

Octave Instrument Control Toolkit 0.6.0

Low level instrumentation functions for GNU Octave.

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To download a copy of the GNU Octave Instrument Control Toolkit, please visit <http://octave.sourceforge.net/instrument-control/>.

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1 Installing and loading

The Instrument Control toolkit must be installed and then loaded to be used.

It can be installed in GNU Octave directly from octave-forge, or can be installed in an off-line mode via a downloaded tarball.

The toolkit must be then be loaded once per each GNU Octave session in order to use its functionality.

1.1 Requirements

For GPIB support (Linux only), linux-gpib must be installed before installing instrument-control. GPIB support is also available for windows by following the information from the wiki: https://wiki.octave.org/Instrument_control_package#Requirements

For VXI11 support, rpcgen, and libtirpc-devel must be installed before installing instrument-control.

1.2 Windows install

If using the GNU Octave installer in Windows, the toolkit will have already been installed, and does not need to be re-installed unless a newer version is available.

Run the following command to verify if the toolkit is available:

```
pkg list instrument-control
```

1.3 Online Direct install

With an internet connection available, toolkit can be installed from octave-forge using the following command within GNU Octave:

```
pkg install -forge instrument-control
```

The latest released version of the toolkit will be downloaded, compiled and installed.

1.4 Off-line install

With the toolkit package already downloaded, and in the current directory when running GNU Octave, the package can be installed using the following command within GNU Octave:

```
pkg install instrument-control-0.6.0.tar.gz
```

1.5 Loading

Regardless of the method of installing the toolkit, in order to use its functions, the toolkit must be loaded using the pkg load command:

```
pkg load instrument-control
```

The toolkit must be loaded on each GNU Octave session.

2 Basic Usage Overview

2.1 Authors

The Instrument control package provides low level I/O functions for serial, i2c, spi, parallel, tcp, gpib, vx111, udp and usbtmc interfaces.

It was written mainly by the following developers:

- Andrius Sutas <andrius.sutasg at mail.com>
- Stefan Mahr <dac922 at gmx.de>
- John Donoghue <john.donoghue at ieee.org>

2.2 Available Interfaces

The ability to use each interface is dependent on OS and what libraries were available during the toolkit install.

To verify the available interfaces, run the following command in octave:

```
instrhwinfo
```

The function will return information on the supported interfaces that are available, similar to below:

```
ToolboxVersion = 0.6.0
ToolboxName = octave instrument control package
SupportedInterfaces =
{
    [1,1] = gpib
    [1,2] = i2c
    [1,3] = parallel
    [1,4] = serial
    [1,5] = tcp
    [1,6] = udp
    [1,7] = usbtmc
    [1,8] = vx111
}
```

Most interfaces have two types of functions:

- somewhat compatible matlab functions such as fread, fwrite
- interface specific lower level functions such as udp_read, udp_write

2.3 Basic Serial

2.3.1 Serial

The serial object has been deprecated and may not appear in newer versions of the instrument-control toolbox. Instead new code should use the serialport object.

The serial port can be opened using the serial function:

```
s = serial("/dev/ttyUSB1", 115200)
```

The first parameter is the device name and is OS specific. The second parameter is the baudrate.

A list of available serial ports can be retrieved using the function:

```
seriallist
```

After creating the interface object, properties of the device can be set or retrieved using get or set functions or as property access.

```
s = serial("/dev/ttyUSB1", 115200)
br = get(s, "baudrate") # gets the baudrate
br = s.baudrate # also gets the baudrate

set(s, "baudrate", 9600) # set the baudrate
s.baudrate = 9600 # also sets the baudrate
```

The device can be written and read from using fread, fwrite and srl_read and srl_write functions.

```
srl_write(s, "hello world") # write hello world
fprintf(s, "hello again")

val = srl_read(s, 10) # attempt to read
val = fread(s, 10)
```

The device can be closed using fclose or srl_close.

```
fclose(s)
```

2.3.2 SerialPort

The recommended method of accessing serial ports is through the serialport object.

The serial port can be opened using the serialport function:

```
s = serialport("/dev/ttyUSB1", 115200)
```

The first parameter is the device name and is OS specific. The second parameter is the baudrate.

A list of available serial ports can be retrieved using the function:

```
serialportlist
```

After creating the interface object, properties of the device can be set or retrieved using get or set functions or as property access.

```
s = serialport("/dev/ttyUSB1", 115200)
br = get(s, "baudrate") # gets the baudrate
br = s.baudrate # also gets the baudrate

set(s, "baudrate", 9600) # set the baudrate
s.baudrate = 9600 # also sets the baudrate
```

The device can be written and read from using read and write functions.

```
write(s, "hello world") # write hello world

val = read(s, 10)
```

The device can be closed by clearing the serialport object.

```
clear s
```

2.4 Basic TCP

A TCP connection can be opened using the tcp or tcpip function function:

```
s = tcp("127.0.0.1", 80)
```

The first parameter is the IP address to connect to. The second parameter is the port number. And optional timeout value can be also be provided.

A more matlab compatible function is available as tcpip to also open a tcp port:

```
s = tcpip("gnu.org", 80)
```

The first parameter is a hostname or ip address, the second the port number. Additional parameter/value pairs can be provided after the port.

After creating the interface object, properties of the device can be set or retrieved using get or set functions or as property access.

```
s = tcp("127.0.0.1", 80)
oldtimeout = get(s, "timeout") # get timeout
```

```
set(s, "timeout", 10) # set the timeout
s.timeout = oldtimeout # also sets the timeout
```

The device can be written and read from using fread, fwrite and tcp_read and tcp_write functions.

```
tcp_write(s, "HEAD / HTTP/1.1\r\n\r\n")
```

```
val = tcp_read(s, 100, 500) # attempt to read 100 bytes
```

The device can be closed using fclose or tcp_close.

```
fclose(s)
```

3 Function Reference

The functions currently available in the toolkit are described below.

3.1 Common Functions

3.1.1 flushinput

`flushinput (dev)`

Flush the instruments input buffers

Inputs

dev - connected device or array of devices

Outputs

None

See also: flushoutput.

3.1.2 flushoutput

`flushoutput (dev)`

Flush the instruments output buffers

Inputs

dev - connected device or array of devices

Outputs

None

See also: flushinput.

3.2 Serial (Deprecated)

3.2.1 @octave_serial/fclose

`res = fclose (obj)`

[Function File]

Closes SERIAL connection *obj*

3.2.2 @octave_serial/flushinput

`flushinput (serial)`

[Loadable Function]

Flush the pending input, which will also make the BytesAvailable property be 0.

Inputs

serial - instance of *octave_serial* class.

Outputs

None

See also: srl_flush, flushoutput.

3.2.3 @octave_serial/flushoutput

`flushoutput (serial)`

[Loadable Function]

Flush the output buffer.

Inputs

serial - instance of *octave_serial* class.

Outputs

None

See also: *srl_flush*, *flushinput*.

3.2.4 @octave_serial/fopen

res = *fopen* (*obj*) (*dummy*) [Function File]

Opens SERIAL interface *obj*

This currently is a dummy function to improve compatibility to MATLAB

3.2.5 @octave_serial/fprintf

numbytes = *fprintf* (*obj*, *template* ...) [Function File]

Writes formatted string *template* using optional parameters to serial instrument

Inputs

obj is a serial object.

template Format template string

Outputs

numbytes - number of bytes written to the serial device.

3.2.6 @octave_serial/fread

data = *fread* (*obj*) [Function File]

data = *fread* (*obj*, *size*) [Function File]

data = *fread* (*obj*, *size*, *precision*) [Function File]

[*data*, *count*] = *fread* (*obj*, ...) [Function File]

[*data*, *count*, *errmsg*] = *fread* (*obj*, ...) [Function File]

Reads *data* from serial instrument

Inputs

obj is a serial object.

size Number of values to read. (Default: 100).

precision precision of data.

