python_ics Documentation

Release 3.0

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Minor differences can occur between different icsnVC40.h versions. These differences are usually just structures and constant differences. Below is a list of how the python_ics version correlates to the icsnVC40.h version:

CHAPTER 1

v802

```
pip install 'python_ics>=2.0,<3.0' --force-reinstall
```

Note: Refer to platform specific installation if not on Windows

CHAPTER 2

v803

```
pip install 'python_ics>=3.0,<4.0' --force-reinstall
```

Note: Refer to platform specific installation if not on Windows

CHAPTER 3

v900

```
pip install 'python_ics>=4.0,<5.0' --force-reinstall
```

Note: Refer to platform specific installation if not on Windows

CHAPTER 4

Installation on Windows

PyPi provides binary packages for Windows. You can simply install the python_ics module by running the following command:

```
pip install python_ics
```

Note: pip.exe is usually located under the Scripts directory under the Python installation directory.

4.1 Building from source

Building from source on windows is not usually need so it won't really be covered here in detail. As a starting point you'll need to match the compiler version used to build the official Python binaries (MSVC). If the build environment is setup correctly, you should be able to run `python setup.py build` like usual.

4.2 Intrepid icsneo40 Library

python_ics module looks for `icsneo40.dll` in the normal windows DLL search paths. The module will throw an exception if its not found.

CHAPTER 5

Installation on Linux

python_ics does not provide binaries for linux distributions so we will have to compile from source. This can be easily achieved by utilzing Python's PIP. First we need to make sure we have some base packages installed.

5.1 Fedora Dependencies (FC28)

```
sudo dnf install redhat-rpm-config gcc g++ python3-devel
```

5.2 Debian/Ubuntu Dependencies

```
sudo apt install build-essential python-dev
```

5.3 Others (Required dependencies)

- GCC
- G++
- Python Development packages (We Need to link to Python.h)

5.4 Installation

After dependencies are installed we can run the following pip command:

```
pip install python_ics
```

> **Note:** A lot of distributions have Python 2 and 3 installed side by side. As of this writing without a version suffix the commands still default to version 2 of the Python binaries. In order to utilize the Python 3 binaries you must append a 3 after the binary names (python3 and pip3 instead of just python and pip).

5.5 Intrepid libicsneoapi.so Library

Please see https://github.com/intrepidcs/icsneoapi for more details.

CHAPTER 6

Getting Started

Please see https://github.com/intrepidcs/python_ics/tree/master/examples for simple examples on how to use this module. Most function documentation has a simple example on how its intended to be used. Every function was designed to be as close as possible to it's C counterpart unless it was deemed to make the function more pythonic in nature.

For those experienced with the C API `ics.open_device` (`icsneoOpenNeoDevice()`) behavior has been changed the most (no parameters makes it auto utilize `ics.find_devices` (`icsneoFindNeoDevices()`) and open the first device). Also since python is a object oriented language the module utilizes this and auto cleans up device handles when going out of scope so there is usually no need to call `ics.close_device()`.

CHAPTER 7

Module Function List

ics.close_device	Closes the device.
ics.coremini_clear	Clears the CoreMini into the device.
ics.coremini_get_fblock_status	Gets the status of a Coremini Function Block at *index* on *device*.
ics.coremini_get_status	Gets the status of the CoreMini in the device.
ics.coremini_load	Loads the CoreMini into the device.
ics.coremini_read_app_signal	Gets the value of a Coremini application signal at *index* on *device*.
ics.coremini_read_rx_message	Gets the value of a Coremini Message at *index* on *device*.
ics.coremini_read_tx_message	Gets the value of a Coremini Message at *index* on *device*.
ics.coremini_start	Starts the CoreMini into the device.
ics.coremini_start_fblock	Starts a Coremini Function Block at *index* on *device*.
ics.coremini_stop	Stops the CoreMini into the device.
ics.coremini_stop_fblock	Stops a Coremini Function Block at *index* on *device*.
ics.coremini_write_app_signal	Sets the value of a Coremini application signal at *index* on *device*.
ics.coremini_write_rx_message	TODO
ics.coremini_write_tx_message	TODO
ics.create_neovi_radio_message	Python API only.
ics.find_devices	Finds all connected devices and returns a tuple of *ics.NeoDevice* for use in *ics.open_device()*
ics.firmware_update_required	Determines if the device firmware needs flashing.
ics.force_firmware_update	Forces the device to flash firmware.
ics.get_active_vnet_channel	Gets active vnet channel for the device.
ics.get_backup_power_enabled	Returns the device backup power enabled for the device.
ics.get_backup_power_ready	Returns the device backup power is ready for the device.
ics.get_device_settings	Gets the settings in the device.
ics.get_device_status	Returns the device status.

Continued on next page

Table 1 – continued from previous page

ics.get_dll_firmware_info	Returns the DLL firmware info for the device.
ics.get_dll_version	Gets the DLL version.
ics.get_error_messages	Gets the error message(s) on the device.
ics.get_hw_firmware_info	Returns the device firmware info for the device.
ics.get_last_api_error	Gets the error message from the last API call.
ics.get_library_path	
ics.get_messages	Gets the message(s) on the device.
ics.get_performance_parameters	Gets the Performance Parameters on *device*.
ics.get_rtc	Gets the Real-Time Clock of the device.
ics.get_script_status	Accepts a ics.NeoDevice, exception on error.
ics.get_serial_number	Gets the serial number out of the device.
ics.get_timestamp_for_msg	Calculates the timestamp for a message.
ics.iso15765_disable_networks	Disables ISO15765 networks.
ics.iso15765_enable_networks	Enables ISO15765 networks.
ics.iso15765_receive_message	Setup rx ISO15765 Message.
ics.iso15765_transmit_message	Transmits an ISO15765 Message.
ics.load_default_settings	Load the default settings in the device.
ics.open_device	Opens the device.
ics.override_library_name	Sets active vnet channel for the device.
ics.read_sdcard	icsneoReadSDCard(), Accepts a ics.NeoDevice and sector index.
ics.request_enter_sleep_mode	Signal neoVI to immediete go to sleep.
ics.set_active_vnet_channel	Sets active vnet channel for the device.
ics.set_backup_power_enabled	Sets the device backup power enabled for the device.
ics.set_bit_rate	Sets the bitrate for a given Network ID on the device..
ics.set_bit_rate_ex	ics.set_fd_bit_rate_ex(device, BitRate, NetworkID, iOptions)
ics.set_context	Sets the "context" of how icsneoFindNeoDevices(Ex) and icsneoOpenNeoDevice(Ex) function.
ics.set_device_settings	Sets the settings in the device.
ics.set_fd_bit_rate	Sets the FD bitrate for a given Network ID on the device..
ics.set_reflash_callback	Sets the reflash display callback.
ics.set_rtc	Sets the Real-Time Clock of the device.
ics.transmit_messages	Transmits message(s) on the device.
ics.validate_hobject	Validates the handle is valid for a *device*.
ics.write_sdcard	icsneoReadSDCard(), Accepts a ics.NeoDevice, sector index, and a bytearray of 512 bytes.
ics.ClosePort	**Note:** Compatibility Function
ics.FindNeoDevices	**Note:** Compatibility Function

Continued on next page

Table 1 – continued from previous page

ics.GetDLLVersion	**Note:** Compatibility Function
ics.GetErrorMessages	**Note:** Compatibility Function
ics.GetHWFirmwareInfo	**Note:** Compatibility Function
ics.GetLastAPIError	**Note:** Compatibility Function
ics.GetMessages	**Note:** Compatibility Function
ics.GetPerformanceParameters	**Note:** Compatibility Function
ics.GetRTC	**Note:** Compatibility Function
ics.GetSerialNumber	**Note:** Compatibility Function
ics.OpenNeoDevice	**Note:** Compatibility Function
ics.RequestEnterSleepMode	**Note:** Compatibility Function

Continued on next page

Table 1 – continued from previous page

ics.ScriptClear	**Note:** Compatibility Function
ics.ScriptGetFBlockStatus	**Note:** Compatibility Function
ics.ScriptGetScriptStatus	**Note:** Compatibility Function
ics.ScriptLoad	**Note:** Compatibility Function
ics.ScriptReadAppSignal	**Note:** Compatibility Function
ics.ScriptReadRxMessage	**Note:** Compatibility Function
ics.ScriptReadTxMessage	**Note:** Compatibility Function
ics.ScriptStart	**Note:** Compatibility Function
ics.ScriptStartFBlock	**Note:** Compatibility Function
ics.ScriptStop	**Note:** Compatibility Function

