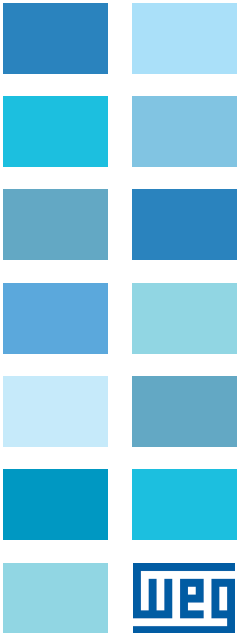


# CPA-D

## Automatic Emergency Stop Control

### User's Manual







# **User's Manual**

Série: CPA-D

Language: English

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## Summary of Reviews



The information below describes the revisions made to this manual.

Version	Review	Description
-	R00	First edition

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# 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.

	<p><b>WARNING!</b> Imminent danger. It is the highest at the notification scale and requires the maximum regard.</p>
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	<p><b>CAUTION!</b> Normal danger. It means a medium threat, not as dangerous as a "warning" but bigger than a simple "attention".</p>
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	<p><b>ATTENTION!</b> Advisory notice. Used as a simple notification that requires a little more care.</p>
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## 1.4 APPROPRIATE USE

This device was developed for safety related usages as part of machinery, whether industrial or not. 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 Automatic 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 protection 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 <sup>2</sup>
Connection cable	Rigid or flexible
Removable terminals (Y/N)	No
Lifespan	107 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
Utilization 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

<b>Standards</b>	IEC 60 204-1, ISO 13850, EN 60947-5-1, EN ISO 13849-1, IEC 61508, EN 62061
<b>PL Category</b>	E
<b>Control Category</b>	4
<b>PFH-Value</b>	2.90 E-10 1/h
<b>SIL</b>	3
<b>Service Life</b>	20 years



## 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 such as emergency buttons, safety switches, gate sensors (i.e. [Figure 7.3 on page 7-2](#)), as described in this manual.

These contacts may be the emergency buttons with positive rupture, or grid sensors, or any other system that requires monitoring of switches or buttons.

**ATTENTION!**

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

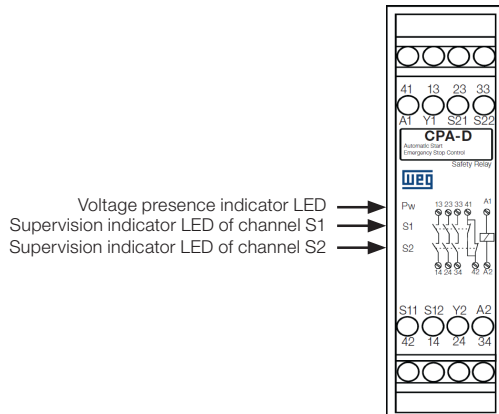
## 4 OPERATIONAL PRINCIPLE AND SETTINGS

### 4.1 TERMINALS DESCRIPTION

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

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

To use the automatic start, you must connect terminals Y1 and Y2.



### 4.2 OPERATION MODE

After connecting the inputs as described on [Section 3.2 INPUTS on page 3-1](#), supply the device with nominal voltage. Thus, and with the inputs not being actuated (S11-S12/S21-S22 inputs opened) the outputs remain off.

When the inputs (S11-S12/S21-S22) are actuated, and the automatic reset input (Y1-Y2) are connected, the outputs are activated promptly.

If one of the inputs or both are deactuated (S11-S12/S21-S22 inputs opened), all the outputs will be shut off (contacts returning to a halt state) immediately.

For a new activation, both the inputs should be deactuated (S11-S12/S21-S22 inputs opened) and again actuated (S11-S12/S21-S22 inputs closed).



#### ATTENTION!

According to EN 60204-1 automatic restart is not allowed after an emergency stop. For this reason the machine control must prevent an automatic start after emergency stop.

### 4.3 LED FUNCTIONING

Power	Power Supply Voltage
S1	Channel 1 signalling
S2	Channel 2 signalling

## 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, 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.

## **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 interconnection between the reset's inputs (Y1 and Y2) to activate the outputs. This reset button may be from a simple pushup button to a NO contact. The device cannot be used in applications which demand a manual reset.

