

# **Octave Instrument Control Toolkit 0.10.1**

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Low level instrumentation functions for GNU Octave.

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To download a copy of the GNU Octave Instrument Control Toolkit, please visit <https://gnu-octave.github.io/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 offline mode via a downloaded tarball.

The toolkit must then be loaded once for 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](https://wiki.octave.org/Instrument_control_package#Requirements)

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

For MODBUS support, the libmodbus-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, the 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-0.10.1.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 = 0.7.0
ToolboxName = octave instrument control package
SupportedInterfaces =
{
  [1,1] = gpib
  [1,2] = i2c
  [1,3] = parallel
  [1,4] = serial
  [1,5] = serialport
  [1,6] = tcp
  [1,7] = tcpclient
  [1,8] = udp
  [1,9] = udpport
  [1,10] = usbtmc
  [1,11] = visadev
  [1,12] = 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

**NOTE:** 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

### 2.4.1 TCP

**NOTE:** The TCP object has been deprecated and may not appear in newer versions of the instrument-control toolbox. Instead new code should use the tcpclient object.

A TCP connection can be opened using the tcp or tcpip 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. An 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)
```

### 2.4.2 TCP Client

The recommended method of creating a TCP connection is through the tcpclient object.

A TCP connection can be opened using the tcpclient function:

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

The first parameter is the IP address or hostname to connect to. The second parameter is 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 = tcpclient("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 read and write functions.

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

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

The device can be closed by clearing the object variable.

```
clear s
```

## 2.5 Basic UDP

### 2.5.1 UDP

**NOTE:** The UDP object has been deprecated and may not appear in newer versions of the instrument-control toolbox. Instead new code should use the udpport object.

A UDP connection can be opened using the udp function:

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

The first parameter is the IP address data will be to. The second parameter is the port number. If an ip address and port is not provided, it will default to "127.0.0.1" and 23.

The address and port can be changed after creation using the remotehost and remoteport properties.

```
s = udp()
s.remotehost = "127.0.0.1";
s.remoteport = 100;
```

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

```
s = udp("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 fwrite, fread and udp\_read and udp\_write functions.

```
udp_write(s, "test")

val = udp_read(s, 5)
```

The device can be closed using fclose or udp\_close.

```
fclose(s)
```

### 2.5.2 UDP Port

The recommended method of creating a udp socket is through the udpport object.

A udpport object can be created using the udpport function:

```
s = udpport()
```

Additional parameter/value pairs can be provided during creation of the object.

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

```
s = udpport()
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 read and write functions.

The destination address and port to send data to must be specified at least on the first time write is used.

```
write(s, "test", "127.0.0.1", s.LocalPort)
```

```
val = read(s)
```

The device can be closed by clearing the object variable.

```
clear s
```

### 2.5.3 VISA Devices

A VISA interface is available for using some hardware.

Current visa devices can be listed using the visadevlist function.

```
devices = visadevlist()
```

Devices can be opened using the visadev function.

As an example, using a serial port through VISA.

```
s = visadev("ASRL0::")
```

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

```
s = visadev("ASRL0::")  
s.BaudRate = 9600 # Set 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
```

## 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.

#### 3.1.3 readbinblock

`data = readbinblock (dev)`

`data = readbinblock (dev, datatype)`

read a binblock of data from an instrument device

readbinblock will discard any data before a recognized binblock. If no binblock is found or read, an empty *data* will be returned.

##### Inputs

*dev* - connected device

*datatype* - optional data type to read data as (default 'uint8') Valid values are:

"string" maps to a char array

"char", "schar", "int8"  
maps to int8

"uchar", "uint8"  
maps to uint8

"int16", "short"  
maps to int16

"uint16", "ushort"  
maps to uint16

"int32", "int"  
maps to int32

"uint32", "uint"  
maps to uint32

"int64", "long"  
maps to int64

"uint64", "ulong"  
maps to uint64

"single", "float", "float32"  
maps to single

"double", "float64"  
maps to double

## Outputs

*data* - data read

**See also:** writebinblock.

### 3.1.4 readline

`data = readline (dev)`

read data from a instrument device excluding terminator value

## Inputs

*dev* - connected device

## Outputs

*data* - ASCII data read

**See also:** flushoutput.

### 3.1.5 writebinblock

`writebinblock (dev, data, datatype)`

Write a IEEE 488.2 binblock of data to a instrument device

binblock formatted data is defined as:

#<A><B><C>

where: <A> ASCII number containing the length of part <B>

<B> ASCII number containing the number of bytes of <C>

<C> Binary data block

## Inputs

*dev* - connected device

*data* - binary data to send. It should be a string or 1 by N row vector

*datatype* - datatype to send data as

## Outputs

None

**See also:** readbinblock.

### 3.1.6 writeline

`writeline (dev, data)`

Write data to a instrument device including terminator value

## Inputs

*dev* - connected device

*data* - ASCII data to write

## Outputs

None

**See also:** flushoutput.

### 3.1.7 writeread

`data = writeread (dev, command)`

write a ASCII command and read data from a instrument device.

## Inputs

*dev* - connected device

*command* - ASCII command

## Outputs

*data* - ASCII data read

**See also:** readline, writeline.

## 3.2 General

### 3.2.1 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 and overview of the package functionality.

## Outputs

None

### 3.2.2 instrhwinfo

