

SD-TestBus

Rapid Guide

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1 Introduction

SD-TestBus is a software suitably prepared for testing and setting of the communication devices Modbus ABB SACE, of the relay connected to them and of all their inputs and outputs.

At this revision level SD-TestBus will be very useful to interface in a simple and fast way with: PR112/PD modbus, PR113/PD modbus, PR121/P, PR122/P, PR123/P, PR212/P with PR212/D-M and PR222DS/PD. The possibility to perform a network scan delimiting the search parameters will help a lot to find possible connection or setting errors.

The operating testing of a switchboard, fitted with communication devices Modbus, will be made easy by the use of SD-TestBus.

The save functionality of the scan just performed is very useful; the file will be afterwards mentioned and compared for the real check of the devices into the switchboard.

Any signal, suggestion, advice or other, in order to improve this product, are welcome.

2 Operating instructions

2.1 Introduction

If case of a previous SD-TestBus version, it will be necessary to remove it (the path is: Start- Settings- Control Panel- Add/Remove programs select the old SD-TestBus version and press "Remove").

2.2 Installation

Decompress the archive "SD-TestBusnnn.zip" (nnn replace the number of the present version) in a temporary directory and launch the file "setup.exe".

Following the screen instructions it proceeds at the guided installation of the program.

Note: with administrative privileges the installation folder page may ask what type of user can use SD-TestBus:

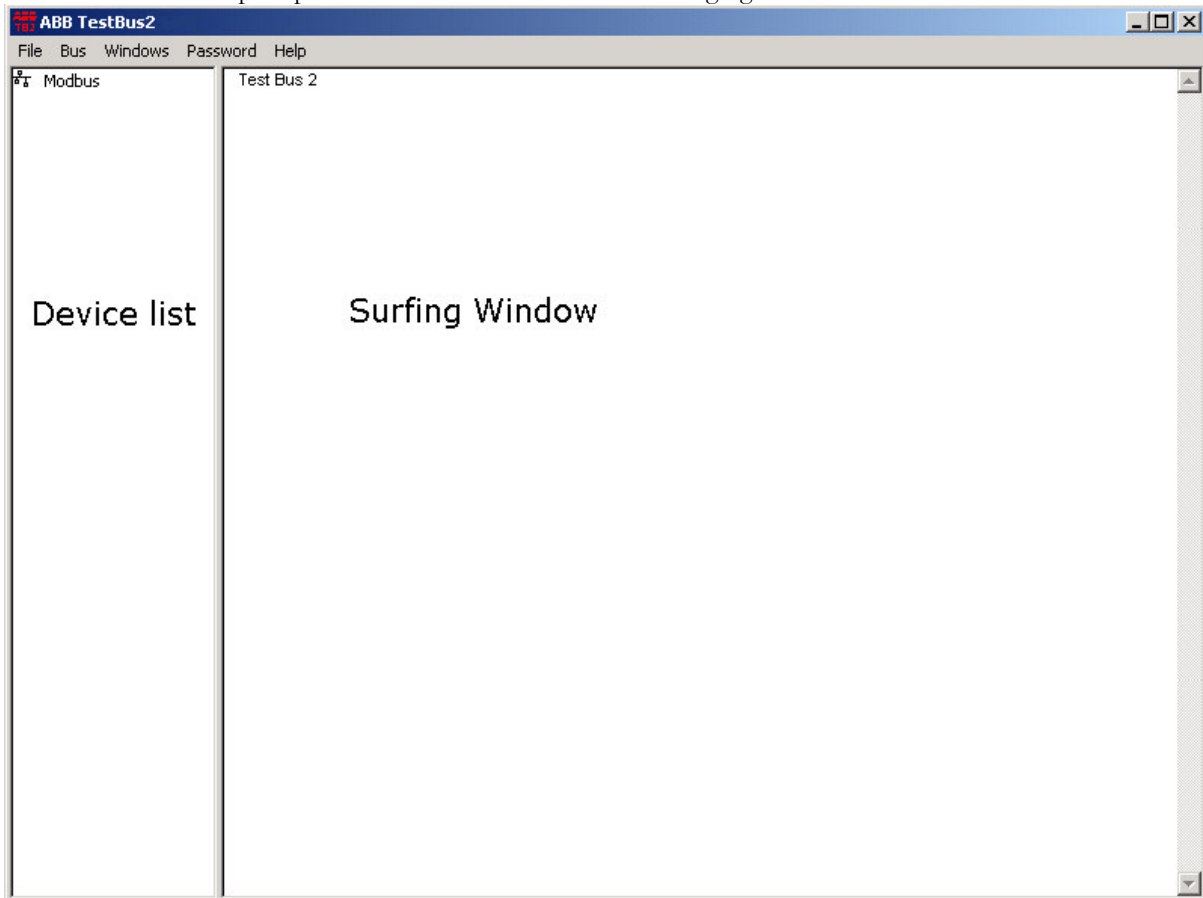
- "Every one": give the possibility to use the software to anyone;
- "Just me": only the administrator can use this program.

2.3 Start

Once followed the default parameters of the installation, it is sufficient to launch the program from the starting Menu pressing the push button "Start" and selecting the SD-TestBus icon , or clicking directly on the icon of the desktop.


3 Main window

The main window is split up into 3 areas as shown in the following figure:












3.1 Device list

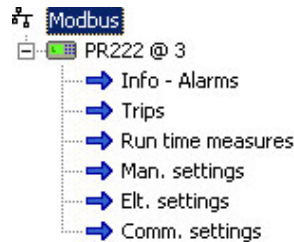
This area represents, with a tree view, all the devices noticed during the bus scanning. The main node is made up of the

element  “Modbus” while, the single devices, are represented as subnodes giving a whole of icons and names that identify the device type and the address they are noticed to. For example, a PR113 relay at the address 3 will have the nameplate “PR113 @ 3”.

Each device is associated with an icon that changes cyclically according to the following table:

	Default icon
	It shows the presence of the device and that the ID supplied (Slave ID) corresponds to that found by SD-TestBus. The device is connected on system bus and it is configured in remote modality.
	It shows the presence of the device and that the ID supplied (Slave ID) corresponds to that found by SD-TestBus. The device is connected on system bus and it is configured in local modality.
	It shows the presence of the device and that the ID supplied (Slave ID) corresponds to that found by SD-TestBus. The device is connected on the local bus (only PR122 and PR123) .
	The device replies but it is of unknown type or it is not possible to determine the remote/local status.
	The device does not reply or its ID does not corresponds to that found by SD-TestBus.
	Wink is active.
	The device has detected ‘any alarm’ condition.

If the devices found are of known a set of pages are shown. Each page contains information and/or commands the device can perform. Each page is marked by an icon  .



