wiring diagram

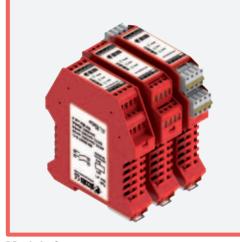




the S11/S12 input. In this case it is necessary to consider the t_{n_1} time referred to S11/S12 input, the t_n time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the \mathbf{t}_{MIN} time referred to the start.

Inputs configuration





Module for emergency stop, gate monitoring, Electro-sensitive protection devices (ESPE) and magnetic safety sensor

Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connectible to ESPE, to electromechanical contacts or to magnetic safety sensor
- Output contacts:
- 2 NO safety contacts,
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac
- Possibility of parallel modules reset

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

us E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

Housing Made of polyamide PA 6.6 self-extinguishing, cla Protection degree: Dimensions:	ass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz 10% ±15% of Un < 5 VA < 2 W
$\label{eq:control circuit} \begin{array}{l} \mbox{Protection against short circuits:} \\ \mbox{Operating time of PTC:} \\ \mbox{Max input resistance:} \\ \mbox{Current for each input:} \\ \mbox{Min. period of start impulse } t_{MIN} \end{tabular} \\ \mbox{Operating time } t_{A} \end{tabular} \\ \mbox{Releasing time } t_{R_{I}} \end{tabular} \\ \mbox{Releasing time in absence of power supply } t_{R_{I}} \end{tabular} \\ \mbox{Simultaneity time } t_{c} \end{tabular} \end{array}$	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 200 ms 150 ms 20 ms 150 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

•	
Output contacts:	2 NO safety contacts,
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	36
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts ca	an be increased by using expansion modules or
contactors See page 4/169 - 4/176	

Code structure

CS AR-08V024

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

Sup	oply voltage	
024	24 Vac/dc	± 15%
120	120 Vac	± 15%
230	230 Vac	± 15%

Items available on stock

CS AR-08V024

Data type approved by UL

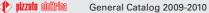
Rated operating voltage (Un):

Rated power consumption AC:
Rated power consumption DC:
Max switching voltage:
Max switching current per contac
Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A

Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

t: C300





1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

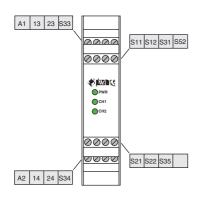
4E

4F

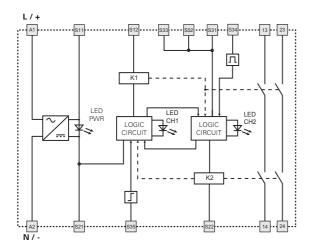
4G

Safety module CS AR-08

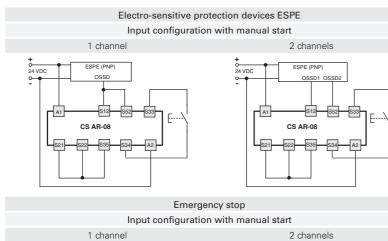
Terminals layout

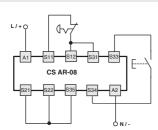


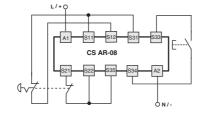
Internal wiring diagram



Inputs configuration



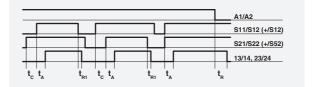




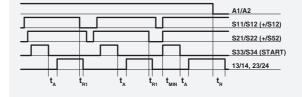
The diagram does not show the exact position of clamps in the product



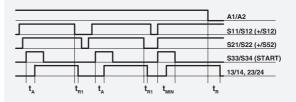
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



 t_{min} : Min. period of start impulse t_c : Simultaneity time t_x : Operating "

Releasing time t_{R1}: t_R: Releasing time in absence of power supply

S33

S34

E-

S33

S34

Note:

The configurations with one channel are obtained taking into consideration only the CH1 input. In this case it is necessary to consider the $t_{\rm st}$ time referred to CH1 input, the $t_{\rm s}$ time referred to the supply, the $t_{\rm s}$ time referred to CH1 input and to the start, and the \mathbf{t}_{MIN} time referred to the start.

Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S33 and S34 terminals.

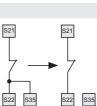
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



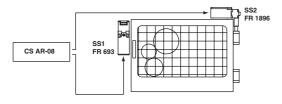
Gate monitoring and safety magnetic sensors.

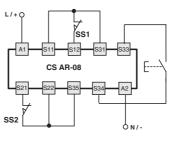
The safety module can control both emergency stop circuits, gate circuits or monitoring safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts.



4H 5 6

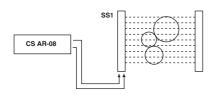
Application examples: safety gates monitoring, up to category 4 according to EN 954-1

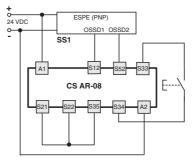




Safety gate monitoring through two switches with different technology. System in safety category 4

Application examples: light barrier monitoring, up to category 4 according to EN 954-1





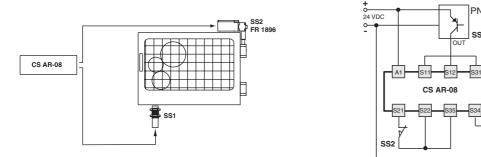
PNP

SS1

F-

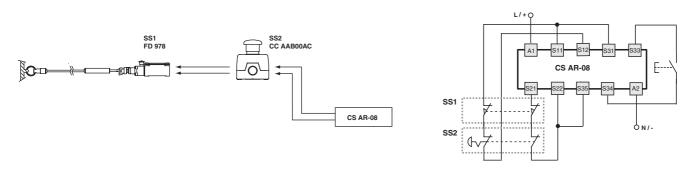
Electro-sensible barrier monitoring (ESPE) with two outputs OSSD. System in safety category 2 or 4 according to the barrier.

Application examples: guard monitoring in mixed technology, sensor + switch, up to category 4 according to EN 954-1



Safety gate monitoring through one switch and one inductive sensor. The positive opening of the switch is required. System in safety category 4.

Application examples: switch and emergency push button monitoring, up to category 3 according to EN 954-1





1A

1B

2

2A

2B

2C

2D

2E

3

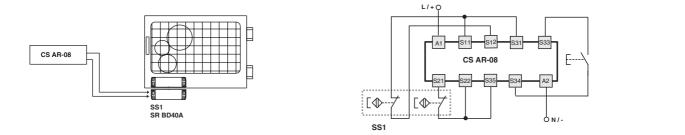
3A

3B

3C

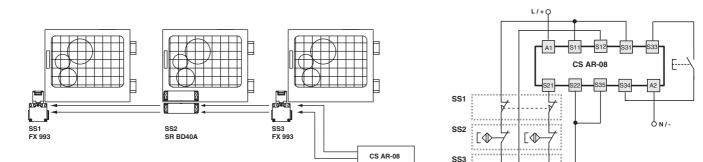
4

Application examples: safety magnetic sensors monitoring, up to category 4 according to EN 954-1



Safety gate monitoring through one coded magnetic sensor. System in safety category 4.

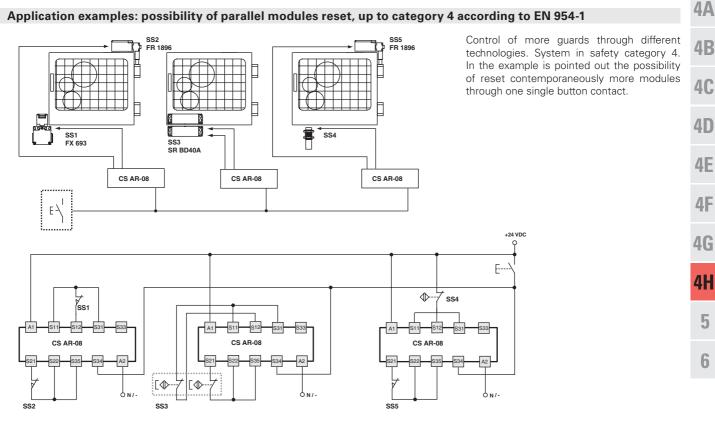
Application examples: series of switches and magnetic sensors monitoring, up to category 3 according to EN 954-1



Control of more guards through switches and magnetic sensors. System in category 3.

The use of one single switch for guard requires that in the risk analysis stage it would be possible to exclude the mechanical breaking of the same.
The sensor must have double coded channel.

Verify possible requirements of the type C standard concerning own machinery.





Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-20 only) or monitored start (CS AR-21 only)
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- 2 NO safety contacts
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

US E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

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Housing Made of polyamide PA 6.6 self-extinguishing, c Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 3 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,2 Kg
Power supply Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	10% ±15% of Un < 5 VA < 2 W
Control circuit Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t_{MIN} : Operating time t_A : Palaesing time is abage of paragraphic to the second start in the second start is abaged as the second start is ab	resistance PTC, lh=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 70 mA 100 ms 50 ms 70 ms

In conformity with standards:

Simultaneity time t_c:

Releasing time in absence of power supply t_p:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 nº 14-95

70 ms

infinite

Output circuit	
Output contacts:	2 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	36
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can b contactors See page 4/169 - 4/176	e increased by using expansion modules or

Code structure

CS AR-20V024

Kind of start

- 20 manual or automatic start
- 21 monitored start

Kind of connection

- **V** screw terminals
- Μ connector with screw terminals
- **X** connector with spring terminals

Supply voltage		
024	24 Vac/dc	± 15%
120	120 Vac	± 15%
230	230 Vac	±15%

Items available on stock

CS AR-20V024

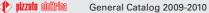
Data type approved by UL

Rated operating voltage (Un):

Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A

Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.



C300



CH1: A1

CH1: A1

CH2: A2 S33/S34 (START)

CH1: A1 CH2: A2

Operating time Releasing time in absence of

power supply

t_A: t_R:

The configurations with one channel are obtained taking into consideration only the CH1:A1 input. In this case it is necessary to consider the $\mathbf{t}_{\mathbf{r}}$ referred to CH1:A1 input , the $\mathbf{t}_{\mathbf{k}}$ time referred to CH1:A1 input and to the start, and the $\mathbf{t}_{\mathbf{k}\mathbf{N}\mathbf{N}}$ time

S33/S34 (START)

13/14, 23/24

13/14, 23/24

t,

t,

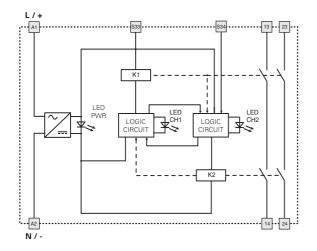
CH2: A2 13/14, 23/24

Safety module CS AR-20 / CS AR-21

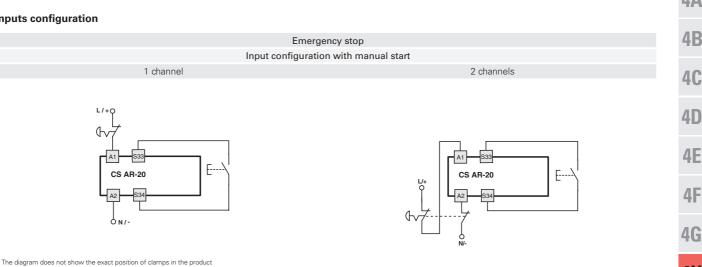
Terminals layout



Internal wiring diagram



Inputs configuration



Legend

t

Note:

Nin. period of start impulse

Simultaneity time

referred to the start.