```
[list] = instrhwinfo ()
list = instrhwinfo (interface)
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" and is 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] = vxi11
    }
```

### 3.2.3 resolvehost

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

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 of 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.

## 3.3 GPIB

### 3.3.1 @octave\_gpib/fclose

```
res = fclose (obj)
  Closes connection to GPIB device obj
```

### 3.3.2 @octave\_gpib/fopen

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

### 3.3.3 @octave\_gpib/fprintf

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

### 3.3.4 @octave\_gpib/fread

```
data = fread (obj)
data = fread (obj, size)
data = fread (obj, size, precision)
[data,count] = fread (obj, ...)
[data,count,errmsg] = fread (obj, ...)
  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 errmsg read operation error message
```

### 3.3.5 @octave\_gpib/fscanf

```
res = fscanf (obj)
res = fscanf (obj, format)
res = fscanf (obj, format, size)
```

```
[res,count] = fscanf (obj, ...)
[res,count,errmsg] = fscanf (obj, ...)
```

Reads data *res* from GPIB instrument  
*obj* is a GPIB object  
*format* Format specifier *size* number of values  
*count* values read *errmsg* read operation error message

### 3.3.6 @octave\_gpib/fwrite

```
fwrite (obj, data)
fwrite (obj, data, precision)
fwrite (obj, data, mode)
fwrite (obj, data, precision, mode)
```

Writes *data* to GPIB instrument  
*obj* is a GPIB object  
*data* data to write *precision* precision of data *mode* sync

### 3.3.7 clrdevice

```
clrdevice (obj)
```

Send clear command to Clear GPIB instrument.  
*obj* is a GPIB object

### 3.3.8 gpib

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

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*.

### 3.3.9 gpib\_close

```
gpib_close (gpib)
```

Close the interface and release a file descriptor.  
*gpib* - instance of `octave_gpib` class.

### 3.3.10 gpib\_read

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

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

### 3.3.11 gpib\_timeout

```
gpib_timeout (gpib, timeout)
t = gpib_timeout (gpib)
```

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* - A value of 0 means never timeout, 11 means one second and 17 means 1000 seconds (see GPIB documentation (ibtmo) for further details)

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

### 3.3.12 gpib\_write

`n = gpib_write (gpib, data)`

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*.

### 3.3.13 spoll

`out = spoll (obj)`

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

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

### 3.3.14 trigger

`trigger (obj)`

Triggers GPIB instrument.

*obj* is a GPIB object

## 3.4 I2C

### 3.4.1 @octave\_i2c/fclose

`res = fclose (obj)`

Closes I2C connection *obj*

### 3.4.2 @octave\_i2c/fopen

`res = fopen (obj) (dummy)`

Opens I2C connection *obj*

This currently is a dummy function to improve compatibility to MATLAB

### 3.4.3 @octave\_i2c/fread

`data = fread (obj)`

`data = fread (obj, size)`

`data = fread (obj, size, precision)`

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

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

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)
numbytes = fwrite (obj, data, precision)
  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)
field = get (i2c, property)
  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

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

```
i2c = i2c ([port_path], [address])
```

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)
```

```
addr = i2c_addr (i2c)
```

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)`

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)`

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)`

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 Modbus

### 3.5.1 @octave\_modbus/get

`struct = get (dev)`

`field = get (dev, property)`

Get the properties of modbus object.

#### Inputs

*dev* - instance of *octave\_modbus* 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\_modbus/set.

### 3.5.2 @octave\_modbus/maskWrite

```
data = maskWrite (dev, address, andmask, ormask)
```

```
data = maskWrite (dev, address, andmask, ormask, serverid)
```

Read holding register at *address* from modbus device *dev* apply masking and write the change data.

writeregister value = (readregister value AND andMask) OR (orMask AND (NOT andMask))

## Inputs

*dev* - connected modbus device

*address* - address to read from.

*andmask* - AND mask to apply to the register

*ormask* - OR mask to apply to the register

*serverId* - address to send to (0-247). Default of 1 is used if not specified.

## Outputs

*data* - data read from the device

**See also:** modbus.

### 3.5.3 @octave\_modbus/read

```
data = read (dev, target, address)
```

```
data = read (dev, target, address, count)
```

```
data = read (dev, target, address, count, serverId, precision)
```

Read data from modbus device *dev* target *target* starting at address *address*.

## Inputs

*dev* - connected modbus device

*target* - target type to read. One of 'coils', 'inputs', 'inputregs' or 'holdingregs'

*address* - address to start reading from.

*count* - number of elements to read. If not provided, count is 1.

*serverId* - address to send to (0-247). Default of 1 is used if not specified.

*precision* - Optional precision for how to interpret the read data. Currently known precision values are uint16 (default), int16, uint32, int32, uint64, int64, single, double.

## Outputs

*data* - data read from the device

**See also:** modbus.

### 3.5.4 @octave\_modbus/set

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

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

Set the properties of modbus object.

## Inputs

*obj* - instance of *octave\_modbus* 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 stored string name of the object.

'Timeout' Set the timeout value.

'Numretries'  
Set the numretries value.

