

# CANrunner v1.0 User Manual



**CANrunner**

CAN diagnostic software.



## Contents

1	Introduction.....	3
2	User Interface.....	4
1.1.	Main screen .....	4
1.2.	Toolbar .....	5
3	Setting Up a Traffic Monitor .....	6
1.3.	Add new channel .....	6
1.4.	Start monitoring .....	7
4	Filtering .....	9
1.5.	Custom filter.....	9
1.6.	CAN ID filter.....	9
5	Custom Protocol Parsers.....	11
1.7.	Building custom protocol parsers .....	12
6	Traffic Generator .....	13
1.8.	Adding a traffic generator.....	13
7	Contact information .....	14

## 1 Introduction

CANrunner is a CAN diagnostic software tool built with the cross-platform Qt toolkit. It is a powerful tool for software developers and service engineers, providing advanced data monitoring and analysis capabilities.

CANrunner allows users to

- Monitor real time data on CAN bus
- Analyze and catch problems on CAN bus
- View CAN bus statistics
- Parse CAN protocol specific data

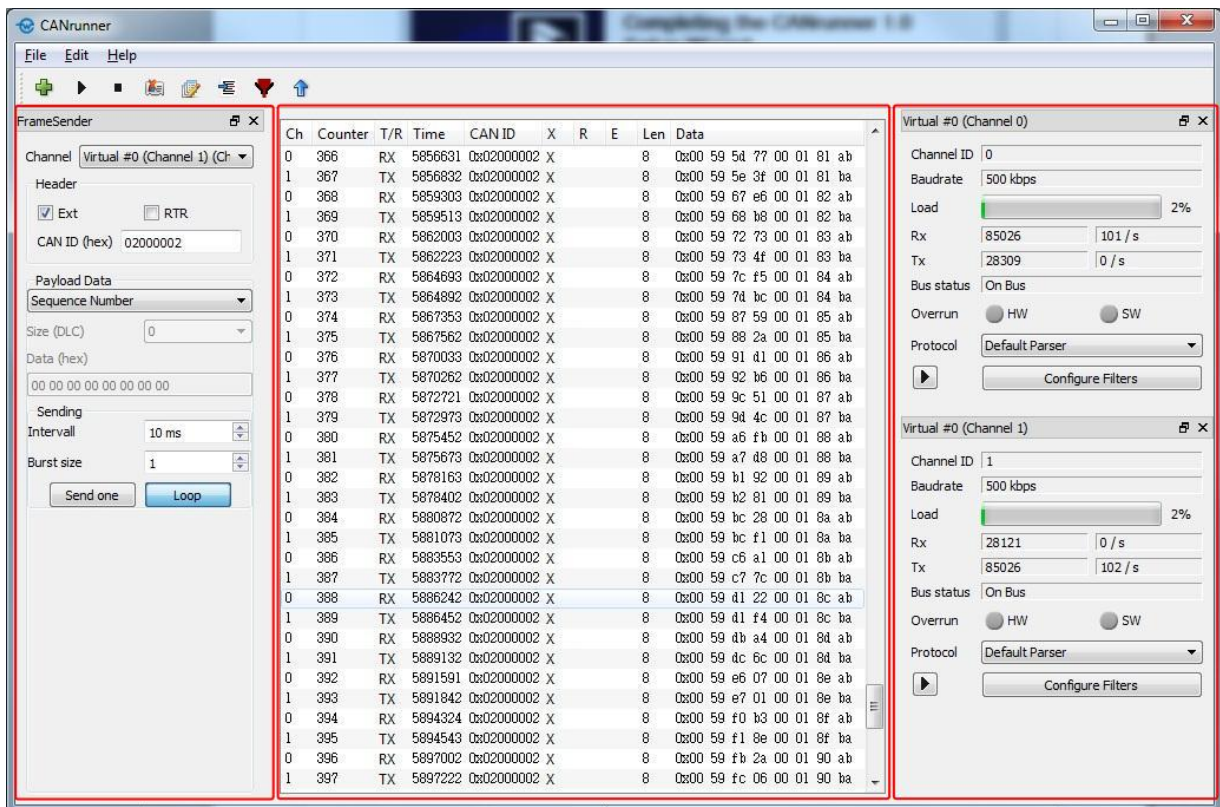
Remotely diagnose CAN bus over Ethernet by connecting to WRM remote device. CANrunner can be used also as a part of Wapice's WRM remote management system.

