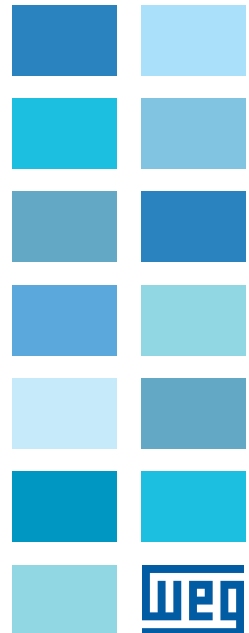


CP-D

Emergency Stop Control

User's Manual





User's Manual

Série: CP-D 301

Language: English

Document: 10010034430 / 00

Publication Date: 02/2023

Summary of Reviews



The information below describes the revisions made to this manual.

Version	Review	Description
-	R00	First edition

1 ABOUT THIS DOCUMENT	1-1
1.1 OBJECTIVE	1-1
1.2 AUTHORISED PERSONNEL	1-1
1.3 SYMBOLS USED IN THIS MANUAL	1-1
1.4 APPROPRIATE USE	1-1
1.5 EXCLUSION OF LIABILITY	1-1
2 DESCRIPTION	2-1
2.1 DESTINATION AND USE	2-1
2.2 TECHNICAL INFORMATION	2-1
2.3 SAFETY LEVELS	2-2
3 INSTALLATION AND CONNECTIONS	3-1
3.1 INSTALLATION INSTRUCTIONS	3-1
3.2 INPUTS	3-1
4 OPERATIONAL PRINCIPLE AND SETTINGS	4-1
4.1 TERMINALS DESCRIPTION	4-1
4.2 OPERATION MODE	4-1
4.3 LED FUNCTIONING	4-2
5 SETUP AND MAINTENANCE	5-1
5.1 FUNCTIONAL TESTING AND MAINTENANCE	5-1
5.2 AUTO-CHECK FUNCTIONS	5-1
6 DISMOUNTING AND DISPOSAL	6-1
6.1 DISASSEMBLY	6-1
6.2 DISPOSAL	6-1
7 APPENDIX	7-1
7.1 START CONFIGURATION	7-1
7.2 SENSOR CONFIGURATION	7-1
7.3 ACTUATOR CONFIGURATION	7-1
8 DECLARATION OF CONFORMITY	8-1
8.1 CE	8-1
8.2 UKCA	8-2

1 ABOUT THIS DOCUMENT

1.1 OBJECTIVE

This manual has every single information about the device and shall answer all questions involving it. Here is gathered all information about mounting, setups, connections and placement of the safety relay and its appendages. With safe operation in mind, this document ensures safety if read and followed in its fully.

1.2 AUTHORISED PERSONNEL

Only trained and qualified personnel are authorized to operate, handle and set the device onto its proper panel.

It is highly important to ensure the operator read and understood the content of this manual before handling with this device.

1.3 SYMBOLS USED IN THIS MANUAL

There will be used three identical symbols but with different writings to identify them from each other.



WARNING!

Imminent danger. It is the highest at the notification scale and requires the maximum regard.



CAUTION!

Normal danger. It means a medium threat, not as dangerous as a "warning" but bigger than a simple "attention".



ATTENTION!

Advisory notice. Used as a simple notification that requires a little more care.

1.4 APPROPRIATE USE

This device was developed for safety related usages as part of machinery, whether industrial. It is the responsibility of the manufacturer of the machinery to ensure the proper functionality of the safety device.

Be aware of using the device according to the application usage detailed on the next chapters.

1.5 EXCLUSION OF LIABILITY

The device's manufacturer excludes itself from the liability of bad handling or misuse which could result into dangerous event.

It is not allowed to have the device opened or even repaired by non authorized personnel.

2 DESCRIPTION

2.1 DESTINATION AND USE

The Emergency Stop Controls were developed to increase the safety level for the emergency stop system of the machine. These controls supervises the contacts of emergency buttons, sensors used in protective grids and other important devices that are vital for the system safety.

The device is meant to go into control cabinets, with its own proper safety level.