'ByteOrder'  
Set the byteorder value

'WordOrder'  
Set the wordorder value

'UserData'  
Set the userdata value

## Outputs

None

**See also:** @octave\_modbus/get.

### 3.5.5 @octave\_modbus/write

```
write (dev, target, address, values)
```

```
read (dev, target, address, values, serverId, precision)
```

Write data *data* to modbus device *dev* target *target* starting at address *address*.

## Inputs

*dev* - connected modbus device

*target* - target type to read. One of 'coils' or 'holdingregs'

*address* - address to start reading from.

*data* - data to write.

*serverId* - address to send to (0-247). Default of 1 is used if not specified.

*precision* - Optional precision for how to interpret the write data. Currently known precision values are uint16 (default), int16, uint32, int32, uint64, int64, single, double.

## Outputs

None

**See also:** modbus.

### 3.5.6 @octave\_modbus/writeRead

```
data = writeRead (dev, writeAddress, values, readAddress, readcount)
```

```
data = writeRead (dev, writeAddress, values, readAddress, readcount,  
serverId)
```

```
data = writeRead (dev, writeAddress, values, writePrecision,
                 readAddress, readCount, readPrecision)
```

Write data *values* to the modbus device *dev* holding registers starting at address *writeAddress* and then read *readCount* register values starting at address *readAddress*.

### Inputs

*dev* - connected modbus device

*writeAddress* - address to start writing to.

*values* - data to write to the device.

*readAddress* - address to start reading from.

*readCount* - number of elements to read.

*serverId* - address to send to (0-247). Default of 1 is used if not specified.

*precision* - Optional precision for how to interpret the read data. Currently known precision values are uint16 (default), int16, uint32, int32, uint64, int64, single, double.

### Outputs

*data* - data read from the device

**See also:** modbus.

## 3.5.7 modbus

```
dev = modbus ('tcpip', deviceaddress)
dev = modbus ('tcpip', deviceaddress, remoteport)
dev = modbus ('tcpip', deviceaddress, name, value)
dev = modbus ('serialrtu', serialport)
dev = modbus ('serialrtu', serialport, name, value)
```

Open modbus interface using a specified transport of 'tcpip' or 'serialrtu'.

### Inputs

*deviceaddress* - the device ip address of type String.

*remoteport* - the device remote port number. If not specified, a default of 502 will be used.

*name*, *value* - Optional name value pairs for setting properties of the object.

*serialport* - the name of the serial port to connect to. It must be specified when transport is 'serialrtu'.

### Common Input Name, Value pairs

Timeout    timeout value used for waiting for data

NumRetries    number of retries after a timeout

UserData    Additional data to attach to the object

### Serial RTU Input Name, Value pairs

BaudRate    Baudrate for the serial port

DataBits    number of databits for serial port

Parity    Parity for serial port ('odd', 'even' or 'none')

StopBits    number of stopbits for serial port

## Outputs

The `modbus()` shall return instance of `octave_modbus` class as the result `modbus`.

## Properties

The `modbus` object has the following public properties:

Name	name assigned to the <code>modbus</code> object
Type	instrument type 'modbus' (readonly)
Port	Remote port number or serial port name (readonly)
DeviceAddress	Device address if transport was 'tcpip' (readonly)
Status	status of the object 'open' or 'closed' (readonly)
Timeout	timeout value used for waiting for data
NumRetries	number of retries after a timeout
UserData	Additional data to attach to the object

## 3.6 Parallel

### 3.6.1 @octave\_parallel/fclose

```
res = fclose (obj)
  Closes parallel connection obj
```

### 3.6.2 @octave\_parallel/fopen

```
res = fopen (obj) (dummy)
  Opens parallel interface obj
  This currently is a dummy function to improve compatibility to MATLAB
```

### 3.6.3 @octave\_parallel/fread

```
data = fread (obj)
data = fread (obj, size)
data = fread (obj, size, precision)
[data,count] = fread (obj, ...)
[data,count,errmsg] = fread (obj, ...)
  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)
numbytes = fwrite (obj, data, precision)
```

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])
```

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)
```

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)
```

```
c = pp_ctrl (parallel)
```

Sets or reads 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)  
d = pp_data (parallel)  
Sets or reads 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)  
dir = pp_datadir (parallel)  
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)  
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 Serial (Deprecated)

### 3.7.1 @octave\_serial/fclose

```
res = fclose (obj)  
Closes SERIAL connection obj
```

### 3.7.2 @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`.

### 3.7.3 @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`.

### 3.7.4 @octave\_serial/fopen

`res = fopen (obj) (dummy)`  
 Opens SERIAL interface *obj*  
 This currently is a dummy function to improve compatibility to MATLAB

### 3.7.5 @octave\_serial/fprintf

`numbytes = fprintf (obj, template ...)`  
 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.

### 3.7.6 @octave\_serial/fread

`data = fread (obj)`  
`data = fread (obj, size)`  
`data = fread (obj, size, precision)`  
`[data,count] = fread (obj, ...)`  
`[data,count,errmsg] = fread (obj, ...)`  
 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.

### 3.7.7 @octave\_serial/fwrite

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

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

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.

### 3.7.8 @octave\_serial/get

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

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

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.

### 3.7.9 @octave\_serial/serialbreak