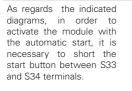
Operation diagrams

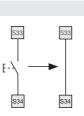
Configuration with automatic start (CS AR-20 only)

Configuration with monitored start (CS AR-21 only)

Configuration with manual start (CS AR-20 only)

Automatic start





Monitored start

Use the CS AR-21 module following the diagram for the manual start.

Gate monitoring

The safety module can control both emergency stop circuits and gate monitoring circuits, replacing the emergency stop contacts with switches contacts.





1

2B

2C

2D 2E

3

3A 3B

3C

4

4A

4B

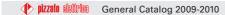
4C

- **4**E
- 4F

4H

5

6





Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-22 only) or monitored start (CS AR-23 only)
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- 3 NO safety contacts,
- 1 NC auxiliary contact
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE Approval UL:

E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

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Housing	
Made of polyamide PA 6.6 self-extinguishing, Protection degree: Dimensions:	class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL):	up to SIL 3 according to EN IEC 62061
Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category:	up to PL e according to EN ISO 13849-1 up to category 3 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II
Weight:	0,2 Kg
Power supply Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	10% ±15% of Un < 5 VA < 2 W
Control circuit Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input:	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 70 mA

Min. period of start impulse t_{MIN}: Operating time t₄: Releasing time in absence of power supply t_p: Simultaneity time t_c:

100 ms 50 ms 60 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

output bilbuit		
Output contacts:	3 NO safety contacts,	
	1 NC auxiliary contact	
Contacts type:	forced guided contacts	
Contacts material:	silver alloy, gold plated	
Max switching voltage:	230/240 Vac; 300 Vdc	
Max switching current per contact:	6 A	
Conventional free air thermal current Ith:	6 A	
Contacts resistance:	≤ 100 mΩ	
Contact protection fuse:	6 A	
The number and the load capacity of output contacts can be increased by using expansion modules or		
contactors See page 4/169 - 4/176		

Code structure

CS AR-22V024

us

Kind of start

- 22 manual or automatic start
- 23 monitored start

Kind of connection

- V screw terminals
- connector with screw terminals Μ
- **X** connector with spring terminals

Supply voltage		
024	24 Vac/dc	± 15%
120	120 Vac	± 15%
230	230 Vac	± 15%

Data type approved by UL

Rated operating voltage (Un):

HzRated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: 6 A Utilization category C300

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 < 5 VA < 2 W 230 Vac

Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.





CH1: A1

CH2: A2

1

1A

1B

2

2A

2B

2C

2D

2E

3

3A

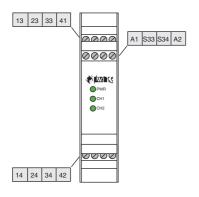
3B

3C

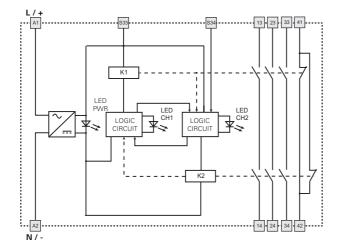
4

Safety module CS AR-22 / CS AR-23

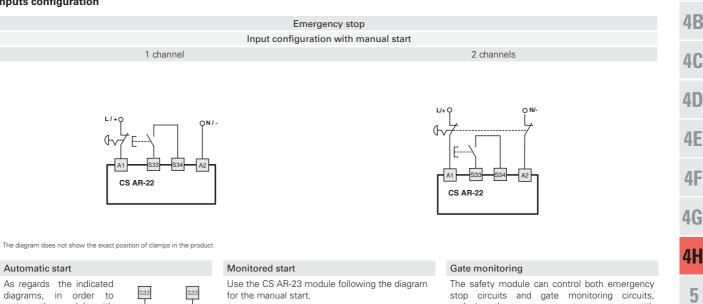
Terminals layout



Internal wiring diagram



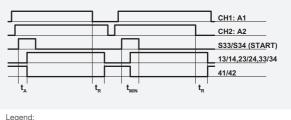
Inputs configuration



13/14,23/24,33/34 41/42 Configuration with monitored start (CS AR-23 only) CH1: A1 CH2: A2 S33/S34 (START) 13/14,23/24,33/34 41/42 t_

Configuration with automatic start (CS AR-22 only)

Configuration with manual start (CS AR-22 only)



 t_{MIN} : Min. period of start impulse t_{c} : Simultaneity time

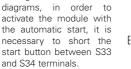
Operation diagrams

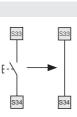
Operating time Releasing time in absence of t_A: t_R: power supply

Note: The configurations with one channel are obtained taking into consideration only the CH1:A1 input. In this case it is necessary to consider the $\mathbf{t}_{\mathbf{x}}$ referred to CH1:A1 input , the $\mathbf{t}_{\mathbf{x}}$ time referred to CH1:A1 input and to the start, and the $\mathbf{t}_{\mathbf{MN}}$ time referred to the start.

> **4**A **4B**

6





replacing the emergency stop contacts with switches contacts.





page **4/142**



Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-24 only) or monitored start (CS AR-25 only)
- Small 22,5 mm housing
- 4 NO safety contacts
- 1 NC auxiliary contact
- Supply voltage:
- 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

Approval UL:

E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

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Housing Made of polyamide PA 6.6 self-extinguishing, Protection degree: Dimensions:	class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 3 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 kV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; 5060 Hz 10% ±15% of Un < 5 VA < 2 W
Control circuit Protection against short circuits:	resistance PTC, Ih=0,5 A

Operating time of PTC: intervention > 100 ms, reset > 3 s Max input resistance: ≤ 50 Ω Current for each input: 30 mA Min. period of start impulse t_{MIN}: 100 ms Operating time t_A: 70 ms Releasing time t_{B1} 40 ms Releasing time in absence of power supply t_R: 80 ms Simultaneity time t_c: infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Supply voltage

±15%

024 24 Vac/dc

Output contacts:	4 NO safety contacts 1 NC auxiliary contact
Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current lth: Max currents sum Σ lth ² : Contacts resistance: Contact protection fuse:	1 NC auxiliary contact forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 72 ≤ 100 mΩ 6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 4/169 - 4/176	

Code structure

CS AR-24V024

US

Kind of start

24 manual or automatic start

25 monitored start

Kind of connection

- V screw terminals
- connector with screw terminals Μ
- **X** connector with spring terminals



Data type approved by UL

Rated operating voltage (Un):

Max switching voltage:

Utilization category

Rated power consumption AC

Rated power consumption DC:

Max switching current per contact:

24 Vac/dc; 50...60 Hz

< 5 VA

< 2 W

6 A

C300

230 Vac



1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

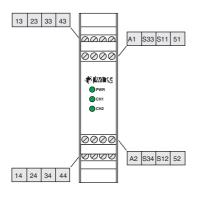
4A

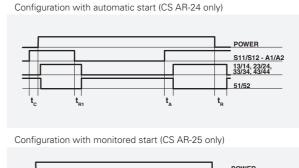
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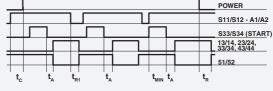
6

Safety module CS AR-24 / CS AR-25

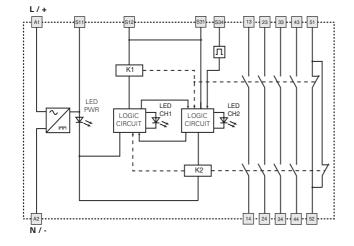
Terminals layout



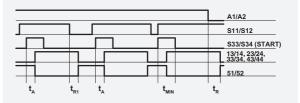




Internal wiring diagram



Configuration with manual start (CS AR-24 only)



 t_{min} : Min. period of start impulse t_c : Simultaneity time t_x : Operating "

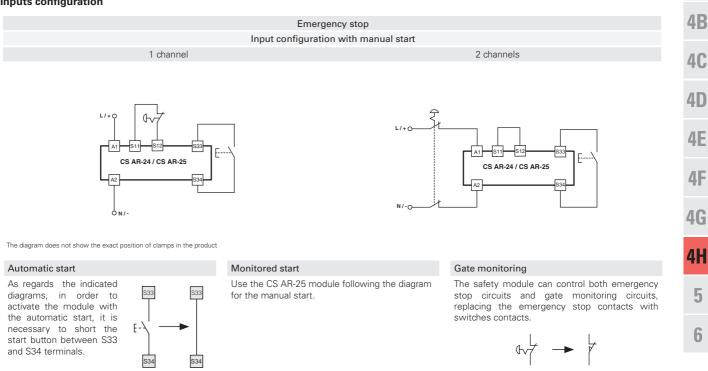
Operation diagrams

Releasing time t_{R1}: t_p: Releasing time in absence of power supply

Note:

The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the \mathbf{t}_n time referred to S11/S12 input, the \mathbf{t}_n time referred to S11/S12 input, the \mathbf{t}_n time referred to S11/S12 input and to the start, and the $\boldsymbol{t}_{\text{MIN}}$ time referred to the start.

