

# SIGNALLING UNIT SACE PR010/K



				Title titolo	<b>Manuale d'uso</b>	Lang. Lingua IT
Rev.	L0633			Apparatus	<b>SACE PR010/K</b>	Scale
Mod.				Apparecchio		Scala
<b>ABB</b>		<b>ABB SACE</b>		Doc. No. N° Doc	<b>RH0043.002</b>	Sh. No N° Pag.. 1/20

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# 1. General

## 1.1. Introduction

Carefully read the whole of this document before installation and start-up of the PR010/K unit.

The PR010/K unit, connected to the protection units from the Isomax series (PR212/P or PR212/MP) and Emax (PR112 or PR113), allows the signalling of various events which can be verified during normal operation of the connected protection unit.

In the case of these events, the PR010/K unit operates the internal relays fitted with powered contacts (par.2.5).

The PR010/K unit also features (only in combination with the protection relays fitted to the Emax series) the ‘Load control’ function. For further information on the functioning of the ‘Load control’ function, as well as the settings necessary to use this protection, consult the users manual for the protection relays (PR112 e PR113).

For the correct use and operation of protection units interfaced with the PR010/K unit, the following documents must be consulted;

- Sheet kit protection unit PR212/P (doc. n° RH0062)
- Sheet kit protection unit PR212/MP (doc. n° RH0063)
- Instruction manual protection unit PR112/P (doc. n° RH0288 for version IEC or RH0109 per version UL)
- Instruction manual protection unit PR113/P (doc. n° RH0288 for version IEC or RH0109 for version UL)
- ABB SACE Isomax technical catalogue
- ABB SACE Emax technical catalogue

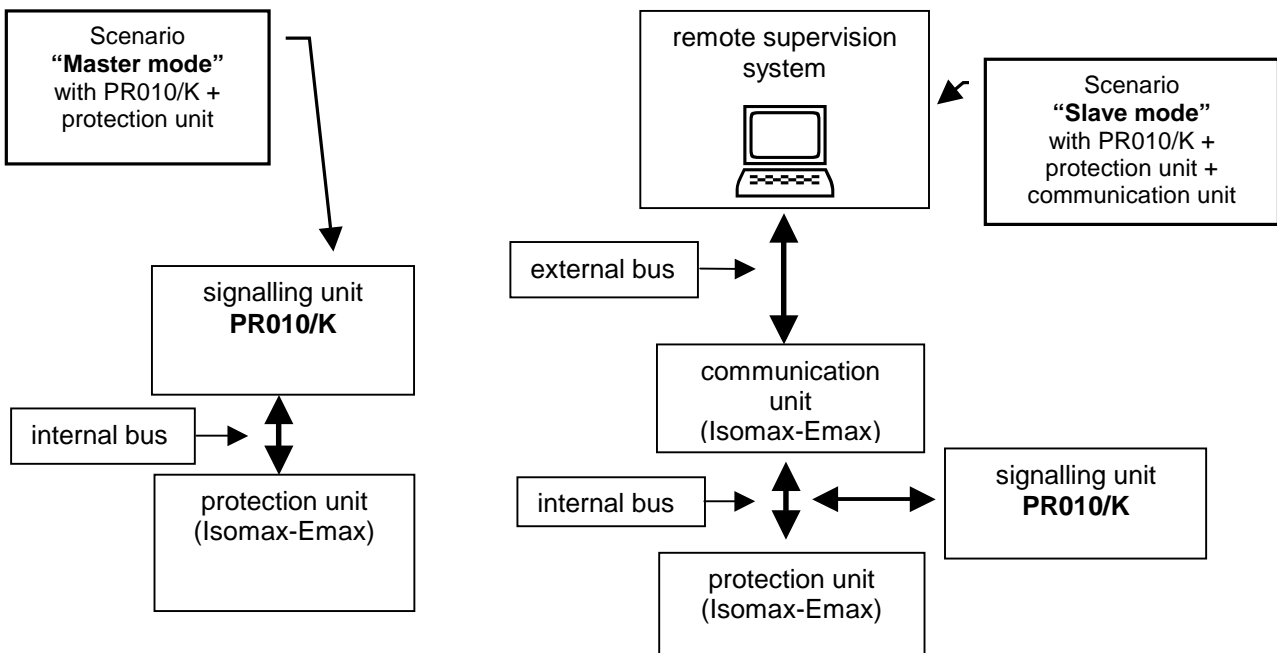
## 1.2. Applicable scenarios

The following diagram shows the applicable scenarios and the relationship between:

- Protection unit (Isomax series or Emax)\*\*
- PR010/K unit
- Communication unit (Isomax series or Emax)\*\*

Note: \*\* for Emax series, the protection unit contains an internal communication unit (when required).

Connections between various units, depending on the scenario (Master or Slave mode are shown as indications only, the specific cabling must be carried out according to official ABB SACE documentation).



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## 2. Technical characteristics

### 2.1. Electrical characteristics

Effective operation:

Maximum of 6s after power on.

MTBF (MIL-HDBK-217E) expected:

15 years at 45°C

#### 2.1.1. Auxiliary supply

Characteristics	PR010/K unit
Supply voltage	24 Vdc±20%
Maximum ripple	± 5%
Nominal Power	4,5 W @ 24 Vdc

As the Vaux must be isolated from earth, it is necessary to use 'galvanically separate converters' conforming to IEC 60950 (UL1950) or equivalent [which guarantee a common mode current or leakage current (see IEC 478/1, CEI 22/3) not greater than 3,5mA], IEC 60364-41 and CEI 64-8.