```
serialbreak (serial)
```

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

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.

### 3.7.10 @octave\_serial/set

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

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. A value of -1 means a blocking call. Maximum value is 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.

### 3.7.11 @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.

### 3.7.12 @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.

### 3.7.13 @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

### 3.7.14 @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

### 3.7.15 @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

### 3.7.16 @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.

### 3.7.17 @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.

### 3.7.18 serial

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

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)

### 3.7.19 seriallist

```
list = seriallist ()
```

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").

**3.7.20 srl\_read**

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

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.

**3.7.21 srl\_write**

```
n = srl_write (serial, data)
```

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*.

**3.8 Serial Port****3.8.1 @octave\_serialport/configureTerminator**

```
configureTerminator (serial, term)
```

```
configureTerminator (serial, readterm, writeterm)
```

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.

### 3.8.2 @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.

### 3.8.3 @octave\_serialport/fprintf

```
numbytes = fprintf (obj, template ...)
```

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.

### 3.8.4 @octave\_serialport/fread

```
data = fread (obj)
data = fread (obj, size)
data = fread (obj, size, precision)
[data,count] = fread (obj, ...)
[data,count,errmsg] = fread (obj, ...)
```

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.

### 3.8.5 @octave\_serialport/fwrite

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

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

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.

### 3.8.6 @octave\_serialport/get

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

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

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.

### 3.8.7 @octave\_serialport/getpinstatus

```
status getpinstatus (serial)
```

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.

### 3.8.8 @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.

### 3.8.9 @octave\_serialport/serialbreak

`serialbreak (serial)`

`serialbreak (serial, time)`

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.

### 3.8.10 @octave\_serialport/set

`set (obj, property,value)`

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

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. A value of -1 means a blocking call. Maximum value is 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.

### 3.8.11 @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.

### 3.8.12 @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.

### 3.8.13 @octave\_serialport/write

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

### 3.8.14 serialport

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

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'
Tag	User settable string to identify the port.

## 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
NumBytesAvailable	number of bytes currently available to read (readonly)
NumBytesWritten	number of bytes written (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)  
 UserData user defined data  
 Tag user defined tag name

### 3.8.15 serialportlist

```
list = serialportlist ()
list = serialportlist ("all")
list = serialportlist ("available")
```

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").

## 3.9 SPI

### 3.9.1 @octave\_spi/fclose

```
res = fclose (obj)
```

Closes SPI connection *obj*

### 3.9.2 @octave\_spi/fopen

```
res = fopen (obj) (dummy)
```

Opens SPI connection *obj*

This currently is a dummy function to improve compatibility to MATLAB

### 3.9.3 @octave\_spi/fread

```
data = fread (obj)
data = fread (obj, size)
data = fread (obj, size, precision)
[data,count] = fread (obj, ...)
[data,count,errmsg] = fread (obj, ...)
```

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.

### 3.9.4 @octave\_spi/fwrite

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

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.

### 3.9.5 @octave\_spi/get

```
struct = get (spi)
field = get (spi, property)
```

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.

### 3.9.6 @octave\_spi/read

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

Reads *data* from SPI instrument

## Inputs

*obj* is a SPI object.

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

## Outputs

*data* data values.

### 3.9.7 @octave\_spi/set

`set (obj, property, value)`

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

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.

### 3.9.8 @octave\_spi/write

`numbytes = fwrite (obj, data)`

Writes *data* to SPI instrument

## Inputs

*obj* is a SPI object.

*data* data to write.

## Outputs

returns number of bytes written.

### 3.9.9 @octave\_spi/writeAndRead

`data = writeAndRead (obj, wrdata)`

Writes and reads *data* from SPI instrument

## Inputs

*obj* is a SPI object.  
*wrdata* Data to write.

## Outputs

*data* data values read.

### 3.9.10 spi

```
spi = spi ([port_path])
spi = spi ([port_path], [propname, propvalue])
```

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)

### 3.9.11 spi\_close

```
spi_close (spi)
```

Close the interface and release a file descriptor.

## Inputs

*spi* - instance of *octave\_spi* class.

## Outputs

None

### 3.9.12 spi\_read

```
[data, count] = spi_read (spi, n)
```

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.

### 3.9.13 spi\_write

```
n = spi_write (spi, data)
```

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*.

### 3.9.14 spi\_writeAndRead

```
rddata = spi_writeAndRead (spi, wrdata)
```

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.

## 3.10 TCP (Deprecated)

### 3.10.1 @octave\_tcp/fclose

```
res = fclose (obj)
```

Closes TCP connection *obj*

### 3.10.2 @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.

### 3.10.3 @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.

### 3.10.4 @octave\_tcp/flushoutput

```
flushoutput (tcp) [Loadable Function]
```

Flush the output buffer.

#### Inputs

*tcp* - instance of *octave\_tcp* class.

#### Outputs

None.

**See also:** flushinput.

### 3.10.5 @octave\_tcp/fopen

```
res = fopen (obj) (dummy)
```

Opens TCP connection *obj*

This currently is a dummy function to improve compatibility to MATLAB

### 3.10.6 @octave\_tcp/fprintf

```
numbytes = fprintf (obj, template ...)
```

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

**3.10.7 @octave\_tcp/fread**

