# RS232 Transparent channel and Identification string

## Introduction

Identification string allows the device to send an identification packet to the server and only after receiving an ACK packet it will begin data transfer.

Transparent channel provides ability for the RS232 device to communicate with the server using FM device as an intermediate.

Feature for FM-pro3 device is available starting with this firmware version:

● FM-Pro3 - 00.B2.48 (Transparent channel with NMEA string available from 00.02.50 version.)

## Note

Important information for integrators. FM-Pro3 devices with firmware versions from 02.47 to 02.49 work in a different way as compared to a device running 02.50 firmware. Ruptela's protocol transparent channel command was changed. Please contact Technical support team for protocol description and always use newest firmware (or newer than 02.50).

You can get the latest firmware and configurator from our FTP server: doc.ruptela.lt

## Legal information

## Document change log

| Date | Version | Change details |
|------|---------|----------------|
| 2014-12-18 | 1.0 | Initial draft |
| 2016-04-22 | 1.1 | Included information on maximum number of messages that can be stored. |

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## Functionality description

Functionality consist of two independent parts:
- Identification string
- Transparent channel settings

Only one of them can be used at any single time. To use identification string you cannot use the transparent channel and vice versa.

## Identification string

Identification string option can be called with short-cut CTRL+T. Checkbox will become visible on the main configurator screen.
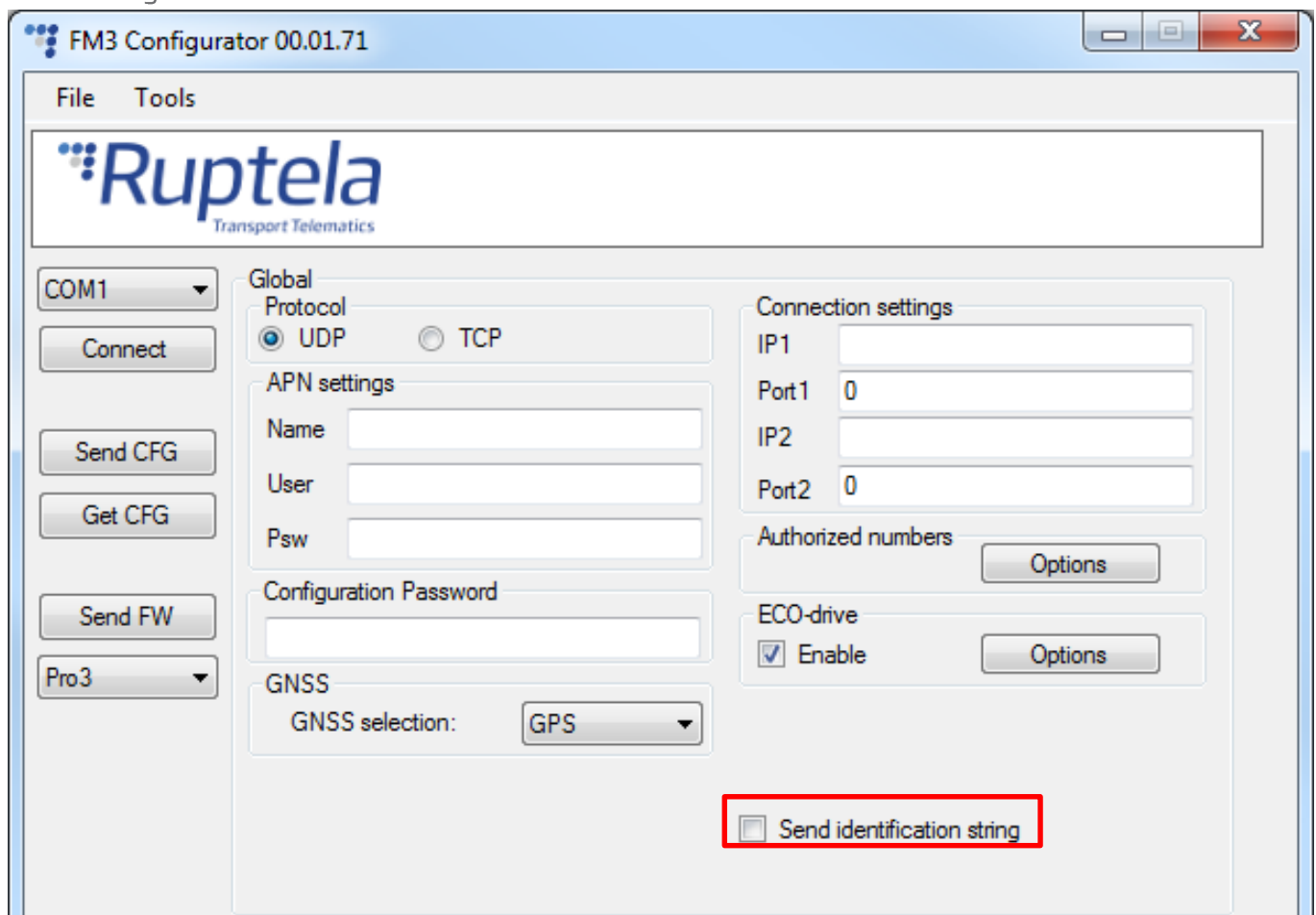