Note: in order to make the representation more compact, the pages are “compressed” and are not visualized. To visualize them click with the mouse on sign “+” that appears next to the device icon.

3.2 Surfing pages

This area is deputed to represent the selected information operating with the mouse in the “nodes” of the device list.

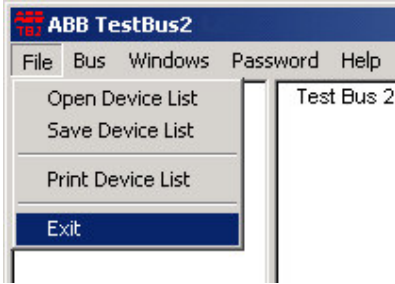
Selecting the root node “Modbus” it will be visualized a summary with all the found devices and their communication parameters. At the same time, selecting with the mouse a single device it will be visualized a summary on its status and the possible problems found out during the scanning operation.

At last, selecting the nodes “page” the information relevant to the status of protections, measured currents, etc. will be visualized.

3.3 Menu bar

This bar contains all the commands that can be carried out by SD-TestBus. The menu bar is contextual and changes according to the node selected in the device list.

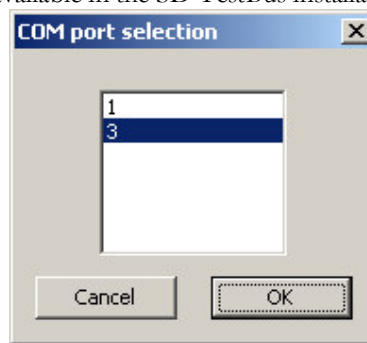
3.3.1 File



3.3.1.1 Open device list

It is possible to mention the result of the scan previously saved selecting “File\Open device list” and choosing the file .xml from the directory.

An example named “scanlist.xml” is available in the SD-TestBus installation directory.



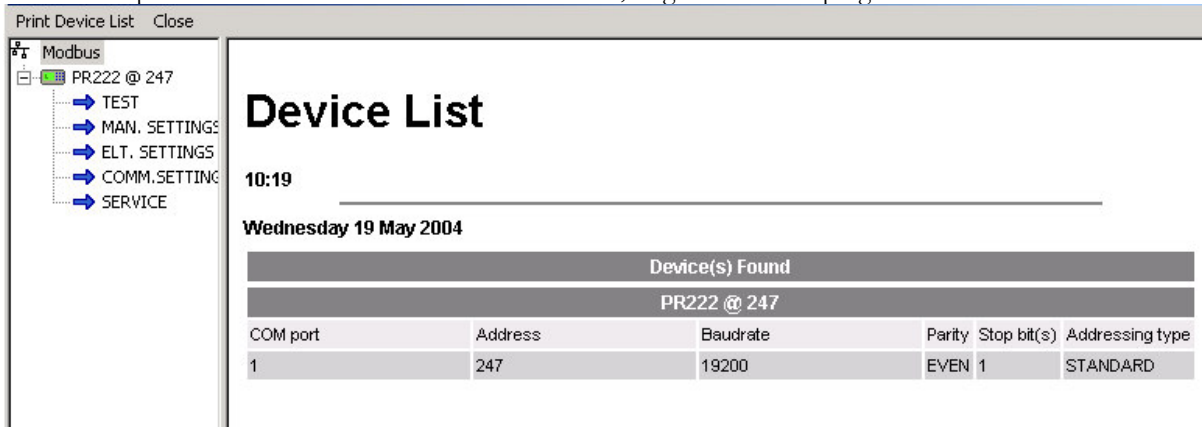
Opening the file a dialog window is showed. It is possible to select the COM port the devices are connected to. If the scan file is generated by the same PC you don't need to select the COM port: just push “Cancel”.

3.3.1.2 Save device list

It is possible to save on file (.xml) the list of the devices found during the scanning.

3.3.1.3 Print device list

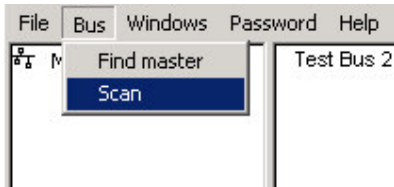
It is possible to print the summary screen that shows the list of all devices found during the bus scanning. To confirm the print select the menu voice “Print device list”; to go back to the program select “Close”.



3.3.1.4 Exit

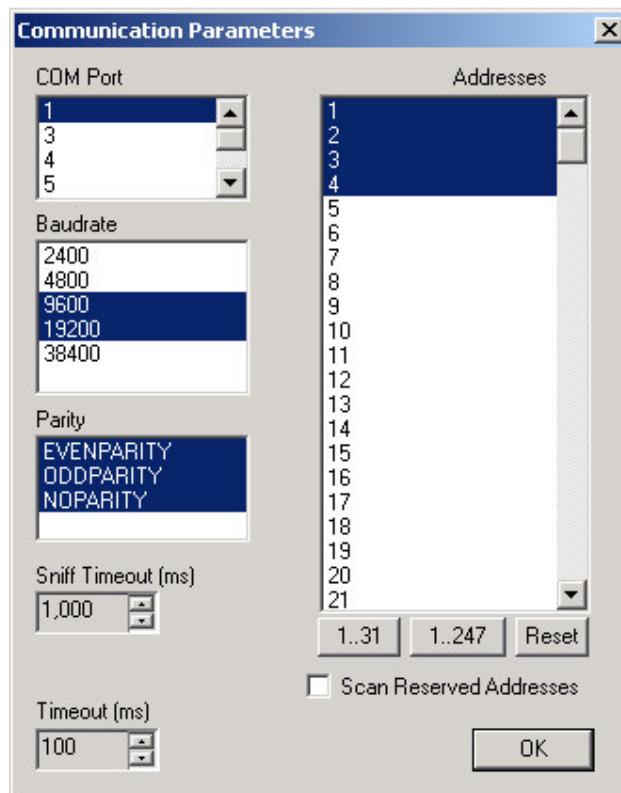
Exit from the program.

3.3.2 Bus



3.3.2.1 Find master

It opens a window that allows to set the communication parameters for the surveying of active **master** on the bus.



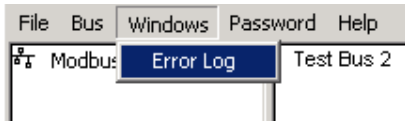
Acting on the item “Sniff timeout” it is possible to set the time delay SD-TestBus will be waiting and listening for intercepting a transmission coming from a master.

In the box “Baudrate” and “Parity” it is possible to select the time delay within which to perform the scanning. The more numerous are the selected combinations, longer will be the time requested for the completion of the operation. To confirm the operation press the push button “OK”, otherwise press “X”.

3.3.2.2 Scan

It opens the dialogue window similar to that one described on the session 3.3.2.1. This window allows the scanning parameters of the **slave** devices on the bus to be selected. Pressing “OK” the scanning starts; by pressing the button “X” the dialogue window will be closed.