2.2 TECHNICAL INFORMATION

General Data	
Standards	IEC 60 204-1, ISO 13850, EN 60947-5-1
Star conditions	Start button only
Feedback circuit (Y/N)	Yes
Mechanical Data	
Connection type	Screw terminals
Cable section	2 mm ²
Connection cable	Rigid or flexible
Removable terminals (Y/N)	No
Lifespan	10 ⁷ operations
Ambient Conditions	
Ambient temperature	-10 °C to +55 °C
Storage and transport	-40 °C to +70 °C
Protection level	IP20
EMC rating	To EMC Directive
Electrical Data	
Power consumption	max. 2.5 W
Power supply	24 V dc/ac, ±10 %
Frequency range	50 Hz / 60 Hz
Tripping current protection	100 mA
Monitored Inputs	
Cross-wire detection (Y/N)	Yes
Wire breakage detection (Y/N)	Yes
NO contacts	3
NC contacts	1
Cable lengths	Varies. Refer for the conductor's maximum resistance
Conductor's resistance	max. 40 Ω
Output	
Number of safety contacts	3 normally opened contacts
Number of auxiliary contacts	1 normally closed contact
Contact capacity	4.5 A - 30 Vdc / 200 W - 250 Vac
Utilisation category to EN 60947-5-1	AC-15 / DC-13: EN 60947-5-1
Dimensions (H/W/L)	113.1 mm x 97 mm x 22.7 mm

2.3 SAFETY LEVELS

Standards	IEC 60 204-1, ISO 13850, EN 60947-5-1, EN ISO 13849-1, IEC 61508, EN 62061
PL Category	E
Control Category	4
PFH-Value	2,82 E-10 1/h
SIL	3
Service Life	20 years

2

3 INSTALLATION AND CONNECTIONS

3.1 INSTALLATION INSTRUCTIONS

The device must be set on a DIN rail by the bottom of the enclosure.

Connect the back of the enclosure onto the rail by its bottom and push it down until it clicks onto the rail.

The emergency stop buttons to be applied shall be able to carry the maximum output current of the installed voltage supply unit.

3.2 INPUTS

This device provides two inputs in dual channel system with anti-fraud protection.

One of the inputs provides actuation with positive signal and the other with negative signal (they cannot be interconnected).

The inputs must be switched on with normally closed contacts, as described in this manual.

These contacts may be emergency stop buttons, electronic buttons, sensors used in protective grids or any mechanical pulsating button with two NC contacts.

The reset's Y1 and Y2 inputs must be connected with a normally opened contact such as a push button or a reset button of any kind.

For a proper connection of the inputs, refer to the appendix of this manual and look for the figures 1 and 2 of that chapter.



ATTENTION!

It is mandatory to have the contacts properly connected in order to avoid misuses and even to guarantee contacts' and device's integrity.

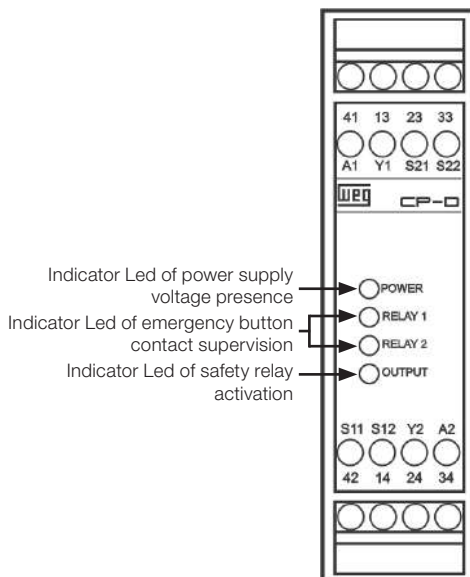
4 OPERATIONAL PRINCIPLE AND SETTINGS

4.1 TERMINALS DESCRIPTION

Voltages	A1 A2	+24 Vdc / 24 Vac 0 Vdc / 24 Vac
Inputs	S11-S12 S21-S22	Positive input channel 1 Negative input channel 2
Outputs	13-14 23-24 33-34 41-42	First safety enabling circuit 2 nd safety enabling circuit 3 rd safety enabling circuit Auxiliary NC circuit
Start	Y1-Y2	Automatic external reset

Alongside, the schematic of the frontal label, with led indicators and screw terminals.

To start using the manual should be pressed a button normally open between terminals Y1 and Y2.



4.2 OPERATION MODE

After connecting the inputs properly as described on the last chapter (see [Section 3.2 INPUTS on page 3-1](#), supply the device with rated voltage without deactuating any input (S11-S12/ S21-S22 closed) nor the reset button, the outputs remain in off state.

While in off state, even if the inputs S11/S12 and/or S21/S22 are deactuated the safety relay will remain off. For the activation of the circuit's outputs, the reset button must be actuated.

If one or both inputs, S11-S12 or S21-S22, are deactuated, the outputs switch to the off state immediately.

For a new cycle (new drive), both inputs must be deactuated, to deactivate the outputs, and then actuated back again. Afterwards, the reset button must be actuated.

4.3 LED FUNCTIONING

Power	Power Supply Voltage
S1	Channel 1 signalling
S2	Channel 2 signalling
Out	Output contact's activation

5 SETUP AND MAINTENANCE

5.1 FUNCTIONAL TESTING AND MAINTENANCE

The device should be tested before full operation.

