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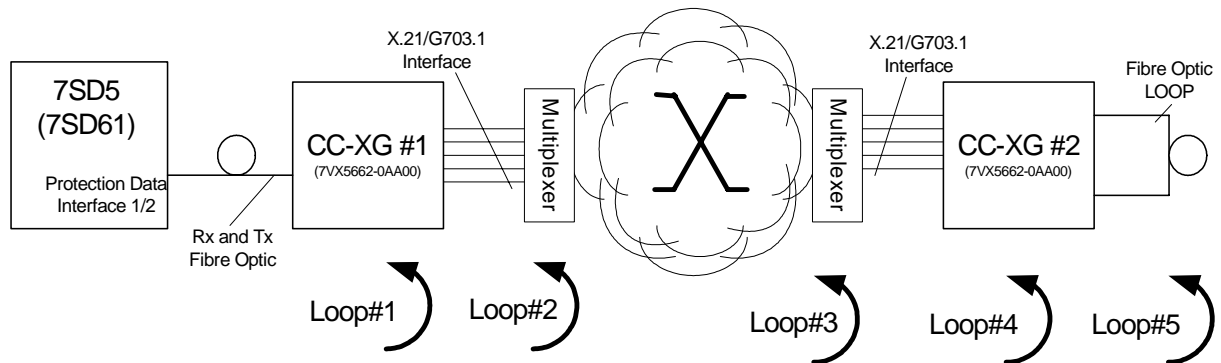
Rev.: App_Diff_0003.01 AST

Commissioning of the Protection Interface with Communication Converter X.21/G.703.1

Scope: Commissioning of the 7SD5 (7SD61) Protection Data Interface with Communication Converter X.21 / G.703.1

Description:

The figure above shows the 7SD5 (7SD61) with Protection Data Interface (PDI) \ Protection Interface (PI) for communication between the two line ends. During commissioning of both Protection Data Interface 1 and 2 the indicated loops may be used to check the data connections or to find problems in the PDI communication. The Protection Data Interface communication is tested with so called 'LOOP Tests'. During the loop tests the 7SD sends a telegram and expects reception of the same telegram. If an error occurs during the transmission the sent and received telegrams are not equal.

Loop1 tests:
- the fibre optic between the 7SD and the CC-XG and

Loop1 is implemented by a jumper setting in the CC-XG. (To run this test you switch off the clockrecovering)

Loop2 tests:
- the fibre optic between the 7SD and the CC-XG and
- the interface connection of the CC-XG and the communication network (multiplexer near end).

Loop2 is implemented by a setting in the multiplexer (near end).

Loop3 tests:
- the fibre optic between the 7SD and the CC-XG,
- the interface connection of the CC-XG and the communication network (multiplexer near end) and
- the routing thru the communication network to the multiplexer (far end).

Loop3 is implemented by a setting in the multiplexer (far end).

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Loop4 tests:
- the fibre optic between the 7SD and the CC-XG,
- the interface connection of the CC-XG and the communication network (multiplexer near end),
- the routing thru the communication network to the multiplexer (far end) and
- the interface connection of the CC-XG (far end) and the communication network.

Loop4 is implemented by a jumper setting in the CC-XG.

Loop5 tests:
- the fibre optic between the 7SD and the CC-XG,
- the interface connection of the CC-XG and the communication network (multiplexer near end) and
- the routing thru the communication network to the multiplexer (far end),
- the interface connection of the CC-XG (far end) and the communication network

Loop5 is implemented a fibre optic at the CC-XG (the implementation is easier compare to LOOP4).
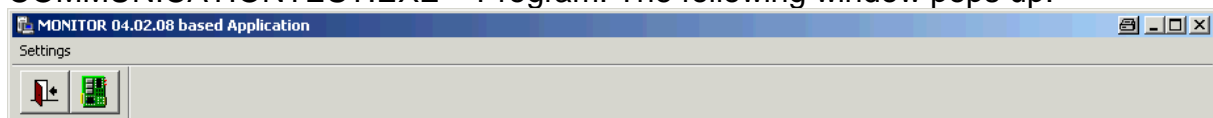
For the commission of the PDI LOOP test #5 is recommended as a minimum.

Preconditions for runnning the LOOP test:

Before you run the loop tests the interface between the CC-XG and the multiplexer must be established, this can be observed at the LED's of the converters (please refer to manual of the 7XV5662-0AA00).