### 2.2. Mechanical characteristics

Casing :

Metallic (1mm sheet)

Degree of protection :

IP20

Dimensions :

100 x 45 x 120 mm (h x w x d)

Weight :

500 gr. (including 2 front connectors)

### 2.3. Environmental conditions

Operating environmental temperature:

-5 °C ... +70 °C

Storage conditions:

-40 °C ... +90 °C

### 2.4. Communication Bus

Exclusive ABB SACE communication bus (internal bus)

### 2.5. Internal relay characteristics

Type

Monostable

Maximum switching capacity

150 W / 1250 VA (resistive load)

Maximum switching voltage

130 Vdc / 250 Vac

Maximum switching current

5 A

Breaking power (UL/CSA) @ 48 Vdc (resistive load)

0.9 A

Breaking power (UL/CSA) @ 230 Vac (resistive load)

5 A

Contact/contact insulation

1000 V efficient (1 min.)

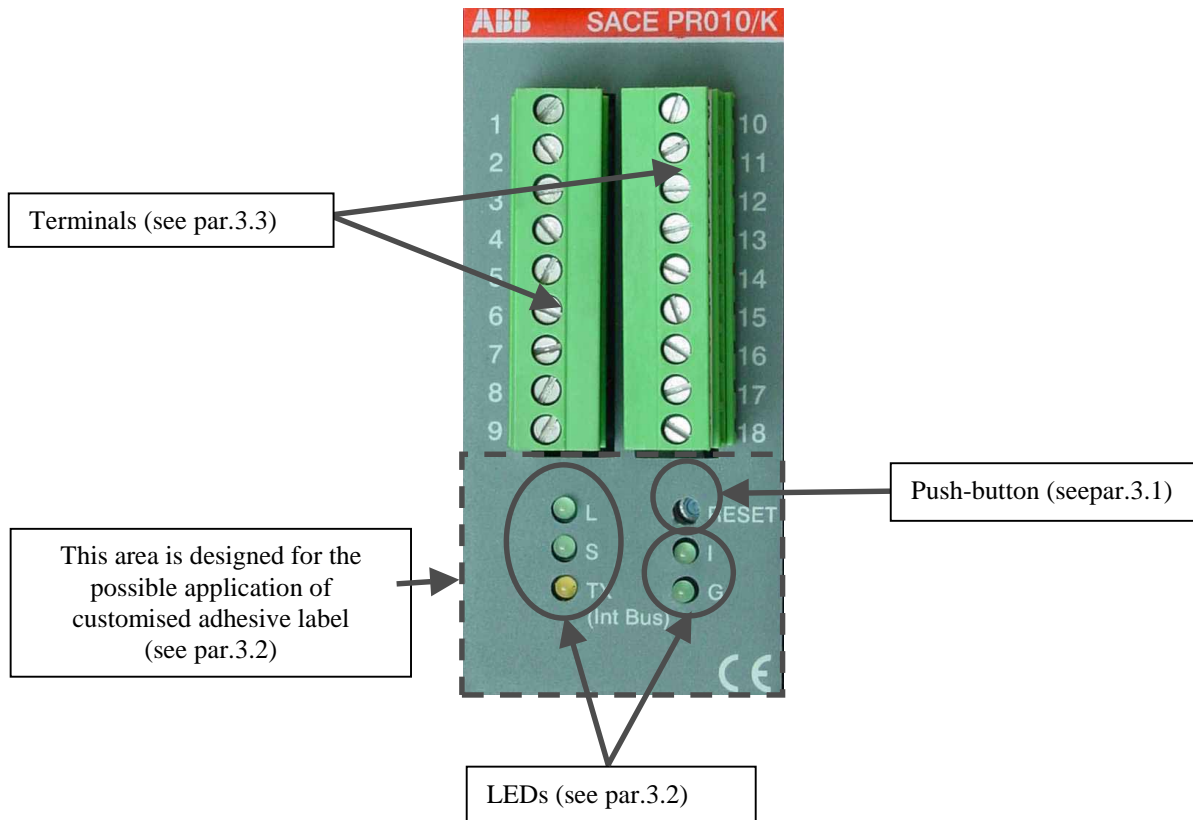
Contact/coil insulation

2000 V efficient (1 min.)

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### 3. User interface

The front of the unit consists of one push-button, five LEDs, and two terminal blocks.



#### 3.1. Use of push-button

- **Reset:**  
Press to carry out reset of PR010/K hardware.

#### 3.2. Optical signalling

LED state	Functioning conditions of PR010/K				
	LED L (green)	LED S (green)	LED I (green)	LED G (green)	LED Tx (Int Bus) (yellow)
Off	Contact K51/1 open	Contact K51/2 open	Contact K51/3 open	Contact K51/4 open	anomalous situation
On	Contact K51/1 closed	Contact K51/2 closed	Contact K51/3 closed	Contact K51/4 closed	anomalous situation
Flashing	--	--	--	--	Fast flashing → OK with freq. = 2Hz → see ***

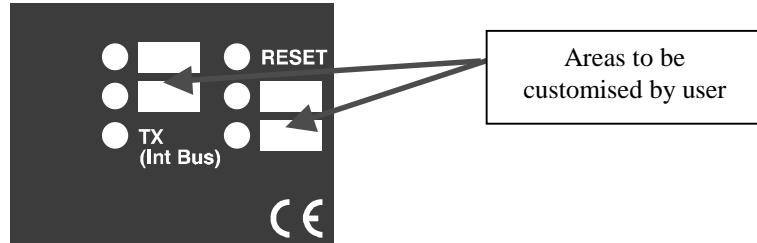
\*\*\* Flashing at 2Hz one of the following can be verified:

- Communication not present
- SACE PR010/K in stand-by mode or Self-test
- Connected protection unit not recognised

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- Any LED state which does not conform with the above probably indicates a malfunction of the SACE PR010/K unit.
- The indications given in the above table are with Vaux present, and with the PR010/K **not** in Self-test, and **not** in stand-by mode (see par.5.3).
- For further details of possible malfunction conditions see para.6.

In the case of the LEDs being designated a significance other than L, S, I and G (standard configuration) it is possible to use a customised adhesive label (RE0314/001) supplied with the PR010/K unit.



### 3.3. Terminal block

Connections 1...18 inputs and outputs of PR010/K unit (see par.5.2)

## 4. Special functions

### 4.1. Reset

It is possible to carry out a reset of the PR010/K unit, by pressing the 'reset' push-button situated on the front panel of the unit (see par. 3.1).

This type of reset restarts the Sw of the PR010/K unit (the data memorised in the RAM is conserved).

### 4.2. Reset signalling

"Reset signalling" causes the repositioning of the internal relays (K51) to rest conditions (contacts open) following switching (contacts closed) for protection function (trip).

This reset can be carried out:

- carrying out a reset (see par.4.1), if the applicable scenario is "PR010/K in Master mode" (see par.1.2).
- sending a "Trip Reset" command from the remote supervision system.
- pressing the RESET push-button on the front of the unit, if the applicable scenario is "PR010/K in Slave mode" (see par.1.2) and only for Emax series protection units.