3.3.3 Windows



3.3.3.1 Error Log

This command opens a window that contains the detected errors during the communication with the last tested device.

Note: in case of communication errors, this window is automatically opened by SD-TestBus.

At start up SD-TestBus create a file named “modbus.log”. In this file are reported the last 200 errors occurred in the communication bus. The analysis of this file may be useful to detect problems on the bus.

Note: The file “modbus.log” location is in the installation path (for example “C:\Program Files\ABB\SD-TestBus”).

Note 2: communication errors are often a normal condition: some noise can generate temporary error on the communication bus. Otherwise if you notice slow refresh on SD-TestBus’s pages and a great log activity probably a serious error has occurred on the bus. If you notice 10 or 15 errors in a time slice of 1 s there is probably a problem on the communication line.

The following example shows a broken bus condition:

```

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

```

```
*****
07/06/2005 - 12:02.56
PR122/P @ 3 time out error
*****

*****
07/06/2005 - 12:02.57
PR122/P @ 3 time out error
*****
```

3.3.4 Password



3.3.4.1 Insert

Inserting a specific password the user's authorizations change. At present in SD-TestBus two use levels are provided:

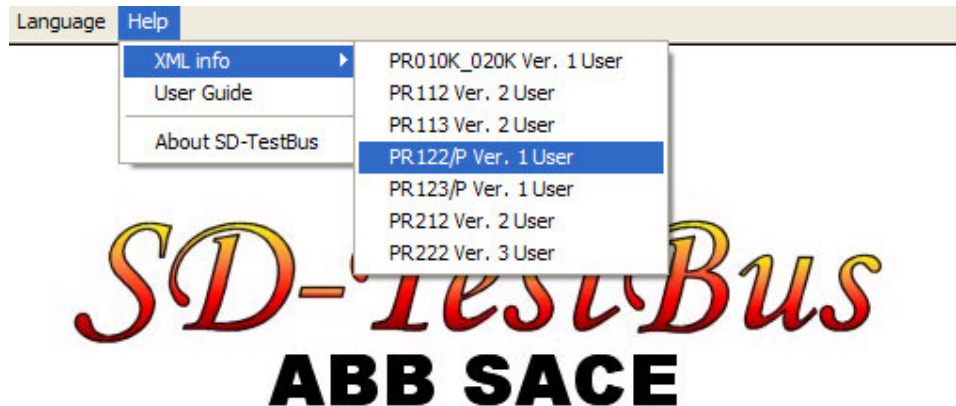
Protection level	Description
none	It allows the scanning of the devices, to visualize some pages but not the sending of commands (opening/closing) or the setting of protection parameters.
User	All the operations of previous level are possible and the sending of commands and the setting of protection parameters are admitted.

Note: at the first installation of SD-TestBus the **user password** is set to **0001**.

3.3.4.2 Change

It allows to change the current password with another one at pleasure.

3.3.5 Help



3.3.5.1 XML info

It is possible to access to the information about the device describers and their version. Each device describer from the SD-Testbus database identifies and manages the device on the bus.

WARNING: it is forbidden to modify the device describers. It may compromise SD-TestBus.

3.3.5.2 Guide

It opens this guide.

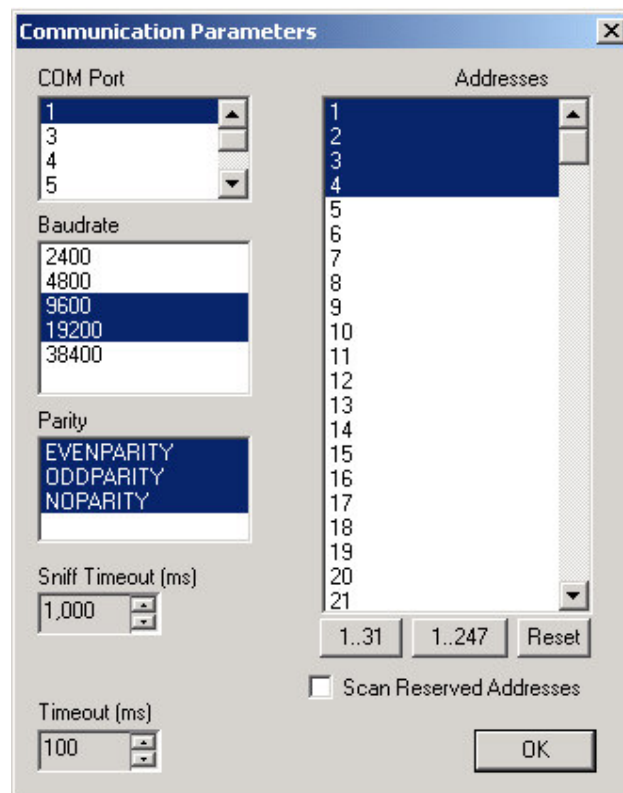
3.3.5.3 About SD-TestBus

It opens a window containing the information on the version of SD-TestBus.

4 Bus scanning

This function allows to identify the devices (slave) present on bus, pointing out the characteristic communication parameters. According to the device type, more “pages” will be available for protection parameters settings and for commands sending.

From the menu "Bus" select the item "Scan"; a dialogue window opens allowing to choose different parameters by which to perform the scanning.



Note: The voice “Baudrate” allows to select the communication speed between the device and SD-TestBus. The voice “Parity” allows to select the type of error check that is carried out on each transmitted character. The possible options are:

- “Evenparity”: check of “even” parity;
- “Oddparity”: check of “odd” parity;
- “Noparity”: no check of parity

In the box on the left it is possible to select with the mouse an addresses range within which to perform the scanning. By ticking off the item “Scan Reserved Addresses” it will be carried out the device scanning in the addresses 248 – 255.

The “Timeout” parameter shows the maximum time expressed in milliseconds, the program will be waiting for receiving a reply from the device under scanning. If the selected time is too short there is a possibility of not being able to detect the presence of devices on the bus.

The 100 ms value is an excellent compromise between the scanning velocity and the waiting time.

Acting in the box “COM Port” it is possible to select the port within which to perform the scanning.

Note 2: if some program is using one or more serial ports (e.g. SDView 2000), these ones will not be visualized.

Note 3: it is possible to launch a number of SD-TestBus instances equal to the serial ports available on one’s own PC.