Inputs configuration





Main functions

- Choice between automatic start, manual start (CS AR-40 only) or monitored start (CS AR-41 only)
- Small 22,5 mm housing
- 2 NO safety contacts
- · Supply voltages:
- 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

US E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishin	ng, class V0 (UL94)
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/178, shape D
General data SIL level (SIL CL):	up to SIL 2 according to EN IEC 62061

Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

Supply voltage

±15%

024 24 Vac/dc

Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t_{MIN}: Operating time t₄: Releasing time in absence of power supply t_p: Simultaneity time t_c:

±15% of Un < 5 VA < 2 W

24 Vac/dc; 50...60 Hz

resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s ≤ 50 Ω 70 mA 100 ms 50 ms 50 ms infinite

up to PL d according to EN ISO 13849-1

up to category 2 according to EN 954-1

see page 6/32 -25°C...+55°C

4 kV

250 V

0,2 Kg

10%

Ш

outside 3, inside 2

>10 millions of operations >100.000 operations

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit	
Output contacts:	2 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	36
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be	be increased by using expansion modules or
contactors See page 4/169 - 4/176	

Code structure

CS AR-40V024

Kind of start

40 manual or automatic start

41 monitored start

Kind of connection

- V screw terminals
- connector with screw terminals Μ
- **X** connector with spring terminals

Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy



Data type approved by UL

Rated operating voltage (Un):

Max switching voltage:

Utilization category

Notes

Rated power consumption AC

Rated power consumption DC:

Max switching current per contact:

24 Vac/dc; 50...60 Hz

< 5 VA

< 2 W

6 A

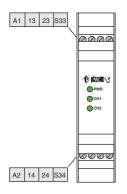
C300

230 Vac

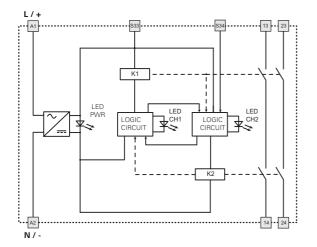


Safety module CS AR-40 / CS AR-41

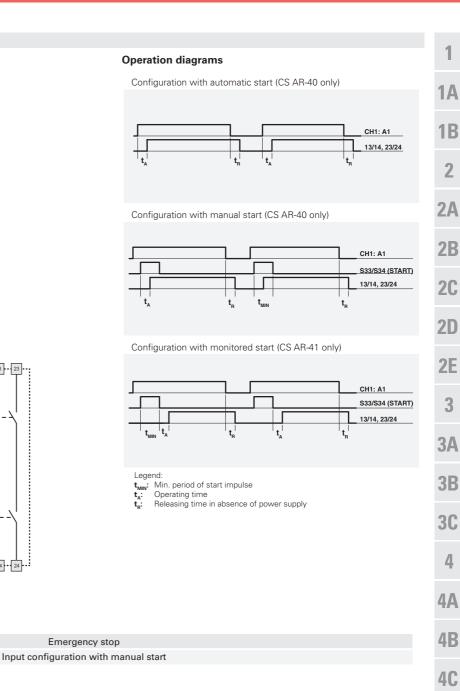
Terminals layout

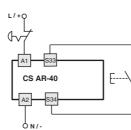


Internal wiring diagram



Inputs configuration

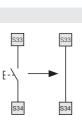




The diagram does not show the exact position of clamps in the product

Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S33 and S34 terminals.



Monitored start

Use the CS AR-41 module following the diagram for the manual start.

Gate monitoring

The safety module can control both emergency stop circuits and gate monitoring circuits, replacing the emergency stop contacts with switches contacts.





6

4D

4E

4F

4G

4H

5



Module for emergency stop, gate monitoring and magnetic safety sensor

Main functions

- Small 22,5 mm housing
- 1 NO safety contacts
- Supply voltages:
- 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

Approval UL: E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

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Housing Made of polyamide PA 6.6 self-extinguishing, Protection degree: Dimensions:	class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/178, shape D
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 1 according to EN IEC 62061 up to PL c according to EN ISO 13849-1 up to category 1 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 KV 250 V II 0,2 Kg
Power supply Rated operating voltage (Un):	24 Vac/dc; 5060 Hz

10% ±15% of Un

< 5 VA

< 2 W

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Operating time t₄: Releasing time t_{B1}: Releasing time in absence of power supply t_p: Simultaneity time t_c:

resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s ≤ 50 Ω 20 mA 15 ms 20 ms 100 ms infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	1 NO safety contacts	
Contacts material:	silver alloy	
Max switching voltage:	230/240 Vac; 300 Vdc	
Max switching current per contact:	6 A	
Conventional free air thermal current Ith:	6 A	
Contacts resistance:	≤ 100 mΩ	
Contact protection fuse:	6 A	
The number and the load capacity of output contacts can be increased by using expansion modules or		
contactors See page 4/169 - 4/176		

Code structure

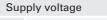
CS AR-46V024

US

Kind of connection

- V screw terminals
- M connector with screw terminals

X connector with spring terminals



024 24 Vac/dc ±15%

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

Notes Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy





2D

2E

3

3A

3**B**

3C

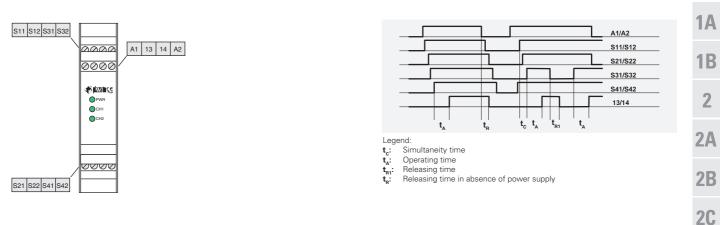
4

4A

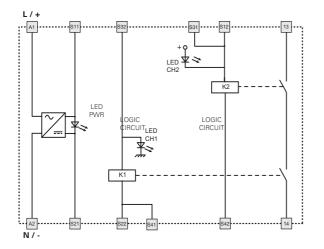
Safety module CS AR-46

Terminals layout

Operation diagrams



Internal wiring diagram



Inputs configuration

switches contacts or with the sensors contacts.

inputs configuration			
	Emergency stop		4B
	Input configuration with automatic start		
2 channels and 1 emergency stop button	2 channels and 2 emergency stop buttons	2 channels and 4 position switches	4C
			4D
CS AR-46	CS AR-46	CS AR-46	4 E
			4F
			4G
Gate monitoring and safety magnetic sensors.			4H
The safety module can control both emergency stop circuits, gate monitoring circuits or			5
safety magnetic sensors. Replace the emergency stop contacts with			6

6

[Φ



Module for emergency stop, gate monitoring, safety mats and safety edges with 4 wires technology

Main functions

- Dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- · Connectible to electromechanical contacts, to safety mats or to safety edges
- Output contacts:
- 2 NO safety contacts,
- · Supply voltages:
- 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

6

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

E131787

Electromagnetic Compatibility 2004/108/EC

Technical data

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Made of polyamide PA 6.6 self-exting Protection degree: Dimensions:	guishing, class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data	
SIL level (SIL CL):	up to SIL 3 according to EN IEC 62061
Performance Level (PL):	up to PL e according to EN ISO 13849-1
Safety category:	up to category 4 according to EN 954-1
Safety parameters:	see page 6/32
Ambient temperature:	-25°C+55°C

>10 millions of operations >100.000 operations

outside 3, inside 2

24 Vac/dc; 50...60 Hz

4 kV

250 V

0,3 Kg

10% ±15% of Un

< 5 VA

< 2 W

Ш

5 Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

resistance PTC, Ih=0,5 A Protection against short circuits: Operating time of PTC: intervention > 100 ms, reset > 3 s Max input resistance: ≤200 Ω Current for each input: 10 mA Min. period of start impulse t_{MIN}: 150 ms 120 ms Operating time t₄: Releasing time t_{B1} < 10 ms Releasing time in absence of power supply t_p: 80 ms Simultaneity time t_c: infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	2 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	36
Contacts resistance:	≤ 100 m Ω
Contact protection fuse:	6 A
The number and the load capacity of output contacts can contactors See page 4/169 - 4/176	be increased by using expansion modules or

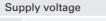
Code structure

CS AR-51V024

US

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals



024 24 Vac/dc ±15%

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy





1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

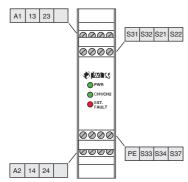
4D

4E

4F

Safety module CS AR-51

Terminals layout



PE terminal connection

The PE terminal has to be connected to the equipotential circuit of machine protection if it is necessary.

This connection is made for functional reason, to reduce effects of an insulation fault on the machine operation. In particular, faults towards ground on

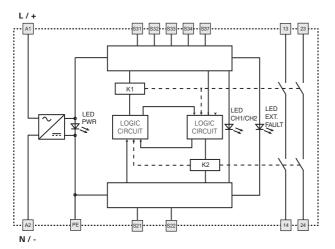
control circuits must not cause an unwanted starting, either dangerous movements or obstruct the machine stop

"EXT. FAULT" LED function

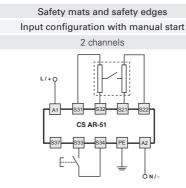
When a pressure is exerted on surfaces of a bumper or a safety mat or a bumper, we obtain a short-circuit between the two conductive elements which form the device and are connected to the entry channels of the safety module.

The produced signal cause the LED EXT.FAULT lighting to signal the short-circuit between channels and the output contacts opening, which produce the block of the control circuit and the safety setting of the machine. The EXT.FAULT LED does not activate in the case of wires or internal connection interruption of safety mat or bumper.



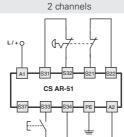


Inputs configuration

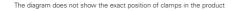


Emergency stop

Input configuration with manual start

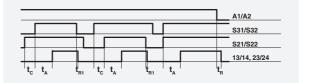




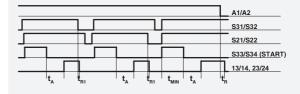


Operation diagrams

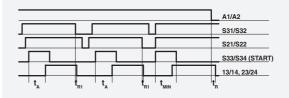
Configuration with automatic start



Configuration with monitored start



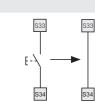
Configuration with manual start



Releasing time t_{R1}: t_c: Releasing time in absence of power supply

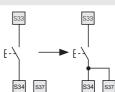


As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S33 and S34 terminals.



Monitored start

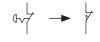
As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to add the connection between S34 and S37 terminals.



page 4/150

Gate monitoring

The safety module can control both emergency stop circuits and gate monitoring circuits, replacing the emergency stop contacts with switches contacts



4G 4H 5



Module for emergency stop and gate monitoring with delayed contacts at the opening of the input channels

Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Connectible to ESPE, to electromechanical contacts or to magnetic safety sensor
- 45 mm housing
- 2 NO safety instantaneous contacts, 1 NC auxiliary instantaneous contact,
- 2 NO safety delayed contacts.
- Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (À) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

US E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing Made of polyamide PA 6.6 self-extinguishing, cla Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/178, shape C
General data	
SIL level (SIL CL): Performance Level (PL): Safety category:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 (instantaneous contacts) category 3 (delayed contacts) according to EN 954-1
Safety parameters: Ambient temperature: Mechanical endurance:	see page 6/32 -25°C+55°C >10 millions of operations
Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp):	>100.000 operations outside 3, inside 2 4 KV
Rated insulation voltage (Ui): Over-voltage category: Weight:	250 V II 0,5 Kg
Power supply	
Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Max residual ripple in DC:	10%
Supply voltage tolerance:	±15% of Un
Rated power consumption AC:	< 10 VA
Rated power consumption DC:	< 5 W
Control circuit	
Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t_{MIN} : Operating time t_A : Releasing time t_{R1} : Releasing time in absence of power supply t_R : Releasing time delayed contacts t_{R2} : Simultaneity time t_c :	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 200 ms 150 ms 20 ms 150 ms see "CODE STRUCTURE" infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit Output contacts:

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ lth²: Contacts resistance: Contact protection fuse:

2 NO safety instantaneous contacts, 1 NC auxiliary instantaneous contact, 2 NO safety delayed contacts. forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 72 (instantaneous cont.), 36 (delayed cont.) ≤ 100 mΩ 6 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 4/169 - 4/176

Code structure

CS AT-00V024-1

Sup

024

120

230

Releasing time delayed contacts (t_{P2})

- 0 Fixed time (see TF)
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- 3 from 3 to 30 s, step 3 s
- 4 from 30 to 300 s, step 30 s

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

	Releasi	ng time delayed contacts (t _{R2}
٦	F0.5	fixed 0,5 s
	TF1	fixed 1 s
	TF3	fixed 3 s
ply v	oltag	е
24 Va	ac/dc	±15%
120	Vac	±15%
230	Vac	±15%

Data type approved by UL

Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category	< 10 VA < 5 W 230 Vac 6 A C300
Notes: - Use 60° or 75 °C copper (Cu) conductor and wire	size No. 30-12 AWG.