```
data = fread (obj)
```

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

```
data = fread (obj, size, precision)
```

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

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

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.

**3.10.8 @octave\_tcp/fwrite**

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

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

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.

**3.10.9 @octave\_tcp/get**

```
struct = get (tcp)
```

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

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.

### 3.10.10 @octave\_tcp/read

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

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.

### 3.10.11 @octave\_tcp/set

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

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.

### 3.10.12 @octave\_tcp/write

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

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.

### 3.10.13 tcp

```

tcp = tcp ()
tcp = tcp (ipaddress)
tcp = tcp (ipaddress, port)
tcp = tcp (ipaddress, port, timeout)
tcp = tcp (ipaddress, [propertyname, propertyvalue])
tcp = tcp (ipaddress, port, [propertyname, propertyvalue])

```

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)

### 3.10.14 tcp\_close

```
tcp_close (tcp)
```

Close the interface and release a file descriptor.

**Inputs**

*tcp* - instance of *octave\_tcp* class.

**Outputs**

None

**3.10.15 tcp\_read**

```
[data, count] = tcp_read (tcp, n, timeout)
```

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.

**3.10.16 tcp\_timeout**

```
tcp_timeout (tcp, timeout)
```

```
t = tcp_timeout (tcp)
```

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*.

**3.10.17 tcp\_write**

```
n = tcp_write (tcp, data)
```

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*.

**3.10.18 tcpip**

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

Matlab compatible wrapper to the tcp interface.

NOTE: tcpip has been deprecated. 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.

## 3.11 TCP Client

### 3.11.1 @octave\_tcpclient/configureTerminator

```
configureTerminator (tcp, term)
```

```
configureTerminator (tcp, readterm, writeterm)
```

Set terminator on a tcpclient object for ASCII string manipulation

#### Inputs

*tcp* - tcpclient 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:** tcpport.

### 3.11.2 @octave\_tcpclient/flush

```
data = flush (dev)
```

```
data = flush (dev, "input")
```

```
data = flush (dev, "output")
```

Flush the tcpclient socket buffers

#### Inputs

*dev* - connected tcpclient 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.

### 3.11.3 @octave\_tcpclient/get

```
struct = get (tcpclient)
field = get (tcpclient, property)
```

Get the properties of tcpclient object.

#### Inputs

*tcpclient* - instance of *octave\_tcpclient* 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\_tcpclient/set.

### 3.11.4 @octave\_tcpclient/read

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

Reads *data* from TCP instrument

#### Inputs

*obj* is a TCP object.

*size* Number of values to read. (Default: NumBytesAvailable).

*datatype* datatype of data.

#### Outputs

*data* data read.

### 3.11.5 @octave\_tcpclient/set

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

Set the properties of tcpclient 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 tcpclient socket.

'UserData' Set user data for the tcpclient socket.

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

'Tag' Set user tag to identify the port

## Outputs

None

**See also:** @octave\_tcpclient/get.

### 3.11.6 @octave\_tcpclient/write

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

Writes *data* to TCP instrument

## Inputs

*obj* is a TCPclient object.

*data* data to write.

*datatype* datatype of data. If not specified, it defaults to "uint8".

## Outputs

returns number of bytes written.

### 3.11.7 tcpclient

```
tcpclient = tcpclient (ipaddress, port)
tcpclient = tcpclient (ipaddress, port, [propertyname, propertyvalue])
```

Open tcpclient interface.

## Inputs

*ipaddress* - the ip address of type String.

*port* - the port number to connect.

*propname,propvalue* - property name/value pairs.

Known input properties:

Name        name value

Tag         tag value

Timeout    Numeric timeout value or -1 to wait forever

EnableTransferDelay  
            Boolean to enable or disable the nagle algorithm for delay transfer.

UserData   User data value.

## Outputs

The tcpclient() shall return instance of *octave\_tcpclient* class as the result *tcpclient*.

## Properties

The tcpclient object has the following public properties:

Name        name assigned to the tcpclient object

Tag         user tag assigned to the tcpclient object

Type        instrument type 'tcpclient' (readonly)

Port        remote port number (Readonly)

Address    remote host address (Readonly)

Status	status of the object 'open' or 'closed' (readonly)
Timeout	timeout value in seconds used for waiting for data
NumBytesAvailable	number of bytes currently available to read (readonly)
NumBytesWritten	number of bytes currently available to read (readonly)
ByteOrder	Byte order for data (currently not used)
Terminator	Terminator value used for string data (currently not used)
UserData	User data
EnableTransferDelay	Bool for whether transfer delay is enabled. (Read only)

## 3.12 TCP Server

### 3.12.1 @octave\_tcpserver/configureTerminator

`configureTerminator (tcp, term)`

`configureTerminator (tcp, readterm, writeterm)`

Set terminator on a tcpserver object for ASCII string manipulation

#### Inputs

*tcp* - tcpserver 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:** tcpport.

### 3.12.2 @octave\_tcpserver/flush

`data = flush (dev)`

`data = flush (dev, "input")`

`data = flush (dev, "output")`

Flush the tcpserver socket buffers

#### Inputs

*dev* - connected tcpserver 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.

### 3.12.3 @octave\_tcpserver/get