Setting up the 'Hardware Test'

Connect a normal DIGSI- Cable from your PC to the 7SD52 and start the COMMUNICATIONTEST.EXE – Program. The following window pops up.
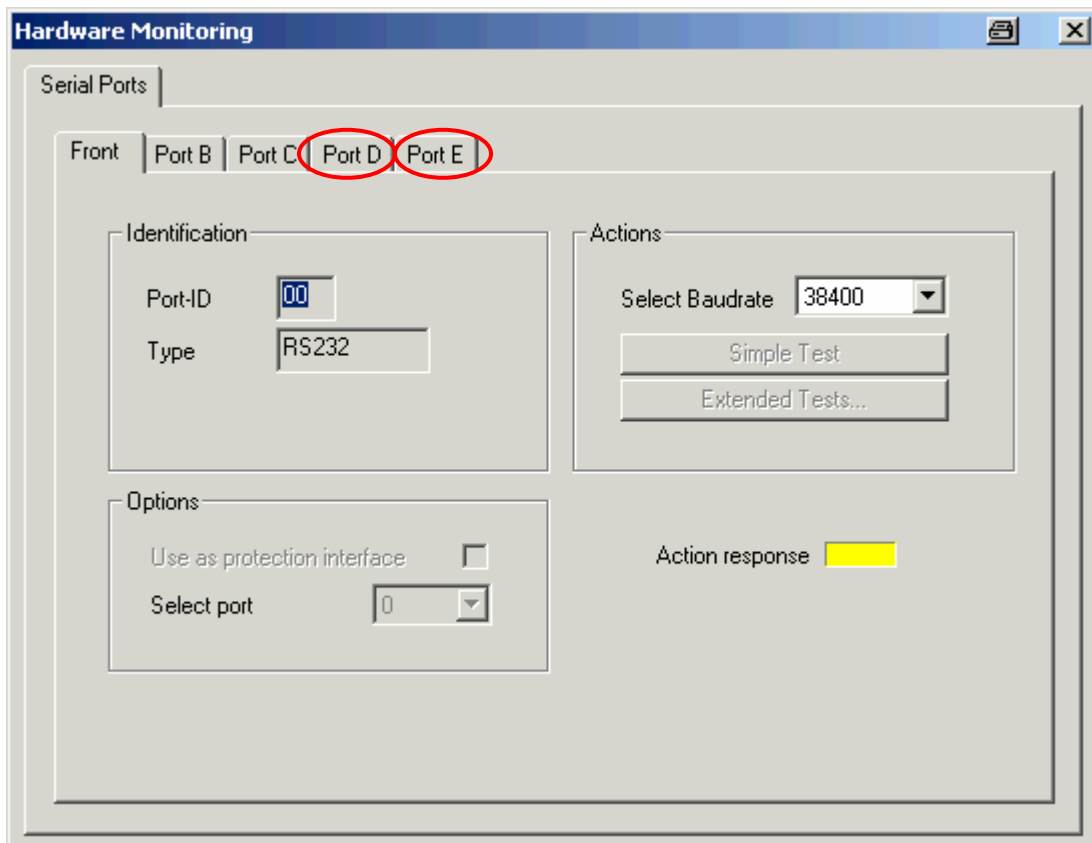
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The COMMUNICATIONTEST.EXE – Program needs to communicate with the relay. Choose under ‚*Settings*' → ‚*Serial Connection*' the connected PC COM Port.
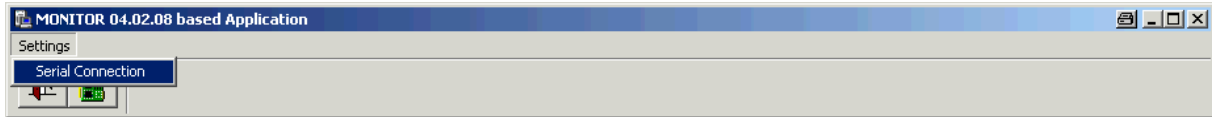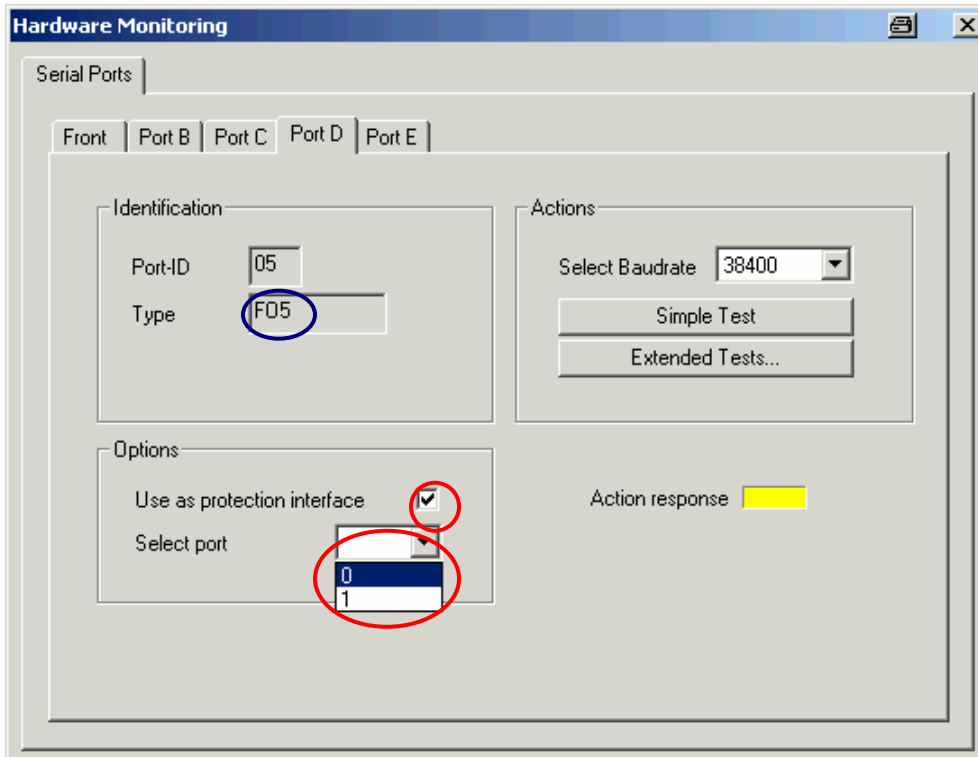
To start the Monitor Program press the ‚*Printed Circuit Bord Button*' (2nd Button from the left).
After a few seconds the device makes a RESET and the following window pops up on the PC screen.