### 4.3. Self-test function

To carry out the self-test, dip-switch n°1 must be set to ON (see par. 5.3.1) and the reset button pressed.

The self-test switches, in succession, all 8 internal relays, carrying out a functional test on each.

The Tx LED lights with each switching. When the switching is completed the LED flashes at a frequency of 2 Hz.

The self-test takes approx. 10 s, after which the SACE PR010/K unit automatically returns to normal operation.

### 4.4. Stand-by function

To select Stand-by mode, dip-switch n°8 must be set to 'ON' (see par.5.3.1) and the reset button pressed; in this mode the internal relays will not be switched.

This function is useful when the protection unit is being tested (for example with PR010/T unit) and the switching of the relays of the PR010/K unit is not desired.

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## 5. Putting into service

### 5.1. Installation instructions

Mount on standard 35 mm guide (DIN EN50022 type TS 35 x 15mm).

For the removable front terminals use cable with conductor sectional area between 0.5 e 2.5 mm<sup>2</sup> (AWG 22 ... 12). The maximum current for each terminal is 5 A continuous and 10 A for 2 a maximum of 2 seconds.

The earth connection of the metal casing is carried out using a cable with conductor sectional area of 4 mm<sup>2</sup>, fitted with an eye-terminal, connected to the M4 bolt fitted to the rear of the casing.

An earth terminal is provided on a front terminal, to connect the electronic circuit to the installation earth. This terminal must not be connected to the case earth bolt.

Dielectrical rigidity tests must not be carried out on the inputs and outputs of the PR010/K unit.

Even if the unit can be installed with the circuit breakers, it is good practise to install the unit with other instruments in the electrical cabinet.

### 5.2. Connections

Carefully study the relevant electrical diagram for the wiring of the connectors.

For the dedicated inputs and outputs, wiring other than that described in the official ABB SACE electrical diagrams is not allowed

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### 5.3. Dip-switch settings

After correctly wiring all of the frontal connections and the rear earth connection, it is necessary to set the dip-switches which are positioned on the top of the PR010/K unit.

The criteria for the wiring of the frontal connections and for the dip-switch settings depend upon the type of protection unit connected to the PR010/K unit; the following paragraphs detail the possible configurations.

N.B.: dip-switch reading is carried out at “power on” or after a hardware reset (pressing front "Reset" button) and is active after the start-up phase.

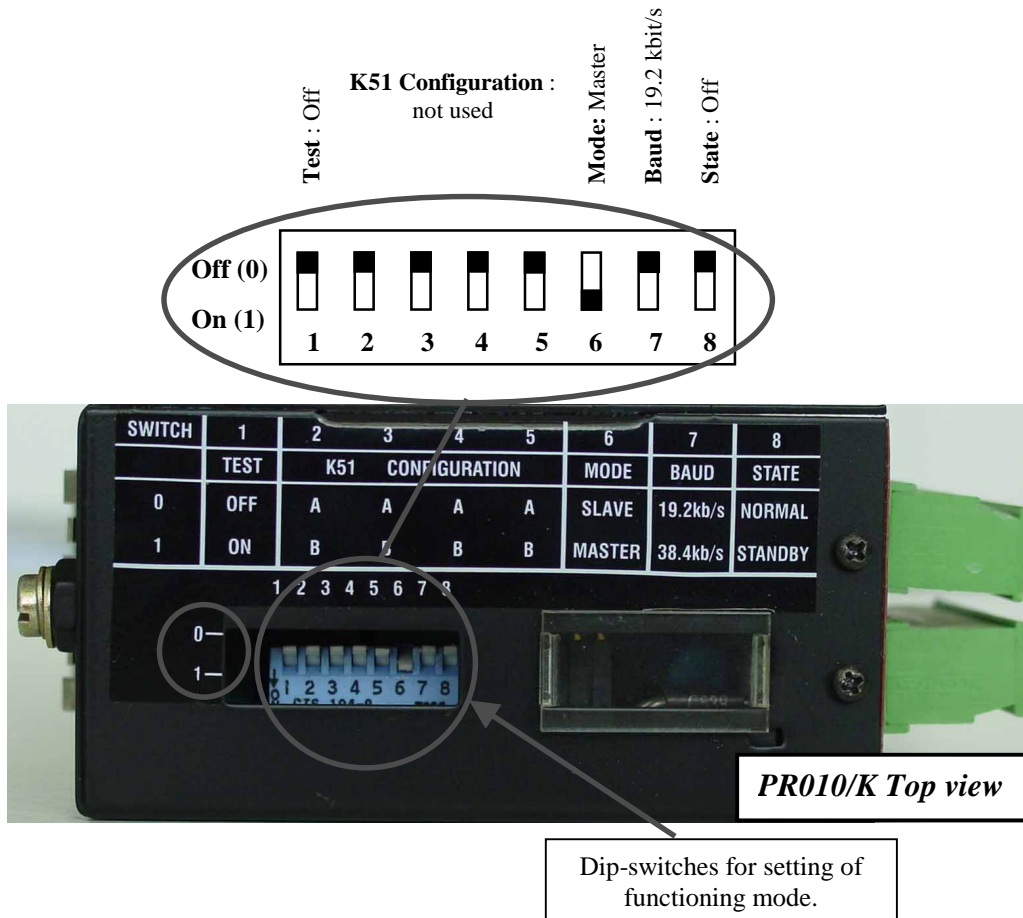
Dip-Sw n°	dip-switch description	Settable values	Note
1	Test	0 = Self-test deactivated 1 = Self-test activated	The “Self-test” function switches all 8 internal relays in succession, carrying out a functional test. The Tx LED lights in combination with the switching, once the test has been carried out, the LED flashes at a frequency of 2Hz. For the normal functioning mode, this dip-switch must be set to OFF.
2	K51 Configuration	0 = Matching signalling of event A 1 = Matching signalling of event B	Depending upon the type of protection unit connected to the PR010/K unit, the event associated with the switching of some contacts (K51), can be selected from two alternatives (A or B). N.B. For some protection units an alternative which can be selected using the dip-switches is not provided, in this case the event associated with each contact is unique (defined by ABB SACE), and is independent of the position of the dip-switch (0 or 1).
3			
4			
5			
6	Mode	0 = Slave, 1 = Master.	Setting in Master mode is necessary when the PR010/K unit is combined with a protection unit without a communication unit (see “scenario PR010/K in Master mode” par.1.2). Setting in Slave mode is necessary when the PR010/K unit is connected to a protection unit and a communication unit (see “scenario PR010/K in Slave mode” par.1.2).
7	Baud	0 = 19.2 kbit/s, 1 = 38.4 kbit/s.	The setting of the transmission speed must be equal to that of the connected protection unit (see par.5.4.1, 5.5.1, 5.6.1...).
8	State	0 = Normal, 1 = Stand-by.	The Stand-by mode ensures that the K51 contacts do not switch under any circumstances, even if the conditions which would normally cause switching exist. Normal functioning mode ensures that the K51 contacts switch when the conditions which normally cause switching exist (normal functioning) If set to 1 (Stand-by), the unit is not able to carry out a self-test! For normal functioning, this dip-switch must be set to Off.