No. 30-12 AWG.

-Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. - Surrounding air of 55 °C.



1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

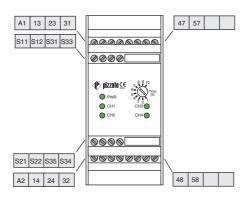
4F

4G

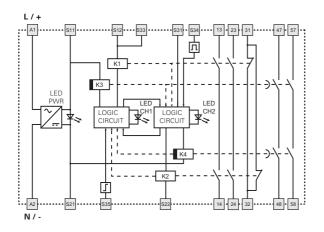
4H

Safety module CS AT-0

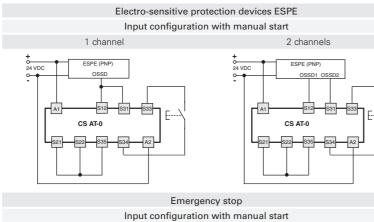
Terminals layout

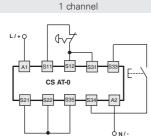


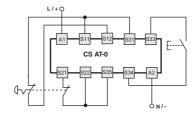
Internal wiring diagram



Inputs configuration

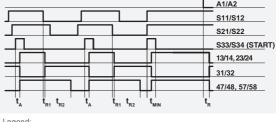






2 channels

					A1	/A2
					S1	1/S12
					S2	1/S22
					13	/14, 23/24
					31	/32
					_ 47	/48, 57/58
t _c t _A	t _{R1} t _{R2}	t _c t _A	t _{R1} t _{R2}	t _A	t _R	
Configura	ation witl	n monit	ored star	t		
					A1	/A2
]				S1	1/S12
			٦		S2	1/S22
				Л	S3	<u>3/S34 (START)</u>
	1				13/	14, 23/24
					31	32
					47	48, 57/58
t _A	t _{R1} t _{R2}	t _A	t _{R1} t _{R2} t	min t _a	t _R	
Configura	ation witl	n manu	al start			
					A1	/A2



Legend: $\substack{t_{\text{MIN}}: \\ \text{Min. period of start impulse} \\ t_c: \\ \text{Simultaneity time} }$ Operating time Releasing time t_A:

Operation diagrams

Configuration with automatic start

Releasing time in absence of t_R: power supply t_{R2}

Adjustable releasing time delayed contacts (see "Code structure")

S33

E-

S33

t_{R1}: Note:

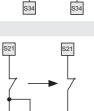
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} and t_{R2} time referred to S11/S12 input, the t_{R} time referred to the supply, the t_{A} time referred to S11/S12 input and to the start, and the t_{MIN} time referred to the start.

Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S33 and S34 terminals.

Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



Gate monitoring and safety magnetic sensors The safety module can

control both emergency stop circuits, gate circuits or monitoring safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts.



5 6



Module for emergency stop and gate monitoring with delayed contacts at the opening of the input channels

Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Connectible to ESPE, to electromechanical contacts or to magnetic safety sensor
- 45 mm housing
- 3 NO safety instantaneous contacts,
- 2 NO safety delayed contacts. · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (À) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

 (ϵ) Approval UL:

115 E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing Made of polyamide PA 6.6 self-extinguishing, cl	ass V0 (UI 94)
Protection degree: Dimensions:	IP40 (housing), IP20 (terminals) see page 4/178, shape C
General data	
SIL level (SIL CL): Performance Level (PL): Safety category:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 (instantaneous contacts) category 3 (delayed contacts) according to EN 954-1
Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance:	 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations
Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category:	outside 3, inside 2 4 KV 250 V
Weight:	0,5 Kg
Power supply	
Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Max residual ripple in DC: Supply voltage tolerance:	10% ±15% of Un
Rated power consumption AC: Rated power consumption DC:	< 10 VA < 5 W
Control circuit	
Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input:	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA
Min. period of start impulse t_{MIN} : Operating time t_A :	200 ms 150 ms
Releasing time t_{R1} : Releasing time in absence of power supply t_{R1} :	20 ms 150 ms
Releasing time allocate of power supply t_{R} . Simultaneity time t_c :	see "CODE STRUCTURE" infinite
In conformity with standards: IEC 60947-1, EN 60947-1, IEC 60204-1, EN 6020 EN ISO 12100-1, EN ISO 12100-2, EN ISO 138	

EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit Output contacts:

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: 6 A Conventional free air thermal current Ith: 6 A Max currents sum Σ lth²: Contacts resistance: ≤ 100 mΩ Contact protection fuse: 6 A The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 4/169 - 4/176

3 NO safety instantaneous contacts, 2 NO safety delayed contacts. forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 72 (instantaneous cont.), 36 (delayed cont.)

Code structure

CS AT-10V024-TF1

Releasing time delayed contacts (t_{R2})

- Fixed time (see TF) 0
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- 3 from 3 to 30 s, step 3 s
- 4 from 30 to 300 s, step 30 s

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

Releasing time delayed contacts (t_{R2}) TF0.5 fixed 0,5 s TF1 fixed 1 s TF3 fixed 3 s Supply voltage 024 24 Vac/dc +15% 120 Vac **±**15% 230 230 Vac ±15%

Data type approved by UL

nated operating voltage (on).
Rated power consumption AC: Rated power consumption DC: Max switching voltage:
Max switching current per contact: Utilization category
Note:

Bated operating voltage (Un):

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 10 VA < 5W230 Vac 6 A C300

Note:
 Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
 Terminal tightening torque of 5-7 Lb In.
 Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.
 Surrounding air of 55 °C.



1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

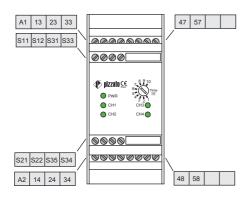
4F

4G

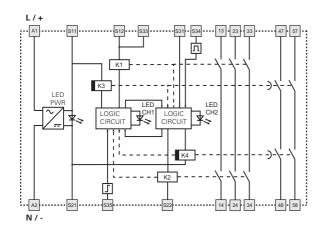
4H

Safety module CS AT-1

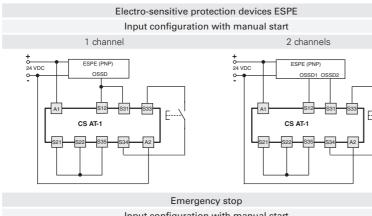
Terminals layout



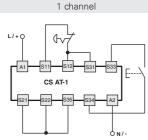
Internal wiring diagram

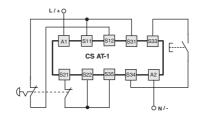


Inputs configuration



Input configuration with manual start

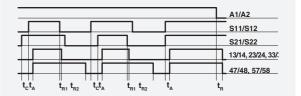




2 channels

Operation	diagrams
Operation	ulagrams

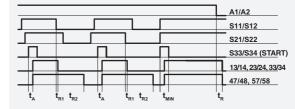
Configuration with automatic start



Configuration with monitored start

	A1/A2
	S11/S12
	S21/S22
	S33/S34 (START)
	13/14, 23/24, 33/34
	47/48, 57/58
t, t _a , t _a	t _R

Configuration with manual start



Legend: $\substack{t_{\text{MIN}}: \\ \text{Min. period of start impulse} \\ t_c: \\ \text{Simultaneity time} }$

Operating time Releasing time t_{R1}:

Releasing time in absence of t_R: power supply t_{R2}

S33

E-

S33

Adjustable releasing time delayed contacts (see "Code structure")

Note:

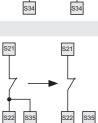
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} and t_{R2} time referred to S11/S12 input, the t_{R} time referred to the supply, the t_{A} time referred to S11/S12 input and to the start, and the t_{MIN} time referred to the start.

Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S33 and S34 terminals.

Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



Gate monitoring and safety magnetic sensors

The safety module can control both emergency stop circuits, gate circuits or monitoring safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts.



5 6



Module for emergency stop and gate monitoring and magnetic safety sensor with delayed contacts at the opening of the input channels

Main functions

- Single or dual channel input circuit • Choice between automatic start, manual start or monitored start
- Connectible to electromechanical contacts or to magnetic safety sensor
- 22,5 mm housing
- 2 NO safety instantaneous contacts,
- 1 NO safety delayed contact.
- · Supply voltages:
- 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A)

Markings, quality marks and certificates:

Approval UL:

E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) IP40 (housing), IP20 (terminals) Protection degree: Dimensions: see page 4/178, shape A

General data

SIL level (SIL CL): Performance Level (PL): Safety category:

Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t_{MIN}: Operating time t₄: Releasing time t_{B1} Releasing time in absence of power supply t_p: Releasing time delayed contacts t_{R2} : Simultaneity time t infinite

< 10 VA < 5 Wresistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s ≤ 50 Ω 30 mA 100 ms 70 ms

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1

up to category 4 (instantaneous contacts)

category 3 (delayed contacts) according to EN 954-1 see page 6/32

-25°C...+55°C >10 millions of operations

>100.000 operations

24 Vac/dc; 50...60 Hz

outside 3, inside 2

4 KV 250 V

0,3 Kg

10% ±15% of Un

Ш

15 ms 100 ms see "Code structure"

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: 6 A Conventional free air thermal current Ith: 6 A Contacts resistance: ≤ 100 mΩ Contact protection fuse: 6 A contactors See page 4/169 - 4/176

2 NO safety instantaneous contacts, 1 NO safety delayed contact. forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc

The number and the load capacity of output contacts can be increased by using expansion modules or

Code structure

CS AT-20V024-TF1

Releasing time delayed contacts (t_{po})

- 0 Fixed time (see TE)
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- from 3 to 30 s, step 3 s 3
- 4 from 30 to 300 s, step 30 s

Kind of connection

- V screw terminals
- M connector with screw terminals
- Х connector with spring terminals

Releasing time delayed contacts (t_{R2}) **TF0.5** fixed 0.5 s TF1 fixed 1 s **TF3** fixed 3 s

Supply voltage

024 24 Vac/dc ±15%

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 10 VA < 5 W 230 Vac 6 A C300

Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. - Surrounding air of 55 °C.



Ç.

