Ratatoskr User's Manual

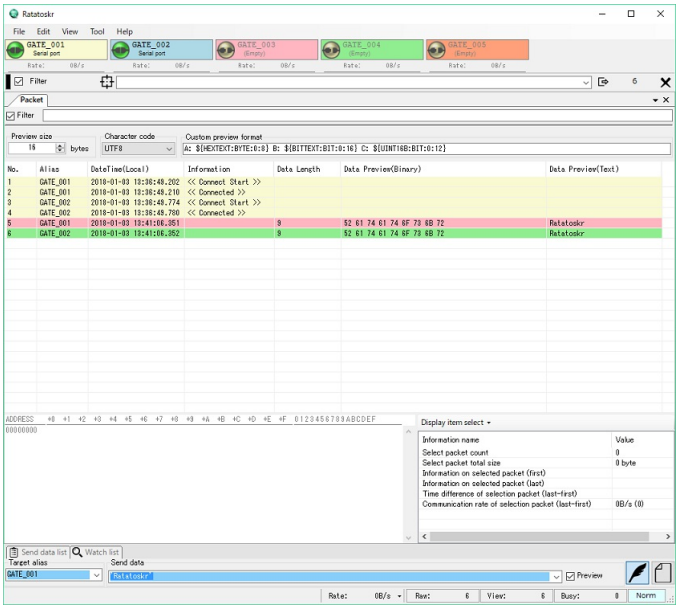
https://github.com/tokihk/Ratatoskr

Ratatoskr is a development support tool that can communicate with various devices that can be connected to a personal computer. It provides a general-purpose communication debugging environment for various communication ports such as serial port and TCP /UDP.

You can intuitively operate input /output to /from ports by easy-to-view packet view and interface that emphasizes operability.

Ratatoskr has the following features.

- Supports various communication such as serial port, TCP /IP, UDP
    - Serial Port
    - TCP/IP Server or Client
    - UDP
    - USB Capture
- Supports packet view according to usage, such as packet unit and data unit
- Simultaneous connection to multiple ports
- Simultaneous display of multiple types of packet views
- Saving /loading /saving packet logs automatically
- Real-time packet control such as filtering, packet combining
- Redirect transfer from port to port



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GPL 3 (GNU GENERAL PUBLIC LICENSE v 3)

Operating environment

- .NET Framework 4.7

Installation

After installing .NET Framwork, decompress it to an arbitrary folder and execute it.
Other software is required when using some functions.

Features	Required Software
USB Monitor	USBPcap (http://desowin.org/usbpcap/)
Ehernet	WinPcap (https://www.winpcap.org/)

Uninstall

Ratatoskr does not use the registry.
Delete the file decompressed by installation, delete the configuration file.
The configuration file exists in the following location.
%APPDATA%\Ratatoskr

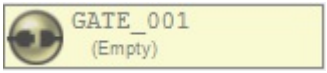
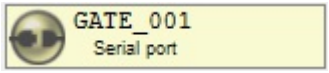
Basic usage

1.Add packet view

You can add any packet view from [Menu Bar]->[View]->[Add packet view].

2.Set the gate

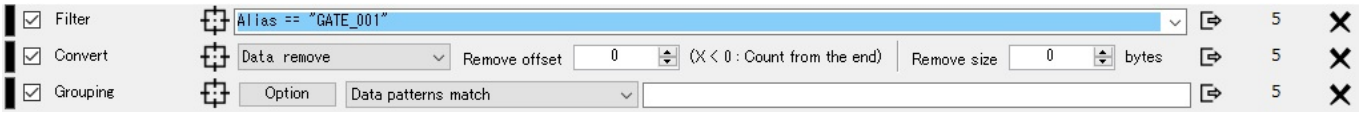
You can set the gate from the button of the gate bar.

Icon	state	operation method
	Not set	Mouse Left /Right click:Gate edit
	Configured	Left mouse click:Connect /disconnect Mouse right click:Gate edit Mouse right hold:Gate reset

Icon	State
	Connection status
	Preparing for connection
	Disconnected state

3.Send

Data can be sent from the transmission control box at the bottom of the frame.



The destination gate is specified with wild card 'inTarget alias`.

-  **Edit transmission mode**

  Enter in hexadecimal notation and send with Enter key. It recognizes it as a separate data with the 3rd character or space.

  Enclose it with '...'to convert the enclosed character to character code. You can change the character code by enclosing it with <...>.(Default is utf-8)

  If you check Preview, you can check the data actually sent.

Input data	Transmission data
	0123456789
	0 1 2 3 4
	02'test '03

02 'あいうえお'03

02 <shift-jis>'あいうえお'03

- **File transmission mode**

  Drag and drop transmission data or select from the file selection dialog.
  You can not drag and drop when in administrator mode.
  Send with Enter key.