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### 5.3.1. Example of dip-switch setting

Example of dip-switch setting for the connection of PR010/K with protection unit PR112/P with last letter of serial number from A to F (see par.5.4).



### 5.3.2. Default settings

The PR010/K unit is supplied by ABB SACE with the following parameters pre-set:

Dip-Sw n°	Description of dip-switch	Value set
1	Test	Off (Deactivated)
2	K51 Configuration	Dip-switch set in position A (Off)
3		
4		
5		
6	Mode	Slave
7	Baud	19.2 kbit/s
8	State	Normal

### 5.3.3. Serial Number

The Serial Number label is positioned on the left side, at the top.

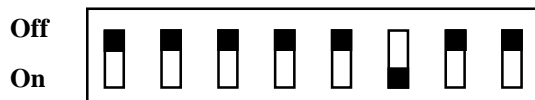
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## 5.4. SACE PR010/K with SACE PR112 unit (with last letter of serial number A...E)

### 5.4.1. Dip-switch settings

N° Dip-Sw	Description of dip-switch	0 (Off)	1 (On)	Note
1	Test	Normal	Self-test	For normal functioning mode, set this dip-switch to OFF.
2	K51 Configuration	-	-	Not used
3				
4				
5				
6	Mode	Slave	Master	Master if PR112/P + PR010/K. Slave if PR112/PD + PR010/K.
7	Baud Rate	19.2 kbit/s	38.4 kbit/s	Set 19.2 kbit/s
8	State	Normal	Stand-by	For normal functioning mode, set this dip-switch to OFF

Example of dip-switch settings for connection of PR010/K unit with SACE PR112/P protection unit.



Dip-switch n°    1    2    3    4    5    6    7    8

### 5.4.2. Signalling

The significance of signals (K51/1...K51/8) for protection unit SACE PR112 is as follows:

Contact	N° Pin on unit PR010/K	Event which causes closing of relay
K51/1	5	Alarm protection L (overload)
K51/2	6	Alarm protection S (selective short circuit)
K51/3	7	Alarm protection I (instantaneous short circuit)
K51/4	8	Alarm protection G (ground fault)
K51/5	9	Internal Bus communication problem (bus KO)
K51/6	10	Internal overheat alarm (T=85°C)
K51/7	12	CB trip alarm –TRIP–
K51/8	17	Pre-alarm function L (overload)

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## 5.5. SACE PR010/K with SACE PR112 unit (with last letter of serial number F...Z)

### 5.5.1. Dip-switch settings

N° Dip-Sw	Description of dip-switch	0 (Off)		1 (On)		Note
1	Test	Normal		Self-test		For normal functioning mode, set this dip-switch to OFF.
2	K51/4 Configuration	A	Alarm protection G	B	Pre-alarm function L	Functions (A or B) assigned to contact relay, to be selected with corresponding dip-switch
3	K51/5 Configuration	A	Bus KO	B	Internal overheat	
4	-	-		-		Not used
5						
6	Mode	Slave		Master		Master if PR112/P + PR010/K. Slave if PR112/PD + PR010/K.
7	Baud Rate	19.2 kbit/s		38.4 kbit/s		Set 19.2 kbit/s
8	State	Normal		Stand-by		For normal functioning mode, set this dip-switch to OFF.

Example of dip-switch settings for connection of PR010/K unit with SACE PR112/P protection unit.



### 5.5.2. Signalling

The significance of signals (K51/1...K51/8) for protection unit SACE PR112 is as follows:

Contact	N° Pin on unit PR010/K	Event which causes closing of relay	
K51/1	5	Alarm protection L (overload)	
K51/2	6	Alarm protection S (selective short circuit)	
K51/3	7	Alarm protection I (instantaneous short circuit)	
K51/4 *	8	A	Alarm protection G (ground fault)
		B	Pre-alarm function L (overload)
K51/5 *	9	A	Internal Bus communication problem (bus KO)
		B	Internal overheat alarm (T=85°C)
K51/6	10	Load check LC1	
K51/7	12	CB trip alarm –TRIP–	
K51/8	17	Load check LC2	

“\*” The reason for the closing of these contacts (K51/4 e K51/5) depends upon the configuration, set via the dip-switch (event A or event B), of the PR010/K unit (see par.5.3).

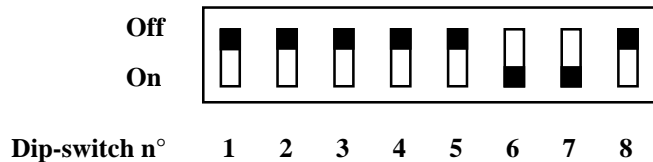
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## 5.6. SACE PR010/K with SACE PR113 unit

### 5.6.1. Dip-switch settings

N° Dip-Sw	Description of dip-switch	0 (Off)		1 (On)		Note
1	Test	Normal		Self-test		For normal functioning mode, set this dip-switch to OFF.
2	K51/1 Configuration	A	Alarm protection L	B	Pre-alarm function L	<b>if dip-switch N°5 = Off</b> Note “\$\$\$”: Functions (A or B) assigned to relay contact, to be selected with corresponding dip-switch
3	K51/4 Configuration	A	Alarm protection G	B	Under voltage coil activated	
4	K51/5 Configuration	A	Bus KO	B	Internal overheat	
5	K51/1...K51/8 Configuration	(See note “\$\$\$”)		Bus KO (See note “***”)		<b>if dip-switch N°5 = On</b> Note “***”: The functions assigned to contacts (K51/1...K51/4 e K51/6...K51/8) are those directly defined by the user on PR113 while contact K51/5 is associated with the signalling of “bus KO”
6	Mode	Slave		Master		Master if PR113/P + PR010/K. Slave if PR113/PD + PR010/K.
7	Baud Rate	19.2 kit/s		38.4 kbit/s		Set 38.4 kbit/s
8	State	Normal		Stand-by		For normal functioning mode, set this dip-switch to OFF.