1

1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

4F

4G

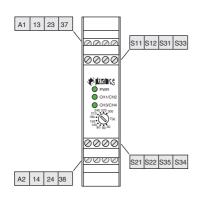
4H

5

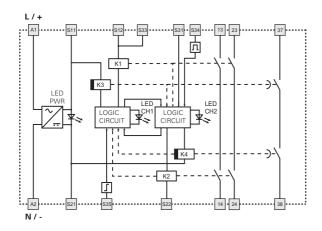
6

Safety module CS AT-2

Terminals layout



Internal wiring diagram



Configuration with automatic	Start	
	, <u> </u>	A1/A2
		<u>S11/S12</u>
┥╎┎═╼┧┕══┽┦┎══┧		S21/S22
		37/38
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	R1 t _{R2} t _A	t _R
Configuration with monitored	start	
		A1/A2
		S11/S12
		S21/S22
		13/14, 23/24
	<u> </u>	37/38
$t_A t_{R1} t_{R2} t_A t_{R1}$	t _{R2} t _{MIN} t _A	t _R
Configuration with manual sta	art	
		A1/A2
		S11/S12
		S21/S22
		S33/S34
		13/14, 23/24
╺┽┦╴║╶╴┡╾┦╴║	₽₽₽	37/38
$t_A = t_{R1} t_{R2} = t_A = t_{R1}$	t _{R2} t _{MIN}	't _e '
Legend:		
t _{MIN} : Min. period of start impulse t _c : Simultaneity time		asing time in absence of er supply
t _a : Operating time		stable releasing time dela

The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{p_1} and t_{p_2} times referred to S11/S12 input, the t_p time referred to the supply, the t_q time referred to S11/S12 input and to the start, and the t_{MIN} time referred to the start.

contacts

switches contacts or with the sensors contacts.

with

stop

S22 S35

Inputs configuration Emergency stop Input configuration with manual start 1 channel 2 channels L/+0 L/+(ŀ A1 A1 S11 S1 CS AT-2 CS AT-2 S22 S21 A2 ſ δN/ 6N/-The diagram does not show the exact position of clamps in the product Monitored start Gate monitoring and safety magnetic sensors. Automatic start As regards the indicated As regards the indicated The safety module can to S21 S21 S33 S33 diagrams, in order to diagrams, in order control both emergency activate the module with activate the module with gate stop circuits, the automatic start, it is the monitored start, it is monitoring circuits or necessary to short the E necessary to remove the safety magnetic sensors. start button between S33 connection between S22 Replace the emergency

S22 S35

and S35 terminals.

₽v7 → [Φ--7

The diagram does not show the exact position of clamps in the product

and S34 terminals.

🔹 🕩 pizzato 🕬 🕬 🖉 🖉 🔶 🔶 pizzato 🕬 🖗

S34

S34



Safety timer module with delayed contacts at energizing

Main functions

- Timed circuits through safety system with self-monitoring and redundancy
- Suitable to control safety interlocked devices
- Small 22,5 mm housing
- Output contacts:
- 1 NO safety contact,
- 2 NC auxiliary contacts,
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

Approval UL: E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

н

Housing Made of polyamide PA 6.6 self-extinguishing, cl Protection degree: Dimensions:	ass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data	up to SIL 3 according to EN IEC 62061
SIL level (SIL CL):	up to PL e according to EN ISO 13849-1
Performance Level (PL):	up to category 4 according to EN 954-1
Safety category:	(dependent from the circuit structure)
Safety parameters:	see page 6/32
Ambient temperature:	-25°C+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	II
Weight:	0,2 Kg
Power supply Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Max residual ripple in DC:	10%
Supply voltage tolerance:	±15% of Un
Rated power consumption AC:	< 5 VA
Rated power consumption DC:	< 2 W

Control circuit

Protection against short circuits: Operating time of PTC: Operating time t_A: Releasing time in absence of power supply t_B:

resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s see "Code structure" 40 ms

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit Output contacts: 1 NO safety contact, 2 NC auxiliary contacts, Contacts type: forced guided contacts Contacts material: silver allov Max switching voltage: 230/240 Vac; 300 Vdc Max switching current per contact: 6 A Conventional free air thermal current Ith: 6 A Contacts resistance: ≤ 100 mΩ Contact protection fuse: 6 A The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 4/169 - 4/176

Code structure

CS FS-01V024-T

US

Operating time t_A

- 0 Fixed time (see TFx)
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- from 3 to 30 s, step 3 s 3
- 4 from 30 to 300 s, step 30 s

Kind of connection

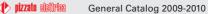
- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

Operating time t _A			
TF0.5		fixed 0,5 s	
TF1		fixed 1 s	
TF3 fixed 3 s			
	TF10	fixed 10 s	
Supply voltage			
024	24 Vac/dc	± 15%	
120	120 Vac	± 15%	
230	230 Vac	±15%	

Data type approved by UL

Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Rated power consumption AC:	< 5 VA
Rated power consumption DC:	< 2 W
Max switching voltage:	230 Vac
Max switching current per contact:	6 A
Utilization category	C300
Note:	
- Use 60° or 75 °C copper (Cu) conductor an	d wire size No. 30-12 AWG.
Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category Note:	< 5 VA < 2 W 230 Vac 6 A C300

Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. - Surrounding air of 55 °C.





3A

3B

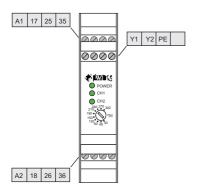
3C

4

4A

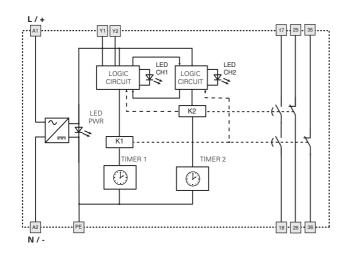
Safety module CS FS-0

Terminals layout

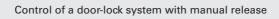


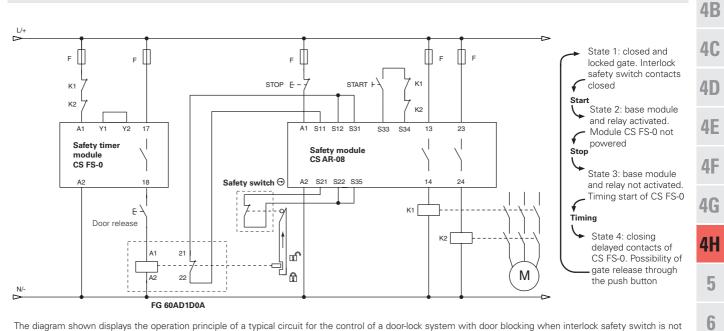
Operations diagram	1
	1A
A1/A2	1 B
25/26 35/36 t _A t _R	2
Legend:	2 A
$\begin{array}{l} \textbf{t}_{a} : & \text{Adjustable operating time (see "Code structure")} \\ \textbf{t}_{a} : & \text{Releasing time in absence of power supply} \end{array}$	
	2C
	2D
	2E
	3

Internal wiring diagram



Circuit structure





The diagram shown displays the operation principle of a typical circuit for the control of a door-lock system with door blocking when interlock safety switch is not energized, and manual release of the single doors.

In order to obtain the complete wiring diagram with different modalities of electrical blocking or with automatic door release, please contact our technical office.

The diagram does not show the exact position of clamps in the product



Safety timer module with delayed contacts at energizing

Main functions

- Timed circuits through safety system with
- self-monitoring and redundancy
- Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
- 1 NO safety contact,
- 1 NC auxiliary contact,
- 1 CO auxiliary contact,
- Supply voltages: 24 Vdc, 120 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) Protection degree: IP40 (housing), IP20 (terminals) Dimensions: see page 4/178 shape C

General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un):

Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

Protection against short circuits: Operating time of PTC: Operating time t₄: Releasing time in absence of power supply t_B:

In conformity with standards: IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current lth: Max currents sum Σ lth²: Contacts resistance: Contact protection fuse: Error signalling output (Y14): Rated operational voltage (Ue): Rated operational current (le):

1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact, forced guided contacts silver alloy 230/240 Vac; 300 Vdc 6 A 6 A 36 ≤ 100 mΩ 6 A Type PNP 24 VDC 10 mA

up to SIL 2 according to EN IEC 62061

up to PL d according to EN ISO 13849-1

up to category 3 according to EN 954-1

see page 6/32

-25°C...+55°C

4 KV 250 V

0,2 Kg

10%

< 5 VA

< 2 W

40 ms

Ш

>10 millions of operations

120 Vac; 50...60 Hz (B1-B2)

resistance PTC, Ih=0,5 A

see "Code structure"

intervention > 100 ms, reset > 3 s

>100.000 operations

outside 3, inside 2

24 Vdc (A1-A2)

±15% of Un

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See page 4/169 - 4/176

Code structure

CS FS-20VU24-TFxx

Operating time t

- Fixed time (see TFxx) 0
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- 3 from 3 to 30 s, step 3 s
- 4 from 30 to 300 s, step 30 s

Kind of connection

- V screw terminals
- M connector with screw terminals
- Х connector with spring terminals

Supply voltage

Operating time t_A

TFxx xx s (fixed time)

U24 24 Vdc ±15% 120 120 Vac **±**15%

Data type approved by UL

Rated operating voltage (Un):

Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

Note: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. - Surrounding air of 55 °C.



24 Vdc⁻

< 5 VA

< 2 W

230 Vac

6 A

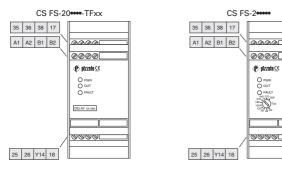
C300

120 Vac; 50...60 Hz



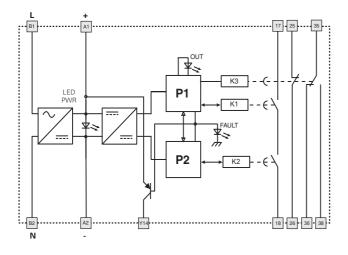
Safety module CS FS-2

Terminals layout



	ration with	iout faults		1		A1/A2 -	B1/B2	
						17/18		
		1				25/26 		
						35/38		
	t _A			t _R				
Legend: t _A : Adjus t _R : Relea	table operati sing time in	ing time (se absence of	e "Code power si	structu upply	re")			

Internal wiring diagram



4D

4E

4F

4G

4H

5

6



Safety timer module with ON pulse function

Main functions

- Timed circuits through safety system with
- self-monitoring and redundancy
- Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
- 1 NO safety contact,
- 1 NC auxiliary contact,
- 1 CO auxiliary contact,
- Supply voltages: 24 Vdc, 120 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) Protection degree: IP40 (housing), IP20 (terminals) Dimensions: see page 4/178 shape C

up to SIL 2 according to EN IEC 62061

up to PL d according to EN ISO 13849-1

up to category 3 according to EN 954-1

see page 6/32

-25°C...+55°C

4 KV

250 V

0,2 Kg

10%

< 5 VA

< 2 W

40 ms

200 ms

24 Vdc (A1-A2)

±15% of Un

Ш

outside 3, inside 2

>10 millions of operations >100.000 operations

120 Vac; 50...60 Hz (B1-B2)

resistance PTC, Ih=0,5 A

see "Code structure"

1 NO safety contact,

1 NC auxiliary contact,

intervention > 100 ms, reset > 3 s

General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un):

Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

Protection against short circuits: Operating time of PTC: Operating time t₄: Releasing time in absence of power supply t_B: Start-up time t_s:

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

Operating time t,

±15%

±15%

U24 24 Vdc

120 120 Vac

1 CO auxiliary contact, forced guided contacts Contacts type: Contacts material: silver alloy Max switching voltage: 230/240 Vac; 300 Vdc Max switching current per contact: 6 A Conventional free air thermal current Ith: 6 A Max currents sum Σ lth²: 36 Contacts resistance: ≤ 100 mΩ Contact protection fuse 6 A Type PNP Error signalling output (Y14): Rated operational voltage (Ue): 24 VDC Rated operational current (le): 10 mA The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See page 4/169 - 4/176

Code structure

CS FS-30VU24-TFxx

Operating time t,

- 0 Fixed time (see TFxx)
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- **3** from 3 to 30 s, step 3 s
- 4 from 30 to 300 s, step 30 s

Kind of connection

- V screw terminals
- M connector with screw terminals
- Х connector with spring terminals

Operating time t _A	Data type approved by UI	
TFxx xx s (fixed time)	Rated operating voltage (Un):	24 13
	Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization catedory	< < 2 6 C
Supply voltage		
	Note:	

Note: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. - Surrounding air of 55 °C.