Continued on next page

Table 1 – continued from previous page

ics.ScriptStopFBlock	**Note:** Compatibility Function
ics.ScriptWriteAppSignal	**Note:** Compatibility Function
ics.ScriptWriteRxMessage	**Note:** Compatibility Function
ics.ScriptWriteTxMessage	**Note:** Compatibility Function
ics.SetRTC	**Note:** Compatibility Function
ics.SetReflashDisplayCallback	**Note:** Compatibility Function
ics.TxMessages	**Note:** Compatibility Function
ics.ValidateHObject	**Note:** Compatibility Function
ics.base36enc	Converts a decimal serial number to base36.
ics.icsneoFirmwareUpdateRequired	**Note:** Compatibility Function
ics.icsneoForceFirmwareUpdate	**Note:** Compatibility Function

Continued on next page

Table 1 – continued from previous page

ics.icsneoGetActiveVNETChannel	**Note:** Compatibility Function
ics.icsneoGetBackupPowerEnabled	**Note:** Compatibility Function
ics.icsneoGetBackupPowerReady	**Note:** Compatibility Function
ics.icsneoGetDLLFirmwareInfo	**Note:** Compatibility Function
ics.icsneoGetDeviceStatus	**Note:** Compatibility Function
ics.icsneoGetFireSettings	**Note:** Compatibility Function
ics.icsneoGetTimeStampForMsg	**Note:** Compatibility Function
ics.icsneoGetVCAN3Settings	**Note:** Compatibility Function
ics.icsneoISO15765_DisableNetworks	**Note:** Compatibility Function
ics.icsneoISO15765_EnableNetworks	**Note:** Compatibility Function

Continued on next page

Table 1 – continued from previous page

ics.icsneoISO15765_ReceiveMessage	**Note:** Compatibility Function
ics.icsneoISO15765_TransmitMessage	**Note:** Compatibility Function
ics.icsneoLoadDefaultSettings	**Note:** Compatibility Function
ics.icsneoReadSDCard	**Note:** Compatibility Function
ics.icsneoScriptGetScriptStatusEx	**Note:** Compatibility Function
ics.icsneoSetActiveVNETChannel	**Note:** Compatibility Function
ics.icsneoSetBackupPowerEnabled	**Note:** Compatibility Function
ics.icsneoSetBitRate	**Note:** Compatibility Function
ics.icsneoSetBitRateEx	**Note:** Compatibility Function
ics.icsneoSetContext	**Note:** Compatibility Function

Continued on next page

Table 1 – continued from previous page

ics.icsneoSetFDBitRate	**Note:** Compatibility Function
ics.icsneoSetFireSettings	**Note:** Compatibility Function
ics.icsneoSetVCAN3Settings	**Note:** Compatibility Function
ics.icsneoWriteSDCard	**Note:** Compatibility Function

CHAPTER 8

Module Documentation

Python C Code module for interfacing to the icsneo40 dynamic library. Code tries to respect PEP 8 (http://python.org/dev/peps/pep-0008). Function naming convention does not follow the tradition c style icsneo40 naming convention as pyics module name acts as the namespace (icsneo portion of the function) and function names are suppose to be lowercase with underscores instead of mixedCase like icsneo API.

C API can be mimiced almost identically by doing the following:

```
>>> import ics as icsneo
>>> devices = icsneo.FindNeoDevices()
>>> for device in devices:
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

Recommended *Python* way by doing the following:

```
>>> import ics
>>> devices = ics.find_devices()
>>> for device in devices:
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

It should be noted that *ics.NeoDevice* is used a little bit differently than the C API. *ics.NeoDevice* contains two extra members:

ics.NeoDevice.AutoHandleClose and ics.NeoDevice._Handle

The handle normally returned from *icsneoOpenNeoDevice()* is stored inside _Handle and setting AutoHandleClose to True (Default) will automatically close the handle when the *ics.NeoDevice* goes out of scope.

Installation:

pip install python_ics

https://pypi.python.org/pypi/python-ics

exception ics.**ArgumentError**
Bases: Exception

exception ics.**RuntimeError**
Bases: Exception

class ics.**ApiFirmwareInfo**
Bases: object

ApiFirmwareInfo object

iAppMajor

iAppMinor

iBoardRevMajor

iBoardRevMinor

iBootLoaderVersionMajor

iBootLoaderVersionMinor

iMainFirmChkSum

iMainFirmDateDay

iMainFirmDateHour

iMainFirmDateMin

iMainFirmDateMonth

iMainFirmDateSecond

iMainFirmDateYear

iMainVnetHWrevMajor

iMainVnetHWrevMinor

iMainVnetSRAMSize

iManufactureDay

iManufactureMonth

iManufactureYear

iType

class ics.**CanFdSettings**
Bases: object

CanFdSettings object

FDBRP

FDBaudrate

FDMode

FDTqProp

FDTqSeg1

FDTqSeg2

FDTqSync

class ics.**CanSettings**
Bases: object

CanSettings object

BRP

Baudrate
The bit rate of a CAN channel can be selected from a list of common bit rates Write the correct enumeration for the desired bit rate and ensure that SetBaudrate is 1(auto)

Mode
CAN controller mode when the neoVI device goes online or runs a CoreMini script. Normal=0 Disabled=1 Listen Only=3 Listen All=7

SetBaudrate
The bit rate of a CAN channel can be selected one of two ways. It can either be selected from a list of common bit rates (SetBaudrate=1) or the user can specify the CAN timing parameters (SetBaudrate=0)

TqProp
Propagation delay

TqSeg1
Phase 1 segment

TqSeg2
Phase 2 segment

TqSync
Syncro jump width

auto_baud
Enables the auto bitrate feature. 1 = enable, 0 = disable.

innerFrameDelay25us

transceiver_mode
Currently Not used.

class ics.**CmISO157652RxMessage**
Bases: object

CmISO157652RxMessage object

blockSize
Overrides the block size that the receiver reports, see overrideBlockSize. Set to J2534's BS_TX if <= 0xFF

cf_timeout
max timeout (ms) for waiting on consecutive frame. Set this to N_CR_MAX's value in J2534

extendedAddress
Extended Address byte of transmitter. see ext_address_enable, not supported

fc_id
flow control arbId to transmit in flow control (from neoVI to ECU)

flags

flowControlExtendedAddress
Expected Extended Address byte of response from receiver. see fc_ext_address_enable, not supported

id
arbId of transmitted frames (CAN id to transmit to)

id_mask
ArbId filter mask for frames from transmitter (from ECU to neoVI)

padding
The padding byte to use to fill the unused portion of * transmitted CAN frames (flow control), see paddingEnable.

reserved

stMin
Minimum seperation time (between consecutive frames) to report in flow control response

vs_netid
The netid of the message (determines which network to decode receives), not supported

class ics.**CmISO157652TxMessage**
Bases: object

CmISO157652TxMessage object

blockSize
Overrides the block size that the receiver reports, see overrideBlockSize. Set to J2534's BS_TX if <= 0xFF

data
The data

extendedAddress
Extended Address byte of transmitter. see ext_address_enable, not supported

fc_id
flow control arb id filter value (response id from receiver)

fc_id_mask
The flow control arb filter mask (response id from receiver)

flags

flowControlExtendedAddress
Expected Extended Address byte of response from receiver. see fc_ext_address_enable, not supported

fs_timeout
max timeout (ms) for waiting on flow control respons. Set this to N_BS_MAX's value if J2534

fs_wait
max timeout (ms) for waiting on flow control response after receiving flow control * with flow status set to WAIT. Set this to N_BS_MAX's value if J2534.

id
arbId of transmitted frames (CAN id to transmit to)

num_bytes
Number of data bytes

padding
The padding byte to use to fill the unused portion of * transmitted CAN frames (single frame, first frame, consecutive frame) *

stMin
Overrides the stMin that the receiver reports, see overrideSTmin. Set to J2534's STMIN_TX if <= 0xFF

tx_index

vs_netid
The netid of the message (determines which network to transmit on), not supported

class ics.**CyanSettings**

Bases: object

CyanSettings object

ain_sample_period

ain_threshold

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

can5
ics.CanSettings Object

can6
ics.CanSettings Object

can7
ics.CanSettings Object

can8
ics.CanSettings Object

can_switch_mode

canfd1
ics.CanFdSettings Object

canfd2
ics.CanFdSettings Object

canfd3
ics.CanFdSettings Object

canfd4
ics.CanFdSettings Object

canfd5
ics.CanFdSettings Object

canfd6
ics.CanFdSettings Object

canfd7
ics.CanFdSettings Object

canfd8
ics.CanFdSettings Object

digitalIoThresholdEnable

digitalIoThresholdTicks

disableUsbCheckOnBoot

enableLatencyTest

ethernet
ics.EthernetSettings Object

idle_wakeup_network_enables_3

iso15765_separation_time_offset

iso9141_kwp_settings_1
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_2
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_3
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_4
Iso9141Keyword2000Settings Object

iso_msg_termination_1
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_2
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_3
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_4
0 - use inner frame time, 1 - GME CIM-SCL

