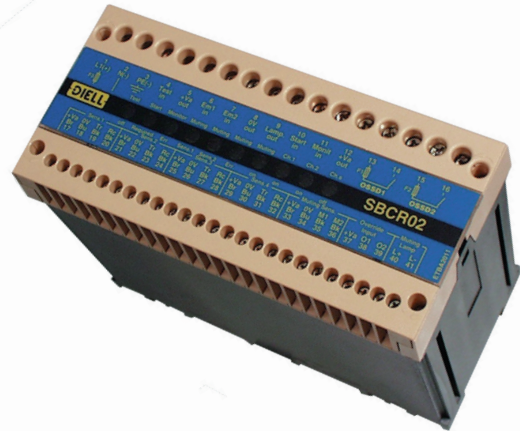


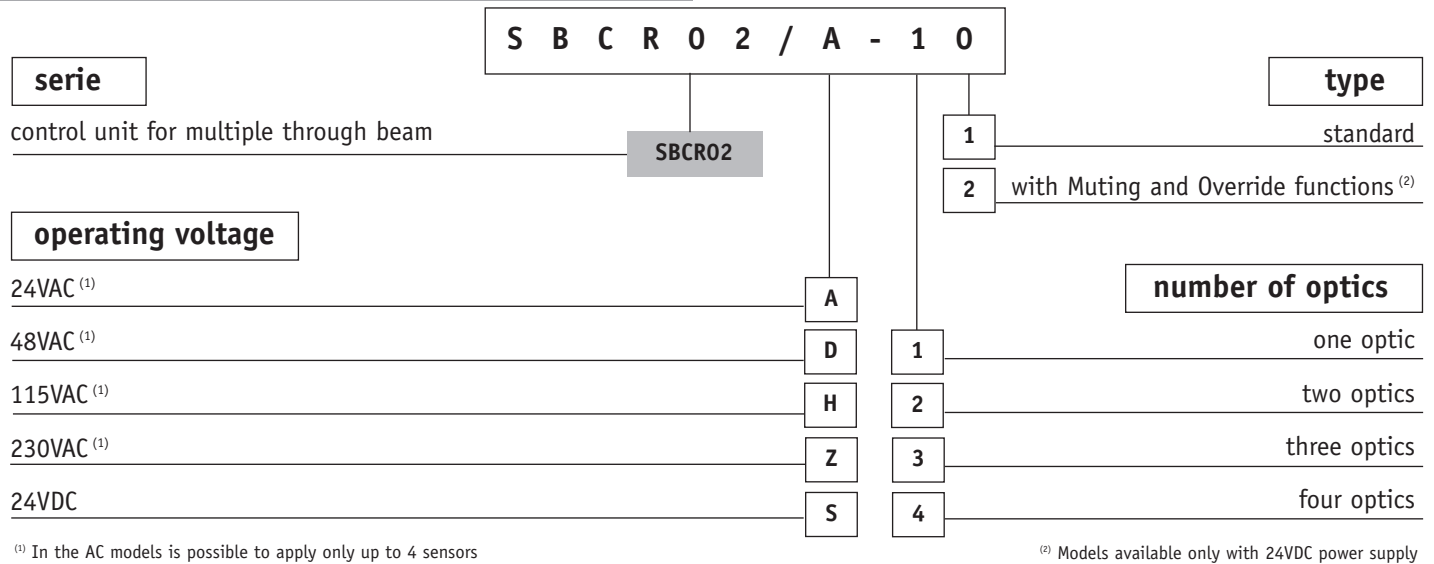
Multiple beam safety control unit (category 2)

for accident prevention in dangerous areas

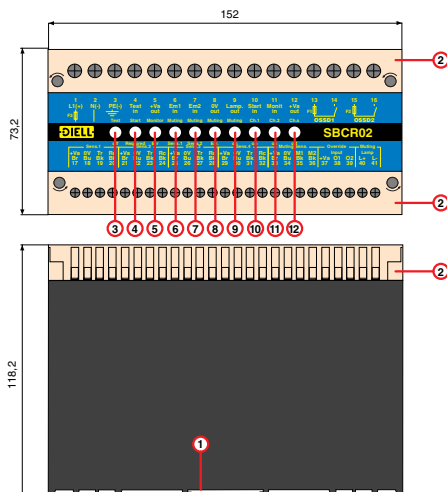
- System composed of a control unit pre-set for connecting from one to eight pairs of optic sensors – M18 (SH), M30 (TH), or SBA through beams
- Control unit mountable on DIN rail: the same control unit can use 3 different M18 and M30 sensor pairs and 6 different SBA through beams
- Direct handling of machine emergency situations
- Possible cascade connection to two or more control units
- The SBCR02 safety system is certified as a category 2 protection device and complies with the EN61496 standard
- Relay safety outputs
- Muting and Override functions
- Response time less than 25ms