24 Vdc

< 5 VA

< 2 W

230 Vac 6 A

C300

120 Vac; 50...60 Hz



3C

4

4A

4B

4C

4D

4E

4F

4G

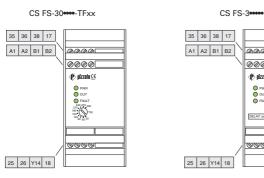
4H

5

6

Safety module CS FS-3

Terminals layout



<u>a</u>@@@

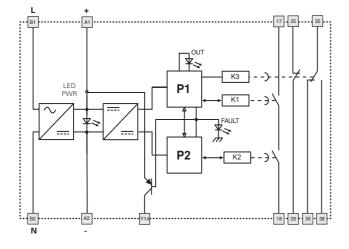
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🕑 pizzato 😒

O PWR O OUT FAULT DELAY: xx sec

<u>@@@@</u>

Internal wiring diagram



Operations d CS FS-3••••• De Normal operation	lay off	
		35/36 35/38
t _s Operation withour	t power supply	
		<u>A1/A2 - B1/B2</u> 17/18
		25/26
ts	t _{A1} t _R	35/38
Legend: t _A : Adjustable op t _{A1} : Operating tin	perating time (see "Code st ne if power supply is minor	ucture")
t _s : Start-up time	ne in absence of power sup	bly

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Safety timer module with delayed contacts at opening of the input channels

Main functions

- Timed circuits through safety system with
- self-monitoring and redundancy Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
- 1 NO safety contact,
- 1 NC auxiliary contact,
- 1 CO auxiliary contact,
- Supply voltages:
- 24 Vdc, 120 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

CE

US E131787

Approval UL:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

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Housing Made of polyamide PA 6.6 self-extinguishing, of Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/178 shape C
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 2 according to EN IEC 62061 up to PL d according to EN ISO 13849-1 up to category 3 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 KV 250 V II 0,2 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 Vdc (A1-A2) 120 Vac; 5060 Hz (B1-B2) 10% ±15% of Un < 5 VA < 2 W
Control circuit Protection against short circuits: Operating time of PTC: Operating time t_A : Releasing time in absence of power supply t_B :	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s see "Code structure" 40 ms
Input circuit Max input resistance: Input current: Start-up time t _s : Minimum endurance of input signal t _{MIN} :	≤ 50 Ω 8 mA 40 ms 50 ms

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

1 NO safety contact,

1 NC auxiliary contact,

Output circuit

Output contacts:

Operating time t_A

TFxx xx s (fixed time)

	T CO auxiliary contact,
Contacts type:	forced guided contacts
Contacts material:	silver alloy
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Max currents sum Σ lth ² :	36
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
Error signalling output (Y14):	Type PNP
Rated operational voltage (Ue):	24 VDC
Rated operational current (le):	10 mA
The number and the load capacity of output contacts of	an be increased by using expansion

modules or contactors. See page 4/169 - 4/176

Code structure

CS FS-50VU24-TFxx

Operating time t₄

- 0 Fixed time (see TFxx)
- 1 from 0,3 to 3 s, step 0,3 s
- 2 from 1 to 10 s, step 1 s
- 3 from 3 to 30 s, step 3 s
- 4 from 30 to 300 s, step 30 s

Kind of connection

- V screw terminals
- **M** connector with screw terminals
- **X** connector with spring terminals

Sup	oply voltage		120 Vac; 5060 HzRated power consumption AC:Rated power consumption DC:Max switching voltage:Max switching current per contact:Utilization categoryC300
U24	24 Vdc	±15%	Note:
120	120 Vac	± 15%	 Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AW Terminal tightening torque of 5-7 Lb In.

Data type approved by UL

Rated operating voltage (Un):

wire size No. 30-12 AWG Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy. - Surrounding air of 55 °C.



24 Vdc;



A1/A2 - B1/B2

safety output

A1/A2 - B1/B2

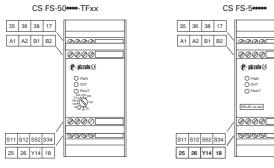
safety output

activation conditions start

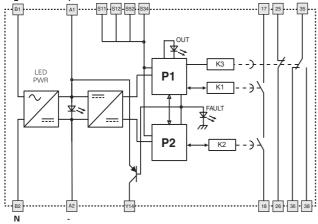
activation conditions

Safety module CS FS-5

Terminals layout



Internal wiring diagram



5*****	Configuration with automatic start
	Configuration with manual start
->	Legend: t _A : Adjustable operating time (see "Code structure") t _{A1} :: Operating time if power supply is minor to t _A t _R : Releasing time in absence of power supply t _s : Start-up time

Operations diagram

Inputs configuration

Gate monitoring Input configuration with manual start	4B 4C
	10
	10
1 channel 2 channels	46
	4D
$\begin{bmatrix} A1 \\ CS FS-5 \end{bmatrix} = \begin{bmatrix} CS FS-5$	4E
	4F
dı d. d.	4G
Automatic start	4H
As regards the indicated diagrams, in order to \$11 \$11 activate the module with the automatic start, it is	5
and S34 terminals.	6

2E

3

3A

3**B**

3C

4

4A

1

1A

1B



Bimanual control device according to EN 574 type III C or safety module with synchronism control

Main functions

- Input circuit with 2 channels for bimanual control device or safety gate
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- 3 NO safety contacts,
- 1 NC auxiliary contact
- · Supply voltages:
- 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:



Complying with the requirements requested by: Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Housing Made of polyamide PA 6.6 self-extinguishing, c Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/177, shape A
General data SIL level (SIL CL): Performance Level (PL): Safety category: Device type for bimanual control: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1 EN 574: type III C see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 KV 250 V II 0,3 Kg
Power supply Rated operating voltage (Un):	24 Vac/dc; 5060 Hz 120 Vac; 5060 Hz 230 Vac; 5060 Hz
Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	10% ±15% of Un < 5 VA < 2 W
Control circuitProtection against short circuits:Operating time of PTC:Max input resistance:Current for each input:Operating time t_A :Releasing time t_{R1} :Releasing time in absence of power supply t_R :	resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 30 mA 50 ms 20 ms 70 ms

In conformity with standards:

Time range for synchronized control t_s:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

< 0,5 s

Output circuit

Output contacts:	3 NO safety contacts,
	1 NC auxiliary contact
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 Vac; 300 Vdc
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts of	can be increased by using expansion modules or
contactors See page 4/169 - 4/176	

Code structure

CS DM-01V024

Kind of connection

- V screw terminals
- M connector with screw terminals
- X connector with spring terminals

Supply voltage		
024	24 Vac/dc	± 15%
120	120 Vac	± 15%
230	230 Vac	± 15%

Items available on stock

CS DM-01V024

Data type approved by UL

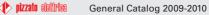
Rated operating voltage (Un):

Rated power consumption AC:
Rated power consumption DC:
Max switching voltage:
Max switching current per contac
Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A

Voles. - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

t: C300





1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

4F

4G

4H

5

6

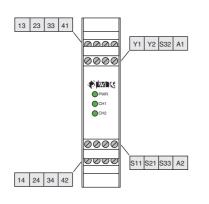
of each relay is connected

to the feedback circuit of

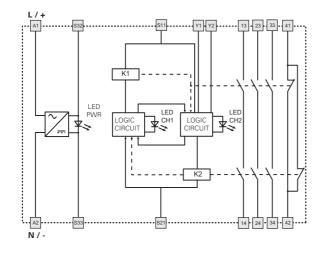
the safety module.

Safety module CS DM-01

Terminals layout

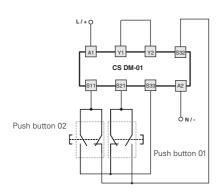


Internal wiring diagram

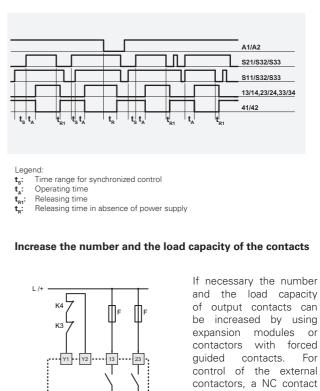


Inputs configuration

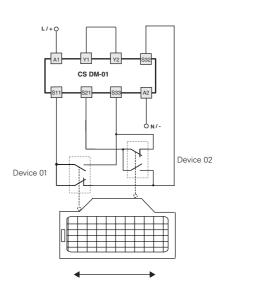
Bimanual control device type III C according to EN 574

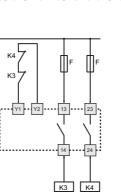


The diagram does not show the exact position of clamps in the product



Safety gate monitoring with automatic start wiring and simultaneity between channels < 0,5 s (safety category 4)





Operations diagram

Feedback circuit for external contactors

N /-

pizzalo dell'rise General Catalog 2009-2010



Standstill monitor safety module

Main functions

- Single or dual channel input circuit
- Residual voltage at motor-stop selectable on 10 position
- Galvanic separation between control circuit and measure circuit
- 45 mm housing
- · 2 NO safety contacts,
- 1 NC auxiliary contact
- 2 Semiconductor outputs:
- 1 output for failure state signalling
- 1 output for signalling outputs state
- · Possibility to connect single-phase or threephase motors to measuring circuits.
- Supply voltages:
- 24 ... 230 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:



Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing Made of polyamide PA 6.6 self-extinguishing, o Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/178, shape C
General data SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 2 according to EN IEC 62061 up to PL d according to EN ISO 13849-1 up to category 3 according to EN 954-1 see page 6/32 -25°C+55°C >10 millions of operations >100.000 operations outside 3, inside 2 4 KV 250 V II < 0,3 Kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:	24 230 Vac/dc; 5060 Hz 10% ±15% of Un < 6 VA < 2 W
Input circuit Voltage between terminals L1-L2-L3: Frequency: Input impedance: Stopped motor threshold voltage: Started motor threshold voltage: Input impedance Y1-Y2: START Y1-Y2 circuit current: Input voltage RESET: Input current RESET:	$\begin{array}{l} 0\dots 690 \text{ Vac} \\ 0\dots 3 \text{ KHz} \\ > 1 \ M\Omega \\ \text{from 20 mV to 500 mV}_{\text{adjustable on 10 positions}} \\ \text{double than the stopped motor threshold voltage} \\ < 24 \ Vdc \\ < 70 \ mA \\ 24 \ Vdc \pm 20\% \\ 10 \ mA \end{array}$
Control circuit Operating time t_A : Releasing time t_R ; Releasing time in absence of power supply: Simultaneity time: Test: Test duration:	2 s 20 ms max 3 s 3 s Self-test when the power is supplied and after the RESET input is activated 2,5 s (During the test in the measuring circuits the voltage must be lower than the stopped motor threshold)
In conformity with standards: IEC 60947-1, EN 60947-1, IEC 60204-1, EN 602 EN ISO 12100-1, EN ISO 12100-2, EN ISO 133 EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60 CSA C22.2 n° 14-95	850, IEC 529, EN 60529, EN 61000-6-2,
Output circuit Output contacts:	2 NO safety contacts, 1 NC auxiliary contact

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Contacts resistance: Contact protection fuse: Semiconductor outputs:

silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A ≤ 100 mΩ 6 A PNP outputs galvanically separated, protected from over voltage and short circuit 24 Vdc 50mA 24 Vdc ±20% The number and the load capacity of output contacts can be increased by using expansion modules or

forced guided contacts

Code structure

CS AM-01VE01

Setting range of the stopped motor voltage 01 20 ... 500 mV, range 53 mV

Kind of connection

- **V** screw terminals
- M connector with screw terminals
- **X** connector with spring terminals

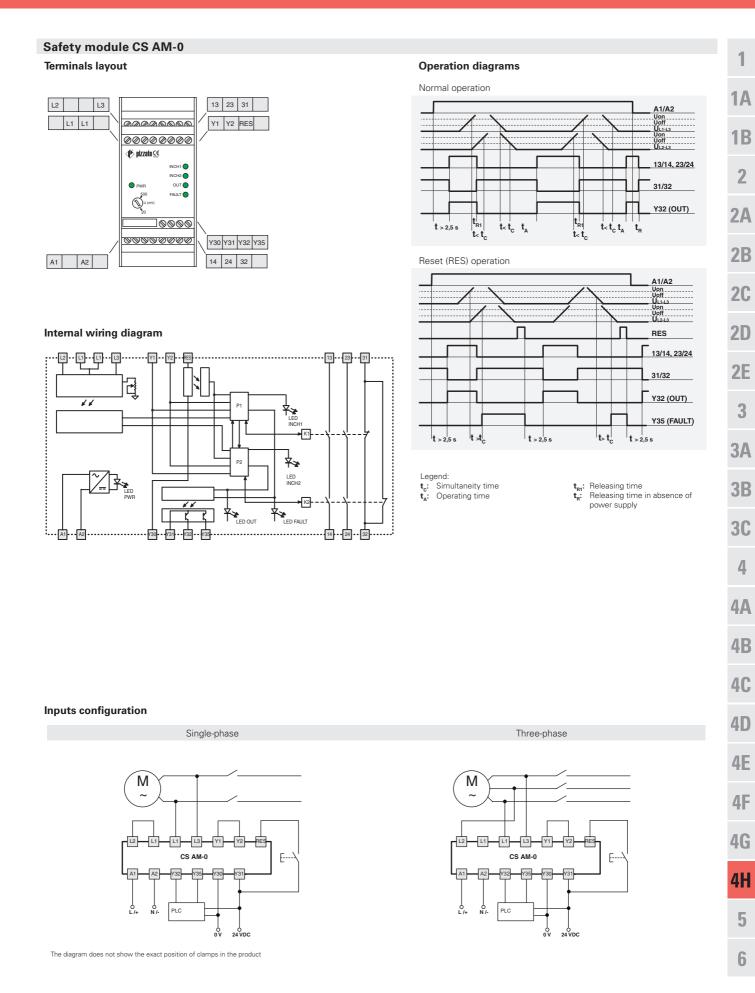
Switching voltage:

Switching current: External supply voltage:

contactors. 4/169 - 4/176

page 4/167

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Expansion modules for output contacts

Main functions

- Possibility of control with 1 or 2 channelsConnection of the input channels to opposite
- potentials
- Small 22,5 mm housing
- Output contacts:
- 5 NO safety contacts,
- 1 NC auxiliary contact,
- 1 NC feedback contact
- Supply voltages: 24 Vac/dc

Utilization categories

Alternat	e current: AC15 (5060 Hz)
Ue (V)	230
le (A)	3
Direct c	urrent: DC13 (6 operations/minute)
Ue (V)	24
le (A)	6

Markings, quality marks and certificates:

CE

Approval UL:

CULUS E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) Protection degree: IP40 (housing), IP20 (terminals) Dimensions: see page 4/177, shape A

Seneral data

SIL level (SIL CL): Performance Level (PL): Safety category:

Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

Control circuit

Output circuit

Protection against short circuits: Operating time of PTC: Max input resistance: Operating time t_A : Releasing time in absence of power supply t_R : Simultaneity time t_c : resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s \leq 50 Ω 40 ms 40 ms infinite

up to SIL 3 according to EN IEC 62061

(dependent on the base module)

>10 millions of operations >100.000 operations

see page 6/32

-25°C...+55°C

4 kV

ll 0,3 Kg

250 V

10% ±15% of Un

< 5 VA

< 2 W

outside 3, inside 2

24 Vac/dc; 50...60 Hz

up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output contacts: Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ Ith²: Contacts resistance:

Contact protection fuse:

5 NO safety contacts, 1 NC auxiliary contact, 1 NC feedback contact forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 72 ≤ 100 mΩ 6 A

Code structure

CS ME-01V024

Kind of connection

- V screw terminals
- M connector with screw terminals

X connector with spring terminals

Supply voltage

024 24 Vac/dc ±15%

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category 24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

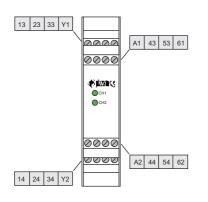
Notes: Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. -Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.





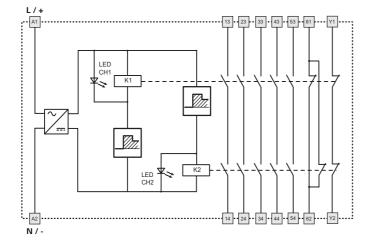
Expansion module CS ME-01

Terminals layout

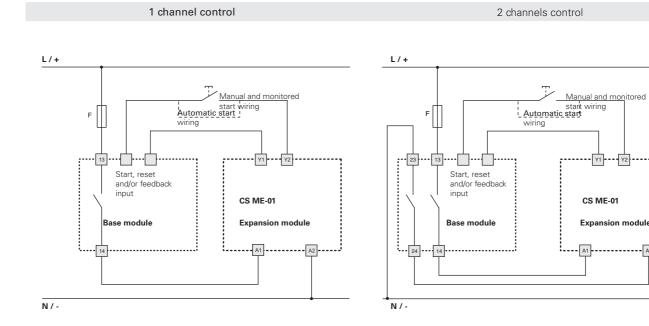


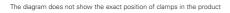
Operations diagram	1
A1/A2	1 A
Y1/Y2 13/14, 23/34, 43/44, 53/54	1B
61/62	2
Legend: t _e : Operating time	2A
$\mathbf{t}_{\mathbf{a}}$: Operating time $\mathbf{t}_{\mathbf{a}}$: Releasing time in absence of power supply	2B
	2C
	2 D
	2E
	3
	3A
	3B
	3C
	4
	4 A

Internal wiring diagram



Inputs configuration





A2

Y1 ---- Y2

Expansion module

CS ME-01

A1

4B

4C

4D

4E

4F

4G

4H

5

6



Expansion modules for output contacts

Main functions

- Light barrier module (ESPE type 2 and 4)
- 2 OSSD inputs
- Small 22,5 mm housing
- Output contacts:
- 3 NO safety contacts,
- 1 NC feedback contact/EDM contact
- Supply voltages: 24 Vdc

Technical data

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Protec	ng of polyamide PA 6.6 self-extinguishing, ;tion degree: isions:	class V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/178, shape D
SIL lev	ral data vel (SIL CL): mance Level (PL):	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1

up to category 4 according to EN 954-1

(dependent on the ESPE)

>10 millions of operations >100.000 operations

see page 6/32

-25°C...+55°C

4 kV

Ш

250 V

0,2 Kg

outside 3, inside 2

Safety category:

Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

24 Vdc Rated operating voltage (Un): Max residual ripple in DC: 10% ±20% of Un Supply voltage tolerance: Rated power consumption DC: < 2 WStart power consumption: < 3 W

Control circuit

o o ne o	
Operating time t ₄ :	40 ms
Releasing time t _{R1} :	15 ms

Utilization categories

Alternate current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 6

Markings, quality marks and certificates:

(F

Approval UL:

lis E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

Supply voltage

U24 24 Vdc

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ lth²: Contacts resistance: Contact protection fuse:

±15%

3 NO safety contacts, 1 NC feedback contact forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 36 ≤ 100 mΩ 6 A

Code structure

CS ME-03VU24

Kind of connection

- V screw terminals
- connector with screw terminals М
- X connector with spring terminals

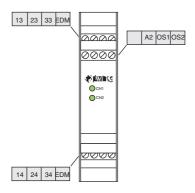


Voles. Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. -Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy



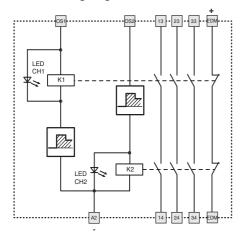


Expansion module CS ME-03 Terminals layout



Operations diagram	1
OS1	1A
	1 B
EDM/EDM	2
Legend: t _A : Operating time	2A
t _{n1} : Releasing time	2B
	2 C
	2D
	2E
	3
	3A
	3 B
	3C
	4
	4 A

Internal wiring diagram



Inputs configuration

Electro-sensitive protection devices ES 1 channel	SPE 2 channels	4C
ESPE (PNP) 24 VDC EDM OSSD	ESPE (PNP) EDM OSSD1 OSSD2	4D
		4E
		4 F
		4 G

4H 5

4B

6

The diagram does not show the exact position of clamps in the product



Expansion module with delayed contacts at de-energizing

Main functions

- Possibility of control with 1 or 2 channels
- 4 delayed time 0,5 1 2 and 3 s
- Small 22,5 mm housing
- Output contacts:
- 4 NO safety contacts,
- 2 NC auxiliary contact,
- 1 NC feedback contact
- Supply voltages: 24 Vdc