iso_parity_1
0 - no parity, 1 - event, 2 - odd

iso_parity_2
0 - no parity, 1 - event, 2 - odd

iso_parity_3
0 - no parity, 1 - event, 2 - odd

iso_parity_4
0 - no parity, 1 - event, 2 - odd

lin1
ics.LinSettings Object

lin2
ics.LinSettings Object

lin3
ics.LinSettings Object

lin4
ics.LinSettings Object

lin5
ics.LinSettings Object

lin6
ics.LinSettings Object

lsft1
ics.CanSettings Object

lsft2
ics.CanSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

network_enables_3

perf_en

pwr_man_enable

pwr_man_timeout

reserved

slaveVnetA

slaveVnetB

swcan1
ics.SWCanSettings Object

swcan2
ics.SWCanSettings Object

termination_enables

text_api
ics.TextApiSettings Object

class ics.**DeviceSettings**
Bases: object

DeviceSettings object

DeviceSettingType

cyan
ics.CyanSettings Object

fire
ics.FireSettings Object

radgalaxy
ics.RadGalaxySettings Object

vcan3
ics.Vcan3Settings Object

vcan4
ics.Vcan4Settings Object

vcan4_12
ics.Vcan412Settings Object

vividcan
ics.VividCANSettings Object

class ics.**EthernetSettings**
Bases: object

EthernetSettings object

auto_neg

duplex

led_mode

link_speed

rsvd

class ics.**Fire2DeviceStatus**
Bases: object

Fire2DeviceStatus object

backupPowerEnabled

backupPowerGood

ethernetActivationLineEnabled

usbHostPowerEnabled

class ics.**FireSettings**
Bases: object

FireSettings object

ain_sample_period

ain_threshold

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

cgi_baud

cgi_chksum_enable

cgi_enable_reserved

cgi_rx_ifs_bit_times

cgi_tx_ifs_bit_times

fast_init_network_enables_1

fast_init_network_enables_2

iso15765_separation_time_offset

iso9141_kwp_enable_reserved

iso9141_kwp_settings
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_2
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_3
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_4
Iso9141Keyword2000Settings Object

iso_msg_termination
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_2
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_3
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_4
0 - use inner frame time, 1 - GME CIM-SCL

iso_parity
0 - no parity, 1 - event, 2 - odd

iso_parity_2
0 - no parity, 1 - event, 2 - odd

iso_parity_3
0 - no parity, 1 - event, 2 - odd

iso_parity_4
0 - no parity, 1 - event, 2 - odd

iso_tester_pullup_enable

lin1
ics.LinSettings Object

lin2
ics.LinSettings Object

lin3
ics.LinSettings Object

lin4
ics.LinSettings Object

lsft
ics.CanSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

perf_en

pwm_man_timeout

pwr_man_enable

swcan
ics.SWCanSettings Object

text_api
ics.TextApiSettings Object

uart
ics.UartSettings Object

uart2
ics.UartSettings Object

vnetBits

class ics.**IcsDeviceStatus**
Bases: object

IcsDeviceStatus object

fire2Status
ics.Fire2DeviceStatus Object

vcan4Status
ics.Vcan4DeviceStatus Object

class ics.**Iso9141Keyword2000InitSteps**
Bases: object

Iso9141Keyword2000InitSteps object

k

l

time_500us

class ics.**Iso9141Keyword2000Settings**
Bases: object

Iso9141Keyword2000Settings object

Baudrate

brgh

chksum_enabled

init_steps
Tuple of Iso9141Keyword2000InitSteps

p2_500us

p3_500us

p4_500us

spbrg

class ics.**LinSettings**
Bases: object

LinSettings object

Baudrate

MasterResistor

Mode

brgh

spbrg

class ics.**NeoDevice**
Bases: object

NeoDevice object

AutoHandleClose
When NeoDevice is freed the handle will automatically be closed, if true.

DeviceType

Handle

IsOpen
This contains the handle returned from icsneoOpenDevice() API. If uncertain, don't use this.

MaxAllowedClients

Name
String describing DeviceType, extension to Python api only.

NumberOfClients

SerialNumber

class ics.**OpEthGeneralSettings**
Bases: object

OpEthGeneralSettings object

bEnReportLinkQuality

bTapEnPtp

bTapEnSwitch

reserved0

tapPair0

tapPair1

tapPair2

tapPair3

tapPair4

tapPair5

ucInterfaceType

class ics.**OpEthSettings**
Bases: object

OpEthSettings object

preemption_en

reserved0

ucConfigMode

class ics.**RadGalaxySettings**
Bases: object

RadGalaxySettings object

ain_sample_period

ain_threshold

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

can5
ics.CanSettings Object

can6
ics.CanSettings Object

can7
ics.CanSettings Object

can8
ics.CanSettings Object

can_switch_mode

canfd1
ics.CanFdSettings Object

canfd2
ics.CanFdSettings Object

canfd3
ics.CanFdSettings Object

canfd4
ics.CanFdSettings Object

canfd5
ics.CanFdSettings Object

canfd6
ics.CanFdSettings Object

canfd7
ics.CanFdSettings Object

canfd8
ics.CanFdSettings Object

idle_wakeup_network_enables_1

idle_wakeup_network_enables_2

idle_wakeup_network_enables_3

iso15765_separation_time_offset

iso9141_kwp_settings_1
Iso9141Keyword2000Settings Object

iso_msg_termination_1
0 - use inner frame time, 1 - GME CIM-SCL

iso_parity_1
0 - no parity, 1 - event, 2 - odd

lin1
ics.LinSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

network_enables_3

opEth1
ics.OpEthSettings Object

opEth10
ics.OpEthSettings Object

opEth11
ics.OpEthSettings Object

opEth12
ics.OpEthSettings Object

opEth2
ics.OpEthSettings Object

opEth3
ics.OpEthSettings Object

opEth4
ics.OpEthSettings Object

opEth5
ics.OpEthSettings Object

opEth6
ics.OpEthSettings Object

opEth7
ics.OpEthSettings Object

opEth8
ics.OpEthSettings Object

opEth9
ics.OpEthSettings Object

opEthGen
ics.OpEthGeneralSettings Object

perf_en

pwr_man_enable

pwr_man_timeout

swcan1
ics.SWCanSettings Object

swcan2
ics.SWCanSettings Object

text_api
ics.TextApiSettings Object

class ics.**SWCanSettings**
Bases: object

SWCanSettings object

BRP

Baudrate
The bit rate of a CAN channel can be selected from a list of common bit rates Write the correct enumeration for the desired bit rate and ensure that SetBaudrate is 1(auto)

Mode
CAN controller mode when the neoVI device goes online or runs a CoreMini script. Normal=0 Disabled=1 Listen Only=3 Listen All=7

RESERVED

SetBaudrate
The bit rate of a CAN channel can be selected one of two ways. It can either be selected from a list of common bit rates (SetBaudrate=1) or the user can specify the CAN timing parameters (SetBaudrate=0)

TqProp
Propagation delay

TqSeg1
Phase 1 segment

TqSeg2
Phase 2 segment

TqSync
Syncro jump width

auto_baud
Enables the auto bitrate feature. 1 = enable, 0 = disable.

high_speed_auto_switch

transceiver_mode
Currently Not used.

class ics.**SpyMessage**
Bases: object

SpyMessage object

AckBytes

ArbIDOrHeader

Data

DescriptionID
Not Used

ExtraDataPtr

ExtraDataPtrEnabled

MessagePieceID
Not Used

MiscData

NetworkID
This value is used to identify which network this message was received on.

NetworkID2
This value is used to identify which network this message was received on.

NodeID
Not Used

NumberBytesData
Holds the number of bytes in the Data(1 to 8) array or the number of bytes in a CAN remote frame (The DLC).

NumberBytesHeader
Used for J1850/ISO messages. It indicates how many bytes are stored in the Header(1 to 4) array.

Protocol
Valid values are SPY_PROTOCOL_CAN, SPY_PROTOCOL_J1850VPW, and SPY_PROTOCOL_ISO9141.

StatusBitField

StatusBitField2

StatusBitField3

StatusBitField4

TimeHardware
Hardware time stamp. The TimeStamp is reset on device open

TimeHardware2
Hardware time stamp. The TimeStamp is reset on device open

TimeStampHardwareID
This is an identifier of what type of hardware timestamp is used. Since neoVI's timestamp is always the same, this doesn't change.

TimeStampSystemID
This is an identifier of what type of system timestamp is used. Since WIN32 neoVI's timestamp is always the same, from the timeGetTime API, this doesn't change.

TimeSystem
TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

TimeSystem2
TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

noExtraDataPtrCleanup
Tells Python to not clean up ExtraDataPtrMemory, If this is enabled. Ignore, if unsure.

class ics.**SpyMessageJ1850**
Bases: object

SpyMessageJ1850 object

AckBytes

Data

DescriptionID
Not Used

ExtraDataPtr

ExtraDataPtrEnabled

Header

MessagePieceID
Not Used

MiscData

NetworkID
This value is used to identify which network this message was received on.

