Overview

WinPP103 is a test program for the transmission protocol IEC 60870-5-103. It receives, tests, filters, stores, prints and transmits IEC 60870-5-103 messages. The generic messages are as displayed as hexadecimal strings.

System Requirements: Windows 7, Vista or XP, Pentium, 100 MB RAM, 100 MB Disc, at least 1 COM, USB for dongle, VGA or better.

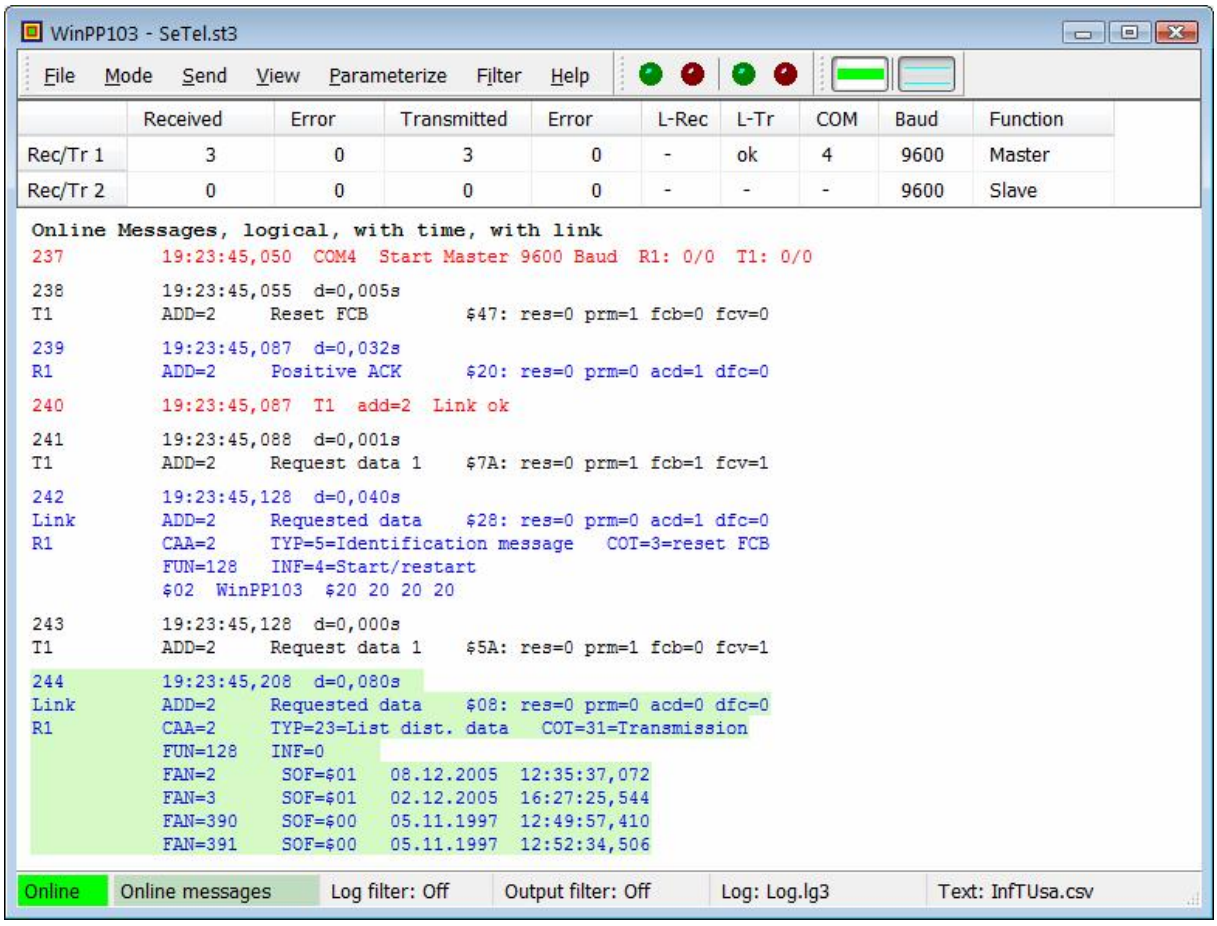

Fig. 1 WinPP103, Online message display

Interfacing to the protection equipment is done via the serial interface COM. You may need a RS232 – Fiber Optic interface converter. The program supports two COM interfaces. It is possible to run the program several times simultaneously and thus support several COM interfaces.