Read more and download the CANrunner software for free at [www.wapice.com](http://www.wapice.com) → Products

## 2 User Interface

### 1.1. Main screen

CANrunner's main screen consists of traffic log list, traffic generator panels and channel panels. All panels can be undocked from their default position and placed in desired location.



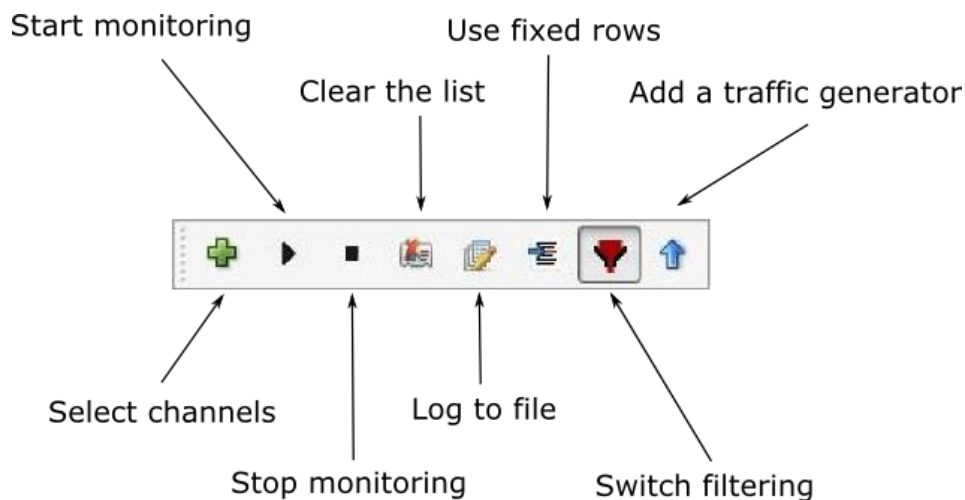
Traffic generators settings

Traffic monitor

Channels settings

## 1.2. Toolbar

All toolbar's functionalities can be also accessed from application's menu bar.



Toolbar's buttons:

**Select channels** – opens the device manager window which allows managing monitored channels.

**Start monitoring** – starts or continues channels monitoring.

**Stop monitoring** – halts channels monitoring.

**Clear the list** – clears traffic log list.

**Log to file** – create/open a file to save further logs.

**Use fixed rows** – switches on/off option of grouping logs by CAN ID.

**Switch filtering** – switches on/off option of messages filtering.

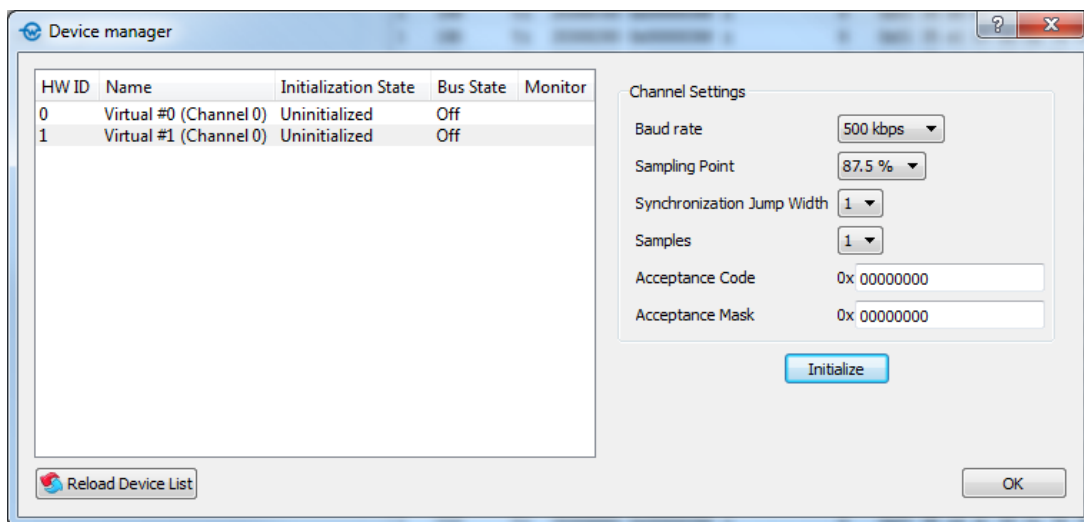
**Add a traffic generator** – adds new traffic generator.