NetworkID2
This value is used to identify which network this message was received on.

NodeID
Not Used

NumberBytesData
Holds the number of bytes in the Data(1 to 8) array or the number of bytes in a CAN remote frame (The DLC).

NumberBytesHeader
Used for J1850/ISO messages. It indicates how many bytes are stored in the Header(1 to 4) array.

Protocol
Valid values are SPY_PROTOCOL_CAN, SPY_PROTOCOL_J1850VPW, and SPY_PROTOCOL_ISO9141.

StatusBitField

StatusBitField2

StatusBitField3

StatusBitField4

TimeHardware
Hardware time stamp. The TimeStamp is reset on device open

TimeHardware2
Hardware time stamp. The TimeStamp is reset on device open

TimeStampHardwareID
This is an identifier of what type of hardware timestamp is used. Since neoVI's timestamp is always the same, this doesn't change.

TimeStampSystemID
This is an identifier of what type of system timestamp is used. Since WIN32 neoVI's timestamp is always the same, from the timeGetTime API, this doesn't change.

TimeSystem
TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

TimeSystem2
TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

noExtraDataPtrCleanup
Tells Python to not clean up ExtraDataPtrMemory, If this is enabled. Ignore, if unsure.

class ics.**TextApiSettings**
Bases: object

TextApiSettings object

can1_options
Sets the length of the Arbitration ID's. Set to 1 for Extended and 0 for Standard

can1_rx_id
Sets or Reads the Arbitration ID for Sending Receiving API commands

can1_tx_id
Sets or Reads the Arbitration ID for Sending Text API commands

can2_options

can2_rx_id

can2_tx_id

can3_options

can3_rx_id

can3_tx_id

can4_options

can4_rx_id

can4_tx_id

network_enables
Bitfield telling which netowrk to support Text API.

class ics.**UartSettings**
Bases: object

UartSettings object

Baudrate
Holds the baud rate for the UART Connection. An example value could be 10417 or 9600

bOptions
Bitfield containing UART Options Invert TX=1, Invert RX=2, Half Duplex=4

brgh

flow_control
Set to 0 for no flow control and 1 for simple CTS RTS

parity
Sets the Parity type. Valid values are None=0, Even=1, Odd=2

reserved_1

spbrg

stop_bits
Sets the number of stop bits to use. Valid values are One=1, Two=2

class ics.**Vcan3Settings**
Bases: object

Vcan3Settings object

can1
ics.CanSettings Object

can2
ics.CanSettings Object

iso15765_separation_time_offset

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

perf_en

class ics.**Vcan412Settings**
Bases: object

Vcan412Settings object

can1
ics.CanSettings Object

can2
ics.CanSettings Object

canfd1
ics.CanFdSettings Object

canfd2
ics.CanFdSettings Object

disableUsbCheckOnBoot
flags

enableLatencyTest
flags

iso15765_separation_time_offset

network_enabled_on_boot

network_enables

perf_en

pwr_man_enable

pwr_man_timeout

reserved
flags

termination_enables

text_api
ics.TextApiSettings Object

class ics.**Vcan4DeviceStatus**
Bases: object

Vcan4DeviceStatus object

ethernetActivationLineEnabled

class ics.**Vcan4Settings**
Bases: object

Vcan4Settings object

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

canfd1
ics.CanFdSettings Object

canfd2
ics.CanFdSettings Object

canfd3
ics.CanFdSettings Object

canfd4
ics.CanFdSettings Object

enableLatencyTest
flags

enablePcEthernetComm
flags

ethernet
ics.EthernetSettings Object

iso15765_separation_time_offset

iso9141_kwp_settings_1
Iso9141Keyword2000Settings Object

iso_9141_kwp_enable_reserved

iso_msg_termination_1

iso_parity_1

lin1
ics.LinSettings Object

network_enabled_on_boot

network_enables

network_enables_2

network_enables_3

perf_en

pwr_man_enable

pwr_man_timeout

reserved
flags

termination_enables

text_api
ics.TextApiSettings Object

class ics.**VcanRFSettings**
Bases: object

VcanRFSettings object

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

idle_wakeup_network_enables_1

idle_wakeup_network_enables_2

iso15765_separation_time_offset

iso9141_kwp_enable_reserved

iso9141_kwp_settings
ics.Iso9141Keyword2000Settings Object

iso9141_kwp_settings_2
ics.Iso9141Keyword2000Settings Object

iso_msg_termination
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_2
0 - use inner frame time, 1 - GME CIM-SCL

iso_parity
0 - no parity, 1 - event, 2 - odd

iso_parity_2
0 - no parity, 1 - event, 2 - odd

iso_tester_pullup_enable

lin1
ics.LinSettings Object

lin2
ics.LinSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

perf_en

pwr_man_enable
0 - off, 1 - sleep enabled, 2- idle enabled (fast wakeup)

pwr_man_timeout

class ics.**VividCANSettings**
Bases: object

VividCANSettings object

can1
ics.CanSettings Object

can_switch_mode

disableUsbCheckOnBoot
flags

ecu_id

enableLatencyTest
flags

iso15765_separation_time_offset

lsftcan1
ics.CanSettings Object

network_enabled_on_boot

network_enables

perf_en

pwr_man_enable

pwr_man_timeout

reserved
flags

swcan1
ics.CanSettings Object

termination_enables

ics.**ClosePort**()

Note: Compatibility Function Identical to PEP8 compliant *ics.close_device()* method.

ics.**EnableNetworkCom**()

Note: Compatibility Function Identical to PEP8 compliant *ics.enable_network_com()* method.

ics.**FindNeoDevices**()

Note: Compatibility Function Identical to PEP8 compliant *ics.find_devices()* method.

ics.**FirmwareUpdateRequired**()

Note: Compatibility Function Identical to PEP8 compliant *ics.firmware_update_required()* method.

ics.**ForceFirmwareUpdate**()

Note: Compatibility Function Identical to PEP8 compliant *ics.force_firmware_update()* method.

ics.**GetActiveVNETChannel**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_active_vnet_channel()* method.

ics.**GetBackupPowerEnabled**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_backup_power_enabled()* method.

ics.**GetBackupPowerReady**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_backup_power_ready()* method.

ics.**GetDLLFirmwareInfo**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_dll_firmware_info()* method.

ics.**GetDLLVersion**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_dll_version()* method.

ics.**GetDeviceStatus**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_device_status()* method.

ics.**GetErrorMessages**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_error_messages()* method.

ics.**GetFireSettings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_device_settings()* method.

ics.**GetHWFirmwareInfo**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_hw_firmware_info()* method.

ics.**GetLastAPIError**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_last_api_error()* method.

ics.**GetMessages**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_messages()* method.

ics.**GetPerformanceParameters**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_performance_parameters()* method.

ics.**GetRTC**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_rtc()* method.

ics.**GetSerialNumber**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_serial_number()* method.

ics.**GetTimeStampForMsg**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_timestamp_for_msg()* method.

ics.**GetVCAN3Settings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_device_settings()* method.

ics.**ISO15765_DisableNetworks**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_disable_networks()* method.

ics.**ISO15765_EnableNetworks**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_enable_networks()* method.

ics.**ISO15765_ReceiveMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_receive_message()* method.

ics.**ISO15765_TransmitMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_transmit_message()* method.

ics.**LoadDefaultSettings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.load_default_settings()* method.

ics.**OpenNeoDevice**()

Note: Compatibility Function Identical to PEP8 compliant *ics.open_device()* method.

ics.**ReadSDCard**()

Note: Compatibility Function Identical to PEP8 compliant *ics.read_sdcard()* method.

ics.**RequestEnterSleepMode**()

Note: Compatibility Function Identical to PEP8 compliant *ics.request_enter_sleep_mode()* method.

ics.**ScriptClear**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_clear()* method.

ics.**ScriptGetFBlockStatus**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_get_fblock_status()* method.

ics.**ScriptGetScriptStatus**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_get_status()* method.

ics.**ScriptGetScriptStatusEx**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_script_status()* method.

ics.**ScriptLoad**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_load()* method.

ics.**ScriptReadAppSignal**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_read_app_signal()* method.

ics.**ScriptReadRxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_read_rx_message()* method.

ics.**ScriptReadTxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_read_tx_message()* method.

ics.**ScriptStart**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_start()* method.

ics.**ScriptStartFBlock**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_start_fblock()* method.

ics.**ScriptStop**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_stop()* method.

ics.**ScriptStopFBlock**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_stop_fblock()* method.

ics.**ScriptWriteAppSignal**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_write_app_signal()* method.

ics.**ScriptWriteRxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_write_rx_message()* method.

ics.**ScriptWriteTxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_write_tx_message()* method.

ics.**SetActiveVNETChannel**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_active_vnet_channel()* method.

ics.**SetBackupPowerEnabled**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_backup_power_enabled()* method.

ics.**SetBitRate**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_bit_rate()* method.

ics.**SetBitRateEx**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_bit_rate_ex()* method.

ics.**SetContext**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_context()* method.

ics.**SetFDBitRate**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_fd_bit_rate()* method.

ics.**SetFireSettings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_device_settings()* method.

ics.**SetRTC**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_rtc()* method.

ics.**SetReflashDisplayCallback**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_reflash_callback()* method.

ics.**SetVCAN3Settings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_device_settings()* method.

ics.**TxMessages**()

Note: Compatibility Function Identical to PEP8 compliant *ics.transmit_messages()* method.

ics.**ValidateHObject**()

Note: Compatibility Function Identical to PEP8 compliant *ics.validate_hobject()* method.

ics.**WriteSDCard**()

Note: Compatibility Function Identical to PEP8 compliant *ics.write_sdcard()* method.

ics.**base36enc**(*serial*)
Converts a decimal serial number to base36.