Functionality

You can monitor an existing Link or simulate a control system or the protection equipment. You may also simulate a transmission of disturbance data. If you wish to monitor the control and monitoring directions simultaneously then you need two free COM interfaces. For simulation, you need one free COM interface. You can parameterize the following for example:

- Ø -Text of the objects (CSV file)
- Ø -Program function (Master, Station, Monitoring)
- Ø -Use of single character E5
- Ø -COM Port
- Ø -Baud rate

The program reads the texts of the information numbers from a CSV file, format: “type; function type; information number; Color code; text;”, see also file “InfTxtUsa.csv” in the program directory. Select a CSV file in the "File | Plaintexts Load" menu. The currently used file is indicated in the status bar.

The program checks the received messages for correctness. Faulty messages are marked as such. Every transmitted and received message is allocated a time stamp and is stored in a Log File. The size of the Log file can be parameterized. During reception you can continue to display messages from a Log file and leaf backwards and forwards through the pages. The messages in the Log file can be output to a printer or stored in a text file.

The Log file is organized as a circular buffer. When the file is full then the newest message overwrites the oldest message.

When storing or displaying messages you can filter them with respect to:

- Ø Time
- Ø Link or Device Address
- Ø Type, Function or function number

With the time filter you can specify, for example those only messages from 02:00 till 08:00 should be stored. The transmitted messages are parameterized logically, see Fig. 2.