If you check this box, the device will send an identification packet to the server and only after receiving an ACK packet will it begin data transfer.

# TS232 Transparent channel

Transparent channel options are accessible in the IO settings window. Here you can configure all the necessary parameters for the RS232 device.

To enable transparent channel:

1. In the **IO events** section click on the "Options" button
2. Under **interfaces** section enable one of the ports. (If you have chosen PortA, then additionally select *RS232*.)
3. In the devices drop down menu choose *Transparent channel.*
4. Click "Config.." button to display Transparent channel settings window
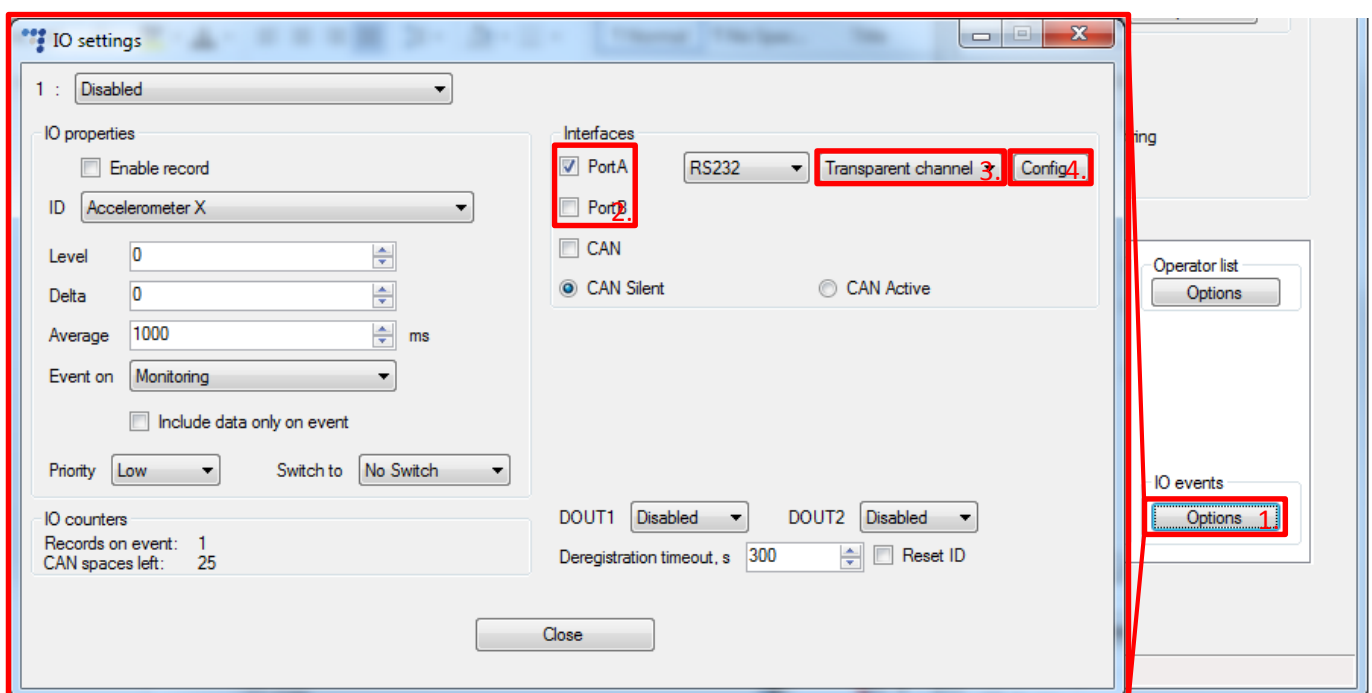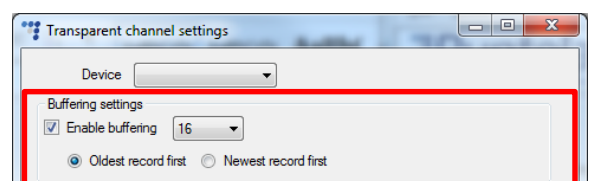