Outputs

data The read data.

count values read.

errmsg read operation error message.

3.2.7 @octave_serial/fwrite

numbytes = *fwrite* (*obj*, *data*) [Function File]

numbytes = *fwrite* (*obj*, *data*, *precision*) [Function File]

Writes *data* to serial instrument

Inputs

obj is a serial object.

data data to write.

precision precision of data.

Outputs

returns number of bytes written.

3.2.8 @octave_serial/get

```
struct = get (serial)
```

[Function File]

```
field = get (serial, property)
```

[Function File]

Get the properties of serial object.

Inputs

serial - instance of *octave_serial* class.

property - name of property.

Outputs

When *property* was specified, return the value of that property.

otherwise return the values of all properties as a structure.

See also: @octave_serial/set.

3.2.9 @octave_serial/serialbreak

```
serialbreak (serial)
```

[Function File]

```
serialbreak (serial, time)
```

[Function File]

Send a break to the serial port

Inputs

serial - serial object

time - number of milliseconds to break for. If not specified a value of 10 will be used.

Outputs

None

See also: serial.

3.2.10 @octave_serial/set

```
set (obj, property, value)
```

[Function File]

```
set (obj, property, value, ...)
```

[Function File]

Set the properties of serial object.

Inputs

serial - instance of *octave_serial* class.

property - name of property.

If *property* is a cell so must be *value*, it sets the values of all matching properties.

The function also accepts property-value pairs.

Properties

- '*baudrate*' Set the baudrate of serial port. Supported values by instrument-control: 0, 50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200 and 230400. The supported baudrate of your serial port may be different.
- '*bytesize*' Set the bytesize. Supported values: 5, 6, 7 and 8.
- '*name*' Set the stored string name of the serial object.
- '*parity*' Set the parity value. Supported values: Even/Odd/None. This Parameter must be of type string. It is case insensitive and can be abbreviated to the first letter only
- '*stopbits*' Set the number of stopbits. Supported values: 1, 2.
- '*timeout*' Set the timeout value in tenths of a second. Value of -1 means a blocking call. Maximum value of 255 (i.e. 25.5 seconds).
- '*requesttosend*'
Set the requesttosend (RTS) line.
- '*dataterminalready*'
Set the dataterminalready (DTR) line.

Outputs

None

See also: @octave_serial/get.

3.2.11 @octave_serial/srl_baudrate

`srl_baudrate (serial, baudrate)\` [Loadable Function]
`br = srl_baudrate (serial)` [Loadable Function]
 Set new or get existing serial interface baudrate parameter. Only standard values are supported.

Inputs

serial - instance of *octave_serial* class.

baudrate - the baudrate value used. Supported values: 0, 50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600 19200, 38400, 57600, 115200 and 230400.

If *baudrate* parameter is omitted, the `srl_baudrate()` shall return current baudrate value as the result *br*.

Outputs

br - The currently set baudrate

This function is obsolete. Use get and set method instead.

3.2.12 @octave_serial/srl_bytesize

`srl_bytesize (serial, bsize)` [Loadable Function]
`bs = srl_bytesize (serial)` [Loadable Function]
 Set new or get existing serial interface byte size parameter.

Inputs

serial - instance of *octave_serial* class.

bsize - byte size of type Integer. Supported values: 5/6/7/8.

If *bsize* parameter is omitted, the `srl_bytesize()` shall return current byte size value or in case of unsupported setting -1, as the result *bs*.

This function is obsolete. Use `get` and `set` method instead.

Outputs

bs -the currently set byte size.

3.2.13 @octave_serial/srl_close

`srl_close` (*serial*) [Loadable Function]
Close the interface and release a file descriptor.

Inputs

serial - instance of *octave_serial* class.

This function is obsolete. Use `fclose()` method instead.

Outputs

None

3.2.14 @octave_serial/srl_flush

`srl_flush` (*serial*, [*q*]) [Loadable Function]
Flush the pending input/output.

Inputs

serial - instance of *octave_serial* class.

q - queue selector of type Integer. Supported values:

- 0 flush untransmitted output
- 1 flush pending input
- 2 flush both pending input and untransmitted output.

If *q* parameter is omitted, the `srl_flush()` shall flush both, input and output buffers.

Outputs

None

3.2.15 @octave_serial/srl_parity

`srl_parity` (*serial*, *parity*) [Loadable Function]
`p = srl_parity` (*serial*) [Loadable Function]
 Set new or get existing serial interface parity parameter. Even/Odd/None values are supported.

Inputs

serial - instance of *octave_serial* class.

parity - parity value of type String. Supported values: Even/Odd/None (case insensitive, can be abbreviated to the first letter only)

If *parity* parameter is omitted, the `srl_parity()` shall return current parity value as the result *p*.

This function is obsolete. Use get and set method instead.

Outputs

p - The currently set parity

3.2.16 @octave_serial/srl_stopbits

`srl_stopbits (serial, stopb)` [Loadable Function]

`sb = srl_stopbits (serial)` [Loadable Function]

Set new or get existing serial interface stop bits parameter. Only 1 or 2 stop bits are supported.

Inputs

serial - instance of *octave_serial* class.

stopb - number of stop bits used. Supported values: 1, 2.

Outputs

If *stopb* parameter is omitted, the `srl_stopbits()` shall return current stop bits value as the result *sb*.

This function is obsolete. Use get and set method instead.

3.2.17 @octave_serial/srl_timeout

`srl_timeout (serial, timeout)` [Loadable Function]

`t = srl_timeout (serial)` [Loadable Function]

Set new or get existing serial interface timeout parameter used for `srl_read()` requests. The timeout value is specified in tenths of a second.

Inputs

serial - instance of *octave_serial* class.

timeout - `srl_read()` timeout value in tenths of a second. A value of -1 means a blocking call. Maximum value of 255 (i.e. 25.5 seconds).

Outputs

If *timeout* parameter is omitted, the `srl_timeout()` shall return current timeout value as the result *t*.

This function is obsolete. Use get and set method instead.

3.2.18 serial

`serial ([path], [baudrate], [timeout])` [Loadable Function]

Open serial interface.

Inputs

path - the interface path of type String.

baudrate - the baudrate of interface. If omitted defaults to 115200.

timeout - the interface timeout value. If omitted defaults to blocking call.

Outputs

The `serial()` shall return an instance of *octave_serial* class as the result *serial*.

Properties

The serial object has the following public properties:

<code>name</code>	name assigned to the object
<code>type</code>	instrument type 'serial' (readonly)
<code>port</code>	OS specific port name (readonly)
<code>status</code>	status of the object 'open' or 'closed' (readonly)
<code>timeout</code>	timeout value used for waiting for data
<code>bytesavailable</code>	number of bytes currently available to read (readonly)
<code>stopbits</code>	number of stopbits to use
<code>requesttosend</code>	request to send state - 'on' or 'off'
<code>parity</code>	Parity setting 'none', 'even', 'odd'
<code>bytesize</code>	Number of bits to a byte (7 or 8)
<code>baudrate</code>	Baudrate setting
<code>dataterminalready</code>	state of dataterminal ready - 'on' or 'off'
<code>pinstatus</code>	current state of pins (readonly)

3.2.19 seriallist

`list = seriallist ()`

[Function File]

Returns a list of all serial ports detected in the system.

Inputs

None

Outputs

list is a string cell array of serial ports names detected in the system.

See also: `instrhwinfo("serial")`.

3.2.20 srl_read

`[data, count] = srl_read (serial, n)`

[Loadable Function]

Read from serial interface.