Example of dip-switch settings for connection of PR010/K unit with SACE PR113/P protection unit.



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## 5.6.2. Signalling

The significance of signals (K51/1...K51/8) for the SACE PR113 protection unit is as follows:

Contact	N° Pin on unit PR010/K	Event which causes closing of relay	
K51/1*	5	A	Alarm protection L (overload)
		B	Pre-alarm function L (overload)
		§§	Configured by user on PR113 unit
K51/2	6	Alarm protection S (selective short circuit)	
		§§	Configured by user on PR113 unit
K51/3	7	Alarm protection I (instantaneous short circuit)	
		§§	Configured by user on PR113 unit
K51/4*	8	A	Alarm protection G (ground fault)
		B	Under voltage coil activated
		§§	Configured by user on PR113 unit
K51/5*	9	A	Internal Bus communication problem (bus KO)
		B	Internal overheat alarm (T=85°C)
		§§	Internal Bus communication problem (bus KO)
K51/6	10	Load check LC1	
		§§	Configured by user on PR113 unit
K51/7	12	CB trip alarm –TRIP–	
		§§	Configured by user on PR113 unit
K51/8	17	Load check LC2	
		§§	Configured by user on PR113 unit

“\*”The reason for the closing of these contacts (K51/1, K51/4 and K51/5) depends upon the configuration (event A or event B) set via the dip-switch of the PR010/K unit, only if dip-sw N°5 is set to OFF (see par.5.6.1).

“§§” In the case of dip-sw N°5 set to ON all contacts (K51/1...K51/8) are exclusively associated with the function set on the PR113 unit by the user, except contact K51/5 which shows ‘Internal Bus communication problem (bus KO)’.

## 5.6.3. Connection of 3 SACE PR010/K units with SACE PR113/P

It is possible to connect two or three SACE PR010/K units with a PR113/P unit (see par. 5.9.2).

The only condition being that one PR010/K unit must be configured as Master, with the other(s) configured as Slave.

In this way it is possible to activate up to (7 + 8 + 3 =) 18 contacts without potential (relay), plus 6 replicated (see Emax manual).

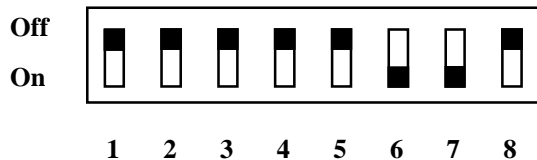
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## 5.7. SACE PR010/K with SACE PR212/P unit

### 5.7.1. Dip-switch settings

N° Dip-Sw	Description of dip-switch	0 (Off)	1 (On)	Note
1	Test	Normal	Self-test	For normal functioning mode, set this dip-switch to OFF.
2	-	-	-	Not used
3				
4				
5				
6				
7	Baud Rate	19.2 kbit/s	38.4 kbit/s	Set 38.4 kbit/s
8	State	Normal	Stand-by	For normal functioning mode, set this dip-switch to OFF.

Example of dip-switch settings for connection of PR010/K with SACE PR212/P protection unit.



### 5.7.2. Signalling

The significance of signals (K51/1...K51/8) for the SACE PR212/P protection unit is as follows:

Contact	N° Pin on unit PR010/K	Event which causes closing of relay
K51/1	5	Alarm protection L (overload)
K51/2	6	Alarm protection S (selective short circuit)
K51/3	7	Alarm protection I (instantaneous short circuit)
K51/4	8	Alarm protection G (ground fault)
K51/5	9	Internal Bus communication problem (bus KO)
K51/6	10	Not Used
K51/7	12	CB trip alarm –TRIP–
K51/8	17	Pre-alarm function L (overload)

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## 5.8. SACE PR010/K with SACE PR212/MP unit

### 5.8.1. Dip-switch settings

N° Dip-Sw	Description of dip-switch	0 (Off)	1 (On)	Note
1	Test	Normal	Self-test	For normal functioning mode, set this dip-switch to OFF.
2	K51/4 Function	U Protection	WC Protection	Functions (A or B) assigned to relay contact, to be selected with corresponding dip-switch
3	K51/6 Function	PTC Protection	G.P. Protection	
4	K51/8 Function	L Pre-alarm	Backup Protection	
5	-	-	-	Not used
6	Mode	Slave	Master	Set Master
7	Baud Rate	19.2 kbit/s	38.4 kbit/s	Set 38.4 kbit/s
8	State	Normal	Stand-by	For normal functioning mode, set this dip-switch to OFF.

Example of dip-switch settings for connection of PR010/K unit with SACE PR212/MP protection unit.



### 5.8.2. Signalling

The significance of signals (K51/1...K51/8) for the SACE PR212/MP protection unit is as follows:

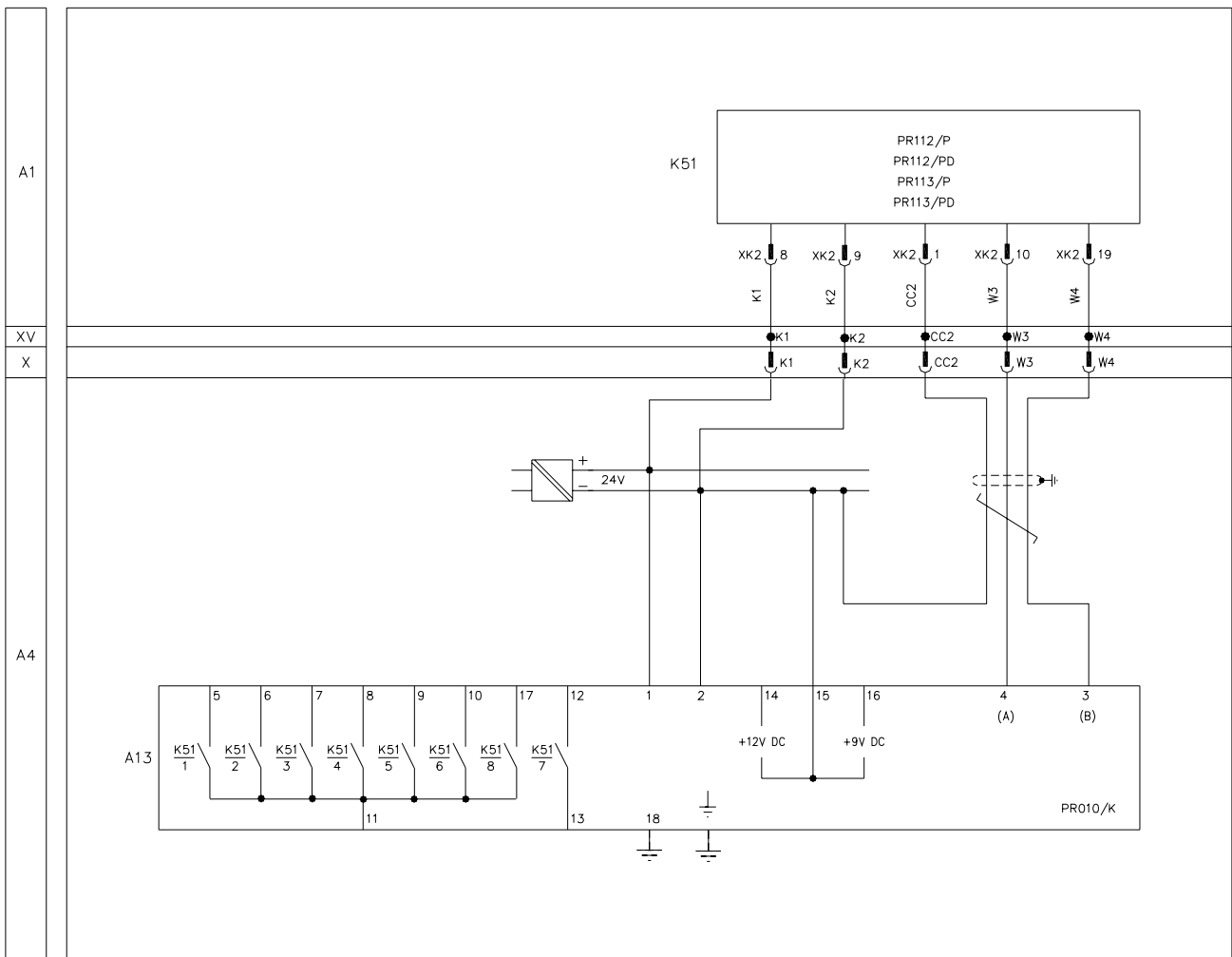
Contact	N° Pin on unit PR010/K	Event which causes closing of relay	
K51/1	5	Alarm protection L (overload)	
K51/2	6	Alarm protection R (rotor stuck)	
K51/3	7	Alarm protection I (instantaneous short circuit)	
K51/4 *	8	A	Alarm protection U (loss of phase)
		B	Alarm WC (contacts stuck )
K51/5	9	Internal Bus communication problem (bus KO)	
K51/6 *	10	A	Alarm PTC (motor overheat )
		B	Activation of generic input contact (generic input G.P.)
K51/7	12	CB trip alarm –TRIP–	
K51/8 *	17	A	Pre-alarm function L (overload)
		B	Backup alarm protection

“\*\*”The reason for the closing of these contacts (K51/4 ,K51/6 e K51/8 ) depends upon the configuration (event A or event B) set via the dip-switch of the PR010/K unit, (see par.5.3).

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## 5.9. Applicable electrical diagrams