Ordering system



Dimensions



1. DIN rail mounting (EN50022-35) or with M4 screws
2. Removable terminal board
3. Yellow LED (test OFF)
4. Yellow LED (waiting for start-up)
5. Orange LED (EDM)
6. Yellow LED (muting sensor 1, active)
7. Yellow LED (muting sensor 2, active)
8. Orange LED (muting error)
9. Yellow LED (active muting)
10. Green LED (output 1, ON)
11. Green LED (output 2, ON)
12. Red LED (outputs, OFF)

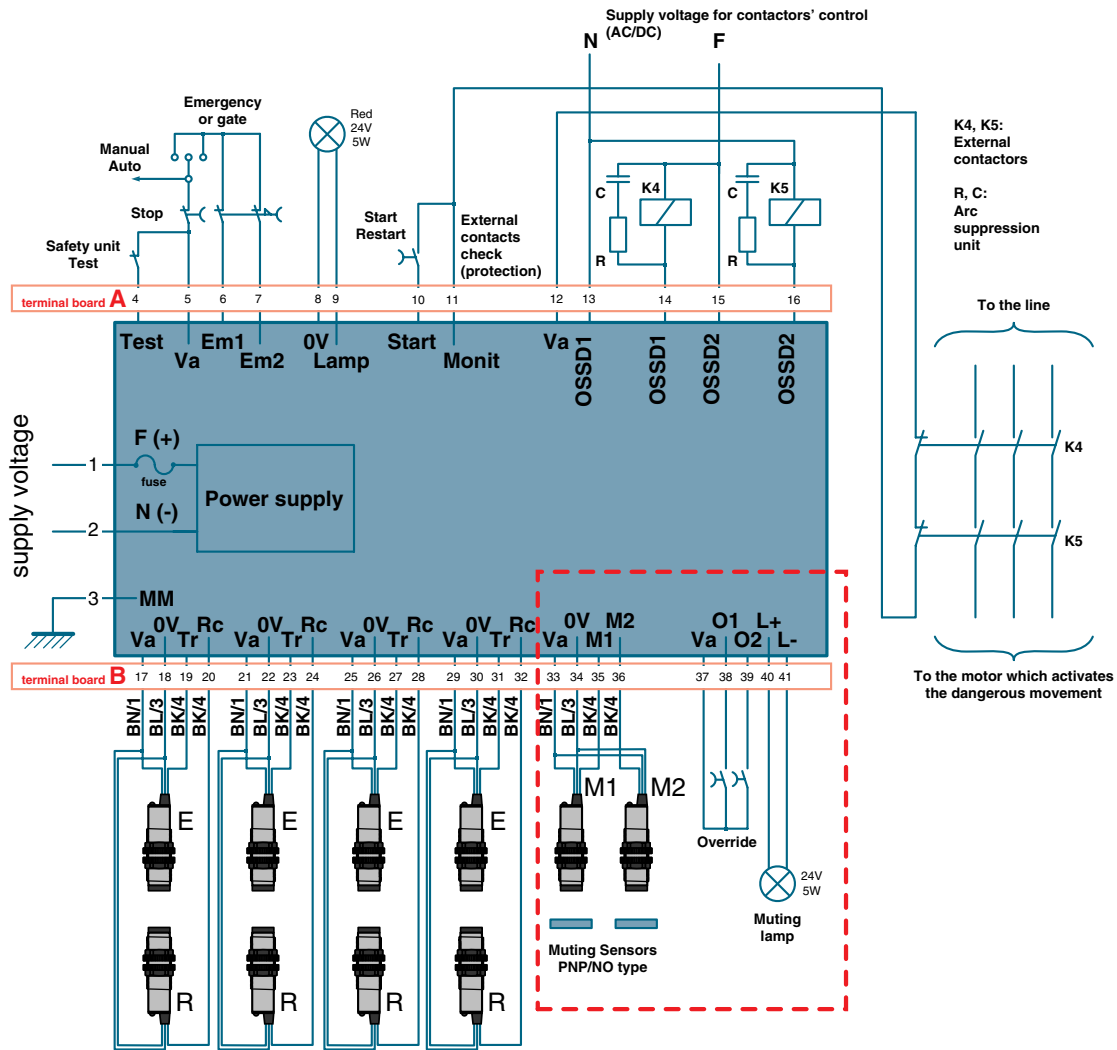
Specifications

Model	SBCR02-A-*0	SBCR02-D-*0	SBCR02-H-*0	SBCR02-Z-*0	SBCR02-S-*0	SBCR02-S-*M
Type	AC	AC	AC	AC	DC	DC
Operating voltage	24VAC	48VAC	115VAC	230VAC	24VDC	24VDC
Tolerance	+ 10% - 15%				±20%	±20%
Ripple	-				5Vpp	5Vpp
No-load supply current	10VA				350mA	550mA
Line frequency	50 - 60 Hz				-	-
Periodic test period	10ms					
Functions available	Automatic restart					
	Restart interlock					
	EDM (with switching monitoring time: 200ms)					
						Muting
						Override
Muting sensors time concurrence						3s (excl.)
Test for max. muting endurance						60s (excl.)
Muting sensors type						2xPNP, NO
Muting lamp output						5W, 24VDC
Safety output	2 forced contact relays: 2 contacts NO (gold) protected by a fuse					
Max. switching voltage	400VAC, 250VDC					
Max. switching current	4,2A (in use), 8A (switching)					
Contact isolation	250VAC					
Contact life	1x10 ⁵ (electric), 1x10 ⁷ (mechanical)					
Output status	static output 50mA: +24VDC = OFF; 0V = ON (not for safety)					
Response time	≤25ms					
Restart time	≥100ms					
Protection degree	IEC IP20 (to install inside an electrical panel with at least an IP54 protection degree)					
Operating temperature	0...+55°C					
Storage temperature	-25...+75°C					
Ambient humidity	15...95%					
Housing material	polycarbonate (PC)					
Weight (approx.)					900g	600g

The following sensors can be connected to the SBCR02 safety control unit:

SH serie: SH2 models	M18 through-beam	optical protection guard up to 10m
TH serie: TH2 model	M30 through-beam	optical protection guard up to 30m
TH serie: TH4 model	M30 through-beam	optical protection guard up to 60m
SBA serie: SBA*/2B models E,R,S,T	2 optics through-beams (500mm step)	optical protection guard up to 10m