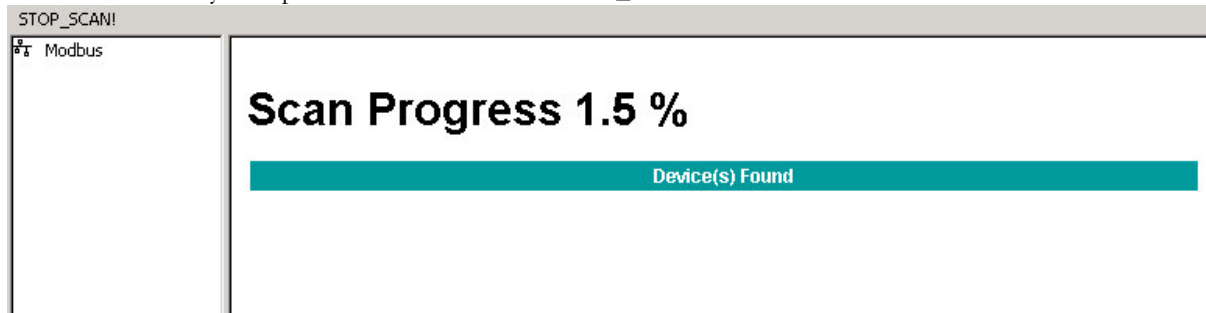
At last, in the boxes “Baudrate” and “Parity it is possible to select the wished scanning intervals likewise the box “Addresses”.

Note 4: the larger is the selected parameters set, the greater is the number of the combinations to test; as a result, the time to complete the scanning will be longer.

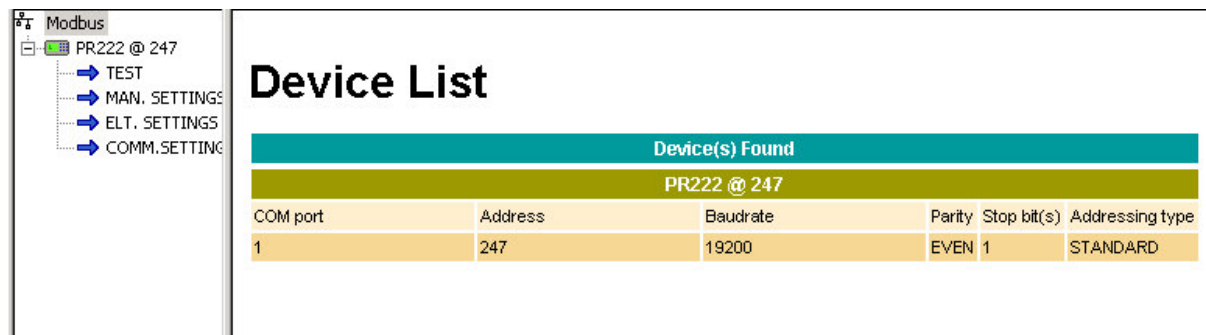
To confirm press OK; to exit press the ‘X’ push button.

During the scanning the progress percentage is visualized in the box on the right.

To end immediately the operation select the item “STOP_SCAN” in the menu bar.





If some devices will be found, they will be visualized both in the device list and in the box of surfing pages where the main communication parameters will be summarized.



At the end of the operation (each 5s) SD-TestBus checks the presence of the devices found.

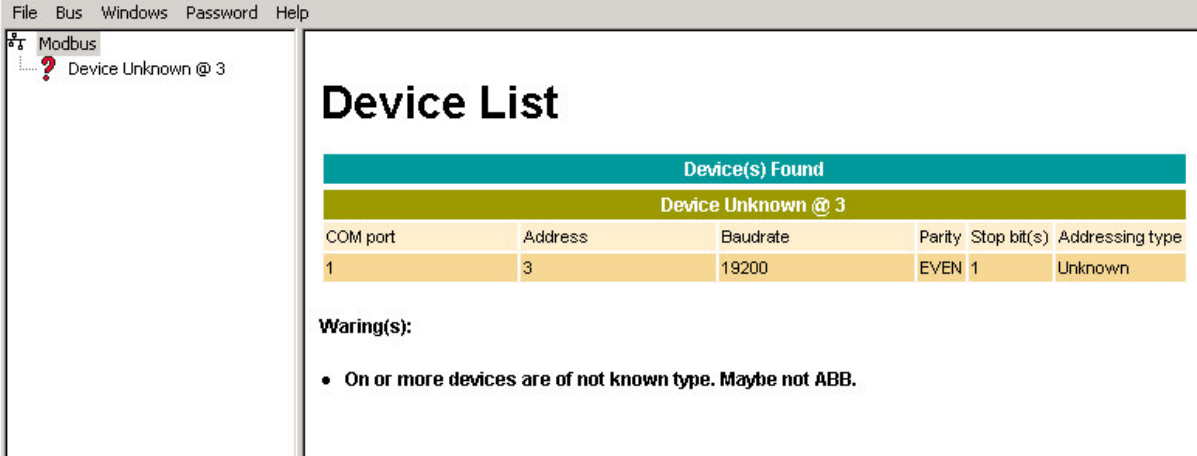
In the box “device list” all the devices found are visualized by a tree diagram.

The device’s icon, may change from  , showing the right reply of the device, to  signaling a device’s or serial connection’s anomaly.

In case the device is in **local** modality (the device can not perform commands), the icon will have the padlock

shape 

Note 4: SD-TestBus will signal also the possible presence of not ABB SACE devices.



The screenshot shows the SD-TestBus application window. The menu bar includes 'File', 'Bus', 'Windows', 'Password', and 'Help'. The main window is titled 'Modbus' and shows a tree view on the left with a question mark icon and the text 'Device Unknown @ 3'. The main content area is titled 'Device List' and contains a table with the following data:

Device(s) Found					
Device Unknown @ 3					
COM port	Address	Baudrate	Parity	Stop bit(s)	Addressing type
1	3	19200	EVEN	1	Unknown

Below the table, a warning message is displayed:

Warning(s):

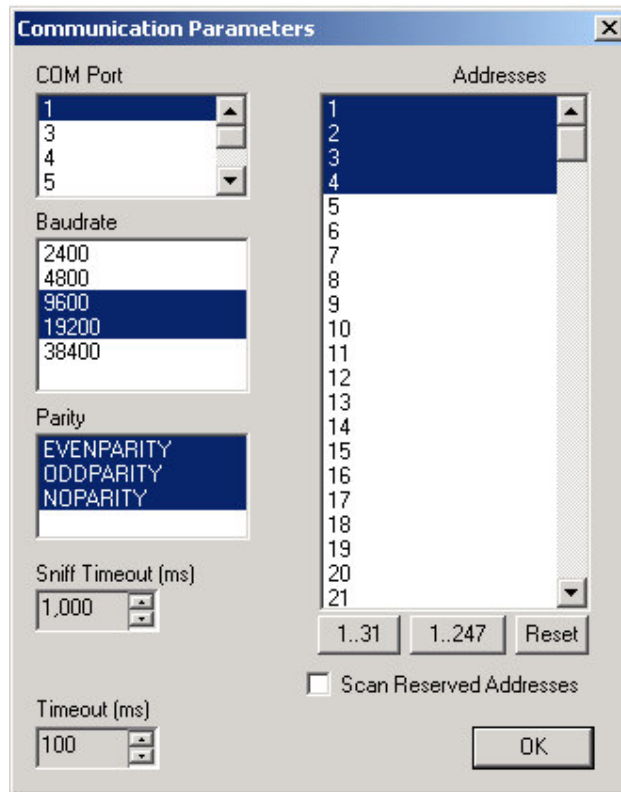
- On or more devices are of not known type. Maybe not ABB.