The Protection Data Interface is lacated at PORT D and PORT E at the 7SD5. For the 7SD610 it is always Port D. Choose the PORT you like to test
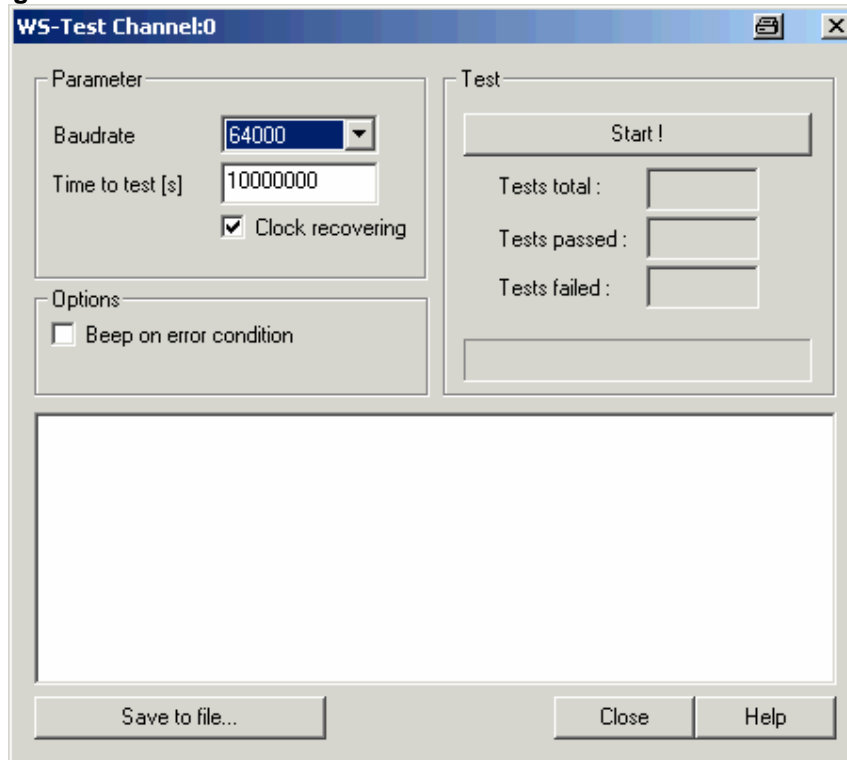