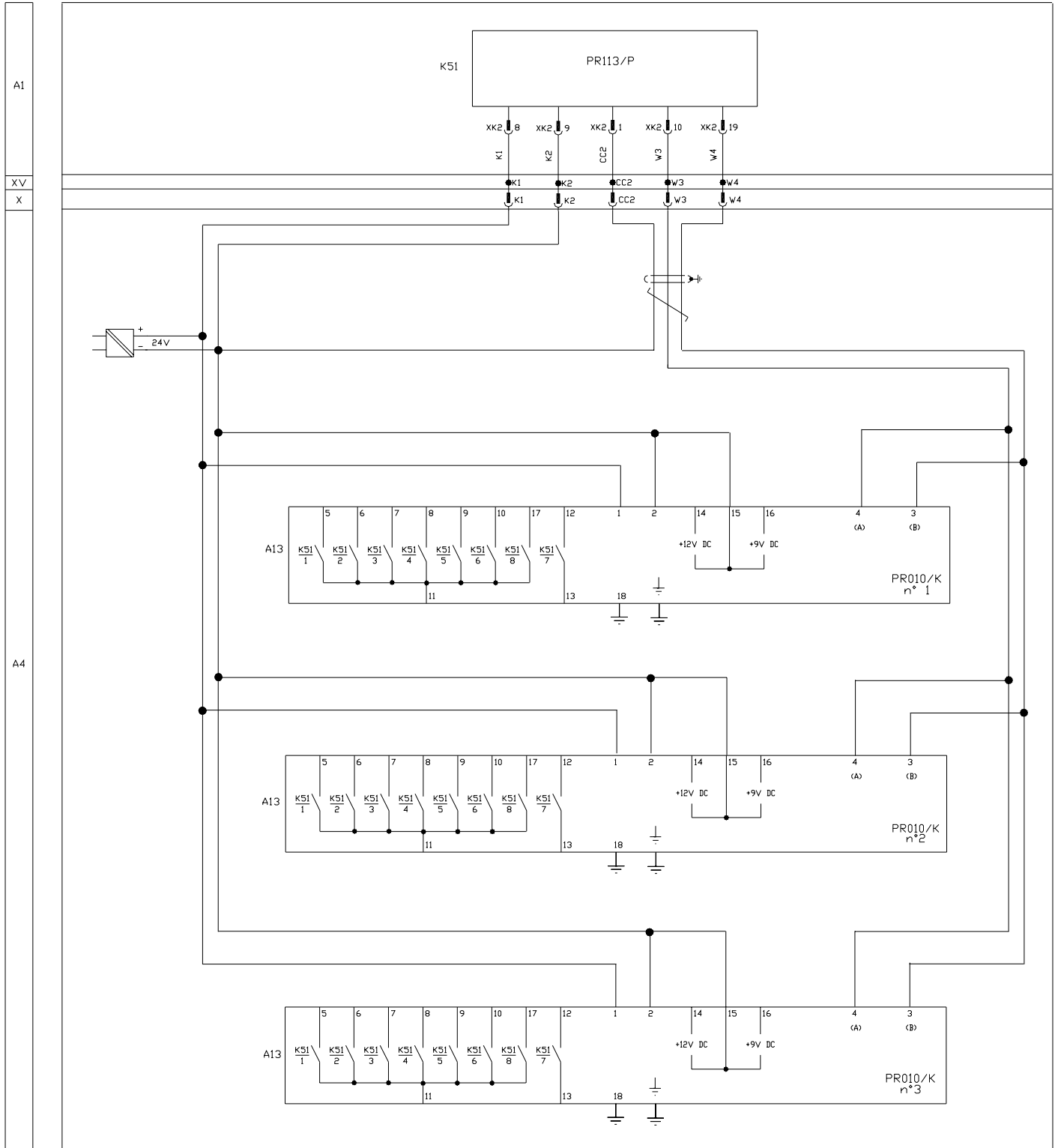
### 5.9.1. PR112 (or PR113) + PR010/K



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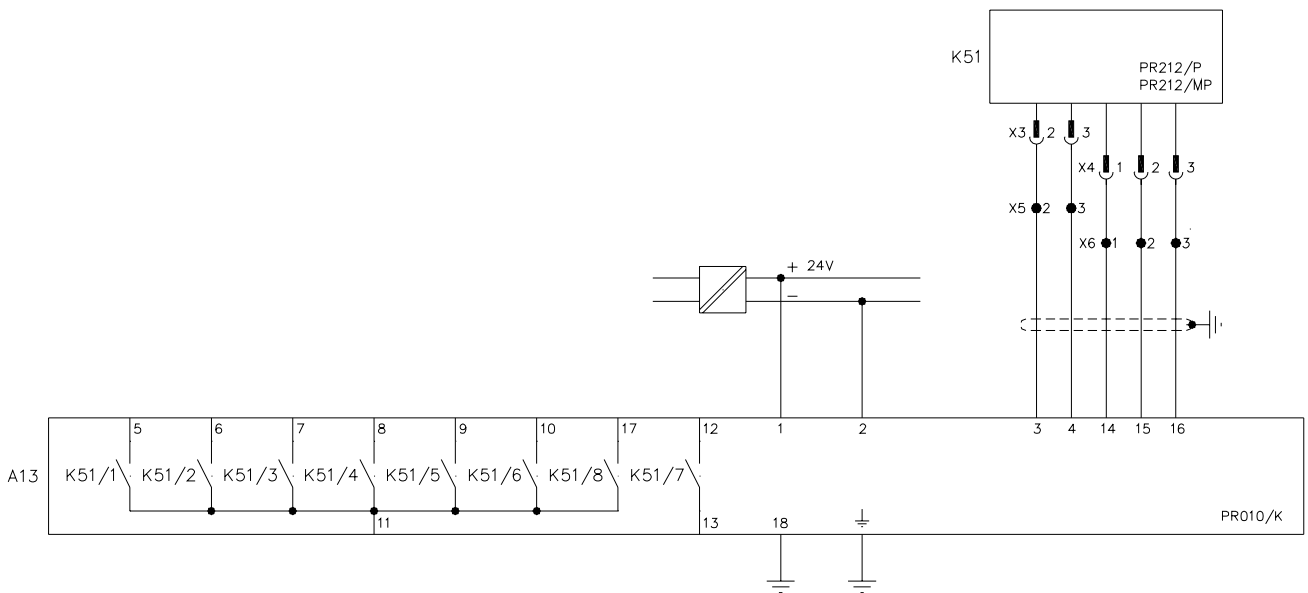


### 5.9.2. PR113/P + 3 PR010/K units

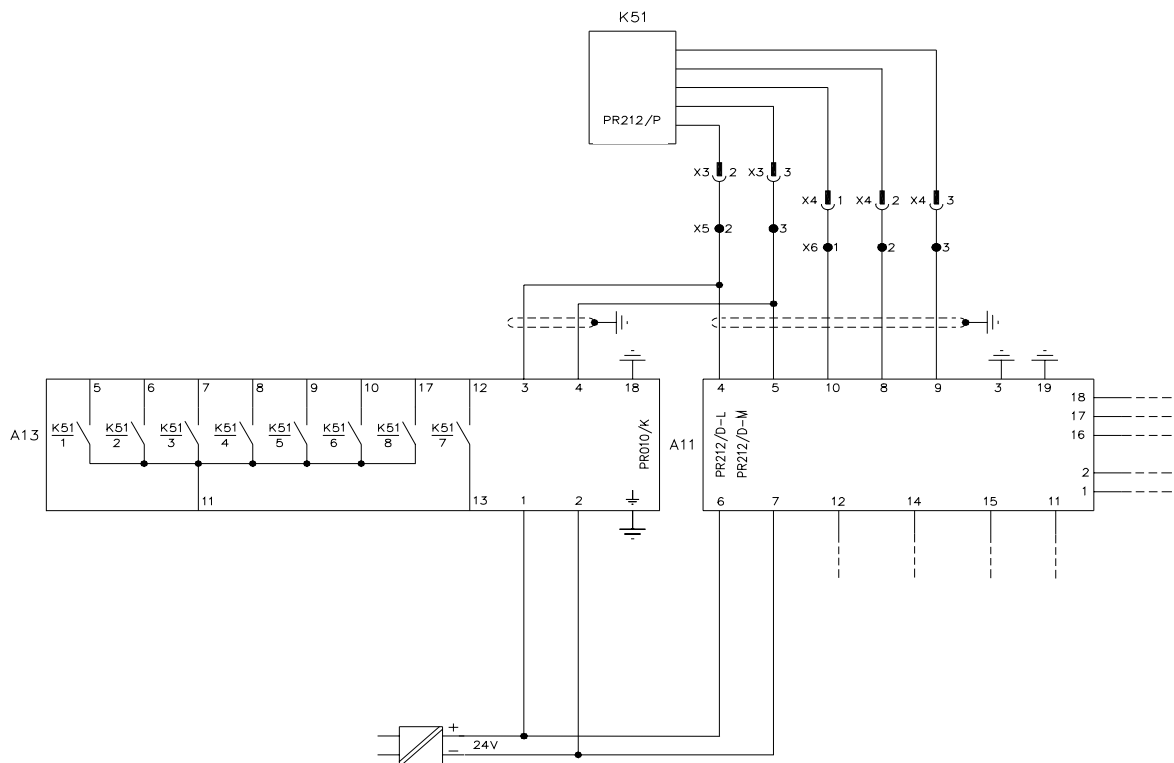


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### 5.9.3. PR212/P (or PR212/MP) + PR010/K



### 5.9.4. PR212/P + PR212/D-L (or PR212/D-M) + PR010/K



Per il cablaggio completo del PR212/D-L (oppure -M) consultare il catalogo tecnico.  
For full PR212/D-L (or -M) wirings indications please see technical catalogue.