### 3 Setting Up a Traffic Monitor

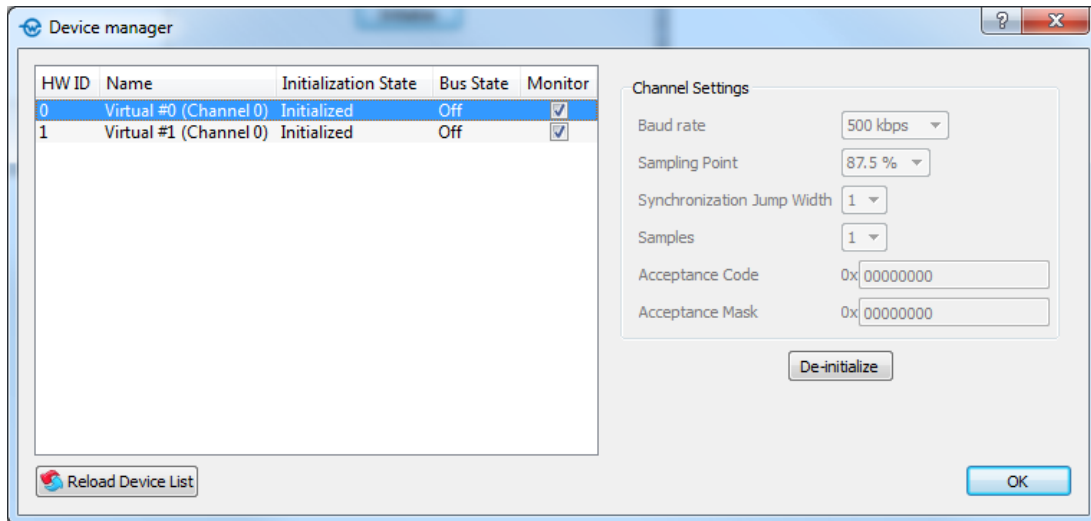
Do the following steps to set up a basic device configuration and generate channel traffic:

#### 1.3. Add new channel

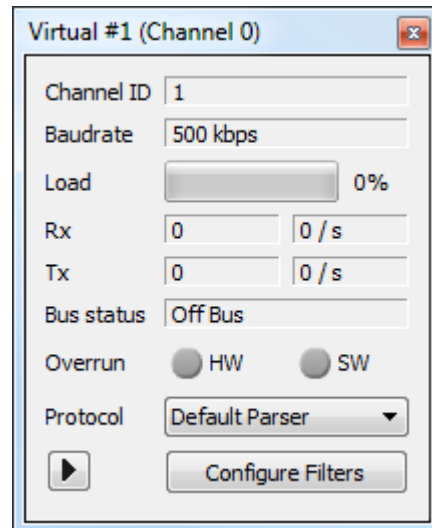
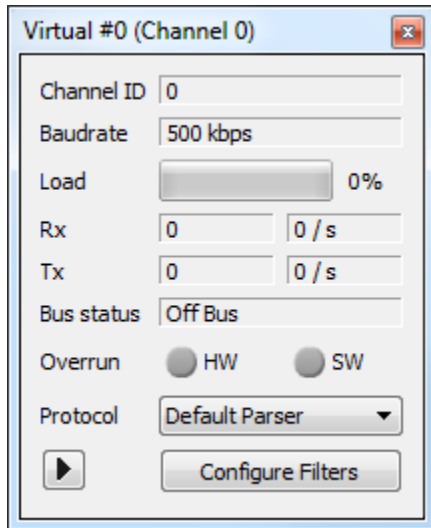
- Open a device manager by pressing (Select channels to monitor) button.
- Press "Reload Device List" button to get currently available devices.



- Select the device you want to monitor, set device settings and press "Initialize" button. You can initialize many devices at once.