SBA serie: SBA*/2E models E,R,S,T	2 optics through-beams (500mm step)	optical protection guard up to 60m
SBA serie: SBA*/3B models E,R	3 optics through-beams (400mm step)	optical protection guard up to 10m
SBA serie: SBA*/3E models E,R	3 optics through-beams (400mm step)	optical protection guard up to 60m
SBA serie: SBA*/4B models E,R,S,T	4 optics through-beams (300mm step)	optical protection guard up to 10m
SBA serie: SBA*/4E models S,T	4 optics through-beams (300mm step)	optical protection guard up to 60m
SBA serie: SBA*/4D models S,T	4 optics through-beams (300mm step)	optical protection guard up to 40m

Wiring diagrams



Example of wiring diagram for the SBCR02 safety system with Muting function

N.B. In the version without Muting function, terminal block B has 16 poles instead of 25, therefore pins from 33 to 41 are not present

Description

The SBCR02 safety system is a self-monitoring device, manufactured using both dynamic and double channel techniques. When the system is applied to the machine in accordance with the double channel technique, the necessity of carrying out a test when starting-up the machine as well as periodic controls is eliminated.

This system meets the requirements of the EN61496 standard for category 2 devices and is composed of a control unit, which must be housed in an electrical panel, and of a pair of optic-electronic sensors or an emitter-receiver column through-beam.

The control unit is available in various models which differ according to the presence or absence of the Muting function, the maximum number of applicable pairs of sensors and the different power voltages.

The connections are made on two removable terminal strips, one preset for the interface connections with the machine to be protected and the other preset for sensor connection. The basic SBCR02 control unit model has the following functions:

- Start/Restart interlock
- failure check for the Start/Restart button
- monitoring of the external contacts
- monitoring of the switching time
- emergency situations handling



These functions can be selected using the DIL switch housed in the unit control board which can be accessed by removing the terminals.