```
struct = get (tcpserver)
field = get (tcpserver, property)
```

Get the properties of tcpserver object.

#### Inputs

*tcpserver* - instance of *octave\_tcpserver* 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\_tcpserver/set.

### 3.12.4 @octave\_tcpserver/read

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

Reads *data* from TCP instrument

#### Inputs

*obj* is a TCP Server object.

*size* Number of values to read. (Default: NumBytesAvailable).

*datatype* datatype of data.

#### Outputs

*data* data read.

### 3.12.5 @octave\_tcpserver/set

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

Set the properties of tcpserver 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 tcpserver socket.

'UserData' Set user data for the tcpserver socket.

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

## Outputs

None

**See also:** @octave\_tcpserver/get.

### 3.12.6 @octave\_tcpserver/write

```

numbytes = write (obj, data)
numbytes = write (obj, data, datatype)

```

Writes *data* to TCP instrument

## Inputs

*obj* is a TCPServer object.

*data* data to write.

*datatype* datatype of data. If not specified, it defaults to "uint8".

## Outputs

returns number of bytes written.

### 3.12.7 tcpserver

```

tcpserver = tcpserver (ipaddress, port)
tcpserver = tcpserver (port)
tcpserver = tcpserver (... , [propertyname, propertyvalue])

```

Open tcpserver interface.

## Inputs

*ipaddress* - the ip address of type String.

*port* - the port number to bind.

*propname,propvalue* - property name/value pairs.

Known input properties:

Name      name value

Timeout    Numeric timeout value or -1 to wait forever

UserData    User data value.

## Outputs

The tcpserver() shall return instance of *octave\_tcpserver* class as the result *tcpserver*.

## Properties

The tcpserver object has the following public properties:

Connected    boolean flag for when connected to a client (Readonly)

ClientPort    connected client port number (Readonly)

ClientAddress  
              connected client address (Readonly)

Name         name assigned to the tcpserver object

Type         instrument type 'tcpserver' (readonly)

ServerPort  
              server port number (Readonly)

ServerAddress	server address (Readonly)
Status	status of the object 'open' or 'closed' (readonly)
Timeout	timeout value in seconds used for waiting for data
NumBytesAvailable	number of bytes currently available to read (readonly)
NumBytesWritten	number of bytes currently available to read (readonly)
ByteOrder	Byte order for data (currently not used)
Terminator	Terminator value used for string data (currently not used)
UserData	User data

### 3.13 UDP (Deprecated)

#### 3.13.1 @octave\_udp/fclose

`res = fclose (obj)`  
Closes UDP connection *obj*

#### 3.13.2 @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`.

#### 3.13.3 @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`.

### 3.13.4 @octave\_udp/flushoutput

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

#### Inputs

*udp* - instance of *octave\_udp* class.

#### Outputs

None

**See also:** flushinput.

### 3.13.5 @octave\_udp/fopen

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

### 3.13.6 @octave\_udp/fprintf

`numbytes = fprintf (obj, template ...)`  
 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

### 3.13.7 @octave\_udp/fread

`data = fread (obj)`  
`data = fread (obj, size)`  
`data = fread (obj, size, precision)`  
`[data,count] = fread (obj, ...)`  
`[data,count,errmsg] = fread (obj, ...)`  
 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.

### 3.13.8 @octave\_udp/fwrite

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

### 3.13.9 @octave\_udp/get

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

### 3.13.10 @octave\_udp/read

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

### 3.13.11 @octave\_udp/set

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

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.

### 3.13.12 @octave\_udp/write

```
numbytes = write (obj, data)
numbytes = write (obj, data, destinationAddress, destinationPort)
numbytes = write (obj, data, datatype)
numbytes = write (obj, data, datatype, destinationAddress,
                 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.

### 3.13.13 udp

```
udp = udp ()
udp = udp (remoteipaddress, remoteport)
udp = udp (remoteipaddress, remoteport, [propertyname, 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)

### 3.13.14 `udp_close`

`udp_close (udp)`

Close the interface and release a file descriptor.

#### Inputs

*udp* - instance of *octave\_udp* class.

#### Inputs

None

### 3.13.15 `udp_demo`

`result = udp_demo ()`

Run test SNTP demonstration for `udp` class

**See also:** `udp`.

### 3.13.16 `udp_read`

`[data, count] = udp_read (udp, n, timeout)`

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.

### 3.13.17 `udp_timeout`

`udp_timeout (udp, timeout)`

`t = udp_timeout (udp)`

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*.

### 3.13.18 `udp_write`

`n = udp_write (udp, data)`

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*.

## 3.14 UDP Port

### 3.14.1 `@octave_udpport/configureMulticast`

`data = configureMulticast((dev, address)`

`data = configureMulticast((dev, "off")`

Configure udpport device to receive multicast data

## Inputs

*dev* - open udpport device

If *address* is 'off' disable udp multicast. Otherwise it is the multicast address to use.

## Outputs

None

**See also:** `udpport`.

### 3.14.2 `@octave_udpport/configureTerminator`

`configureTerminator (udp, term)`

`configureTerminator (udp, readterm, writeterm)`

Set terminator for ASCII string manipulation

## Inputs

*udp* - udpport 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:** udpport.

### 3.14.3 @octave\_udpport/flush