### 7.2 SENSOR CONFIGURATION

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

Dual channel automatic 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.

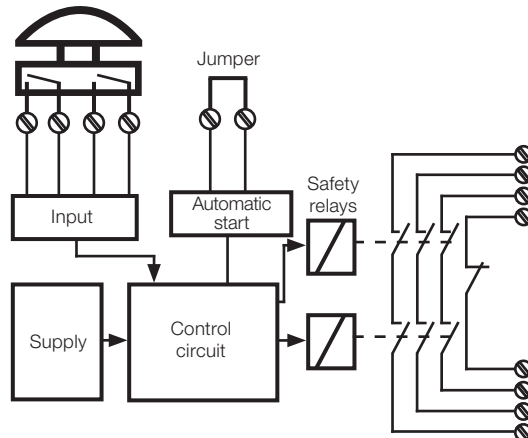


Figure 7.1: Internal block's diagram

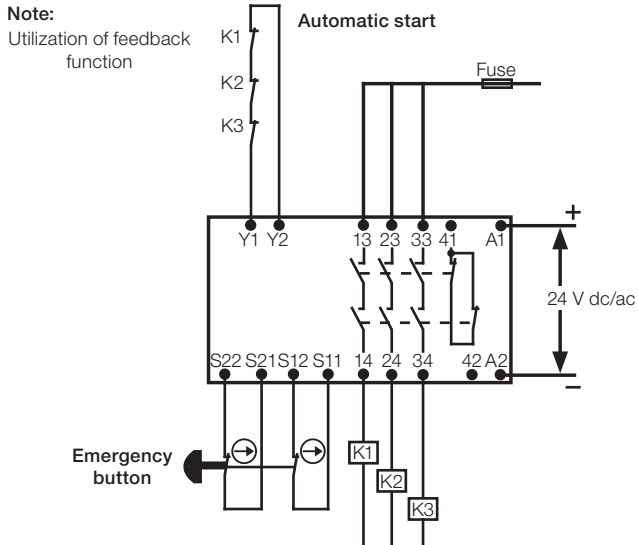


Figure 7.2: Example of configuration

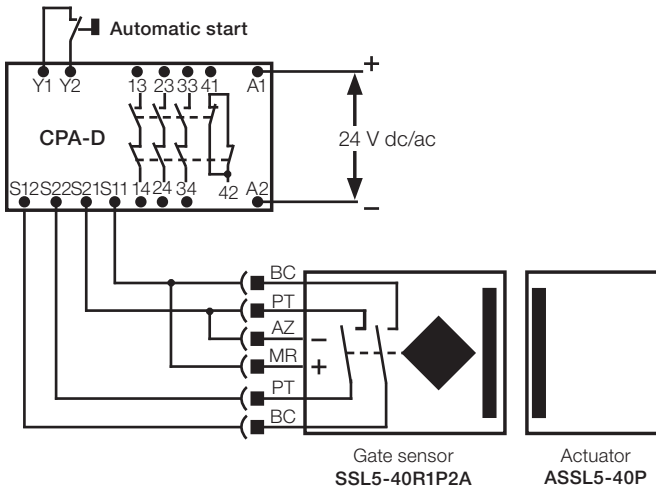


Figure 7.3: Gate sensor

# 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

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

declare that the products:

Type: **Safety relay module for emergency stop application**

Models: **CPA-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**  
 Escolher um item. Escolher um item.


Standards:


**EN ISO 13849-1: 2015**  
**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**

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

  
 Ronny Costa  
 Certification and Laboratory Department  
 Manager

Jaraguá do Sul, May, 25<sup>th</sup>, 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](http://www.weg.net)

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

declare that the products:

Type: **Safety relay module for emergency stop**

application

Models: **CPA-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 Bonan  
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Department Manager

Ronny Costa  
Certification and Laboratory  
Department Manager

Jaraguá do Sul, August, 23<sup>rd</sup>, 2022