- After pressing "OK" button, all monitors of previously initialized channels should be visible on the main screen.



#### 1.4. Start monitoring

- If a channel monitor is not visible on the main screen go back to device manager window and make sure that "Monitor" field of the channel is checked.

- Press "Start monitoring" button to begin listening on all active channels. If you set previously set traffic generator to run in loop mode you should see generator messages on defined channel.
- Alternatively you can select/deselect channels to be listened by toggling its  button.

Ch	Counter	T/R	Time	CAN ID	X	R	E	Len	Data
0	0	TX	6569013	0x00000000				8	0x00 64 3c 35 00 00 00 01
0	1	TX	6570027	0x00000000				8	0x00 64 40 2b 00 00 00 02
0	2	TX	6571041	0x00000000				8	0x00 64 44 21 00 00 00 03
0	3	TX	6572055	0x00000000				8	0x00 64 48 17 00 00 00 04
1	4	TX	6579450	0x00000000				8	0x00 64 64 fa 00 00 00 0a
1	5	TX	6580464	0x00000000				8	0x00 64 68 f1 00 00 00 0b
1	6	TX	6613926	0x00000000				8	0x00 64 eb a6 00 00 00 2c
1	7	TX	6614940	0x00000000				8	0x00 64 ef 9d 00 00 00 2d

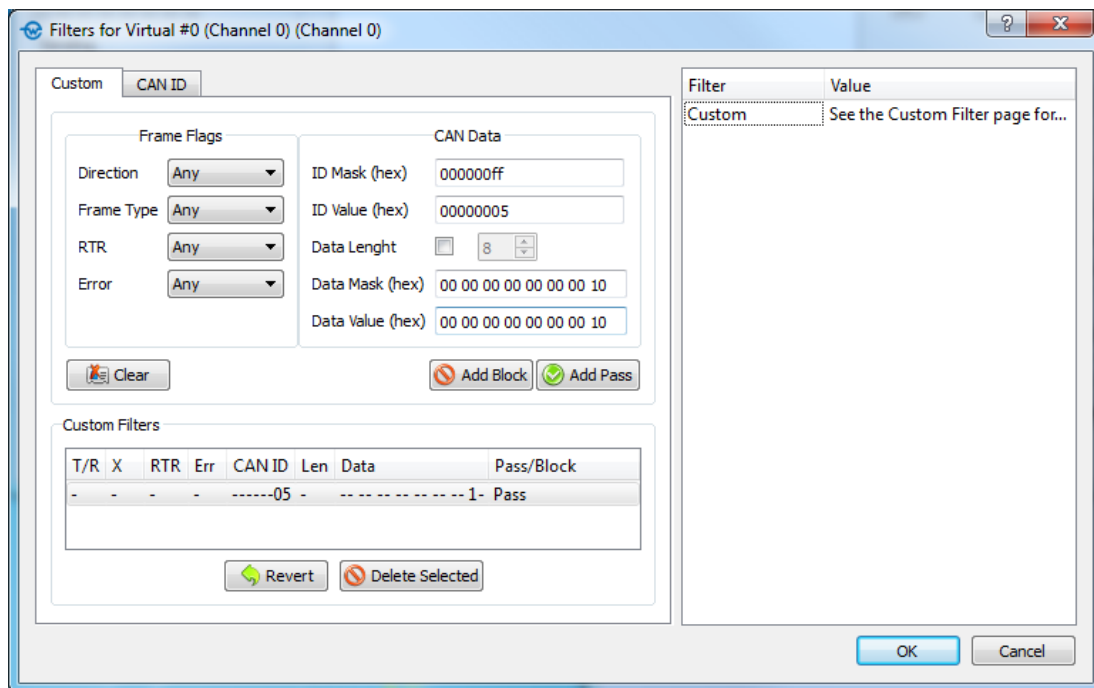


## 4 Filtering

To add a channel filter to the traffic monitor open the filter manager by pressing "Configure filters" button on the desired channel's panel in the main window. For now, two types of filtering are available: custom filter and CAN ID filter.