Inputs

serial - instance of *octave_serial* class.

n - number of bytes to attempt to read of type Integer.

Outputs

The `srl_read()` shall return number of bytes successfully read in *count* as Integer and the bytes themselves in *data* as uint8 array.

3.2.21 srl_write

`n = srl_write (serial, data)` [Loadable Function]
Write data to a serial interface.

Inputs

serial - instance of *octave_serial* class.

data - data to be written to the serial interface. Can be either of String or uint8 type.

Outputs

Upon successful completion, `srl_write()` shall return the number of bytes written as the result *n*.

3.3 Serial Port

3.3.1 @octave_serialport/configureTerminator

`configureTerminator (serial, term)` [Function File]
`configureTerminator (serial, readterm, writeterm)` [Function File]
Set terminator for ascii string manipulation

Inputs

serial - serialport object

term - terminal value for both read and write

readterm = terminal value type for read data

writeterm = terminal value for written data

The terminal can be either strings "cr", "lf" (default), "lf/cr" or an integer between 0 to 255.

Outputs

None

See also: serialport.

3.3.2 @octave_serialport/flush

`data = flush (dev)`
`data = flush (dev, "input")`
`data = flush (dev, "output")`
Flush the serial port buffers

Inputs

dev - connected serialport device

If an additional parameter is provided of "input" or "output", then only the input or output buffer will be flushed

Outputs

None

See also: serialport.

3.3.3 @octave_serialport/fprintf

`numbytes = fprintf (obj, template ...)` [Function File]

Writes formatted string *template* using optional parameters to serialport instrument

Inputs

obj is a serialport object.

template Format template string

Outputs

numbytes - number of bytes written to the serial device.

3.3.4 @octave_serialport/fread

`data = fread (obj)` [Function File]

`data = fread (obj, size)` [Function File]

`data = fread (obj, size, precision)` [Function File]

`[data, count] = fread (obj, ...)` [Function File]

`[data, count, errmsg] = fread (obj, ...)` [Function File]

Reads *data* from serial port instrument

Inputs

obj is a serialport object.

size Number of values to read.

precision precision of data.

Outputs

data The read data.

count number of values read.

errmsg read operation error message.

3.3.5 @octave_serialport/fwrite

`numbytes = fwrite (obj, data)` [Function File]

`numbytes = fwrite (obj, data, precision)` [Function File]

Writes *data* to serial port instrument

Inputs

obj is a serial port object.

data data to write.

precision precision of data.

Outputs

returns number of bytes written.

3.3.6 @octave_serialport/get

`struct = get (serial)` [Function File]

`field = get (serial, property)` [Function File]

Get the properties of serialport object.

Inputs

serial - instance of *octave_serialport* class.

property - name of property.

Outputs

When *property* was specified, return the value of that property.

otherwise return the values of all properties as a structure.

See also: @octave_serial/set.

3.3.7 @octave_serialport/getpinstatus

status `getpinstatus (serial)`

[Function File]

Get status of serial pins

Inputs

serial - serial object

Outputs

status - a structure with the logic names of ClearToSend, DataSetReady, CarrierDetect, and RingIndicator

See also: serialport.

3.3.8 @octave_serialport/read

data = `read (dev, count)`

data = `read (dev, count, precision)`

Read a specified number of values from a serialport using optional precision for valuesize.

Inputs

dev - connected serialport device

count - number of elements to read

precision - Optional precision for the output data read data. Currently known precision values are uint8 (default), int8, uint16, int16, uint32, int32, uint64, uint64

Outputs

data - data read from the device

See also: serialport.

3.3.9 @octave_serialport/serialbreak

`serialbreak (serial)`

[Function File]

`serialbreak (serial, time)`

[Function File]

Send a break to the serial port

Inputs

serial - serialport object

time - number of milliseconds to break for. If not specified a value of 10 will be used.

Outputs

None

See also: serial.

3.3.10 @octave_serialport/set

`set (obj, property,value)` [Function File]

`set (obj, property,value,...)` [Function File]

Set the properties of serialport object.

Inputs

serial - instance of *octave_serialport* class.

property - name of property.

If *property* is a cell so must be *value*, it sets the values of all matching properties.

The function also accepts property-value pairs.

Properties

'baudrate' Set the baudrate of serial port. Supported values by instrument-control: 0, 50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200 and 230400. The supported baudrate of your serial port may be different.

'bytesize' Set the bytesize. Supported values: 5, 6, 7 and 8.

'name' Set the stored string name of the serial object.

'parity' Set the parity value. Supported values: Even/Odd/None. This Parameter must be of type string. It is case insensitive and can be abbreviated to the first letter only

'stopbits' Set the number of stopbits. Supported values: 1, 2.

'timeout' Set the timeout value in tenths of a second. Value of -1 means a blocking call. Maximum value of 255 (i.e. 25.5 seconds).

'requesttosend'
Set the requesttosend (RTS) line.

'dataterminalready'
Set the dataterminalready (DTR) line.

Outputs

None

See also: @octave_serialport/-get.

3.3.11 @octave_serialport/setDTR

`setDTR (dev, true_false)`

Set the state of the DTR line

Inputs

dev - connected serial device.

true_false - state to set the line.

Outputs

None

See also: `serialport`, `getpinstatus`, `setRTS`.

3.3.12 @octave_serialport/setRTS

`setRTS (dev, true_false)`

Set the state of the RTS line

Inputs

dev - connected serial device.

true_false - state to set the line.

Outputs

None

See also: `serialport`, `getpinstatus`.

3.3.13 @octave_serialport/write

`numbytes = write (obj, data)`

[Function File]

`numbytes = write (obj, data, precision)`

[Function File]

Writes *data* to serialport instrument

Inputs

obj is a serialport object.

data data to write.

precision precision of data.

Outputs

returns number of bytes written.

3.3.14 serialport

`serial = serialport ([path], [baudrate])`

[Loadable Function]

`serial = serialport ([path], [propname, propvalue])`

[Loadable Function]

Open serial port interface.

Inputs

path - the interface path of type String.

baudrate - the baudrate of interface.

propname,propvalue - property name/value pairs.

Known input properties:

`baudrate` Numeric baudrate value

`timeout` Numeric timeout value in seconds or -1 to wait forever

`stopbits` number of stopbits to use

`parity` Parity setting 'none', 'even', 'odd'

`databits` Number of bits to a byte (5 to 8)

flowcontrol

Number of bits to a byte 'none', 'hardware', 'software'

Outputs

The `serialport()` shall return an instance of *octave_serialport* class as the result *serial*.

Properties

The serial object has the following public properties:

name	name assigned to the object
type	instrument type 'serial' (readonly)
port	OS specific port name (readonly)
status	status of the object 'open' or 'closed' (readonly)
timeout	timeout value used for waiting for data
bytesavailable	number of bytes currently available to read (readonly)
stopbits	number of stopbits to use
parity	Parity setting 'none', 'even', 'odd'
databits	Number of bits to a byte (5 to 8)
baudrate	Baudrate setting
flowcontrol	Number of bits to a byte 'none', 'hardware', 'software'
pinstatus	current state of pins (readonly)

3.3.15 serialportlist

```
list = serialportlist () [Function File]
list = serialportlist ("all") [Function File]
list = serialportlist ("available") [Function File]
```

Returns a list of all serial ports detected in the system.

Inputs

'all' - show all serial ports (same as providing no arguments) 'available' - show only serial ports that are available for use

Outputs

list is a string cell array of serial ports names detected in the system.

See also: `instrhwinfo("serialport")`.