At the end of the scanning SD-TestBus will visualize possible Warning or Errors found (for example in case there are two devices with different baud rate).

5 Find master

This function allows to discover the presence of possible master present on the bus, showing the characteristic communication parameters.

From the "Bus" menu select the voice "Find master". A dialogue window opens allowing to choose various parameters to perform the scanning.



The parameter “Sniff Timeout” shows the maximum time expressed in milliseconds, the program will be waiting for intercepting the transmission of a master on the bus. If the selected time is too short there is a possibility of not being able to detect device’s presence on the bus. The value of 1000 ms is an excellent compromise between the scanning velocity and the waiting time.

Acting in the box “COM Port” it is possible to select the port within which to perform the scanning.

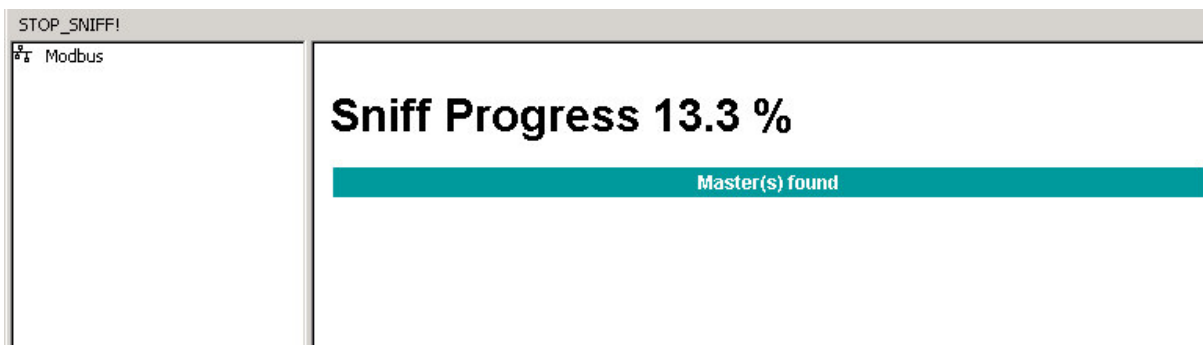
Note: if some program is using one or more serial ports (e.g. SDView 2000), these ones will not be visualized.

In the boxes “Baudrate” and “Parity” it is possible the selection of the wished scanning intervals.

Note 2: the larger is the selected parameters set, the greater is the number of the combinations to test; as a result the scanning time will be longer.

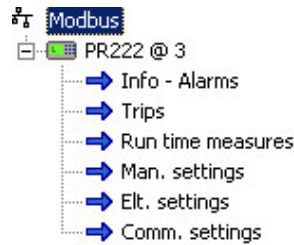
To confirm press OK; to exit press the ‘X’ push button.

During the scanning the progress percentage is visualized in the box on the right.
To end immediately the operation select the item “STOP_SNIFF” in the menu bar.



6 Interaction with the single device

To interact with a single device select the “pages” (e.g. "TEST", "SETTINGS",...) that appear below each node in the box “device list”:



Note: a changeable number of pages may be present according to the device type.

6.1 Information


In this section it is possible to read general information about the device (SW release, circuit breaker and alarms status) and send commands (Wink, closing and opening command, Trip reset, etc.).

PR222 @ 1 - Info - Alarms			
Present Parameter		Alarms	
CB Type	T4	L Prealarm	NO
Nominal current	300 A	L	NO
Date of Test	10.11.2069	S	NO
SW version	02.03	G	NO
Device version	warning!hex: FFFF	Trip Command Fail	NO
Product Execution	LSIG		
Process Statistics		Reports	
CB Number of Operation(s)	0	CB Status	OPEN
		CB tripped	NO
		PR010T Connected	NO
		AUX-E Status	NOT PRESENT
		MOE-E Status	NOT PRESENT

PR222 @ 1 - COMMANDS				
CB Open	CB Close	CB Reset	Trip Reset	Wink

Note: For sending the command it is necessary to be an “authorized” user. The default password is **0001**. For more details see section 3.3.4.

Note 2: the commands in the page will be visualized in grey color if the device under test is in the local

operation modality ; it will not be possible to press the push buttons.

6.2 Alarms

All the alarms made available by the device are shown in this page: the “any alarm” status is shown with the



icon into the tree view.

PR122/P @ 1 - Alarms			
Protection Alarms		Other Alarms	
L Pre-Alarm	NO	Harm. Dist. > 2.1	NO
L Timing	NO	CVV Pre-Alarm	NO
S Timing	NO	CVV Alarm	NO
S2 Timing	NO	LC1 Alarm	NO
G Timing	NO	LC2 Alarm	NO
G Alarm (Blocked Trip)	NO	Frequency Error	NO
G Ext. Timing	NO	fw Warning	NO
G Ext. Alarm (Blocked Trip)	NO	Power Factor Error	NO
Advanced Alarms		Phase Cycle Error	NO
T Pre-alarm	NO	Date Error	NO
T Alarm	NO	Configuration Error	NO
T Alarm (Blocked Trip)	NO	CB Status Error	NO
D Timing	NO	Connection Alarms	
U Timing	NO	Rogowski L1	OK
U Alarm (Blocked Trip)	NO	Rogowski L2	OK
UV Timing	NO	Rogowski L3	OK
UV Alarm (Blocked Trip)	NO	Rogowski NE	OK
OV Timing	NO	GT Ext Sensor	OK
OV Alarm (Blocked Trip)	NO	TC Status	OK
RV Timing	NO	Rating Plug Status	OK
RV Alarm (Blocked Trip)	NO	Key Plug Status	OK
RP Timing	NO	Temperature Sensor Status	OK
RP Alarm (Blocked Trip)	NO		
UF Timing	NO		
UF Alarm (Blocked Trip)	NO		
OF Timing	NO		
OF Alarm (Blocked Trip)	NO		

The “any alarm” status is produced by any of the alarms reported in this page: for example alarm condition could be done by protection timing or by connection errors.

6.3 Trips

If the alarm condition has reached a timeout (i.e. L timing) the relay sends a trip command to the circuit breaker and then enters into the “tripped” status. In this page it is possible to catch information about the cause of the trip and the protection’s name that has timed out.

Depending on the type of relay, it is possible to read information about previous trips (called Trip history).