The SBCR02 control unit has two main forced contact relay outputs with NO contacts, each made up of a “safe” switching element.

Besides this, the SBCR02 control unit also has two terminals (Em1, Em2) which can be used to perform an emergency interlock of category 0 and safety category 2, to integrate the interfacing functions with the machine to be guarded.

This function allows a saving in costs by avoiding the use of additional devices for handling emergency situations.

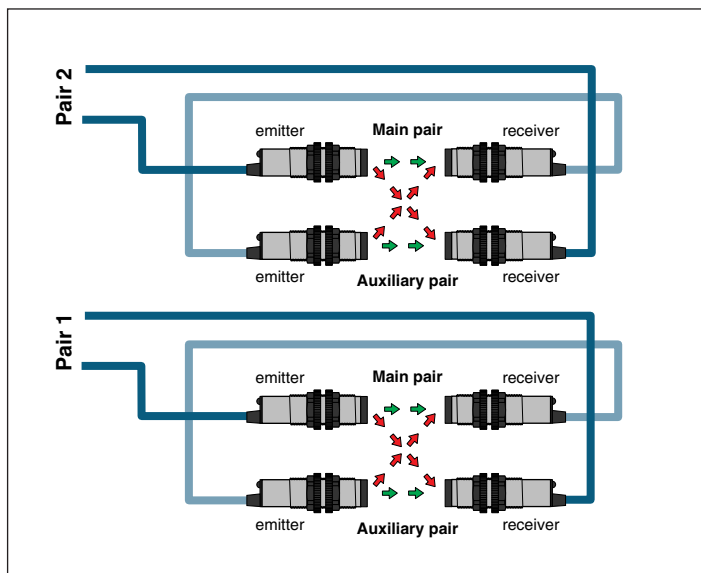
The control unit can be connected to up to four pairs of safety monitoring single-beam photocells of the SH or TH serie; it is possible, with only a few limitations, to double the maximum number of connectable sensors.

The control unit SBCR02 can be also connected to the SBA multiple through beam serie with 2, 3 or 4 optics.

It is possible to exclude a pair of sensors by connecting an optic exclusion module in its place, which simulates the function of the missing pair. This module has been designed to make it possible, when preparing machines for operation, to quickly adapt models on stock which are pre-set for a number of sensors greater than the number required for that specific application.

The single pair receiver is synchronised with the corresponding emitter, therefore the various pairs cannot influence each other. This increases the positioning options. It is possible to increase the number of sensor pairs up to 8, by connecting an auxiliary pair to each one, in serie.

In this case, it is necessary to pay attention to the positioning of the auxiliary pair in respect of the main one, in that they can cause optical interference with each other.



Muting function

The guard function can be automatically suspended using the control unit model SBCR02/...M’s Muting function, in order to allow “authorised” material to enter the dangerous area.

When this function is activated, the interruption of the optic path, caused by loading/unloading of work in process materials, does not interrupt the machine’s functioning.

The activation of the Muting function takes place through the use of at least two non-testable PNP, NO type sensors.

Besides the standard functions, this model has the following additional functions:

- check of the Muting sensors’ activation concurrence
- check of the maximum endurance of the Muting status
- override function

These functions can be selected through another DIL switch located on the control unit’s Muting board, which can be accessed by removing the terminals.

The Override function, activated only through a voluntary manual manoeuvre, controls the forced activation of the outputs, even if the optical path is engaged and the Muting function is not active.

This operative mode is useful for freeing the guarded area from material which cause it to interlock, so preventing the restart of conveyors.

Applications

The optical-electronic SBCR02 safety system can be specifically used as a safety component in the following application fields:

Perimeter protection

where protection is required on more than one side, without using mirrors, to protect the operator from voluntary or accidental intrusion into a danger area where there are fixed or mobile manufacturing machines.

Some examples can be:
 conveyor or assembly lines;
 robotized areas;
 wrapping machines;
 machines for the ceramic industry.

Access protection with Muting function

to protect accesses that the authorised material can cross without causing the normal machine operation to interlock.

Some examples could be:
 palletizers and unloaders
 automatic warehouses;
 packaging machines in general.