3.4 I2C

3.4.1 @octave_i2c/fclose

```
res = fclose (obj) [Function File]
```

Closes I2C connection *obj*

3.4.2 @octave_i2c/fopen

`res = fopen (obj) (dummy)` [Function File]
 Opens I2C connection *obj*

This currently is a dummy function to improve compatibility to MATLAB

3.4.3 @octave_i2c/fread

`data = fread (obj)` [Function File]
`data = fread (obj, size)` [Function File]
`data = fread (obj, size, precision)` [Function File]
`[data, count] = fread (obj, ...)` [Function File]
`[data, count, errmsg] = fread (obj, ...)` [Function File]
 Reads *data* from I2C instrument

Inputs

obj is a I2C object.
size Number of values to read. (Default: 100).
precision precision of data.

Outputs

data data values.
count number of values read.
errmsg read operation error message.

3.4.4 @octave_i2c/fwrite

`numbytes = fwrite (obj, data)` [Function File]
`numbytes = fwrite (obj, data, precision)` [Function File]
 Writes *data* to I2C instrument

Inputs

obj is a I2C object.
data data to write.
precision precision of data.

Outputs

returns number of bytes written.

3.4.5 @octave_i2c/get

`struct = get (i2c)` [Function File]
`field = get (i2c, property)` [Function File]
 Get the properties of i2c object.

Inputs

i2c - instance of *octave_i2c* class.

property - name of property.

Outputs

When *property* was specified, return the value of that property.
otherwise return the values of all properties as a structure.

See also: @octave_i2c/set.

3.4.6 @octave_i2c/set

<code>set (obj, property,value)</code>	[Function File]
<code>set (obj, property,value,...)</code>	[Function File]

Set the properties of i2c object.

Inputs

obj - instance of *octave_i2c* class.
property - name of property.

If *property* is a cell so must be *value*, it sets the values of all matching properties.
The function also accepts property-value pairs.

Properties

'name' Set the name for the i2c socket.
'remoteaddress'
 Set the remote address for the i2c socket.

Outputs

None

See also: @octave_i2c/get.

3.4.7 i2c

<code>i2c = i2c ([port_path], [address])</code>	[Loadable Function]
---	---------------------

Open i2c interface.

Inputs

port_path - the interface device port/path of type String. If omitted defaults to '/dev/i2c-0'.
address - the slave device address. If omitted must be set using *i2c_addr()* call.

Outputs

i2c - An instance of *octave_i2c* class.

Properties

The i2c object has the following properties:

name	Name of the object
remoteaddress	the slave device address
port	The interface driver port (readonly)

3.4.8 i2c_addr

`i2c_addr (i2c, address)` [Loadable Function]
`addr = i2c_addr (i2c)` [Loadable Function]

Set new or get existing i2c slave device address.

Inputs

i2c - instance of *octave_i2c* class.

address - i2c slave device address of type Integer. The address is passed in the 7 or 10 lower bits of the argument.

Outputs

addr - If *address* parameter is omitted, the `i2c_addr()` shall return current i2c slave device address.

3.4.9 i2c_close

`i2c_close (i2c)` [Loadable Function]

Close the interface and release a file descriptor.

Inputs

i2c - instance of *octave_i2c* class.

Outputs

None

3.4.10 i2c_read

`[data, count] = i2c_read (i2c, n)` [Loadable Function]

Read from i2c slave device.

Inputs

i2c - instance of *octave_i2c* class.

n - number of bytes to attempt to read of type Integer.

Outputs

The `i2c_read()` shall return number of bytes successfully read in *count* as Integer and the bytes themselves in *data* as uint8 array.

3.4.11 i2c_write

`n = i2c_write (i2c, data)` [Loadable Function]

Write data to a i2c slave device.

Inputs

i2c - instance of *octave_i2c* class.

data - data, of type uint8, to be written to the slave device.

Outputs

Upon successful completion, `i2c_write()` shall return the number of bytes written as the result *n*.

3.5 SPI

3.5.1 @octave_spi/fclose

`res = fclose (obj)` [Function File]
 Closes SPI connection *obj*

3.5.2 @octave_spi/fopen

`res = fopen (obj) (dummy)` [Function File]
 Opens SPI connection *obj*
 This currently is a dummy function to improve compatibility to MATLAB

3.5.3 @octave_spi/fread

`data = fread (obj)` [Function File]
`data = fread (obj, size)` [Function File]
`data = fread (obj, size, precision)` [Function File]
`[data, count] = fread (obj, ...)` [Function File]
`[data, count, errmsg] = fread (obj, ...)` [Function File]
 Reads *data* from a SPI instrument

Inputs

obj is a SPI object.
size Number of values to read. (Default: 10).
precision precision of data.

Outputs

data data values.
count number of values read.
errmsg read operation error message.

3.5.4 @octave_spi/fwrite

`numbytes = fwrite (obj, data)` [Function File]
`numbytes = fwrite (obj, data, precision)` [Function File]
 Writes *data* to SPI instrument

Inputs

obj is a SPI object.
data data to write.
precision precision of data.

Outputs

returns number of bytes written.

3.5.5 @octave_spi/get

`struct = get (spi)` [Function File]
`field = get (spi, property)` [Function File]
 Get the properties of spi object.

Inputs

spi - instance of *octave_spi* class.

property - name of property.

Properties

'*name*' Name for the spi socket.

'*bitrate*' The bitrate for the spi object.

'*clockpolarity*'
The clock polarity for the spi object of 'idlehigh' or 'idlelow'.

'*clockphase*'
The clock phase for the spi object of 'firstedge' or 'secondedge'.

'*port*' The device port name.

'*status*' The device status of 'open' or 'closed'

Outputs

When *property* was specified, return the value of that property.
otherwise return the values of all properties as a structure.

See also: @octave_spi/set.

3.5.6 @octave_spi/read

data = read (*obj*) [Function File]
data = read (*obj*, *size*) [Function File]
 Reads *data* from SPI instrument

Inputs

obj is a SPI object.

size Number of values to read. (Default: 10).

Outputs

data data values.

3.5.7 @octave_spi/set

set (*obj*, *property*,*value*) [Function File]
 set (*obj*, *property*,*value*,...) [Function File]
 Set the properties of spi object.

Inputs

obj - instance of *octave_spi* class.

property - name of property.

If *property* is a cell so must be *value*, it sets the values of all matching properties.
The function also accepts property-value pairs.

Properties

- 'name' Set the name for the spi socket.
- 'bitrate' Set the bitrate for the spi object.
- 'clockpolarity' Set the clock polarity for the spi object of 'idlehigh' or 'idlelow'.
- 'clockphase' Set the clock phase for the spi object of 'firstedge' or 'secondedge'.

Outputs

None

See also: @octave_spi/get.

3.5.8 @octave_spi/write

numbytes = fwrite (obj, data) [Function File]
Writes *data* to SPI instrument

Inputs

obj is a SPI object.
data data to write.

Outputs

returns number of bytes written.

3.5.9 @octave_spi/writeAndRead

data = writeAndRead (obj, wrdata) [Function File]
Writes and reads *data* from SPI instrument

Inputs

obj is a SPI object.
wrdata Data to write.

Outputs

data data values read.

3.5.10 spi

spi = spi ([port_path]) [Loadable Function]
spi = spi ([port_path], [propname, provalue]) [Loadable Function]
Open a spi interface.

Inputs

port_path - the interface device port/path of type String. If omitted defaults to '/dev/spi-0'.
propname, propvalue - property name/value pairs.

Known input properties:

name Name of the object

bitrate Numeric bitrate value
clockpolarity
 Clock polarity: idlehigh or idlelow.
clockphase
 Clock phase value: firstedge or secondedge

Outputs

spi - An instance of *octave_spi* class.

Properties

The *spi* object has the following properties:

name Name of the object
status Open or closed status of object (readonly).
bitrate Numeric bitrate value
clockpolarity
 Clock polarity: idlehigh or idlelow.
clockphase
 Clock phase value: firstedge or secondedge
port The interface driver port (readonly)

3.5.11 spi_close

spi_close (*spi*) [Loadable Function]
 Close the interface and release a file descriptor.