PR122/P @ 1 - Trips								
Trip History								
Trip Type	N. of Trip	Date	Time	RMS L1	RMS L2	RMS L3	RMS Ne	Contact wear
HW Trip	45	09.06.2005	17:44:16.311	...	...	...	...	13.0507 %
HW Trip	44	09.09.2005	17:11:21.616	...	...	...	...	13.0476 %
HW Trip	43	09.09.2005	17:11:04.987	...	...	...	...	13.0446 %
HW Trip	42	08.06.2005	16:56:13.614	...	2596 A	...	...	13.0415 %
HW Trip	41	08.06.2005	16:54:57.803	...	...	...	...	13.0338 %
HW Trip	40	08.06.2005	16:54:50.087	...	...	...	...	13.0307 %
HW Trip	39	08.06.2005	16:54:31.599	...	...	...	...	13.0276 %
I	38	08.06.2005	16:06:59.641	...	...	...	9014 A	13.0246 %
I	37	08.06.2005	16:06:45.175	...	...	...	8345 A	12.6092 %
I	36	08.06.2005	16:06:42.052	...	...	9036 A	...	12.1553 %
I	35	08.06.2005	16:06:37.695	...	9040 A	...	...	11.7984 %
I	34	08.06.2005	16:06:14.235	8085 A	...	...	...	11.4476 %
I	33	08.06.2005	16:05:24.557	...	...	...	9011 A	11.0169 %
I	32	08.06.2005	16:05:04.515	...	...	...	9007 A	10.5861 %
I	31	08.06.2005	16:04:35.063	...	8655 A	...	...	10.1476 %
I	30	08.06.2005	16:04:22.642	8571 A	8819 A	8430 A	9000 A	9.8738 %
I	29	08.06.2005	16:03:18.618	...	...	9033 A	...	9.5692 %
I	28	08.06.2005	16:03:11.042	9007 A	...	...	...	9.203 %
I	27	08.06.2005	16:03:05.491	8664 A	...	...	...	8.7569 %
I	26	08.06.2005	16:01:28.613	8593 A	8452 A	6208 A	...	8.483 %

6.4 Measures History

In this table are shown the measures of current, voltages and power recorded by the relay. It is possible to define the time interval between two measures (for ex. 5 mins).

Measures History												
MARKER	Historical Code	Time from the last store [min]	Date	Hour	Minute	Average Total Active Power [kW]	Max Total Active Power [kW]	Max current phase	RMS max current [A]	Max Voltage Phase	Max value	Min Voltage Phase
Valid	Power Up	0	28/07/2005	15	14	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	14	55	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	14	54	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	14	54	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	14	54	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	14	53	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	14	53	...	...	---	...	U12	...	U12
Valid	Normal	16	28/07/2005	14	46	...	...	---	7476	U12	...	U12
Valid	Normal	16	28/07/2005	13	46	...	...	Phase L2	7	U12	...	U12
Valid	Normal	16	28/07/2005	12	46	...	...	---	7492	U12	...	U12
Valid	Normal	16	28/07/2005	11	46	...	...	---	8796	U12	...	U12
Valid	Power Up	0	28/07/2005	10	47	...	...	---	...	U12	...	U12
Valid	Power Up	0	28/07/2005	10	43	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	14	42	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	14	25	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	12	18	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	12	15	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	10	19	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	34	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	33	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	32	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	32	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	32	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	29	...	...	---	...	U12	...	U12
Valid	Power Up	0	27/07/2005	9	20	...	...	---	...	U12	...	U12

PR122/P @ 3 - COMMANDS

Measure History Reset

6.5 Run time measures

In this page are shown all the measures made by the relay at run time.

PR123/P @ 247 - Run time measures	
Currents	
RMS max current	...
Max current phase	---
L1 phase	...
L2 phase	...
L3 phase	...
Neutral	...
Ground	...
Voltages	
U1	...
U2	...
U3	...
U0 Residual	...
U12	...
U23	...
U31	...
Active Powers	
P Total	---
Reactive Powers	
Q Total	---
Apparent Powers	
S Total	---
Power Factor	
Total	---
Frequency	
Measured Frequency	---
Peak Factors	
Phase 1	---
Phase 2	---
Phase 3	---
Neutral	---
Energies	
Active Total	2 kWh
Reactive Total	- 7 kVARh
Apparent Total	145 kVAh
Active Positive	47 kWh
Active Negative	- 45 kWh
Reactive Positive	41 kVARh
Reactive Negative	- 48 kVARh

It is possible to see the run time currents, voltages, power and energies depending on the installed relay.

6.6 Settings

The protection settings can be visualized and set up in this page. The information are arranged in a table form; each row contains the name of the item, its current value and a list box menu showing the value whole that the item may assume. Choose the wanted value from the menu. More selections about different items are possible; the new values are transferred to device only after pressing the push button "Submit".


PR222 @ 1 - Eit. settings			
Protection L		Protection I	
Trip Treshold	1.00 In	1.00	ENABLED
Trip time	6.0 s	6.0	8.0 In
L pre-alarm status	DISABLED	DISABLED	Protection G
Protection S		Protection Status	
Protection Status	ENABLED	ENABLED	ENABLED
Curve type	DEFINITE TIME	DEFINITE TIME	Trip Threshold
Trip Threshold	2.0 In	2.0	0.50 In
Trip time	0.25 s	0.25	0.20 s
Submit		Reset	
PR222 @ 1 - DRAW CURVE			
CURRENT/TIME CURVE			

During the transfer of the data to the device, for each item modified will be visualized the indication "old_value--> new_value" (e.g. "10 ----> 12") to indicate that the writing operation is under execution. When the writing is completed the indication will change in "new_value".

For sending the data it is necessary to be an "authorized" user. The default password is **0001**. For more details see section 3.3.4.

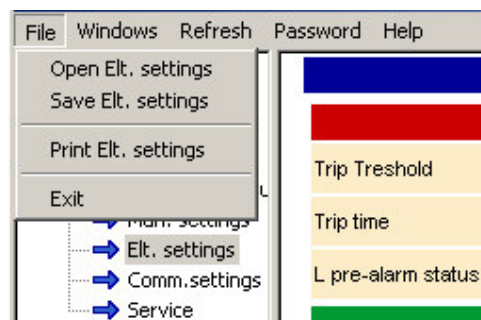
ATTENTION: the sending to the device of some value arrangements (e.g. not congruent protection threshold) may cause an error message. In this case the page will be refreshed with the relay current value.



Note 1: when the device under test is in the local operating modality , all the writing commands are disabled.