For that, the correct fixing should be assured as so the cable and connections integrity and the electrical function of the device should be checked.

Regular inspections should be performed to check the integrity of all parts described above.



ATTENTION!

The device has to be integrated into the periodic check-ups according to the Ordinance on Industrial Safety and Health, however at least 1x/year.

5.2 AUTO-CHECK FUNCTIONS

Inputs can be actuated individually in a double channel without the necessity for simultaneity. However when you press the manual start button, the two inputs should necessarily be deactivated for the activation of the system's outputs.

This device adopts positive polarity to activate inputs S1 and negative polarity to activate input S2.



ATTENTION!

Therefore, they cannot be interconnected (changed to single channel input) or the functionality of the device will be corrupted.

The circuit shall not activate the outputs in case it is powered on with inputs actuated, thus preventing unintentional activation.

6 DISMOUNTING AND DISPOSAL

6.1 DISASSEMBLY

This device should only be disassembled after its de-energizing.

Pull the metallic latch, below the enclosure, towards you (using preferentially a screw driver) and pull the device up.

6.2 DISPOSAL

As this device should be handled and carried with care, it should be disposed likewise.

It should be disposed in accordance under national prescriptions and legislations.

7 APPENDIX

7.1 START CONFIGURATION

The device needs an external normally opened reset button to activate the outputs. This reset button may be from a simple push button to a NO contact or any other one. The only mandatory feature it should bare, it's a normally opened input. (i.e. [Figure 7.1 on page 7-1](#)).

7.2 SENSOR CONFIGURATION

An example of configuration is described below ([Figure 7.2 on page 7-2](#)):

Dual channel emergency stop circuit with command devices to DIN EN ISO 13850 and EN 60947-5-5.

Within, the device recognizes/detects wire breakages and earth leakages in the control circuits. It also detects cross-wire shorts between the control circuits.

7.3 ACTUATOR CONFIGURATION

As the device has two magnetic safety switches, it is made available a two-channel control according to EN 60947-5-3.

Because of this configuration, at least one contact with positive break should be necessary to interrupt and deactivate de outputs' system.

This control system recognizes wire breakage and earth faults in the central circuit.

Likewise, the cross-wire short circuits between the control circuits are detected.

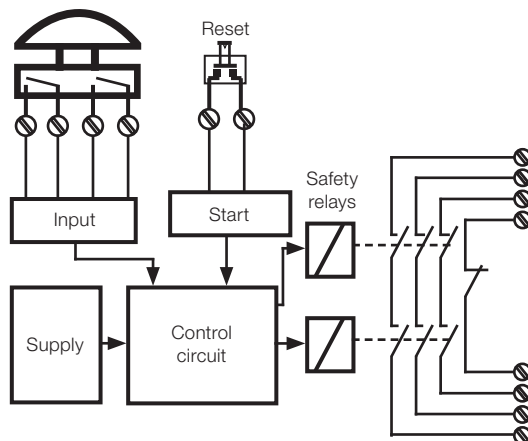


Figure 7.1: Internal blocks' diagram

Note:

Utilization of feedback
function

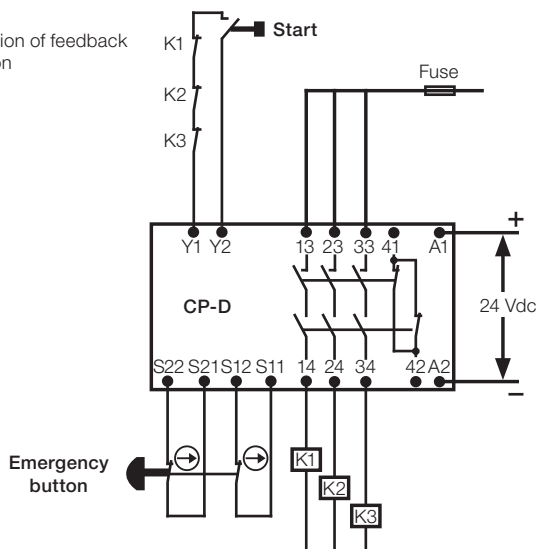


Figure 7.2: Example of configuration

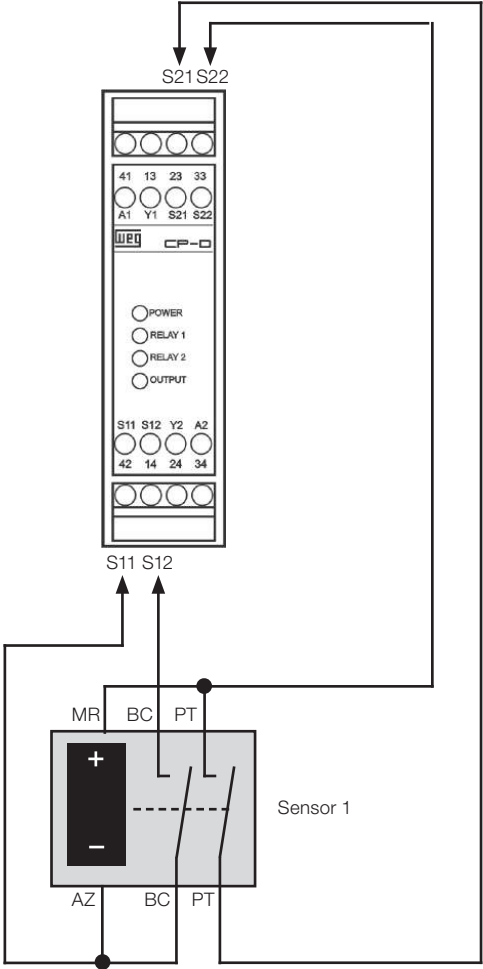


Figure 7.3: Gate sensor

8 DECLARATION OF CONFORMITY

8.1 CE



EU Declaration of Conformity

We, **WEG Drives & Controls - Automação Ltda**
(manufacturer)
Av. Prefeito Waldemar Grubba, 3000
89256-900 - Jaraguá do Sul - SC - Brazil
www.weg.net
declare that the products:

WEG GERMANY GMBH
(Authorized Representative in the Europe Union)
Industriegebiet Tümmich 3, Geigerstraße 7, 50169
Kerpen Tümmich - North Rhine-Westphalia - Germany
Contact person: Wilmar Henning

Type: **Safety relay module for emergency stop applications**
Models: **CP-D**
Accessories: **-**

when installed, maintained and used on the applications they were designed for, and in compliance with the relevant installation standards and manufacturer's instructions, comply with the relevant European Union harmonisation legislation where applicable:

Directives:

2006/42/EC Machinery Directive
2011/65/EU + 2015/863/EU RoHS Directive

Standards:

EN ISO 13849-1: 2015
EN 62061:2005 + AC:2010 + A1:2013+A2:2015
IEC 60947-5-1: 2003 +A1:2009
IEC 61508 parts 1-7: 2010
IEC 60204-1:2016
EN IEC 63000:2018

Notified body: TÜV Rheinland Industrie Service GmbH, Am Grauen Stein, 51105 Köln / Germany - Notified body #: NB 0035

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Signed for and on behalf of WEG Drives & Controls - Automação Ltda


Guilherme Bonan
Critical Power Development
Department Manager


Remy Costa
Certification and Laboratory Department
Manager

Jaraguá do Sul, May, 25th 2021

8.2 UKCA

UK Declaration of Conformity



We, **WEG Drives & Controls - Automação Ltda**
(manufacturer)
Av. Prefeito Waldemar Grubba, 3000
89256-900 - Jaraguá do Sul - SC - Brazil
www.weg.net

WEG (UK) Ltd
(Authorized Representative in the UK)
Broad Ground Road, Lakeside, Redditch, Worcestershire
B98 8YP
Contact person: Patrick O'Neil

declare that the products:

Type: **Safety relay module for emergency stop application**
Models: **CP-D**

Accessories: -

when installed, maintained and used on the applications they were designed for, and in compliance with the relevant installation standards and manufacturer's instructions, comply with the relevant UK Statutory Instruments and their amendments where applicable:

Regulations:

N° 3032 The Restriction of the Use of Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
N° 1597 The supply of Machinery (Safety) regulations 2008

Standards:

EN ISO 13849-1:2015
BS EN 62061:2005 + AC:2010 + A1:2013+A2:2015
IEC 60947-5-1:2003 + A1:2009
IEC 60204-1:2016
IEC 61508 parts 1-7:2010
EN IEC 63000:2018

UK Approved body: TÜV Rheinland UK Ltd., Friars Gate (Third floor), 1011 Stratford Road, Shirley, Solihull B90 4BN, UK. Approved Body No.: 2571
This declaration of conformity is issued under the sole responsibility of the manufacturer.

Signed for and on behalf of WEG Drives & Controls - Automação Ltda


Guilherme Borlan
Critical Power Development
Department Manager


Ronny Costa
Certification and Laboratory
Department Manager

Jaraguá do Sul, August, 23th, 2022

Manufacturer:

WEG Equipamentos Elétricos S.A.
Av. Prefeito Waldemar Grubba, 3000
89256-900 - Jaraguá do Sul - SC - Brazil
www.weg.net