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### 5.9.5. Electrical diagram legend

- A11 = Communication unit PR212/D-L (or PR212/D-M) for connection with a remote supervision system.
- A13 = Signalling unit PR010/K
- K51 = Protection unit PR212/P, PR212/MP, PR112/P, PR112/PD, PR113/P e PR113/PD.
- K51/1...8 = Internal relays of protection unit PR010/K
- X3-X4 = Connectors for auxiliary circuits of protection unit PR212/P or PR212/MP
- X = Connector for auxiliary circuits for removable breaker.
- XV = Terminals for auxiliary circuits for fixed breaker.

SEGNI GRAFICI PER SCHEMI ELETTRICI (NORME IEC 617 E CEI 3-14...3-26)  
 GRAPHICAL SYMBOLS FOR ELECTRICAL DIAGRAMS (617 IEC STANDARDS)

SEGNO SYMBOL	IEC REF. NUMBER	LEGENDA CAPTION
	02-15-01	-TERRA (SEGNO GENERALE) -EARTH, GROUND (GENERAL SYMBOL)
	02-17-06 02-17-07	-CONVERTITORE SEPARATO GALVANICAMENTE -CONVERTER WITH GALVANIC SEPARATOR
	03-01-07 03-01-09	-CONDUTTORI IN CAVO SCHERMATO (ESEMPIO: DUE CONDUTTORI) -CONDUCTORS IN A SCREENED CABLE, TWO CONDUCTORS SHOWN
	03-02-02	-TERMINALE O MORSETTO -TERMINAL
	03-02-01	-CONNESSIONE DI CONDUTTORI -CONNECTION OF CONDUCTORS
	03-03-05	-PRESA E SPINA (FEMMINA E MASCHIO) -PLUG AND SOCKET (MALE AND FEMALE)
	07-02-01	-CONTATTO DI CHIUSURA -MAKE CONTACT

## 6. Troubleshooting

The following table details a range of typical operational situations, useful in the understanding and resolution of hypothetical faults and malfunctions.

**NB:**

- Before consulting the following table, check the LEDs on the front panel of the PR010/K unit for several seconds. (wait until the end of the start up phase if the unit has just been switched on).
- FN indicates normal functioning.

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N°	Situation	Possible cause	Suggestions
1	Relays do not switch, even in presence of conditions required for switching (for example an overload with protection function L)	<ol style="list-style-type: none"> <li>Relay in Stand-by or Self-test mode.</li> <li>The unit has not been reset.</li> </ol>	<ol style="list-style-type: none"> <li>Set the Stand-by and Self-test dip-switches to OFF, press the reset push-button on the front panel of the PR010/K unit.</li> <li>Carry out reset.</li> </ol>
2	The unit does not update events after a trip.	<ol style="list-style-type: none"> <li>The unit has not been reset</li> <li>Internal Bus communication is interrupted.</li> </ol>	<ol style="list-style-type: none"> <li>Press the reset push-button on the front panel of the PR010/K unit.</li> <li>Check connections.</li> </ol>
3	The signalling cannot be reset after a trip, despite pressing the reset push-button.	The connected protection unit is a PR112/PD or PR113/PD and has not been reset.	<ol style="list-style-type: none"> <li>Press the RESET push-button on the front panel of the PR112/PD or PR113/PD.</li> <li>Send the "Trip reset" command from the remote supervision system.</li> </ol>
4	Flashing "Tx (Int Bus)" and/or switching relay K51/5 (bus KO) discontinued.	<ol style="list-style-type: none"> <li>Bus conflict (2 master)</li> <li>Defective connection</li> </ol>	<ol style="list-style-type: none"> <li>Set Slave mode (dip-sw 6=Off)</li> <li>Check connections</li> </ol>
5	The LED "Tx (Int Bus)" flashes with a frequency of 2Hz.	<ol style="list-style-type: none"> <li>Communication not present.</li> <li>Unit PR010/K in Stand-by mode.</li> <li>Unit PR010/K in Self-test mode.</li> <li>Connected protection unit not recognised.</li> <li>Incorrect communication speed set (dip-switch "Baud").</li> </ol>	<ol style="list-style-type: none"> <li>Check connections.</li> <li>FN</li> <li>FN</li> <li>Remove Vaux from PR010/K unit and from the protection unit, then re-power the two units simultaneously.</li> <li>Set the correct value.</li> </ol>
6	The LED "Tx (Int Bus)" is off.	<ol style="list-style-type: none"> <li>Wiring error.</li> <li>Anomalous situation.</li> <li>Aux voltage not present.</li> </ol>	<ol style="list-style-type: none"> <li>Check connections.</li> <li>Contact ABB SACE.</li> <li>Restore supply voltage.</li> </ol>
7	The LED "Tx (Int Bus)" is on continuously.	Anomalous situation.	Contact ABB SACE
8	The LED L (or S, I, or G) flashes.	The circulating current is close to the threshold value (L, S, I or G) set on the protection unit.	FN

## 6.1. In case of fault

If it is suspected that the PR010/K unit is faulty, is malfunctioning or has generated unpredicted commands, the user is advised to carefully follow the following instructions:

Prepare a brief description of the problem (when did it occur? How many times? Can the event be reproduced? ...)

Note the type of load connected to the signalling unit (lamps, signalling relays, CBs, contacts, sirens etc..) and the serial number of the unit (see par.5.3.3).

Send / communicate all the information, along with applicable electrical diagrams, to the nearest ABB SACE Service centre.

Providing complete and accurate information to ABB SACE Service will allow the problem to be analysed efficiently, thus permitting the client to receive complete and prompt service.

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