Args: serial (int): serial number.

Raises: *ics.RuntimeError*

Returns: Str: Serial Number

```
>>> ics.base36enc(device.SerialNumber)
CY0024
```

ics.**close_device**(*device*)
Closes the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Error Count (int)

```
>>> for device in ics.find_devices():
...     ics.open_device(device)
...     # Do something with the device...
...     ics.close_device(device)
...
```

Note: *ics.NeoDevice* will automatically close the device when it goes out of scope.

---

ics.**coremini_clear**(*device*, *location*)
Clears the CoreMini into the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

location (int): Accepts *ics.SCRIPT_LOCATION_FLASH_MEM*, *ics.SCRIPT_LOCATION_SDCARD*, or *ics.SCRIPT_LOCATION_VCAN3_MEM*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_clear(device, ics.SCRIPT_LOCATION_SDCARD)
```

ics.**coremini_get_fblock_status**(*device*, *index*)
Gets the status of a Coremini Function Block at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the function block.

Raises: *ics.RuntimeError*

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_get_fblock_status(device, 1)
True
```

ics.**coremini_get_status**(*device*)
Gets the status of the CoreMini in the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: True if running, otherwise False.

```
>>> device = ics.open_device()
>>> ics.coremini_get_status(device)
>>>
```

ics.**coremini_load**(*device*, *coremini*, *location*)
Loads the CoreMini into the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

coremini (str/tuple): Use string to load from file, Use Tuple if file data.

location (int): Accepts *ics.SCRIPT_LOCATION_FLASH_MEM*, *ics.SCRIPT_LOCATION_SDCARD*, or *ics.SCRIPT_LOCATION_VCAN3_MEM*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_load(device, 'cmvspy.vs3cmb', ics.SCRIPT_LOCATION_SDCARD)
```

ics.**coremini_read_app_signal**(*device*, *index*)
Gets the value of a Coremini application signal at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the application signal.

Raises: *ics.RuntimeError*

Returns: int on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_read_app_signal(device, 1)
52
```

ics.**coremini_read_rx_message**(*device*, *index*, *j1850=False*)
Gets the value of a Coremini Message at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the application signal.

j1850 (bool): Use *ics.SpyMessageJ1850* instead.

Raises: *ics.RuntimeError*

Returns: *ics.SpyMessage* Success.

```
>>> device = ics.open_device()
>>> msg = ics.coremini_read_tx_message(device, 0)
```

ics.**coremini_read_tx_message**(*device*, *index*, *j1850=False*)
Gets the value of a Coremini Message at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the application signal.

j1850 (bool): Use *ics.SpyMessageJ1850* instead.

Raises: *ics.RuntimeError*

Returns: *ics.SpyMessage* Success.

```
>>> device = ics.open_device()
>>> msg = ics.coremini_read_tx_message(device, 0)
```

ics.**coremini_start**(*device*, *location*)
Starts the CoreMini into the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

location (int): Accepts *ics.SCRIPT_LOCATION_FLASH_MEM*, *ics.SCRIPT_LOCATION_SDCARD*, or *ics.SCRIPT_LOCATION_VCAN3_MEM*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_start(device, ics.SCRIPT_LOCATION_SDCARD)
```

ics.**coremini_start_fblock**(*device*, *index*)
Starts a Coremini Function Block at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the function block.

Raises: *ics.RuntimeError*

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_start_fblock(device, 1)
```

ics.**coremini_stop**(*device*)
Stops the CoreMini into the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_stop(device)
```

ics.**coremini_stop_fblock**(*device*, *index*)
Stops a Coremini Function Block at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the function block.

Raises: *ics.RuntimeError*

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_stop_fblock(device, 1)
```

ics.**coremini_write_app_signal**(*device*, *index*, *value*)
Sets the value of a Coremini application signal at *index* on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the application signal.

value (int): New value of the application signal.

Raises: *ics.RuntimeError*

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_write_app_signal(device, 1, 52)
>>>
```

ics.**coremini_write_rx_message**(*device*, *index*, *TODO*)
TODO

ics.**coremini_write_tx_message**(*device*, *index*, *msg*)
TODO

ics.**create_neovi_radio_message**(*Relay1*, *Relay2*, *Relay3*, *Relay4*, *Relay5*, *LED6*, *LED5*, *MSB_report_rate*, *LSB_report_rate*, *analog_change_report_rate*, *relay_timeout*)
Python API only. Generates data bytes for use with neoVI RADI/O CAN Messages

Kwargs: Relay1 (boolean): Enable/Disable Relay1

Relay2 (boolean): Enable/Disable Relay2

Relay3 (boolean): Enable/Disable Relay3

Relay4 (boolean): Enable/Disable Relay4

Relay5 (boolean): Enable/Disable Relay5

LED5 (boolean): Enable/Disable LED5

LED6 (boolean): Enable/Disable LED6

MSB_report_rate (int): MSB Report Rate in ms (0-255)

LSB_report_rate (int): LSB Report Rate in ms (0-255)

analog_change_report_rate (int): Analog change report rate

relay_timeout (int): Relay Timeout (0-255)*255ms

Returns:

Tuple of data bytes for use with *ics.SpyMessage*

Raises: *ics.RuntimeError*

```
>>> msg = ics.SpyMessage()
>>> msg.Data = ics.create_neovi_radio_message(Relay1=True, Relay4=False,␣
↪LED6=True, MSB_report_rate=10)
>>> msg.Data
(65, 10, 0, 0, 0)
```

ics.**enable_network_com**(*device*, *enable*, *net_id*)
Enable or disable network communication.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

enable (`bool`): `bool`

net_id (int): int: Optional. If left blank, disables/enables all networks.

Raises: *ics.RuntimeError*

Returns: None.

```
>>> import ics
>>> d = ics.open_device()
>>> status = ics.enable_network_com(d, True)
>>>
```

ics.**find_devices**(*device_type=ics.NEODEVICE_ALL*)

Finds all connected devices and returns a tuple of *ics.NeoDevice* for use in *ics.open_device()*

Args: device_type (int): Accepts ics.NEODEVICE_* Macros

New in 3.0 (803):

device_type (List/Tuple): Accepts a Container of ics.NEODEVICE_* Macros

stOptionsOpenNeoEx (int): Usually ics.NETID_CAN, if needed

Raises: *ics.RuntimeError*

Returns: Tuple of *ics.NeoDevice* for use in *ics.open_device()*

```
>>> for device in ics.find_devices():
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

New in 3.0 (803):

```
>>> for device in ics.find_devices([ics.NEODEVICE_FIRE, ics.NEODEVICE_VCAN3]):
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

ics.**firmware_update_required**(*device*)

Determines if the device firmware needs flashing.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.force_firmware_update(device)
True
```

ics.**force_firmware_update**(*device*)

Forces the device to flash firmware.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.force_firmware_update(device)
True
```

ics.**get_active_vnet_channel**(*device*)
Gets active vnet channel for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: Returns active vnet channel.

ics.**get_backup_power_enabled**(*device*)
Returns the device backup power enabled for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.**get_backup_power_ready**(*device*)
Returns the device backup power is ready for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.**get_device_settings**(*device*, *vnet_slot*)
Gets the settings in the device. vnet_slot defaults to ics.PlasmaIonVnetChannelMain

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: *ics.DeviceSettings*

```
>>> d = ics.open_device()
>>> d.Name
'neoVI ION'
>>> d.SerialNumber
404444
>>> s = ics.get_device_settings(d)
>>> s.DeviceSettingType
2
>>> s.cyan
<ics.CyanSettings object at 0x01E61B40>
>>> s.cyan.canfd1.FDMode
4
>>> s2.cyan
<ics.CyanSettings object at 0x02B113C8>
>>> s2 = ics.get_device_settings(d, ics.PlasmaIonVnetChannelA)
>>> s2.DeviceSettingType
2
>>> s2.cyan.canfd1.FDMode
4
```

ics.**get_device_status**(*device*)
Returns the device status.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: (*ics.IcsDeviceStatus*).