## Note

On the FM-Pro3 device, transparent channel can work on Port A or Port B, but never on both. Your RS232 device must be connected and configured on the same port to work via transparent channel.

## Transparent channel configuration settings

**Buffering settings (common to all ports)**

Buffering settings are the same for all ports configured as transparent channels. Any changes in this section will apply to all transparent channels.

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- **Enable buffering** enables record storage, if direct connection to the server is lost. In this case data is preserved in FM device's memory. You can select buffering message count (how many records will be stored).
  - **Oldest/Newest record first** sets data transfer priority after records were buffered.

<div style="background:#2e6da4;color:#fff;padding:1em;">

## Note

Maximum RS232 record length is 1005 B for firmware version 02.47 – 02.49.Maximum RS232 payload length is 1004 bytes for firmware version 02.50 and above.

Maximum 1024 messages can be stored. (That makes roughly 1 MB of data, if messages are of the maximum size. If single message size is 1 byte, than it would be only 1 KB maximum).

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### RS232 interface settings

First of all configure packet structure and baud rate according to RS232 device you are connecting to FM device:

- **Baudrate** - Data transfer speed (frequency). e.g. baudrate 115200 will transfer 115200 bits per second.
- **Data bits** - Select packet length (default 8 bits).
- **Parity** - Error checking mechanism. Default is none because it is not reliable. Error checking is left for packet transfer mechanism.
  - *Even* - For example, if the data is 10010010, for Even parity, the serial port sets the parity bit as 1 to keep the number of logic-high bits Even.
  - *Odd* - For Odd parity, the parity bit is 0 so that the number of logic-high bits is Odd.
  - *Mark* – Mark parity simply sets the parity bit to logic-high.
  - *Space* - Space sets the parity bit to logic-low, so that the receiving party can determine if the data is corrupted.
- **Stop bits** - Set stop bit length to 1 or 2 bit period.
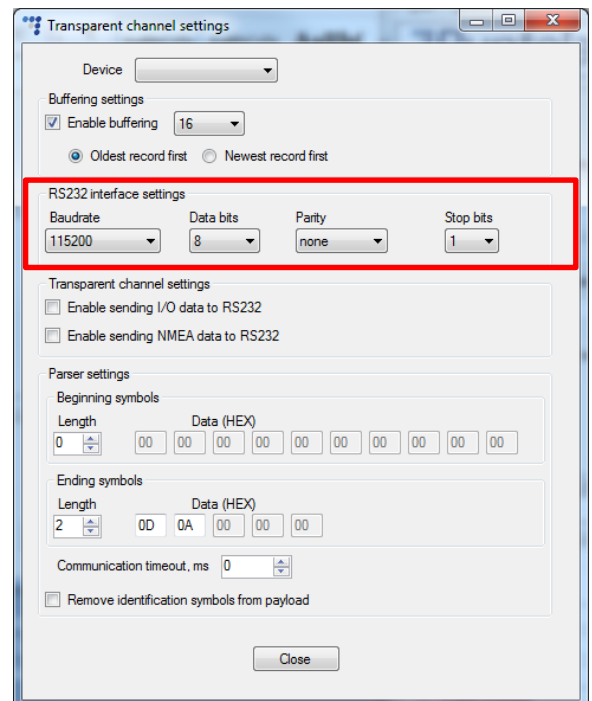
### Transparent channel settings

- **Enable sending I/O data to RS232** - Checkbox should be checked if you want I/O data to be sent to RS232 device. This is useful when you need I/O data collected by FM device e.g. to be displayed in RS232 device screen.