Inputs

spi - instance of *octave_spi* class.

Outputs

None

3.5.12 spi_read

[data, count] = spi_read (*spi*, *n*) [Loadable Function]
 Read from *spi* slave device.

Inputs

spi - instance of *octave_spi* class.
n - number of bytes to attempt to read of type Integer.

Outputs

The *spi_read()* shall return number of bytes successfully read in *count* as Integer and the bytes themselves in *data* as uint8 array.

3.5.13 spi_write

n = spi_write (*spi*, *data*) [Loadable Function]
 Write data to a *spi* slave device.

Inputs

spi - instance of *octave_spi* class.

data - data, of type uint8, to be written to the slave device.

Outputs

Upon successful completion, *spi_write()* shall return the number of bytes written as the result *n*.

3.5.14 spi_writeAndRead

rddata = *spi_writeAndRead* (*spi*, *wrdata*) [Loadable Function]

Write data to a spi slave device and then read same number of values.

Inputs

spi - instance of *octave_spi* class.

wrdata - data, of type uint8, to be written to the slave device.

Outputs

Upon successful completion, *spi_writeAndRead()* shall return the bytes read.

3.6 Parallel

3.6.1 @octave_parallel/fclose

res = *fclose* (*obj*) [Function File]

Closes parallel connection *obj*

3.6.2 @octave_parallel/fopen

res = *fopen* (*obj*) (*dummy*) [Function File]

Opens parallel interface *obj*

This currently is a dummy function to improve compatibility to MATLAB

3.6.3 @octave_parallel/fread

data = *fread* (*obj*) [Function File]

data = *fread* (*obj*, *size*) [Function File]

data = *fread* (*obj*, *size*, *precision*) [Function File]

[*data*, *count*] = *fread* (*obj*, ...) [Function File]

[*data*, *count*, *errmsg*] = *fread* (*obj*, ...) [Function File]

Reads *data* from parallel instrument

Inputs

obj is a parallel object.

size Number of values to read. (Default: 1).

precision precision of data.

Outputs

data The read data.

count values read.

errmsg read operation error message.

3.6.4 @octave_parallel/fwrite

numbytes = `fwrite (obj, data)` [Function File]
numbytes = `fwrite (obj, data, precision)` [Function File]
 Writes *data* to parallel instrument

Inputs

obj is a parallel object.
data data to write.
precision precision of data.

Outputs

returns number of bytes written.

3.6.5 parallel

parallel = `parallel ([path], [direction])` [Loadable Function]
 Open Parallel interface.

Inputs

path - the interface path of type String. If omitted defaults to `'/dev/parport0'`.
direction - the direction of interface drivers of type Integer, see: `PP_DATADIR` for more info.
 If omitted defaults to 1 (Input).

Outputs

The `parallel()` shall return instance of *octave_parallel* class as the result *parallel*.

3.6.6 pp_close

`pp_close (parallel)` [Loadable Function]
 Close the interface and release a file descriptor.

Inputs

parallel - instance of *octave_serial* class.

Outputs

None

3.6.7 pp_ctrl

`pp_ctrl (parallel, ctrl)` [Loadable Function]
c = `pp_ctrl (parallel)` [Loadable Function]
 Sets or Read the Control lines.

Inputs

parallel - instance of *octave_parallel* class.
ctrl - control parameter to be set of type Byte.

Outputs

If *ctrl* parameter is omitted, the `pp_ctrl()` shall return current Control lines state as the result *c*.

3.6.8 pp_data

`pp_data (parallel, data)` [Loadable Function]
`d = pp_data (parallel)` [Loadable Function]
 Sets or Read the Data lines.

Inputs

parallel - instance of *octave_parallel* class.
data - data parameter to be set of type Byte.

Outputs

If *data* parameter is omitted, the `pp_data()` shall return current Data lines state as the result *d*.

3.6.9 pp_datadir

`pp_datadir (parallel, direction)` [Loadable Function]
`dir = pp_datadir (parallel)` [Loadable Function]
 Controls the Data line drivers.

Normally the computer's parallel port will drive the data lines, but for byte-wide transfers from the peripheral to the host it is useful to turn off those drivers and let the peripheral drive the signals. (If the drivers on the computer's parallel port are left on when this happens, the port might be damaged.)

Inputs

parallel - instance of *octave_parallel* class.
direction - direction parameter of type Integer. Supported values: 0 - the drivers are turned on (Output/Forward direction); 1 - the drivers are turned off (Input/Reverse direction).

Outputs

If *direction* parameter is omitted, the `pp_datadir()` shall return current Data direction as the result *dir*.

3.6.10 pp_stat

`stat = pp_stat (parallel)` [Loadable Function]
 Reads the Status lines.

Inputs

parallel - instance of *octave_parallel* class.

Outputs

The `pp_stat()` shall return current Status lines state as the result *stat*.

3.7 TCP

3.7.1 @octave_tcp/fclose

`res = fclose (obj)` [Function File]
Closes TCP connection *obj*

3.7.2 @octave_tcp/flush

`data = flush (dev)`
`data = flush (dev, "input")`
`data = flush (dev, "output")`
Flush the tcp socket buffers

Inputs

dev - connected tcp device

If an additional parameter is provided of "input" or "output", then only the input or output buffer will be flushed

Outputs

None

See also: serialport.

3.7.3 @octave_tcp/flushinput

`flushinput (tcp)` [Loadable Function]
Flush the pending input, which will also make the BytesAvailable property be 0.

Inputs

tcp - instance of *octave_tcp* class.

Outputs

None.

See also: flushoutput.

3.7.4 @octave_tcp/flushoutput

`flushoutput (tcp)` [Loadable Function]
Flush the output buffer.

Inputs

tcp - instance of *octave_tcp* class.

Outputs

None.

See also: flushinput.

3.7.5 @octave_tcp/fopen

`res = fopen (obj) (dummy)` [Function File]
Opens TCP connection *obj*
This currently is a dummy function to improve compatibility to MATLAB

3.7.6 @octave_tcp/fprintf

`numbytes = fprintf (obj, template ...)` [Function File]

Writes formatted string *template* using optional parameters to TCP instrument

Inputs

obj is a TCP object.

template Format template string

Outputs

Number of characters written

3.7.7 @octave_tcp/fread

`data = fread (obj)` [Function File]

`data = fread (obj, size)` [Function File]

`data = fread (obj, size, precision)` [Function File]

`[data, count] = fread (obj, ...)` [Function File]

`[data, count, errmsg] = fread (obj, ...)` [Function File]

Reads *data* from TCP instrument

Inputs

obj is a TCP object.

size Number of values to read. (Default: 100).

precision precision of data.

Outputs

data data read.

count values read.

errmsg read operation error message.

3.7.8 @octave_tcp/fwrite

`numbytes = fwrite (obj, data)` [Function File]

`numbytes = fwrite (obj, data, precision)` [Function File]

Writes *data* to TCP instrument

Inputs

obj is a TCP object.

data data to write.

precision precision of data.

Outputs

returns number of bytes written.

3.7.9 @octave_tcp/get

`struct = get (tcp)` [Function File]

`field = get (tcp, property)` [Function File]

Get the properties of tcp object.

Inputs

tcp - instance of *octave_tcp* class.

property - name of property.

Outputs

When *property* was specified, return the value of that property.

otherwise return the values of all properties as a structure.

See also: @octave_tcp/set.

3.7.10 @octave_tcp/read

data = read (*obj*)

[Function File]

data = read (*obj*, *size*)

[Function File]

data = read (*obj*, *size*, *datatype*)

[Function File]

Reads *data* from TCP instrument

Inputs

obj is a TCP object.

size Number of values to read. (Default: 100).

datatype datatype of data.