```
data = flush (dev)
data = flush (dev, "input")
data = flush (dev, "output")
```

Flush the udpport socket buffers

## Inputs

*dev* - open udpport 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:** udpport.

### 3.14.4 @octave\_udpport/fprintf

```
numbytes = fprintf (obj, template ...)
```

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

## Inputs

*obj* is a UDPPort object.  
*template* Format template string.

## Outputs

*numbytes* is the number of bytes written to the device

### 3.14.5 @octave\_udpport/fread

```
data = fread (obj)
data = fread (obj, size)
data = fread (obj, size, precision)
[data,count] = fread (obj, ...)
```

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

Reads *data* from UDP instrument

## Inputs

*obj* is a UDP port 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.

### 3.14.6 @octave\_udpport/fwrite

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

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

Writes *data* to UDP instrument

## Inputs

*obj* is a UDP port object.

*data* data to write.

*precision* precision of data.

## Outputs

returns number of bytes written.

### 3.14.7 @octave\_udpport/get

```
struct = get (udpport)
```

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

Get the properties of udpport object.

## Inputs

*udpport* - instance of *octave\_udpport* 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\_udpport/set.

### 3.14.8 @octave\_udpport/read

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

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

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

Reads *data* from UDP instrument

## Inputs

*obj* is a udpport object.

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

*datatype* datatype of data.

## Outputs

*data* data read.

### 3.14.9 @octave\_udpport/set

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

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

Set the properties of udpport object.

## Inputs

*obj* - instance of *octave\_udpport* 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 udpport socket.

'UserData' Set the user data of the object.

'Tag' Set the user tag to identify the port.

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

## Outputs

None

**See also:** @octave\_udpport/get.

### 3.14.10 @octave\_udpport/write

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

```
numbytes = write (obj, data, destinationAddress, destinationPort)
```

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

```
numbytes = write (obj, data, datatype, destinationAddress,  
                destinationPort)
```

Writes *data* to UDP instrument

## Inputs

*obj* is a UDPPort 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 previously used remote address.

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

## Outputs

returns number of bytes written.

### 3.14.11 @octave\_udpport/writeline

`writeline (dev, data)`

`writeline (dev, data, destaddr, destport)`

Write data to a udpport including terminator value

## Inputs

*dev* - connected device

*data* - ASCII data to write

*destaddr* - Destination address

*destport* - Destination port

Where the address and port is not specified, the previously used address and port is used.

## Outputs

None

**See also:** flushoutput.

### 3.14.12 udpport

`udp = udpport ()`

`udp = udpport (propertyname, propertyvalue ...)`

Open udpport interface.

## Inputs

*propertyname, propertyvalue* - property name/value pair

Known input properties:

Name        name assigned to the udp object

LocalPort   local port number

LocalHost   local host address

Timeout     timeout value in seconds used for waiting for data

EnablePortSharing  
              Boolean if the socket has port sharing enabled (readonly)

## Outputs

The `udpport()` shall return instance of *octave\_udp* class as the result *udp*.

## Properties

The `udp` object has the following public properties:

Name        name assigned to the udp object

Tag         user tag assigned to the udp object

Type        instrument type 'udpport' (readonly)

LocalPort   local port number (readonly)

LocalHost   local host address (readonly)

Status	status of the object 'open' or 'closed' (readonly)
Timeout	timeout value in seconds used for waiting for data
NumBytesAvailable	number of bytes currently available to read (readonly)
MulticastGroup	multicast group socket is subscribed to (readonly)
EnableMulticast	Boolean if the socket has any multicast group it is subscribed to (readonly)
EnablePortSharing	Boolean if the socket has port sharing enabled (readonly)
Terminator	Terminator value used for string data (currently not used)

## 3.15 USBTMC

### 3.15.1 @octave\_usbtmc/fclose

*res* = `fclose (obj)`  
 Closes USBTMC connection *obj*

#### Inputs

*obj* is a usbtmc object.

### 3.15.2 @octave\_usbtmc/fopen

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

### 3.15.3 @octave\_usbtmc/fread

*data* = `fread (obj)`  
*data* = `fread (obj, size)`  
*data* = `fread (obj, size, precision)`  
`[data,count] = fread (obj, ...)`  
`[data,count,errmsg] = fread (obj, ...)`  
 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.

### 3.15.4 @octave\_usbtmc/fwrite

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

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.

### 3.15.5 usbtmc

```
usbtc = usbtc (path)
```

Open usbtc interface.

#### Inputs

*path* - the interface path of type String. If omitted defaults to '/dev/usbtc0'.

#### Outputs

The usbtc() shall return instance of *octave\_usbtc* class as the result *usbtc*.

### 3.15.6 usbtc\_close

```
usbtc_close (usbtc)
```

Close the interface and release a file descriptor.

#### Inputs

*usbtc* - instance of *octave\_usbtc* class.

#### Outputs

None

### 3.15.7 usbtc\_read

```
[data, count] = usbtc_read (usbtc, n)
```

Read from usbtc slave device.

#### Inputs

*usbtc* - instance of *octave\_usbtc* 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.

### 3.15.8 usbtc\_write