### 1.5. Custom filter

Using this filter, you can set a message filtering according to their flag settings, data and CAN ID

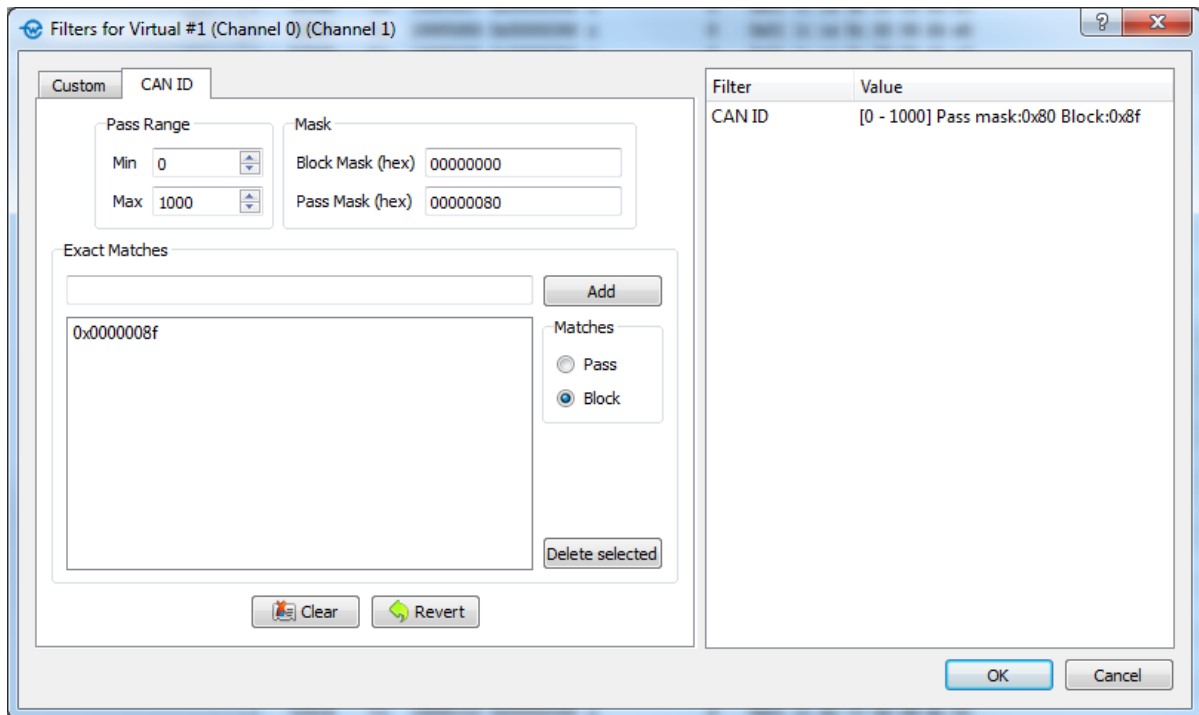


By using the ID mask you can specify which bits of ID value you want to filter. Leaving a certain mask bit on value 0 will pass/block message without filtering it, whereas, setting bit to 1 will force comparison to specified ID value bit. Data mask and value can be set in similar manner. For instance, in the picture above filter passes all messages that the last CAN ID byte is equal to 0x05, but also only those which fifth Data bit is set to 1.

### 1.6. CAN ID filter

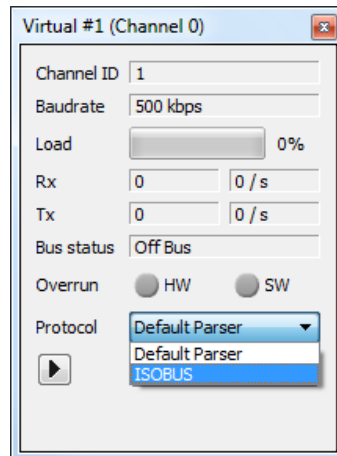
Using this filter you can pass or block messages with whole range of CAN IDs and add single exceptions to it. Similarly to custom filter, pass and block mask can be used too.

In the following example only messages with CAN ID in range from 0 to 1000 are accepted. In addition, pass mask narrows the range to only those IDs which eighth bit is set to 1. Finally one exception was added which blocks messages with ID equals to 0x8F.