```
>>> import ics
>>> d = ics.open_device()
>>> status = ics.get_device_status(d)
>>> status.fire2Status.ethernetActivationLineEnabled
0
```

ics.**get_dll_firmware_info**(*device*)
Returns the DLL firmware info for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: (*ics.ApiFirmwareInfo*)

```
>>> device = ics.open_device()
>>> info = ics.get_dll_firmware_info(device)
>>> info.iAppMajor
7
>>> info.iAppMinor
55
>>>
```

ics.**get_dll_version**(*device*)
Gets the DLL version.

Args: None

Raises: *ics.RuntimeError*

Returns: Int: DLL Version

```
>>> ics.get_dll_version()
700
```

ics.**get_error_messages**(*device*[, *j1850*, *timeout*])
Gets the error message(s) on the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: `list of tuple`s. :class:`tuple` contents: (error_number, description_short, description_long, severity, restart_needed)

```
>>> device = ics.open_device()
>>> errors = ics.get_error_messages(device)
```

ics.**get_hw_firmware_info**(*device*)
Returns the device firmware info for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: (*ics.ApiFirmwareInfo*)

```
>>> device = ics.open_device()
>>> info = ics.get_hw_firmware_info(device)
>>> info.iAppMajor
7
```

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```
>>> info.iAppMinor
55
>>>
```

ics.**get_last_api_error**(*device*)
Gets the error message from the last API call.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Tuple: (error, description short, description long, severity, restart needed)

```
>>> device = ics.open_device()
>>> try:
...     msg = ics.coremini_read_tx_message(device, 0)
... except ics.RuntimeError as ex:
...     print(ex)
...     print(ics.get_last_api_error(device))
...
Error: coremini_read_tx_message(): icsneoScriptReadTxMessage() Failed
(224, 'Invalid Message Index for script.', 'Invalid Message Index for script.
↪', 16, 0)
```

ics.**get_library_path**()

ics.**get_messages**(*device*[, *j1850*, *timeout*])
Gets the message(s) on the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

j1850 (`bool`): Return *ics.SpyMessageJ1850* instead.

imeout (`float`): Optional timeout to wait for messages in seconds (0.1 = 100ms).

Raises: *ics.RuntimeError*

Returns: `tuple` of two items. First item is a `tuple` of *ics.SpyMessage* and second is the error count.

```
>>> device = ics.open_device()
>>> messages, errors = ics.get_messages(device)
>>> len(messages)
14
>>> hex(messages[0].ArbIDOrHeader)
'0x160'
>>> messages[0].Data
(36, 11, 11, 177, 37, 3, 11, 199)
>>> errors
0
```

ics.**get_performance_parameters**(*device*)
Gets the Performance Parameters on *device*.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Tuple on Success: (buffer count, buffer max, overflow count, reserved, reserved, reserved, reserved, reserved)

```
>>> device = ics.open_device()
>>> ics.get_performance_parameters(device)
(0, 24576, 0, 0, 0, 0, 0, 0)
```

ics.**get_rtc**(*device*)
Gets the Real-Time Clock of the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Tuple: (datetime.datetime object, offset in seconds)

```
>>> device = ics.open_device()
>>> ics.get_rtc(device)
(datetime.datetime(2014, 9, 10, 17, 45, 45), 3)
```

ics.**get_script_status**()
Accepts a ics.NeoDevice, exception on error. Returns a list of values of what ulParameters would hold

ics.**get_serial_number**(*device*)
Gets the serial number out of the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: Serial Number Version

```
>>> ics.get_serial_number(device)
53123
```

ics.**get_timestamp_for_msg**(*device*, *msg*)
Calculates the timestamp for a message.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

msg (*ics.SpyMessage*): *ics.SpyMessage*

Raises: *ics.RuntimeError*

Returns: Float: Timestamp for the message.

```
>>> import ics
>>> d = ics.open_device()
>>> msgs, error_count = ics.get_messages(d)
>>> ics.get_timestamp_for_msg(d, msgs[0])
354577568.9145524
```

ics.**icsneoClosePort**()

Note: Compatibility Function Identical to PEP8 compliant *ics.close_device()* method.

ics.**icsneoEnableNetworkCom**()

Note: Compatibility Function Identical to PEP8 compliant *ics.enable_network_com()* method.

ics.**icsneoFindNeoDevices**()

Note: Compatibility Function Identical to PEP8 compliant *ics.find_devices()* method.

ics.**icsneoFirmwareUpdateRequired**()

Note: Compatibility Function Identical to PEP8 compliant *ics.firmware_update_required()* method.

ics.**icsneoForceFirmwareUpdate**()

Note: Compatibility Function Identical to PEP8 compliant *ics.force_firmware_update()* method.

ics.**icsneoGetActiveVNETChannel**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_active_vnet_channel()* method.

ics.**icsneoGetBackupPowerEnabled**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_backup_power_enabled()* method.

ics.**icsneoGetBackupPowerReady**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_backup_power_ready()* method.

ics.**icsneoGetDLLFirmwareInfo**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_dll_firmware_info()* method.

ics.**icsneoGetDLLVersion**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_dll_version()* method.

ics.**icsneoGetDeviceStatus**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_device_status()* method.

ics.**icsneoGetErrorMessages**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_error_messages()* method.

ics.**icsneoGetFireSettings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_device_settings()* method.

ics.**icsneoGetHWFirmwareInfo**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_hw_firmware_info()* method.

ics.**icsneoGetLastAPIError**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_last_api_error()* method.

ics.**icsneoGetMessages**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_messages()* method.

ics.**icsneoGetPerformanceParameters**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_performance_parameters()* method.

ics.**icsneoGetRTC**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_rtc()* method.

ics.**icsneoGetSerialNumber**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_serial_number()* method.

ics.**icsneoGetTimeStampForMsg**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_timestamp_for_msg()* method.

ics.**icsneoGetVCAN3Settings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_device_settings()* method.

ics.**icsneoISO15765_DisableNetworks**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_disable_networks()* method.

ics.**icsneoISO15765_EnableNetworks**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_enable_networks()* method.

ics.**icsneoISO15765_ReceiveMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_receive_message()* method.

ics.**icsneoISO15765_TransmitMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.iso15765_transmit_message()* method.

ics.**icsneoLoadDefaultSettings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.load_default_settings()* method.

ics.**icsneoOpenNeoDevice**()

Note: Compatibility Function Identical to PEP8 compliant *ics.open_device()* method.

ics.**icsneoReadSDCard**()

Note: Compatibility Function Identical to PEP8 compliant *ics.read_sdcard()* method.

ics.**icsneoRequestEnterSleepMode**()

Note: Compatibility Function Identical to PEP8 compliant *ics.request_enter_sleep_mode()* method.

ics.**icsneoScriptClear**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_clear()* method.

ics.**icsneoScriptGetFBlockStatus**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_get_fblock_status()* method.

ics.**icsneoScriptGetScriptStatus**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_get_status()* method.

ics.**icsneoScriptGetScriptStatusEx**()

Note: Compatibility Function Identical to PEP8 compliant *ics.get_script_status()* method.

ics.**icsneoScriptLoad**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_load()* method.

ics.**icsneoScriptReadAppSignal**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_read_app_signal()* method.

ics.**icsneoScriptReadRxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_read_rx_message()*

method.

ics.**icsneoScriptReadTxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_read_tx_message()* method.

ics.**icsneoScriptStart**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_start()* method.

ics.**icsneoScriptStartFBlock**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_start_fblock()* method.

ics.**icsneoScriptStop**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_stop()* method.

ics.**icsneoScriptStopFBlock**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_stop_fblock()* method.

ics.**icsneoScriptWriteAppSignal**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_write_app_signal()* method.

ics.**icsneoScriptWriteRxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_write_rx_message()* method.

ics.**icsneoScriptWriteTxMessage**()

Note: Compatibility Function Identical to PEP8 compliant *ics.coremini_write_tx_message()* method.

ics.**icsneoSetActiveVNETChannel**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_active_vnet_channel()* method.

ics.**icsneoSetBackupPowerEnabled**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_backup_power_enabled()* method.

ics.**icsneoSetBitRate**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_bit_rate()* method.

ics.**icsneoSetBitRateEx**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_bit_rate_ex()* method.

ics.**icsneoSetContext**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_context()* method.

ics.**icsneoSetFDBitRate**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_fd_bit_rate()* method.

ics.**icsneoSetFireSettings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_device_settings()* method.

ics.**icsneoSetRTC**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_rtc()* method.

ics.**icsneoSetReflashDisplayCallbacks**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_reflash_callback()* method.

ics.**icsneoSetVCAN3Settings**()

Note: Compatibility Function Identical to PEP8 compliant *ics.set_device_settings()* method.

ics.**icsneoTxMessages**()