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- **Enable sending NMEA data to RS232** – This allows FM device to forward received NMEA string from the GPS/GLONASS module to the same serial port, which uses transparent channel feature. String contains the following data:
  - GGA – essential fix data, which provide 3D location and accuracy data.
  - GLL – geographic latitude and longitude.
  - GSA – GPS DOP and active satellites.
  - GSV – data about satellites that device might be able to find based on its viewing mask and almanac data.
  - RMC – essential GPS "'pvt'" (position, velocity, time).
  - VTG – velocity.
  - TXT – GPs module additional information.
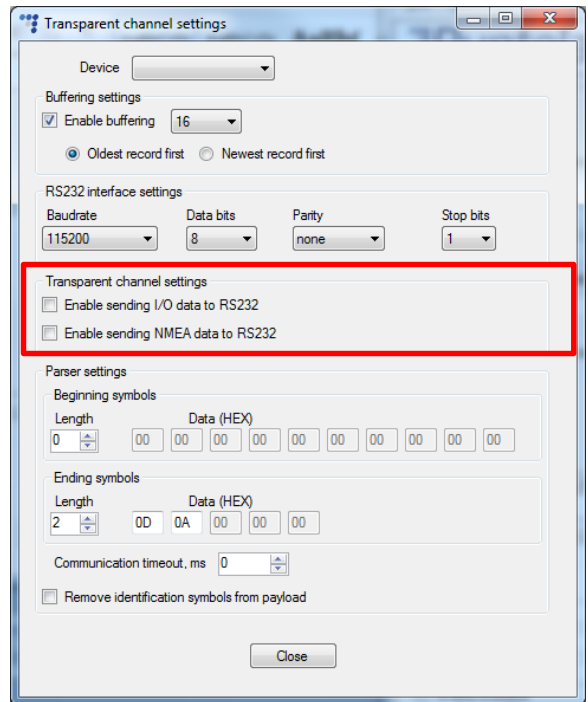
More information about NMEA can be found at: http://www.gpsinformation.org/dale/nmea.htm

**Parser settings**

- **Beginning symbols** - You can set beginning and ending of packet symbols in order to divide data stream into packets. Beginning symbols length can be up to 10 (adjust length with up and down arrows).
- **Ending symbols** - Their length can be up to 5 (adjust length with up and down arrows). Symbols must be entered in HEX format. You can use any online HEX to ASCII converter.

### Example
WT W (57 54 5E 57 20) are defined as beginning symbols (number of symbols is 5) and rn (0D 0A) symbols are used as ending symbols (number of symbols is 2). Symbols must be expressed in HEX.
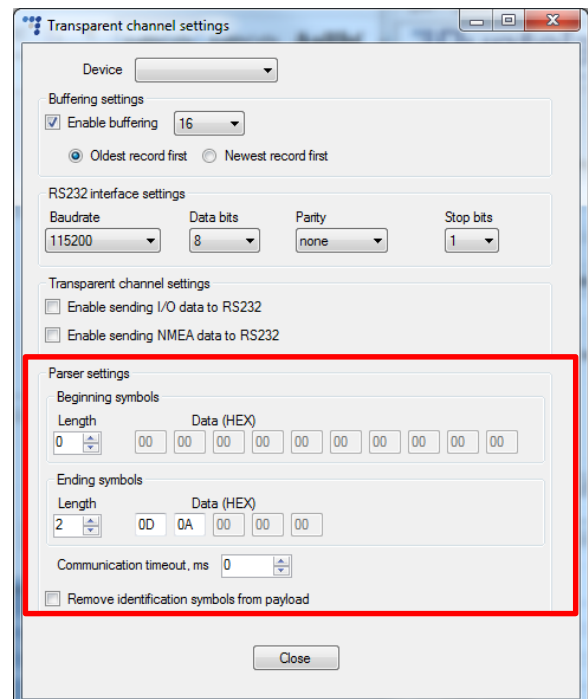
- **Communication timeout** indicates transfer time interval between adjacent symbols. If data is received after this time period, then the following bytes are stored in a separate package.
- **Remove identification symbols from payload** checkbox allows you to remove beginning and ending symbols from the payload of the package, which is sent to server. This way you get only data from the RS232 device and no unnecessary entries.