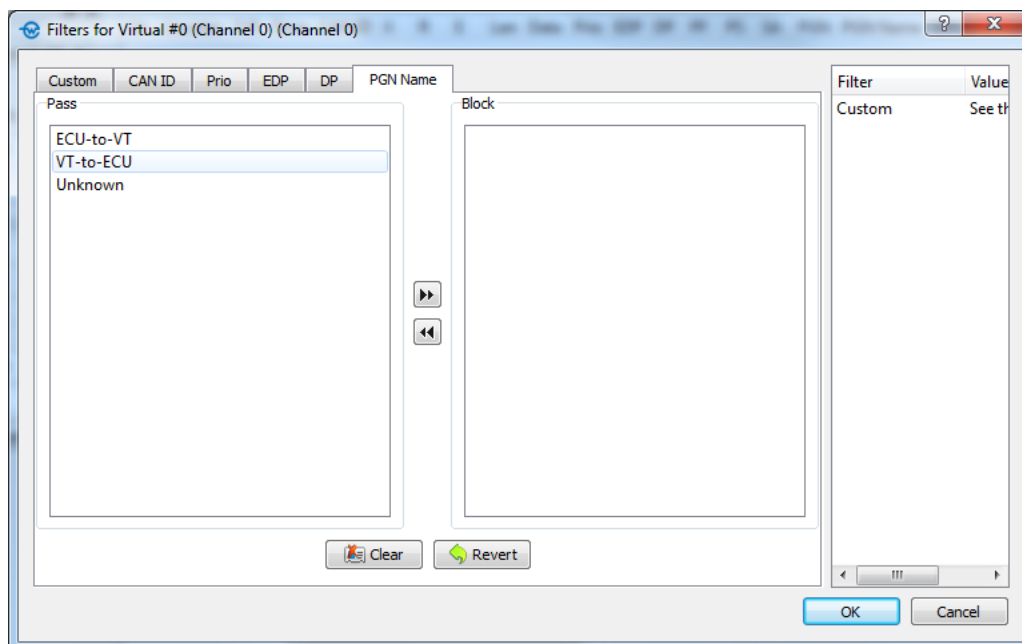


## 5 Custom Protocol Parsers

CANrunner supports custom protocol parsers. To change parser for a channel pick it from “Protocol” drop-down list on the channel panel:



After choosing different protocol parser, columns required to present the protocol's frame will be added to the traffic monitor list. Furthermore, new filtering options (tabs) will be added in the channel's filter manager, if they were defined for chosen parser:



## 1.7. Building custom protocol parsers

CANrunner provides the option to add custom protocol parser plugins with own channel filters by using CANMediaMsg struct from CANMediaMsg.h file and by implementing IWCANParser interface from IWCANParser.h file. Both required files are located in the “include” folder at the CANrunner's main directory.

A custom parser plugin should be copied to “bin/parsers/” directory before starting the CANrunner application.

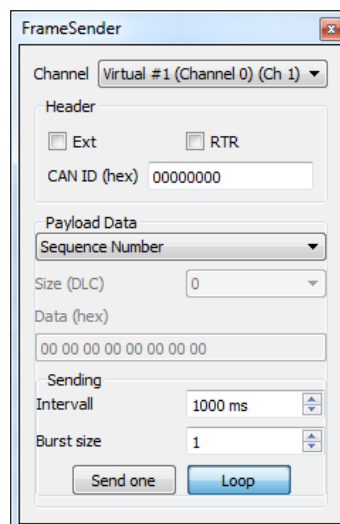
## 6 Traffic Generator

The CANrunner has a feature of generating messages on the channels with user-defined frame settings, CAN ID and data bytes. Moreover, traffic can be optionally generated in adjustable intervals.

### 1.8. Adding a traffic generator

To add a traffic generator to the active channel do the following steps:

- Press the "Traffic generator" button on the toolbar to add a new traffic generator.
- Set parameters of the new traffic generator or leave default settings ( 8 bytes sequence send with a 10ms interval)
- Press the "Send one" button to send a single frame or the "Loop" button to generate traffic in defined interval.



- Turn on monitoring of the channel on which traffic is being generated.

## 7 Contact information

In any questions and needs, please contact:

[canrunner@wapice.com](mailto:canrunner@wapice.com)

[www.wapice.com](http://www.wapice.com)