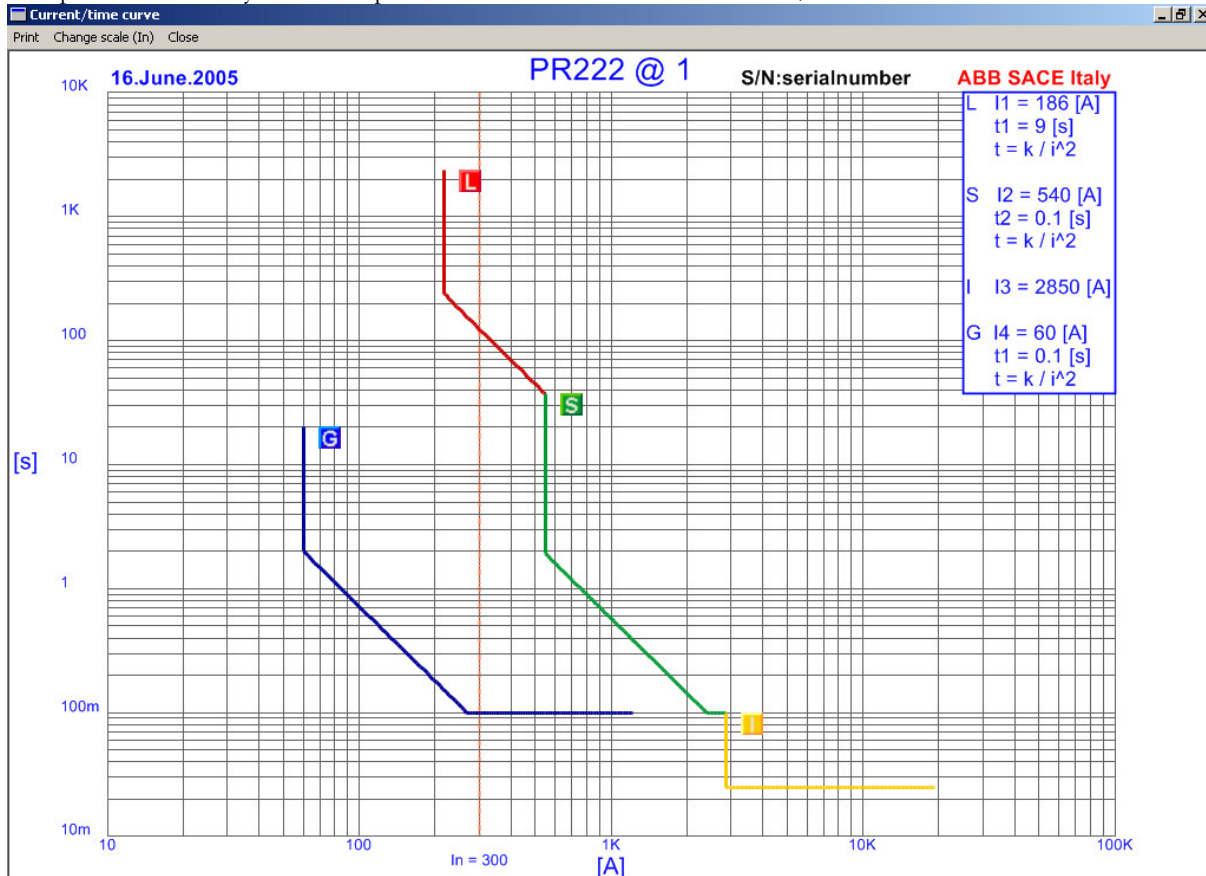
Note 2: to cancel the modifications in the selections it is sufficient to press the pushbutton "Reset".

Note 3: according to the type of selected voice, TEST, SETTINGS, etc. it is possible to print a test report and to save/load the relay settings in the menu "File".



6.6.1 Current time curve

With some relays it is possible to have a graphical representation of the protection set (L, S, I and G protections). To open this window you have to push the button named "Curve current / time".



On the menu bar is made possible to print the current view, to change the current scale (Ampere or In) and to close the window.

Note: the I_1 current threshold is drawn at about 117% (IEC) or 105% (UL) of its nominal value. This is done according to the respective standards.

Note 2: it is possible to change the protection set without close the window. At the end of the programming session, the window is automatically refreshed with the new parameters. If there is a communication problem or an incoherent parameter set a "?" icon is shown.

6.7 Communication settings (only PR222)

This page is visualized only if the device found on the bus belongs to PR222 family. Here are some information about the configuration of the communication unit.

PR222 @ 1 - Comm.settings		
Communication Parameters		
Address	1	1
Addressing	Standard	Standard
Baudrate	9600	9600
Parity	Even	Even
Submit		Reset

The item “Address” shows the logical address of the device on the bus, and may be changed by the list box menu on the right. Admissible values are from 1 to 247.

The item “Addressing” shows the access modality of SD-TestBus to different records of the device. The two possibilities are:

- “Standard”: in this modality the records are mapped according to the standard Modbus;
- “ABB”: in this modality the records are mapped according to the standard owner ABB.

Note: the selection of the addressing modality does not compromise the operativity of device and SD-TestBus, however is good manner that all the devices on the bus will have the same addressing type.

The voice “Baudrate” allows to select the communication speed between the device and SD-TestBus. The two choices are 19200 and 9600 characters per second.

The voice “Parity” allows to select the type of error check that is carried out on each transmitted character. The possible options are:

- “Even”: check of even parity;
- “Odd”: check of odd parity;
- “None”: no check of parity.

ATTENTION: Even though SD-TestBus allows to manage more devices with different communication parameters, **it is highly advisable to maintain the same addressing, baudrate and parity for all devices on the same bus. Before changing the logical address of the device (“Address”), verify that this is not already in use by another device. Otherwise the communication with both devices will be lost.**

Note 2: when one or more communication parameters are modified, SD-TestBus “follows” these changes resetting the serial port. The communication with the device is not lost so the user is not forced to do a new scanning operation.

6.8 Statistics

In this table are shown the number of operations, subdivided by typology.

PR123/P @ 3 - Statistics	
CB Operations statistics	
N° total operations	54
N° manual operations	34
N° protection trips	571
N° prot trip fails	13
N° trip tests	0

Note: the manual operations item is updated when the CB changes its status from CLOSE to OPEN.

6.9 Signaling Status

In this page are shown the status of the contacts installed on the relay:

- Module PR020/K contacts;
- Module PR120/K contacts (see 6.10);
- Input status on PR120/K.

It is possible to reset contacts status by pushing the button “Signaling reset”.

PR122/P @ 3 - Signaling status			
PR020k contacts		P1 P4 contacts	
relay 1	Open	contact P1	Open
relay 2	Open	contact P2	Open
relay 3	Open	contact P3	Open
relay 4	Open	contact P4	Open
relay 6	Open		
relay 7	Open		
relay 8	Open		
		Signaling module input	
		Input status	Not Active

PR122/P @ 3 - Actions	
Signaling reset	

6.10 PR120/K Configuration

In this page is possible to setup the behavior of the PR120/K module. This optional module has 4 programmable contacts (outputs) and one input named "Signaling module input". For each contact there are four items to be selected.