Utilization categories

Alternat	e current: AC15 (5060 Hz)
Ue (V)	230
le (A)	3
Direct c	urrent: DC13 (6 operations/minute)
Ue (V)	24
le (A)	6

Markings, quality marks and certificates:

(F

Approval UL:

lis E131787

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) IP40 (housing), IP20 (terminals) Protection degree: Dimensions: see page 4/177, shape A

General data

SIL level (SIL CL): Performance Level (PL): Safety category:

Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption DC:

Control circuit

Max input resistance: Operating time t_A : Releasing time in absence of power supply t_n:

≤ 50 Ω < 100 ms see Code structure

up to SIL 3 according to EN IEC 62061

(dependent on the base module)

>10 millions of operations >100.000 operations

see page 6/32 -25°C...+55°C

4 KV 250 V

0,2 Kg

24 Vdc

10% ±15% of Un

< 2 W

Ш

outside 3, inside 2

up to PL e according to EN ISO 13849-1 up to category 4 according to EN 954-1

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 nº 14-95

Output circuit

Output contacts:

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Contacts resistance: Contact protection fuse:

4 NO safety contacts, 2 NC auxiliary contact, 1 NC feedback contact forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A ≤ 100 mΩ 6 A

Code structure

CS ME-20VU24-TF1

Kind of connection

- V screw terminals
- Μ connector with screw terminals
- connector with spring terminals Х

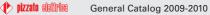
Releasing time on de-energisation (t _R)		
TF05	fixed 0,5 s	
TF1	fixed 1 s	
TF2	fixed 2 s	
TF3	fixed 3 s	

Data type approved by UL

Rated operating voltage (Un): Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vdc < 2 W 230 Vac 6 A C300

Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. -Terminal tightening torque of 5-7 Lb In. - Supply from remote class 2 source or limited voltage and limited energy.





2D

2E

3

3A

3**B**

3C

4

4A

4B

4C

4D

4E

4F

4G

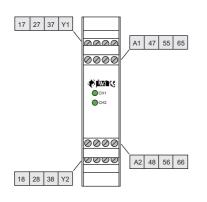
4H

5

6

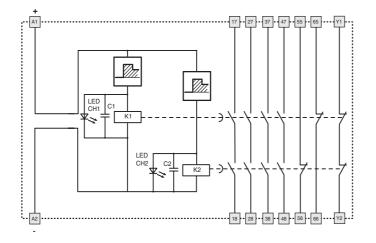
Expansion module CS ME-20

Terminals layout

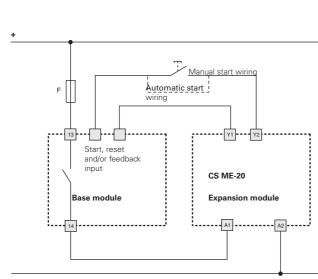


Operations diagram		1
		1A
	A1/A2 Y1/Y2 17/18, 27/28, 37/38, 47/48	1 B
	55/56, 65/66	2
Legend: t _k : Operating time		2 A
$\mathbf{t}_{\mathbf{R}}$: Releasing time in absence of pow	ver supply (see "Code structure")	2B
		2C

Internal wiring diagram

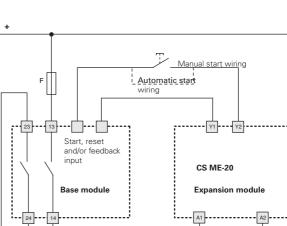


Inputs configuration



1 channel control





2 channels control





Expansion module with delayed contacts at de-energizing

Main functions

- Possibility of control with 1 or 2 channels
- Fixed or adjustable delayed time
- 45 mm housing
- Output contacts:
- 4 NO safety contacts,
- 2 NC auxiliary contact,
- 1 NC feedback contact
- Supply voltages: 24 Vdc

Utilization categories

Alternat	e currer	nt: AC15 (5060 Hz)
Ue (V)	230	
le (A)	3	
Direct c	urrent: [DC13 (6 operations/minute)
Ue (V)	24	
le (A)	6	

Markings, quality marks and certificates:

(F

Approval UL:



Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC, Electromagnetic Compatibility 2004/108/EC

Technical data

н

Housing Made of polyamide PA 6.6 self-extinguishing, cl Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) see page 4/178, shape C
General data SIL level (SIL CL): Performance Level (PL):	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1

S Performance Level (PL): Safety category:

Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption DC:

Control circuit

Max input resistance: Operating time t_A : Releasing time in absence of power supply t_n:

≤ 50 Ω < 200 ms see Code structure

up to category 4 according to EN 954-1

(dependent on the base module)

>10 millions of operations >100.000 operations

see page 6/32 -25°C...+55°C

4 kV 250 V

24 Vdc

10% ±15% of Un

< 2 W

Ш 0,4 Kg

outside 3, inside 2

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 nº 14-95

Output circuit

Output contacts:

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Contacts resistance: Contact protection fuse:

4 NO safety contacts, 2 NC auxiliary contact, 1 NC feedback contact forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A ≤ 100 mΩ 6 A

Code structure

CS ME-30VU24-TF1

Fixed or adjustable time

- 0 Fixed time
- 1 Adjustable time

Kind of connection

- ν screw terminals
- connector with screw terminals Μ
- connector with spring terminals Х
- Releasing time on de-energisation (t_R) fixed 1 s TF1 (CS ME-30 only) fixed 12 s **TF12** (CS ME-30 only) from 1 to 12 s, step 1 s **TS12** (CS ME-31 only)

Data type approved by UL

Rated operating voltage (Un): Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vdc < 2 W 230 Vac 6 A C300

Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. -Terminal tightening torque of 5-7 Lb In. - Supply from remote class 2 source or limited voltage and limited energy.





1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

4F

4G

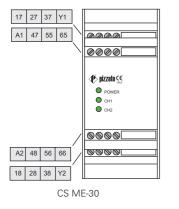
4H

5

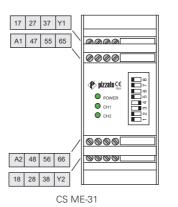
6

Expansion module CS ME-30 / CS ME-31

Terminals layout



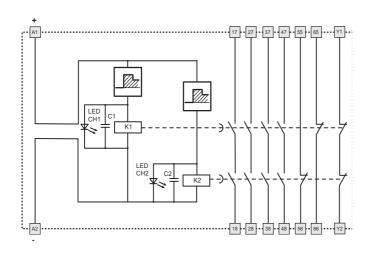
Internal wiring diagram



 $\begin{array}{c|c} & A1/A2 \\ \hline & Y1/Y2 \\ \hline & Y1/Y2 \\ \hline & Y1/Y3 \\$

Release time selection t_{R} (CS ME-31 only)

Operations diagram

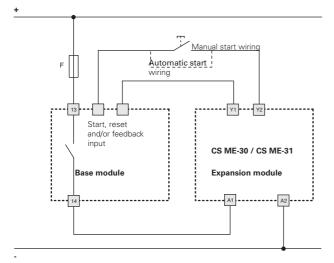


		+ (0)
	DIP SWITCH	t _R (s)
ON OFF		1
ON OFF		2
ON OFF		3
ON OFF		4
ON OFF		5
ON OFF		6
ON OFF		7
ON OFF		8
ON OFF		9
ON OFF		10
ON OFF		11
ON OFF		12

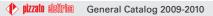
Inputs configuration

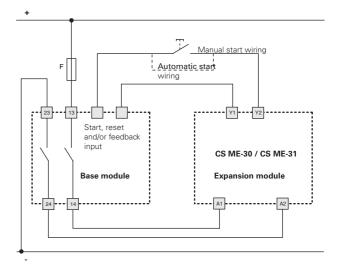
1 channel control





The diagram does not show the exact position of clamps in the product





Shape A, 22,5 mm thickness housing

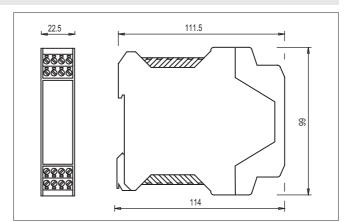
Connection data

Terminals driving torque: Cross section of the conductors:

0,5...0,6 Nm 0,2...2,5 mm² 24...12 AWG

Installation

Snap mounting on DIN-rail



111.5

110.5

Z*[[[[[[[*]]

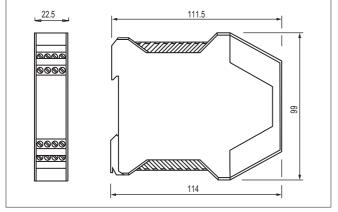
7000

114

Connector with screw terminals

22.5

Connector with spring terminals



Screw terminals

Installation

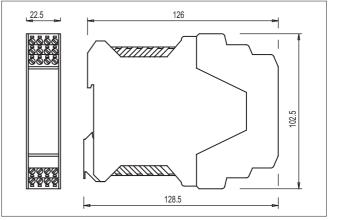
Shape B, 22,5 mm thickness housing

Connection data

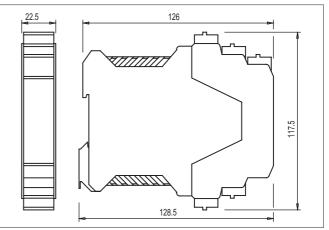
Terminals driving torque: Cross section of the conductors:

Snap mounting on DIN-rail

0,5...0,6 Nm 0,2...2,5 mm² 24...12 AWG



Connector with screw terminals



Connector with spring terminals



1B

2

2D

2E

3

3A

3B

3C

4

4A

4B

110.5

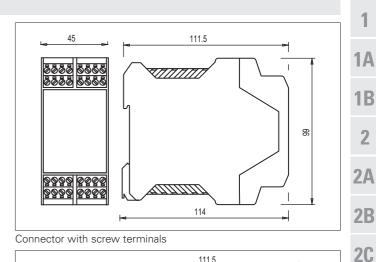
Shape C, 45 mm thickness housing

Connection data

Terminals driving torque: Cross section of the conductors:

Installation

Snap mounting on DIN-rail



111.5

114

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45 111.5 0000 000 0000 0000 66 ୭୭୭୭ ବରରର 114

Screw terminals

Shape D, 22,5 mm thickness housing

Connection data

Installation

Terminals driving torque: Cross section of the conductors:

Snap mounting on DIN-rail

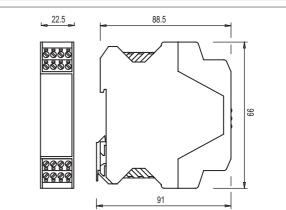
0,2...2,5 mm² 24...12 AWG

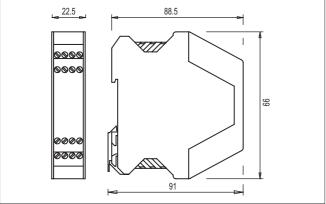
0,5...0,6 Nm

0,5...0,6 Nm

0,2...2,5 mm²

24...12 AWG





Screw terminals





22.5

Connector with spring terminals

45

Connector with screw terminals

88.5

91



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110.5

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