```
n = usbtc_write (usbtc, data)
```

Write data to a usbtc slave device.

## Inputs

*usbtmpc* - instance of *octave\_usbtmpc* class.

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

## Outputs

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

## 3.16 Visa

### 3.16.1 @octave\_visadev/configureTerminator

*configureTerminator* (*dev*, *term*)

*configureTerminator* (*dev*, *readterm*, *writeterm*)

Set terminator for ASCII string manipulation

## Inputs

*dev* - visadev 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:** visadev.

### 3.16.2 @octave\_visadev/flush

*data* = *flush* (*dev*)

*data* = *flush* (*dev*, "input")

*data* = *flush* (*dev*, "output")

Flush the visadev buffers

## Inputs

*dev* - connected visadev 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:** visadev.

### 3.16.3 @octave\_visadev/getpinstatus

*status* *getpinstatus* (*dev*)

Get status of visadev serial pins

## Inputs

*dev* - visadev serial object

## Outputs

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

**See also:** visadev.

### 3.16.4 @octave\_visadev/read

`data = read (dev, count)`

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

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

## Inputs

*dev* - connected visadev 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:** visadev.

### 3.16.5 @octave\_visadev/setDTR

`setDTR (dev, true_false)`

Set the state of the DTR line

## Inputs

*dev* - connected serial visadev device.

*true\_false* - state to set the line.

## Outputs

None

**See also:** visadev, getpinstatus, setRTS.

### 3.16.6 @octave\_visadev/setRTS

`setRTS (dev, true_false)`

Set the state of the RTS line

## Inputs

*dev* - connected visadev serial device.

*true\_false* - state to set the line.

## Outputs

None

**See also:** visadev, getpinstatus.

### 3.16.7 @octave\_visadev/visastatus

`status = visastatus (dev)`

Get the status of the visa device

#### Inputs

`dev` - connected visadev device

#### Outputs

visa dev status

**See also:** visadev.

### 3.16.8 @octave\_visadev/visatrigger

`visatrigger (dev)`

Trigger a GPIB or VXI visa device.

This is equivalent to the viAssertTrigger VISA specification function.

#### Inputs

`dev` - connected visadev device

#### Outputs

None

**See also:** visadev.

### 3.16.9 @octave\_visadev/write

`numbytes = write (obj, data)`

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

Writes `data` to visadev instrument

#### Inputs

`obj` is a visadev object.

`data` data to write.

`precision` precision of data.

#### Outputs

returns number of bytes written.

### 3.16.10 visadev

`dev = visadev (resourcename)`

`dev = visadev (resourcename, propertyname, propertyvalue ...)`

Open visadev interface.

#### Inputs

`resourcename` - name of visadev device to open.

`propertyname, propertyvalue` - property name/value pair

Known input properties:

Tag            tag value assigned to the visadev object

Timeout      timeout value in seconds used for waiting for data

## Outputs

`visadev()` shall return instance of `octave_visadev` class as the result `dev`.

## Properties

The `visadev` object has the following public properties:

Tag	user tag assigned to the <code>visadev</code> object
Type	instrument type (readonly)
Status	status of the object 'open' or 'closed' (readonly)
Timeout	timeout value in seconds used for waiting for data
NumBytesAvailable	number of bytes currently available to read (readonly)
MulticastGroup	multicast group socket is subscribed to (readonly)
Terminator	Terminator value used for string data (readonly)

Other properties are available depending on the `visadev` type and can be retrieved using the `properties` function.

**See also:** `properties`, `visadevlist`.

### 3.16.11 visadevlist

```
resourceList = visadevlist ()
```

List available `visadev` resources.

## Inputs

*propertyName, propertyvalue* - property name/value pair

Known input properties:

## Outputs

The `visdevlist` function shall return struct array of available resources. Struct properties:

## 3.17 VXI11

### 3.17.1 @octave\_vxi11/fclose

```
res = fclose (obj)
```

Closes VXI11 connection `obj`

### 3.17.2 @octave\_vxi11/fopen

```
res = fopen (obj) (dummy)
```

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

### 3.17.3 @octave\_vxi11/fread

```
data = fread (obj)
data = fread (obj, size)
data = fread (obj, size, precision)
[data,count] = fread (obj, ...)
[data,count,errmsg] = fread (obj, ...)
```

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.

### 3.17.4 @octave\_vxi11/fwrite

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

Writes *data* to vxi11 instrument

#### Inputs

*obj* is a vxi11 object.  
*data* data to write.  
*precision* precision of data.

#### Outputs

returns number of bytes written.

### 3.17.5 vxi11

```
vxi11 = vxi11 (ip,instr)
```

Open vxi11 interface.

*ip* - the ip address of type String. If omitted defaults to '127.0.0.1'. *instr* - the instrument name of type String. If omitted defaults to 'inst0'.

The vxi11() shall return instance of *octave\_vxi11* class as the result *vxi11*.

### 3.17.6 vxi11\_close

```
vxi11_close (vxi11)
```

Close the interface and release a file descriptor.

*vxi11* - instance of *octave\_vxi11* class.

### 3.17.7 `vx11_read`

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

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.

### 3.17.8 `vx11_write`

```
n = vx11_write (vx11, data)
```

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*.

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Version 3, 29 June 2007

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