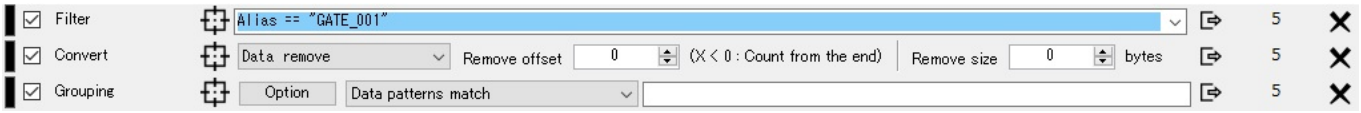
4.Receive

When data is input to the gate from the outside, data is displayed in the packet view.

Useful usage (real time conversion)

Ratatoskr has a function to process transmitted /received packets in real time. Conversion functions can be freely combined, which is very useful for data analysis.

The converter is added from [Menu Bar]->[View]->[Add converter]. The added transducer will be added under the gate button bar.



The conversion order is processed sequentially from the transducers arranged above. You can swap the added transducer by dragging the left bar.

Packets subject to converter can be specified for each converter. If no target packet is specified, all packets passing through the converter are targeted.

Filtering

Add [Menu Bar]->[View]->[Add converter]- [Filter].

Passes only packets that match the specified pattern.

Patterns can be combined with conditions by (...)priority specification and conditional operator && ||.

Conditional operator	operation
A && B	The condition is satisfied when both A and B conditions are satisfied.
A || B	The condition is satisfied when either condition of A or B is satisfied.

Packet elements can be referenced by the following variables.(Not case sensitive)

Content	Data type

Variable name		
PacketCount	Returns the number of packets that arrived at the converter.	Number
LastDelta	Returns the difference time from the last arrived packet.	DateTimeOffset
IsControl	Returns whether the packet is a control packet.(Unused)	Bool
IsMessage	Returns if the packet is a message packet.	Bool
IsData	Returns whether the packet is a data packet.	Bool
Alias	Returns the Alias of the gate that created the packet.	Text
DateTime	Returns the time the packet occurred.	DateTime
Information	Returns additional information on that packet.	Text
Mark	Returns the mark value of that packet.(Unused)	Number
IsSend	Returns whether it is a send packet or not.	Bool
IsRecv	Returns whether or not it is a received packet.	Bool
Source	Returns the sender information of the packet.	Text
Destination	Returns the destination information of the packet.	Text
DataSize	Returns the data size of that packet.	Text
BitText	Returns the data part in binary notation.	Text
HexText	Returns the data part in hexadecimal notation.	Text
AsciiText	Returns the data part in ASCII notation.	Text
Utf8Text	Returns the data part in UTF-8 notation.	Text
UnicodeLText	Returns the data part in UTF-16LE notation.	Text
UnicodeBText	Returns the data part in UTF-16BE notation.	Text

Parameter elements can be defined with the following description.

Type	regular expression	description example
Number	[0]|([1-9][0-9]{0,8})(\.[0-9]{1,8}){0,1}	0 12345 12345.0123
Number	0[xX][0-9a-fA-F]{1,8}	0x01234567
DateTime	{TY}-{TM}-{TD}T{Th}:{Tm}:{Ts}\.{Tf}([\+\-]{Th}:{Tm}|Z)	2018-01-01T01:00:00.000Z 2018-01-01T01:00:00.000+09:00
DateTimeOffset	{Th}:{Tm}:{Ts}\.{Tf}	00:00:15.123

Text	\"[^\"]*\"	"abcdef"
Regex	\/[^/]*\/	/02.*03/

- **Regex type can be compared with Text type and regular expression.**
- Ellipses represent the following.
  - TY = ([0-9]{4})
  - TM = ([0][0-9]|1[0-2])
  - TD = ([0-2][0-9]|3[0-1])
  - Th = ([0-1][0-9]|2[0-3])
  - Tm = ([0-5][0-9])
  - Ts = ([0-5][0-9])
  - Tf = ([0-9]{3})

Below is an example of frequently used description.

Filter expression	Meaning
IsData && HexText == /02.*03/	Data packets enclosed in 02 to 03

Packet Join /Split

Add [Menu Bar]->[View]->[Add converter]- [Grouping].

You can combine and split packets according to the rules.

- **Data patterns match**

Join packets until it finds data matching the described pattern.
Enter a pattern in the same format as the edit send mode.

- **Data size**

When passing through the converter, it becomes a packet of the specified size and is output.

- **Receive timeout**

Packets are combined until the packet input interval to the converter reaches the specified time or longer.

- **Interval**

Packets are output at specified intervals regardless of the packet input interval to the converter.
Packets entered into the converter before being output are combined.

Data conversion

Add [Menu Bar]->[View]->[Add converter]- [Convert].

Modify the contents of the packet input to the converter.

- **Change alias**

Change Alias of packet input to converter.

- **Code encode**

When detecting a specific code, preprocess code is added and the code is masked.

- **Code decode**

TBD

- **Data remove**

  Specify offset and size to delete part of the data.
  If you set the offset to a negative value, it counts from the end.

- **Data change**

  Convert designated data to arbitrary data.