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In the given test example the Protection Data Interface is located at relay Port D (F05). To run the LOOP Test you have to initialise the Protection Data Interface by clicking a ‚check' at the '*Use as protection interface'* and choosing a number (0 or 1, either will do) in the drop down menu. The following figure shows the settings.
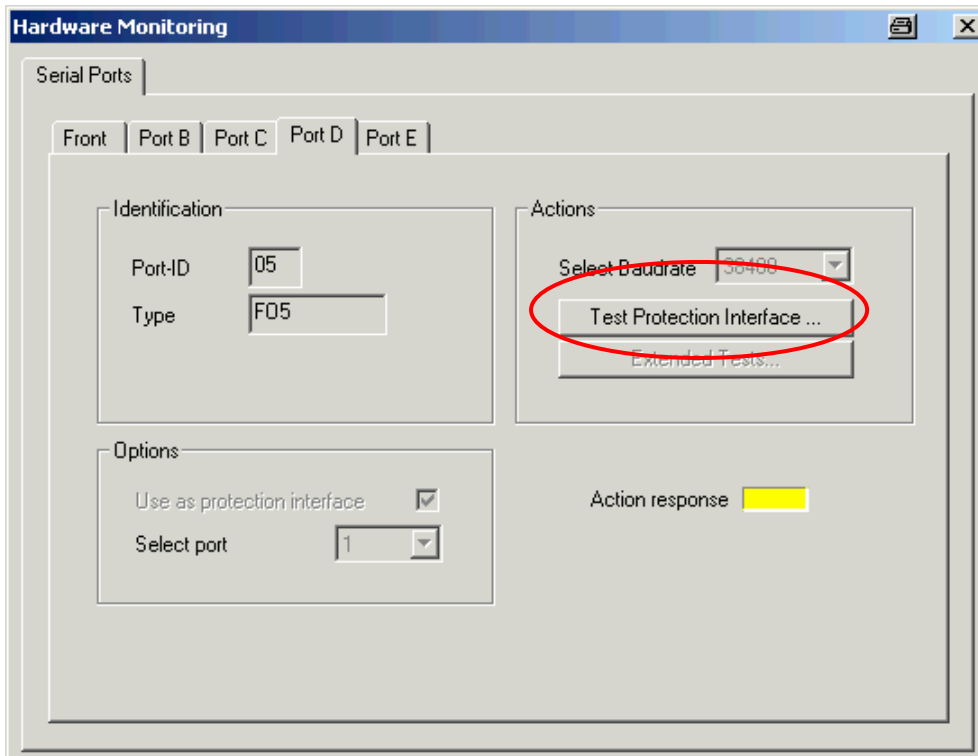
To start the test press the button '*Test Protection Interface*'.The following figure shows the settings

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WS-Test Channel:0

Parameter

Baudrate   64000

Time to test [s]   10000000

☑ Clock recovering

Options

☐ Beep on error condition

Test

Start !

Tests total :

Tests passed :

Tests failed :

Save to file...   Close   Help

In this window some settings can be applied:

Baudrate:	Communication speed for the CC-XG
	is 64000/128000/512000 bit/s
	(64 kbit/s is the choosen value in the figure above)
Time to test [s]:	Duration of the test in seconds
Clock recovering:	Activation of the clock recovering of the F05 – Module.
	For LOOP 1 test switch it off
	For all other LOPP test switch it on (as shown)
Beep:	To have an acoustic alarm if an error occurs