- The "Contact status" item can assume two values:
 - "NO": contact is normally open;
 - "NC": contact is normally close;
- "Contact Latch" establish the behavior of the contact:
 - "Not latched": the output stays active when the programmed event is set. When the event is no more verified the corresponding contact return to its inactive status;
 - "Latched": the output stay active when the programmed event is set for the first time. When the event is no more verified the corresponding contact **does not return** to its inactive status
- "Function": it is possible to select a simple event function from the menu showed. If needed, it is possible to set up a custom event by pressing the "Custom" button.
- "Delay": defines the delay between the event changing status (to verified) and the corresponding contact response.

P1 contact		
Contact Status	NO	NO ▾
Contact Latch	Not Latched	Not Latched ▾
Function	Custom: 0x610	Custom... ▾ Custom
Delay [s]	0.0	0 ▾ . 0 ▾

6.11 Data logger

The Emax series PR122 and PR123 has the ability to record the current and voltage signals of the plant.

PR123/P @ 3 - Data logger				
Parameters			Status	
Frequency	4800 Hz	4800 Hz ▾	Waiting trigger | Waiting	
Status	Enabled	Enabled ▾	Triggered | ---	
Trigger type	Custom: 0x810A	Custom... ▾ Custom	Stopped | ---	
Stop delay	0.00 s	0.00 ▾	Time Stamp	
			Date	31.12.1999
			Hour	0
			Minute	0
			Second	0
			Millisecond	0

PR123/P @ 3 - Commands		
<input type="button" value="Trigger Restart"/>	<input type="button" value="Data logger Stop"/>	<input type="button" value="Download"/>

In this page it is possible to set the sampling frequency, to set a custom event and to set the delay between the trig event and the end of the recordings.

Note: the total time capacity of the data logger depends on the selected sampling rate. It can vary between 3s (sampling frequency equal to 4800Hz) and 27s (sampling frequency set to 600Hz). **It is important to choose the proper sampling frequency: too low sampling frequency may affect signal's representation. This is caused by noise and plant harmonics at frequencies above 50 or 60 Hz. For further information please refer to the Emax PR122 or PR123 user manual.**


Note 2: the data logger can be set to be “free running” or “triggered on event”. In the first case the user have to stop manually the recording of the data logger. In the second, a stop command is sent by the relay when a particular event (i.e. any trip or any alarm or a custom event) occurs. **The trip event has the priority: when this event occurs the relay stops the data logger (even if it is in “free running”).**

To start an acquisition push the “Trigger restart” button. You can notice a “Waiting trigger” item on the top of the “Status” box. **Warning:** the “Trigger restart” command has to be sent only if the data logger is “enabled”.


To stop the data logger acquisition, push the “Data logger stop” button.

To download the content of the data logger to a file push the “Download” button.

6.12 Local/remote modality management

For safety reasons, when the device is in **local** modality , SD-TestBus does not allow the command sending. It is necessary, therefore, to interact with the frontal panel of the device and to set the **remote** operation modality. Within 5 seconds, SD-TestBus will find the setting change and automatically will allow to the user to send the commands or to set the protection parameters.

7 Summary of last scanning

To have a summary of the last scanning carried out, select the node  “Modbus” in the device list.

8 FAQs

8.1 The program does not start and gives a message “No available COM port found!”

At start SD-TestBus is looking for the serial ports supplied from the PC in use. On some portable PC of last generation it is possible that the COM ports are emulated. It is necessary to set them in a proper way so that Test Bus 2 may use them rightly. Besides, verify that the serial ports are not already in use in another software, for example SDView 2000.

8.2 The scanning operation does not find any device

Check that the relay is correctly powered. Make sure that the serial cable and the converter RS-232/ RS-485 is correctly supplied. Besides, check that the polarity of the two cables of the bus 485 is right. In case, act on parameter “Timeout” to increase the waiting time during the scanning. In case, mark the item “Search in the reserved addresses” to find devices with not configured communication.

8.3 The scanning operation finds unknown devices with consecutive addresses

Make sure that the polarity of the bus 485 cables is right and that at rest the line is correctly polarized. Go to “Bus\Find master” to check the presence of a master (e.g. SDView 2000) which is transmitting on the bus.

8.4 During the scanning one or more unknown devices are found even if in the switchboard there are SACE devices.

Verify that the devices do not communicate on the bus at the same address. In case, dissect the bus and set one at a time the devices with different addresses.

8.5 I have found some PR010K /PR020K unit.

Attention, the wirings are wrong. These units have not to be visible to SD-TestBus.

8.6 SD-TestBus has found a device but it does not show the pages.

Make sure that on the left of the icon there is the signal “+”. On the contrary, select the device and in the surfing window check the item “Problem”. They may be several reasons:

- Unknown device, SD-TestBus does not support this device or two or more devices communicate on the same address;
- Describer not valid, the file xml has been corrupt. It is necessary to install again SD-TestBus.

8.7 SD-TestBus has found the device but loses the communication

Make sure that the line RS-232 and the bus 485 are not too much disturbed (interferences with supply cables, mobile phones, etc.)

8.8 I try to send a command but SD-TestBus ask me a password

To send a command it is necessary to be authorized users.


8.9 I try to send a command but the push buttons do not work

Make sure that the device is in **remote** modality (alternation icons  and ). On the contrary, set the remote operation node on the relay panel.

8.10 I try to carry out a command but an error window opens with the message “Modbus device return an exception code...”

It means that the device has received the command but is not in condition to perform it.

8.11 During the surfing of pages, a page in evidence appears with some error messages.


Occasionally some communication errors caused by noise may occur (timeout error, CRC error, etc.). To avoid that this window appears continually, minimize it pressing the push button .

8.12 SD-TestBus show always the same serial number.

Every relay has its own serial number that is read (once) during scan operation. If the relay under test is changed (e.g. by bus switch) with another one (of the same type) with the same slave address, the serial number will not be refreshed. New devices connected to the bus have to be detected always with a bus scan.

8.13 Local bus connection (only PR122 and PR123).

The PR122 and PR123 relays have built in a **point-to-point** bus for Modbus communication. It means that, without the PR120/D-M module, it is made possible to wire the **W3** and **W4** contacts and communicate with an RS-485 converter. **The bus parameters are fixed: address 3, baud rate 19200, even parity and 1 stop bit.**

When local bus is used for connection, SD-TestBus shows the  icon on the tree list view. **It is not possible to connect more than one PR122 and PR123 on the local bus: it can cause conflicts and communication problems.**

8.14 The signaling module doesn't work

It is possible that the contact activation delay is greater than the event duration when the contact behavior is set to "Not Latched". If possible try to decrease the delay or set the contact to "Latched".