Outputs

data data read.

3.7.11 @octave_tcp/set

set (*obj*, *property*, *value*)

[Function File]

set (*obj*, *property*, *value*, ...)

[Function File]

Set the properties of tcp object.

Inputs

If *property* is a cell so must be *value*, it sets the values of all matching properties.

The function also accepts property-value pairs.

Properties

'name' Set the name for the tcp socket.

'remotehost'

Set the remote host name for the tcp socket.

'remoteport'

Set the remote port for the tcp socket.

'timeout' Set the timeout value in seconds. Value of -1 means a blocking call.

Outputs

None

See also: @octave_tcp/get.

3.7.12 @octave_tcp/write

`numbytes = write (obj, data)` [Function File]
`numbytes = write (obj, data, datatype)` [Function File]
 Writes *data* to TCP instrument

Inputs

obj is a TCP object.
data data to write.
datatype datatype of data. If not specified, it defaults to "uint8".

Outputs

returns number of bytes written.

3.7.13 tcp

`tcp = tcp ()` [Loadable Function]
`tcp = tcp (ipaddress)` [Loadable Function]
`tcp = tcp (ipaddress, port)` [Loadable Function]
`tcp = tcp (ipaddress, port, timeout)` [Loadable Function]
`tcp = tcp (ipaddress, [propertyname, propertyvalue])` [Loadable Function]
`tcp = tcp (ipaddress, port, [propertyname, propertyvalue])` [Loadable Function]
 Open tcp interface.

Inputs

ipaddress - the ip address of type String. If omitted defaults to '127.0.0.1'.
port - the port number to connect. If omitted defaults to 23.
timeout - the interface timeout value. If omitted defaults to blocking call.
propname,propvalue - property name/value pairs.

Known input properties:

name name value
 timeout Numeric timeout value or -1 to wait forever

Outputs

The `tcp()` shall return instance of *octave_tcp* class as the result *tcp*.

Properties

The `tcp` object has the following public properties:

name name assigned to the tcp object
 type instrument type 'tcp' (readonly)
 localport local port number (readonly)
 remoteport remote port number
 remotehost remote host
 status status of the object 'open' or 'closed' (readonly)

`timeout` timeout value in seconds used for waiting for data
`bytesavailable`
 number of bytes currently available to read (readonly)

3.7.14 `tcp_close`

`tcp_close (tcp)` [Loadable Function]
 Close the interface and release a file descriptor.

Inputs

`tcp` - instance of *octave_tcp* class.

Outputs

None

3.7.15 `tcp_read`

`[data, count] = tcp_read (tcp, n, timeout)` [Loadable Function]
 Read from tcp interface.

Inputs

`tcp` - instance of *octave_tcp* class.
`n` - number of bytes to attempt to read of type Integer
`timeout` - timeout in ms if different from default of type Integer

Outputs

`count` - number of bytes successfully read as an Integer
`data` - data bytes themselves as uint8 array.

3.7.16 `tcp_timeout`

`tcp_timeout (tcp, timeout)` [Loadable Function]
`t = tcp_timeout (tcp)` [Loadable Function]
 Set new or get existing tcp interface timeout parameter used for `tcp_read()` requests. The timeout value is specified in milliseconds.

Inputs

`tcp` - instance of *octave_tcp* class.
`timeout` - `tcp_read()` timeout value in milliseconds. Value of -1 means a blocking call.

Outputs

If `timeout` parameter is omitted, the `tcp_timeout()` shall return current timeout value as the result `t`.

3.7.17 `tcp_write`

`n = tcp_write (tcp, data)` [Loadable Function]
 Write data to a tcp interface.

Inputs

`tcp` - instance of *octave_tcp* class.
`data` - data to be written to the tcp interface. Can be either of String or uint8 type.

Outputs

Upon successful completion, `tcp_write()` shall return the number of bytes written as the result *n*.

3.7.18 tcpclient

```
tcp = tcpclient (host, port) [Function File]
```

```
tcp = tcpclient (host, port, [PropertyName, PropertyValue...]) [Function File]
```

Matlab compatible wrapper to the tcp interface.

Inputs

host - the host name or ip.

port - the port number to connect.

PropertyName, *PropertyValue* - Optional property name, value pairs to set on the tcp object.

Properties

Currently the only known properties are "timeout" and "name".

Outputs

tcpclient will return an instance of *octave_tcp* class as the result.

3.7.19 tcpip

```
tcp = tcpip (host, [port], [PropertyName, PropertyValue...]) [Function File]
```

Matlab compatible wrapper to the tcp interface.

NOTE: tcpip has been depreciated. Use tcpclient instead

Inputs

host - the host name or ip.

port - the port number to connect. If omitted defaults to 80.

PropertyName, *PropertyValue* - Optional property name, value pairs to set on the tcp object.

Properties

Currently the only known properties are "timeout" and "name".

Outputs

tcpip will return an instance of *octave_tcp* class as the result.

3.8 USBTMC

3.8.1 @octave_usbtmc/fclose

```
res = fclose (obj) [Function File]
```

Closes USBTMC connection *obj*

Inputs

obj is a usbtmc object.

3.8.2 @octave_usbtmc/fopen

`res = fopen (obj) (dummy)` [Function File]
 Opens USBTMC connection *obj* This currently is a dummy function to improve compatibility to MATLAB

3.8.3 @octave_usbtmc/fread

`data = fread (obj)` [Function File]
`data = fread (obj, size)` [Function File]
`data = fread (obj, size, precision)` [Function File]
`[data, count] = fread (obj, ...)` [Function File]
`[data, count, errmsg] = fread (obj, ...)` [Function File]
 Reads *data* from usbtmc instrument

Inputs

obj is a usbtmc object.
size Number of values to read. (Default: 100).
precision precision of data.

Outputs

data The read data.
count values read.
errmsg read operation error message.

3.8.4 @octave_usbtmc/fwrite

`numbytes = fwrite (obj, data)` [Function File]
`numbytes = fwrite (obj, data, precision)` [Function File]
 Writes *data* to an usbtmc instrument

Inputs

obj is a usbtmc object.
data data to write.
precision precision of data.

Outputs

returns number of bytes written.

3.8.5 usbtmc

`usbtmc = usbtmc (path)` [Loadable Function]
 Open usbtmc interface.

Inputs

path - the interface path of type String. If omitted defaults to `'/dev/usbtmc0'`.

Outputs

The `usbtmc()` shall return instance of `octave_usbtmc` class as the result *usbtmc*.

3.8.6 usbtmc_close

`usbtmc_close (usbtmc)` [Loadable Function]
 Close the interface and release a file descriptor.

Inputs

usbtmc - instance of *octave_usbtmc* class.

Outputs

None

3.8.7 usbtmc_read

`[data, count] = usbtmc_read (usbtmc, n)` [Loadable Function]
 Read from usbtmc slave device.

Inputs

usbtmc - instance of *octave_usbtmc* class.

n - number of bytes to attempt to read of type Integer.

Outputs

count - the number of bytes successfully read as an Integer.

data - the read bytes as a uint8 array.

3.8.8 usbtmc_write

`n = usbtmc_write (usbtmc, data)` [Loadable Function]
 Write data to a usbtmc slave device.

Inputs

usbtmc - instance of *octave_usbtmc* class.

data - data, of type uint8, to be written to the slave device.

Outputs

Upon successful completion, `usbtmc_write()` shall return the number of bytes written as the result *n*.