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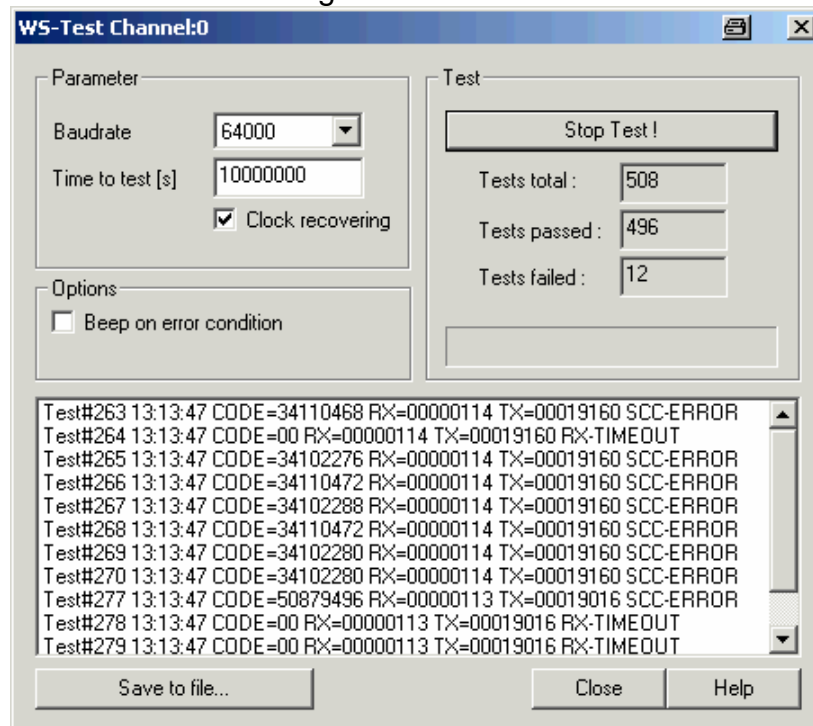
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By pressing the ‚*Start'* button the relay starts to send telegrams with different content. After the parameterized time the relay stops automatically. The test can be interrupted by pressing the ‚*Stop*' button
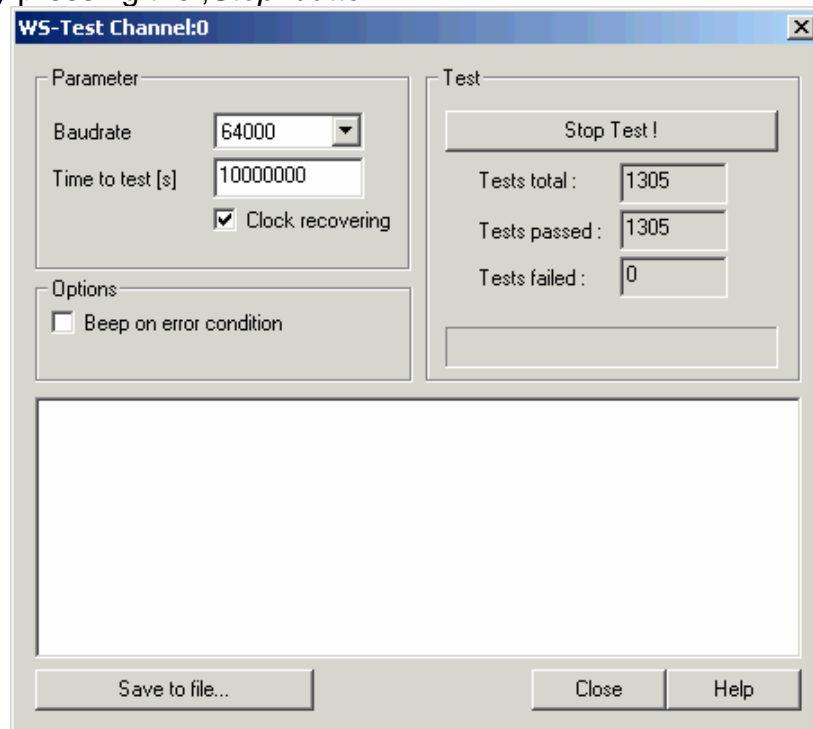
In this mode the relay expects a LOOP condition so the relay can compare the received telegram with the sent telegram.

In the box Test total / passed / failed the relay counts the total sent telegrams / the telegrams with no error and the telegrams with errors.

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After pressing the '*Start*' button again the relay starts with a new test.
To get the relay back in its normal operation close the Monitor Program and switch the relay off and on again.

Good and bad connection for the PDI / PI communication via the Communication converter Copper

In general during the loop test no error telegram should be observed.
The maximal acceptable error rate for the loop test is 1 to 2 telegrams within 2 minutes at an minimal observing time of 20 min.
If during the first 5 minutes no telegram error is observed, the test can be successfully stopped.

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