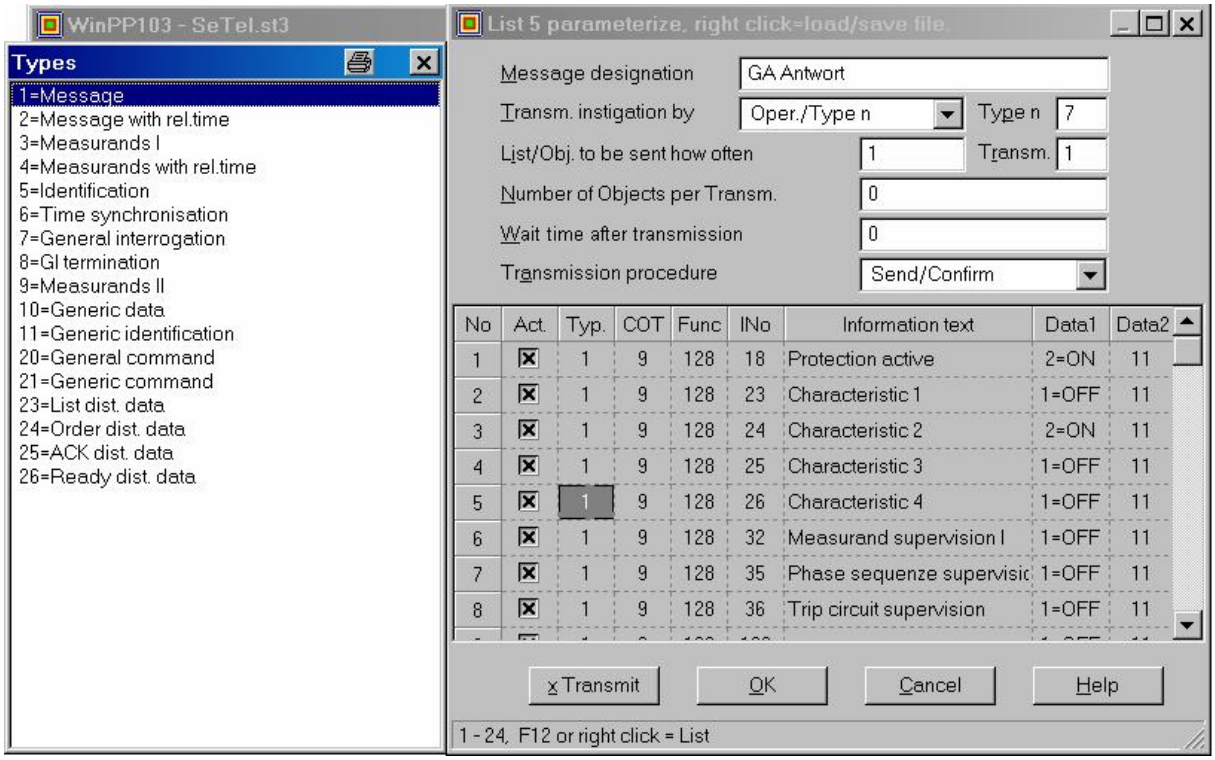

Fig. 1 Parameterizing a message list

There are 12 single messages and 12 message lists available. In a list you can parameterize up to 400 objects. For the simulation of command responses 100 objects are available. The transmission instigation for the messages and lists takes place via operation or via an event. An event can be: reception of a particular type of message or successful establishment of a link. You can then send an interrogation command, answer an interrogation command automatically, send commands, simulate responses, transmit cyclic measured values. The parameterized messages and lists can be saved and loaded.

For test purposes you can send illogical link and data messages. For examples: send NACK instead of ACK, do not toggle the FCB bit, send private ASDUs, see online help Simulate faults.

Option: RS232 <> Fiber Optic interface converter

Functioning

The interface converter converts two RS232 interfaces (COM_1 and COM_2) into two fiber-optic interfaces. Each interface converts the Transmitter (TxD) and Receiver (RxD) signal. All other signals are not relevant. The maximum transmission speed is 64 kBaud. The converter operates independently of the data format used.

With the converter, you can simulate two protection devices or listen to the control and monitoring direction simultaneously. According to the IEC 60870-5-103 standard, the light used has a wavelength of 850 nm. Ordinary duplex multi-mode optical cabel of the type 62.5/125 µm are connected by means of the FO connectors.

Housing and connections

The converter is located in an aluminum housing. The RS232 cables are connected by means of two DB9 sockets with a DCE assignment. In this way, a standard cable wired in a 1 to 1 ratio can be used for connection.

With FO cables, two FSMA plug-in connectors are available for COM_1 and two ST plug-in connectors are available for COM_2. A light-emitting diode is assigned to each plug-in connector. It lights up with “Light ON“.

In this way, FSMA or ST connections can be simulated and listened (without intermediate coupling). A duplex cable with FSMA-ST connectors is required for listening. A plug-in power supply unit ensures power supply. The existing voltage is indicated by means of a light-emitting diode.

Operating modes

The converter can be used for simulation or for listening. The operating mode is set by actuating a switch. During simulation, the E_1 and S_1 FO connections are assigned to the COM_1 interface, whereas the E_2 and S_2 connections are assigned to COM_2. The COM interface data are converted transparently to the FO in both directions.

In the listening mode, the data available on E_1 are sent automatically to S_2. COM_1 allows for listening the data available on RxD. All data available on E_2 are sent to S_1 and can be listened on COM2, RxD. The TxD signals of COM_1 and COM_2 are disconnected.

The line idle position on the optical cable can be set by means of a second switch. The “OFF“ position means “Light OFF“ in the line idle position, whereas the “ON“ position means “Light ON“ in the line idle position. The switch is used for all FO connections.

Devices equipped with SC connectors can be connected with ST-SC connectors or FSMA-SC connectors via FO cables. An ST-SC coupling is required for listening.

Technical data

Power supply:	6-10 V DC
Current input:	Maximal 200 mA with 10V DC
Plug-in power supply unit:	230V AC +/- 10%
Baud rate:	100 - 64000 Baud
Transmitted signals:	RxD, TxD
RS232 connection:	Two female 9-pole DSUB sockets
FO connection:	Two FSMA and two ST (B-FOC) sockets Multi-mode glass fiber cable
Wavelength:	850 nm
Housing:	Aluminum housing
Dimensions:	105 x 100 x 26 mm
Weight:	Approx. 400 g incl. power supply unit

Included in the scope of delivery:

1 RS232 <> FO converter
1 AC plug-in power supply unit, 100-240 V~, 50-60 Hz
2 RS232 cables, 9-pole, DSUB