3.9 GPIB

3.9.1 @octave_gpib/fclose

`res = fclose (obj)` [Function File]
 Closes connection to GPIB device *obj*

3.9.2 @octave_gpib/fopen

`res = fopen (obj) (dummy)` [Function File]
 Opens connection to GPIB device *obj* This currently is a dummy function to improve compatibility to MATLAB

3.9.3 @octave_gpib/fprintf

`fprintf (obj, cmd)` [Function File]
`fprintf (obj, format, cmd)` [Function File]
`fprintf (obj, cmd, mode)` [Function File]
`fprintf (obj, format, cmd, mode)` [Function File]
Writes string *cmd* to GPIB instrument
obj is a GPIB object
cmd String *format* Format specifier *mode* sync

3.9.4 @octave_gpib/fread

`data = fread (obj)` [Function File]
`data = fread (obj, size)` [Function File]
`data = fread (obj, size, precision)` [Function File]
`[data, count] = fread (obj, ...)` [Function File]
`[data, count, errormsg] = fread (obj, ...)` [Function File]
Reads *data* from GPIB instrument
obj is a GPIB object
size Number of values to read. (Default: 100) *precision* precision of data
count values read *errormsg* read operation error message

3.9.5 @octave_gpib/fscanf

`res = fscanf (obj)` [Function File]
`res = fscanf (obj, format)` [Function File]
`res = fscanf (obj, format, size)` [Function File]
`[res, count] = fscanf (obj, ...)` [Function File]
`[res, count, errormsg] = fscanf (obj, ...)` [Function File]
Reads data *res* from GPIB instrument
obj is a GPIB object
format Format specifier *size* number of values
count values read *errormsg* read operation error message

3.9.6 @octave_gpib/fwrite

`fwrite (obj, data)` [Function File]
`fwrite (obj, data, precision)` [Function File]
`fwrite (obj, data, mode)` [Function File]
`fwrite (obj, data, precision, mode)` [Function File]
Writes *data* to GPIB instrument
obj is a GPIB object
data data to write *precision* precision of data *mode* sync

3.9.7 clrdevice

`clrdevice (obj)` [Function File]
Send clear command to Clear GPIB instrument.
obj is a GPIB object

3.9.8 gpib

`gpib = gpib ([gpibid], [timeout])` [Loadable Function]

Open gpib interface.

gpibid - the interface number.

timeout - the interface timeout value. If omitted defaults to blocking call.

The `gpib()` shall return instance of *octave-gpib* class as the result *gpib*.

3.9.9 gpib_close

`gpib_close (gpib)` [Loadable Function]

Close the interface and release a file descriptor.

gpib - instance of *octave-gpib* class.

3.9.10 gpib_read

`[data, count, eoi] = gpib_read (gpib, n)` [Loadable Function]

Read from gpib interface.

gpib - instance of *octave-gpib* class.

n - number of bytes to attempt to read of type Integer.

The `gpib_read()` shall return number of bytes successfully read in *count* as Integer and the bytes themselves in *data* as uint8 array. *eoi* indicates read operation complete

3.9.11 gpib_timeout

`gpib_timeout (gpib, timeout)` [Loadable Function]

`t = gpib_timeout (gpib)` [Loadable Function]

Set new or get existing gpib interface timeout parameter. The timeout value is valid from 0 to 17.

gpib - instance of *octave-gpib* class.

timeout - Value of 0 means never timeout, 11 means one second and 17 means 1000 seconds (see GPIB documentation (ibtm0) for further details)

If *timeout* parameter is omitted, the `gpib_timeout()` shall return current timeout value as the result *t*.

3.9.12 gpib_write

`n = gpib_write (gpib, data)` [Loadable Function]

Write data to a gpib interface.

gpib - instance of *octave-gpib* class.

data - data to be written to the gpib interface. Can be either of String or uint8 type.

Upon successful completion, `gpib_write()` shall return the number of bytes written as the result *n*.

3.9.13 spoll

`out = spoll (obj)` [Function File]

`[out, statusByte] = spoll (obj)` [Function File]

Serial polls GPIB instruments.

obj is a GPIB object or a cell array of GPIB objects

out GPIB objects ready for service *statusByte* status Byte

3.9.14 trigger

trigger (*obj*) [Function File]
 Triggers GPIB instrument.
obj is a GPIB object

3.10 UDP

3.10.1 @octave_udp/fclose

res = **fclose** (*obj*) [Function File]
 Closes UDP connection *obj*

3.10.2 @octave_udp/flush

data = **flush** (*dev*)
data = **flush** (*dev*, "input")
data = **flush** (*dev*, "output")
 Flush the udp socket buffers

Inputs

dev - open udp device

If an additional parameter is provided of "input" or "output", then only the input or output buffer will be flushed

Outputs

None

See also: udp.

3.10.3 @octave_udp/flushinput

flushinput (*udp*) [Loadable Function]
 Flush the pending input, which will also make the BytesAvailable property be 0.

Inputs

udp - instance of *octave_udp* class.

Outputs

None

See also: flushoutput.

3.10.4 @octave_udp/flushoutput

flushoutput (*udp*) [Loadable Function]
 Flush the output buffer.

Inputs

udp - instance of *octave_udp* class.

Outputs

None

See also: flushinput.

3.10.5 @octave_udp/fopen

`res = fopen (obj) (dummy)` [Function File]
 Opens UDP connection *obj* This currently is a dummy function to improve compatibility to MATLAB

3.10.6 @octave_udp/fprintf

`numbytes = fprintf (obj, template ...)` [Function File]
 Writes formatted string *template* using optional parameters to UDP instrument

Inputs

obj is a UDP object.
template Format template string.

Outputs

numbytes is the number of bytes written to the device

3.10.7 @octave_udp/fread

`data = fread (obj)` [Function File]
`data = fread (obj, size)` [Function File]
`data = fread (obj, size, precision)` [Function File]
`[data, count] = fread (obj, ...)` [Function File]
`[data, count, errmsg] = fread (obj, ...)` [Function File]
 Reads *data* from UDP instrument

Inputs

obj is a UDP object.
size Number of values to read. (Default: 100).
precision precision of data.

Outputs

data data values.
count number of values read.
errmsg read operation error message.

3.10.8 @octave_udp/fwrite

`numbytes = fwrite (obj, data)` [Function File]
`numbytes = fwrite (obj, data, precision)` [Function File]
 Writes *data* to UDP instrument

Inputs

obj is a UDP object.
data data to write.
precision precision of data.

Outputs

returns number of bytes written.

3.10.9 @octave_udp/get

```
struct = get (udp)
```

[Function File]

```
field = get (udp, property)
```

[Function File]

Get the properties of *udp* object.

Inputs

udp - instance of *octave_udp* class.

property - name of property.

Outputs

When *property* was specified, return the value of that property.
otherwise return the values of all properties as a structure.

See also: @octave_udp/set.

3.10.10 @octave_udp/read

```
data = read (obj)
```

[Function File]

```
data = read (obj, size)
```

[Function File]

```
data = read (obj, size, datatype)
```

[Function File]

Reads *data* from UDP instrument

Inputs

obj is a UDP object.

size Number of values to read. (Default: BytesAvailable).

datatype datatype of data.

Outputs

data data read.

3.10.11 @octave_udp/set

```
set (obj, property, value)
```

[Function File]

```
set (obj, property, value, ...)
```

[Function File]

Set the properties of *udp* object.

Inputs

obj - instance of *octave_udp* class.

property - name of property.

If *property* is a cell so must be *value*, it sets the values of all matching properties.

The function also accepts property-value pairs.

Properties

- 'name' Set the name for the udp socket.
- 'remotehost' Set the remote host name for the udp socket.
- 'remoteport' Set the remote port for the udp socket.
- 'timeout' Set the timeout value in seconds. Value of -1 means a blocking call.

Outputs

None

See also: @octave_udp/get.