Note: Compatibility Function Identical to PEP8 compliant *ics.transmit_messages()* method.

ics.**icsneoValidateHObject**()

Note: Compatibility Function Identical to PEP8 compliant *ics.validate_hobject()* method.

ics.**icsneoWriteSDCard**()

Note: Compatibility Function Identical to PEP8 compliant *ics.write_sdcard()* method.

ics.**iso15765_disable_networks**(*device*)
Disables ISO15765 networks.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: None

ics.**iso15765_enable_networks**(*device*, *networks*)
Enables ISO15765 networks.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: None

ics.**iso15765_receive_message**(*device*, *netid*, *rx_msg*)
Setup rx ISO15765 Message.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

prx_msg (*ics.CmISO157652RxMessage*): *ics.CmISO157652RxMessage*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.**iso15765_transmit_message**(*device*, *ulNetworkID*, *pMsg*, *ulBlockingTimeout*)
Transmits an ISO15765 Message.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

pMsg (*ics.CmISO157652TxMessage*): *ics.CmISO157652TxMessage*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.**load_default_settings**(*device*)
Load the default settings in the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> settings = ics.load_default_settings(device)
>>>
```

ics.**open_device**(*device*)
Opens the device. *device* can be omitted to return a *ics.NeoDevice* of the first free availible device, a *ics.NeoDevice*, or a serial number of the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

device (int): Serial Number of the device

bNetworkIDs (int): Network Enables

bConfigRead (int): Config Read

iOptions (int): DEVICE_OPTION_* defines

stOptionsOpenNeoEx (int): Usually ics.NETID_CAN, if needed

Raises: *ics.RuntimeError*

Returns: If *ics.NeoDevice* is passed as a parameter, None. If serial number is passed as a parameter, a *ics.NeoDevice* will be returned. If *device* parameter is omitted, a *ics.NeoDevice* will be returned with the first availible free device.

```
>>> for device in ics.find_devices():
...     ics.open_device(device)
...
```

Note: *ics.NeoDevice* will automatically close the device when it goes out of scope.

---

ics.**override_library_name**(*new_name*)
Sets active vnet channel for the device.

Args: name: Absolute path or relative path including filename.

Raises: *ics.RuntimeError*

Returns: None

```
>>> import ics
>>> ics.find_devices()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
```

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```
ics.RuntimeError: Error: find_devices(): Failed to open library: 'icsneo40.dll
↪' with error code: #126
>>> ics.override_library_name(r"C:\Windows\SysWOW64\icsneo40-different.dll")
>>> ics.find_devices()
(<ics.NeoDevice object at 0x00284C50>, <ics.NeoDevice object at 0x007C9A10>)
```

ics.**read_sdcard**()
icsneoReadSDCard(), Accepts a ics.NeoDevice and sector index. Returns a bytearray of 512 bytes max. Exception on error.

ics.**request_enter_sleep_mode**(*device*, *timeout_ms*, *mode*, *reserved_zero*)
Signal neoVI to immediete go to sleep. Currently only supported by FIREVNET/PLASMA. If using over USB this will likely return true but never cause PLASMA to sleep since USB insertion keeps it alive. This API allows Android/Linux applications to invoke power management.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

timeout_ms (int): 16bit word for how long to wait on idle bus before going to sleep. If caller does not want to change it pass in 65535 (0xFFFF) and it will stay whatever it was set to in explorer/coremini.

mode (int): 16bit word for power mode to enter. If caller does not want to change it pass in 65535 (0xFFFF) and it will stay whatever it was set to in explorer/coremini. If it is zero then neoVI will do 'normal sleep'. 0 - power mode off but calling this function will do 'normal sleep'. 1 - normal sleep. 2 - instant sleep. 3 - comatose sleep.

reserved_zero (int): Reserved, Keep as zero.

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.request_enter_sleep_mode(device, 1, 0)
True
```

ics.**set_active_vnet_channel**(*device*, *channel*)
Sets active vnet channel for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.**set_backup_power_enabled**(*device*, *enable*)
Sets the device backup power enabled for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.**set_bit_rate**(*device*, *BitRate*, *NetworkID*)
Sets the bitrate for a given Network ID on the device..

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: None.

ics.**set_bit_rate_ex**()
ics.set_fd_bit_rate_ex(device, BitRate, NetworkID, iOptions)

Sets the bitrate for a given Network ID on the device with extended options.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: None.

ics.**set_context**(*device*)
Sets the "context" of how icsneoFindNeoDevices(Ex) and icsneoOpenNeoDevice(Ex) function. If the context is 0 (null) than icsneoFindNeoDevices(Ex) will be system wide, searching USB and other supported computer interfaces. icsneoFindNeoDevices can then be used to connect to devices found in this manner. If the context is a handle to connected CAN tool than icsneoFindNeoDevices(Ex) will search a specific CAN bus for supported IntrepidCS CAN Nodes. Again icsneoOpenNeoDevice(Ex) would be used create logical connections to found CAN Nodes.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.set_context(device)
True
```

ics.**set_device_settings**(*device*, *settings*, *save_to_eeprom*, *vnet_slot*)
Sets the settings in the device. vnet_slot defaults to ics.PlasmaIonVnetChannelMain

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

settings (*ics.DeviceSettings*): *ics.DeviceSettings*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> d = ics.open_device()
>>> d.Name
'neoVI ION'
>>> d.SerialNumber
404444
>>> s = ics.get_device_settings(d, ics.PlasmaIonVnetChannelA) # Get Slave␣
↪settings, channel selection not needed if not a Plasma/Ion
>>> s.DeviceSettingType
2
>>> s.cyan.can_switch_mode
1
>>> s.cyan.can_switch_mode = 2
>>> ics.set_device_settings(d, s, True, ics.PlasmaIonVnetChannelA)
>>>
```

ics.**set_fd_bit_rate**(*device*, *BitRate*, *NetworkID*)
Sets the FD bitrate for a given Network ID on the device..

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: None.

ics.**set_reflash_callback**(*callback*)
Sets the reflash display callback.

Args: callback (`function`): Must be a callable Python function (*def callback(msg, progress)*)

Raises: *ics.RuntimeError*

Returns: None.

```
>>> def callback(msg, progress):
...     print(msg, progress)
...
>>> ics.set_reflash_callback(callback)
>>>
```

ics.**set_rtc**(*device*[, *time*])
Sets the Real-Time Clock of the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

ime (`datetime.datetime`): Optional. Sets to current time, if omitted.

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.set_rtc(device)
```

ics.**transmit_messages**(*device*, *messages*)
Transmits message(s) on the device. *messages* can be a tuple of *ics.SpyMessage*

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

messages (*ics.SpyMessage*): *ics.SpyMessage*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> msg = ics.SpyMessage()
>>> msg.ArbIDOrHeader = 0xFF
>>> msg.NetworkID = ics.NETID_HSCAN
>>> msg.Data = (0,1,2,3,4,5,6,7)
>>> ics.transmit_messages(device, msg)
>>>
```

ics.**validate_hobject**(*device*)
Validates the handle is valid for a *device*. Handles are only valid when the device is open.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

or:

device (int): c style integer handle to the device.

Raises: *ics.RuntimeError*

Returns: Boolean: True if valid, false otherwise.

```
>>> device = ics.open_device()
>>> ics.validate_hobject(device)
1
>>> ics.validate_hobject(device._Handle)
1
```

ics.**write_sdcard**()
icsneoReadSDCard(), Accepts a ics.NeoDevice, sector index, and a bytearray of 512 bytes. Exception on error.

CHAPTER 9

Module Variables