3.10.12 @octave_udp/write

```

numbytes = write (obj, data) [Function File]
numbytes = write (obj, data, destinationAddress, [Function File]
               destinationPort)
numbytes = write (obj, data, datatype) [Function File]
numbytes = write (obj, data, datatype, destinationAddress, [Function File]
               destinationPort)

```

Writes *data* to UDP instrument

Inputs

obj is a UDP object.

data data to write.

datatype datatype of data. If not specified defaults to uint8.

destinationAddress ipaddress to send to. If not specified, use the remote address.

destinationPort port to send to. If not specified, use the remote port.

Outputs

returns number of bytes written.

3.10.13 udp

```

udp = udp () [Loadable Function]
udp = udp (remoteipaddress, remoteport) [Loadable Function]
udp = udp (remoteipaddress, remoteport, [propertyname, [Loadable Function]
               propertyvalue ...])

```

Open udp interface.

Inputs

remoteipaddress - the ip address of type String. If omitted defaults to '127.0.0.1'.

remoteport - the port number to connect. If omitted defaults to 23.

localport - the local port number to bind. If omitted defaults to 0

propertyname, propertyvalue - property name/value pair

Outputs

The `udp()` shall return instance of `octave_udp` class as the result *udp*.

Properties

The `udp` object has the following public properties:

<code>name</code>	name assigned to the <code>udp</code> object
<code>type</code>	instrument type 'udp' (readonly)
<code>localport</code>	local port number (readonly)
<code>localhost</code>	local host address (readonly)
<code>remoteport</code>	remote port number
<code>remotehost</code>	remote host
<code>status</code>	status of the object 'open' or 'closed' (readonly)
<code>timeout</code>	timeout value in seconds used for waiting for data
<code>bytesavailable</code>	number of bytes currently available to read (readonly)

3.10.14 `udp_close`

`udp_close (udp)` [Loadable Function]
Close the interface and release a file descriptor.

Inputs

udp - instance of *octave_udp* class.

Inputs

None

3.10.15 `udp_demo`

`result = udp_demo ()` [Function File]
Run test SNTP demonstration for `udp` class
See also: `udp`.

3.10.16 `udp_read`

`[data, count] = udp_read (udp, n, timeout)` [Loadable Function]
Read from `udp` interface.

Inputs

udp - instance of *octave_udp* class.
n - number of bytes to attempt to read of type Integer
timeout - timeout in ms if different from default of type Integer

Outputs

The `udp_read()` shall return number of bytes successfully read in *count* as Integer and the bytes themselves in *data* as uint8 array.

3.10.17 udp_timeout

`udp_timeout (udp, timeout)` [Loadable Function]

`t = udp_timeout (udp)` [Loadable Function]

Set new or get existing udp interface timeout parameter used for `udp_read()` requests. The timeout value is specified in milliseconds.

Inputs

udp - instance of *octave_udp* class.

timeout - `udp_read()` timeout value in milliseconds. Value of -1 means a blocking call.

Outputs

If *timeout* parameter is omitted, the `udp_timeout()` shall return current timeout value as the result *t*.

3.10.18 udp_write

`n = udp_write (udp, data)` [Loadable Function]

Write data to a udp interface.

Inputs

udp - instance of *octave_udp* class.

data - data to be written to the udp interface. Can be either of String or uint8 type.

Outputs

Upon successful completion, `udp_write()` shall return the number of bytes written as the result *n*.

3.11 VXI11

3.11.1 @octave_vxi11/fclose

`res = fclose (obj)` [Function File]

Closes VXI11 connection *obj*

3.11.2 @octave_vxi11/fopen

`res = fopen (obj) (dummy)` [Function File]

Opens VXI11 connection *obj* This currently is a dummy function to improve compatibility to MATLAB

3.11.3 @octave_vxi11/fread

`data = fread (obj)` [Function File]

`data = fread (obj, size)` [Function File]

`data = fread (obj, size, precision)` [Function File]

`[data, count] = fread (obj, ...)` [Function File]

`[data, count, errmsg] = fread (obj, ...)` [Function File]

Reads *data* from vxi11 instrument

Inputs

obj is a vxi11 object.

size Number of values to read. (Default: 100).

precision precision of data.

Outputs

data The read data.

count values read.

errmsg read operation error message.

3.11.4 @octave_vx11/fwrite

`numbytes = fwrite (obj, data)`

[Function File]

`numbytes = fwrite (obj, data, precision)`

[Function File]

Writes *data* to vx11 instrument

Inputs

obj is a vx11 object.

data data to write.

precision precision of data.

Outputs

returns number of bytes written.

3.11.5 vx11

`vx11 = vx11 (ip)`

[Loadable Function]

Open vx11 interface.

path - the ip address of type String. If omitted defaults to '127.0.0.1'.

The vx11() shall return instance of *octave_vx11* class as the result *vx11*.

3.11.6 vx11_close

`vx11_close (vx11)`

[Loadable Function]

Close the interface and release a file descriptor.

vx11 - instance of *octave_vx11* class.

3.11.7 vx11_read

`[data, count] = vx11_read (vx11, n)`

[Loadable Function]

Read from vx11 slave device.

vx11 - instance of *octave_vx11* class.

n - number of bytes to attempt to read of type Integer.

The vx11_read() shall return number of bytes successfully read in *count* as Integer and the bytes themselves in *data* as uint8 array.

3.11.8 vx11_write

`n = vx11_write (vx11, data)`

[Loadable Function]

Write data to a vx11 slave device.

vx11 - instance of *octave_vx11* class.

data - data to be written to the slave device. Can be either of String or uint8 type.

Upon successful completion, vx11_write() shall return the number of bytes written as the result *n*.

3.12 General

3.12.1 instrhelp

```
instrhelp ()
instrhelp (funcname)
instrhelp (obj)
    Display instrument help
```

Inputs

funcname - function to display help about.
obj - object to display help about.

If no input is provided, the function will display an overview of the package functionality.

Outputs

None

3.12.2 instrhwinfo

```
[list] = instrhwinfo () [Function File]
list = instrhwinfo (interface) [Function File]
    Query available hardware for instrument-control
```

When run without any input parameters, instrhwinfo will provide the toolbox information and a list of supported interfaces.

Inputs

interface is the instrument interface to query. When provided, instrhwinfo will provide information on the specified interface.

Currently only interface "serialport", "i2c" and "spi" are supported, which will provide a list of available serial ports or i2c ports.

Outputs

If an output variable is provided, the function will store the information to the variable, otherwise it will be displayed to the screen.

Example

```
instrhwinfo
    scalar structure containing the fields:
```

```
ToolboxVersion = 0.4.0
ToolboxName = octave instrument control package
SupportedInterfaces =
{
    [1,1] = i2c
    [1,2] = parallel
    [1,3] = serialport
    [1,4] = tcp
    [1,5] = udp
    [1,6] = usbtmc
    [1,7] = vx11
```

```
}
```

3.12.3 resolvehost

```
name = resolvehost (host) [Loadable Function]
[name, address] = resolvehost (host) [Loadable Function]
out = resolvehost (host, returntype) [Loadable Function]
```

Resolve a network host name or address to network name and address

Inputs

host - Host name or IP address string to resolve.

name - Resolved IP host name.

returntype - 'name' to get host name, 'address' to get IP address.

Outputs

name - Resolved IP host name.

address - Resolved IP host address.

out - host name if *returntype* is 'name', ipaddress if *returntype* is 'address'

Example

```
%% get resolved ip name and address pf www.gnu.org
[name, address] = resolvehost ('www.gnu.org');

%% get ip address of www.gnu.org
ipaddress = resolvehost ('www.gnu.org', 'address');
```

See also: tcp, udp.

Appendix A GNU General Public License

Version 3, 29 June 2007

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1. Source Code.

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