```
ics.AUTO = 0
ics.BPS100 = 5
ics.BPS1000 = 10
ics.BPS100000 = 7
ics.BPS10400 = 1
ics.BPS117647 = 8
ics.BPS125 = 6
ics.BPS20 = 0
ics.BPS2000 = 12
ics.BPS250 = 7
ics.BPS33 = 1
ics.BPS33333 = 2
ics.BPS4000 = 13
ics.BPS50 = 2
ics.BPS500 = 8
ics.BPS5000 = 0
ics.BPS50000 = 3
ics.BPS62 = 3
ics.BPS62500 = 4
ics.BPS666 = 11
ics.BPS71429 = 5
ics.BPS800 = 9
```

ics.**BPS83 = 4**

ics.**BPS83333 = 6**

ics.**BUILD_DATETIME = May 29 2018 16:04:26**

ics.**CANFD_BRS_ENABLED = 2**

ics.**CANFD_BRS_ENABLED_ISO = 4**

ics.**CANFD_ENABLED = 1**

ics.**CANFD_ENABLED_ISO = 3**

ics.**CANFD_SETTINGS_SIZE = 10**

ics.**CANTERM_SETTINGS_SIZE = 6**

ics.**CAN_BPS10000 = 17**

ics.**CAN_BPS5000 = 14**

ics.**CAN_BPS6667 = 15**

ics.**CAN_BPS8000 = 16**

ics.**CAN_SETTINGS_SIZE = 12**

ics.**DISABLE = 1**

ics.**ETHERNET_SETTINGS_SIZE = 8**

ics.**FAST_MODE = 3**

ics.**GLOBAL_SETTINGS_SIZE = 908**

ics.**GS_VERSION = 5**

ics.**ISO15765_2_NETWORK_HSCAN = 1**

ics.**ISO15765_2_NETWORK_HSCAN2 = 4**

ics.**ISO15765_2_NETWORK_HSCAN3 = 8**

ics.**ISO15765_2_NETWORK_HSCAN4 = 20**

ics.**ISO15765_2_NETWORK_HSCAN5 = 24**

ics.**ISO15765_2_NETWORK_HSCAN6 = 28**

ics.**ISO15765_2_NETWORK_HSCAN7 = 32**

ics.**ISO15765_2_NETWORK_MSCAN = 2**

ics.**ISO15765_2_NETWORK_SWCAN = 16**

ics.**ISO15765_2_NETWORK_SWCAN2 = 36**

ics.**ISO9141_KEYWORD2000_SETTINGS_SIZE = 114**

ics.**ISO9141_KEYWORD2000__INIT_STEP_SIZE = 6**

ics.**J1708_SETTINGS_SIZE = 2**

ics.**LIN_SETTINGS_SIZE = 10**

ics.**LISTEN_ALL = 7**

ics.**LISTEN_ONLY = 3**

ics.**LOOPBACK = 2**

ics.**NEODEVICE_ALL = -16385**

ics.**NEODEVICE_ANY_ION = 1310720**

ics.**NEODEVICE_ANY_PLASMA = 208896**

ics.**NEODEVICE_BLUE = 1**

ics.**NEODEVICE_CMPROBE = 8388608**

ics.**NEODEVICE_CT_OBD = 32768**

ics.**NEODEVICE_DW_VCAN = 4**

ics.**NEODEVICE_ECU = 128**

ics.**NEODEVICE_ECUCHIP_UART = 2048**

ics.**NEODEVICE_EEVB = 16777216**

ics.**NEODEVICE_FIRE = 8**

ics.**NEODEVICE_FIRE2 = 67108864**

ics.**NEODEVICE_FIRE_VNET = 8192**

ics.**NEODEVICE_FLEX = 134217728**

ics.**NEODEVICE_IEVB = 256**

ics.**NEODEVICE_ION_2 = 262144**

ics.**NEODEVICE_ION_3 = 1048576**

ics.**NEODEVICE_NEOANALOG = 16384**

ics.**NEODEVICE_NEOECUCHIP = 256**

ics.**NEODEVICE_OBD2_PRO = 1024**

ics.**NEODEVICE_OBD2_SIM = -2147483648**

ics.**NEODEVICE_PENDANT = 512**

ics.**NEODEVICE_PLASMA_1_11 = 4096**

ics.**NEODEVICE_PLASMA_1_12 = 65536**

ics.**NEODEVICE_PLASMA_1_13 = 131072**

ics.**NEODEVICE_RADGALAXY = 268435456**

ics.**NEODEVICE_RADSTAR = 524288**

ics.**NEODEVICE_RADSTAR2 = 536870912**

ics.**NEODEVICE_RED = 64**

ics.**NEODEVICE_SW_VCAN = 2**

ics.**NEODEVICE_UNKNOWN = 0**

ics.**NEODEVICE_VCAN3 = 16**

ics.**NEODEVICE_VCAN4 = 2097152**

ics.**NEODEVICE_VCAN4_12 = 4194304**

ics.**NEODEVICE_VCANRF = 33554432**

ics.**NEODEVICE_VIVIDCAN = 1073741824**

ics.**NEOVI6_VCAN_TIMESTAMP_1 = 1e-06**

ics.**NEOVI6_VCAN_TIMESTAMP_2 = 0.065536**

ics.**NEOVIPRO_VCAN_TIMESTAMP_1 = 1e-06**

ics.**NEOVIPRO_VCAN_TIMESTAMP_2 = 0.065536**

ics.**NEOVI_3G_MAX_SETTINGS_SIZE = 908**

ics.**NEOVI_COMMTYPE_FIRE_USB = 5**

ics.**NEOVI_COMMTYPE_RS232 = 0**

ics.**NEOVI_COMMTYPE_TCPIP = 3**

ics.**NEOVI_COMMTYPE_USB_BULK = 1**

ics.**NEOVI_RED_TIMESTAMP_1_10NS = 1e-08**

ics.**NEOVI_RED_TIMESTAMP_1_25NS = 2.5e-08**

ics.**NEOVI_RED_TIMESTAMP_2_10NS = 429.4967296**

ics.**NEOVI_RED_TIMESTAMP_2_25NS = 107.3741824**

ics.**NEOVI_TIMESTAMP_1 = 1.6e-06**

ics.**NEOVI_TIMESTAMP_2 = 0.1048576**

ics.**NEO_CFG_MPIC_HS_CAN_CNF1 = 522**

ics.**NEO_CFG_MPIC_HS_CAN_CNF2 = 521**

ics.**NEO_CFG_MPIC_HS_CAN_CNF3 = 520**

ics.**NEO_CFG_MPIC_HS_CAN_MODE = 566**

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ics.OPETH_LINK_AUTO = 0
ics.OPETH_LINK_MASTER = 1
ics.OPETH_LINK_SLAVE = 2
ics.OPETH_MAC_SPOOF_DST_ADDR = 0
ics.OPETH_MAC_SPOOF_SRC_ADDR = 1
ics.OP_ETH_GENERAL_SETTINGS_SIZE = 20
ics.OP_ETH_SETTINGS_SIZE = 16
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ics.PLASMA_SLAVE1_OFFSET_RANGE2 = 4608
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ics.PLASMA_SLAVE2_OFFSET_RANGE2 = 8704
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ics.**RESISTOR_ON = 0**

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ics.**SCRIPT_LOCATION_INTERNAL_FLASH = 2**

ics.**SCRIPT_LOCATION_SDCARD = 1**

ics.**SCRIPT_LOCATION_VCAN3_MEM = 4**

ics.**SCRIPT_STATUS_RUNNING = 1**

ics.**SCRIPT_STATUS_STOPPED = 0**

ics.**SLEEP_MODE = 0**

ics.**SLOW_MODE = 1**

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ics.**SPY_PROTOCOL_CAN = 1**

ics.**SPY_PROTOCOL_CANFD = 30**

ics.**SPY_PROTOCOL_CGI = 18**

ics.**SPY_PROTOCOL_CHRYSLER_CCD = 8**

ics.**SPY_PROTOCOL_CHRYSLER_JVPW = 14**

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ics.**SPY_PROTOCOL_CUSTOM = 0**

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ics.**SPY_STATUS2_ERROR_FRAME = 131072**

ics.**SPY_STATUS2_ETHERNET_CRC_ERROR = 2097152**

ics.**SPY_STATUS2_ETHERNET_FCS_AVAILABLE = 8388608**

ics.**SPY_STATUS2_ETHERNET_FRAME_TOO_SHORT = 4194304**

ics.**SPY_STATUS2_ETHERNET_NO_PADDING = 16777216**

ics.**SPY_STATUS2_ETHERNET_PREEMPTION_ENABLED = 33554432**

ics.**SPY_STATUS2_FLEXRAY_NO_CRC = 33554432**

ics.**SPY_STATUS2_FLEXRAY_NO_HEADERCRC = 67108864**

ics.**SPY_STATUS2_FLEXRAY_TX_AB = 2097152**

ics.**SPY_STATUS2_FLEXRAY_TX_AB_NO_A = 4194304**

ics.**SPY_STATUS2_FLEXRAY_TX_AB_NO_B = 8388608**

ics.**SPY_STATUS2_FLEXRAY_TX_AB_NO_MATCH = 16777216**

ics.**SPY_STATUS2_GLOBAL_CHANGE = 65536**

ics.**SPY_STATUS2_HAS_VALUE = 1**

ics.**SPY_STATUS2_HIGH_VOLTAGE = 4**

ics.**SPY_STATUS2_ISO_FRAME_ERROR = 134217728**

ics.**SPY_STATUS2_ISO_OVERFLOW_ERROR = 268435456**

ics.**SPY_STATUS2_ISO_PARITY_ERROR = 536870912**

ics.**SPY_STATUS2_LIN_ERR_MSG_ID_PARITY = 67108864**

ics.**SPY_STATUS2_LIN_ERR_RX_BREAK_NOT_0 = 2097152**

ics.**SPY_STATUS2_LIN_ERR_RX_BREAK_TOO_SHORT = 4194304**

ics.**SPY_STATUS2_LIN_ERR_RX_DATA_GREATER_8 = 16777216**

ics.**SPY_STATUS2_LIN_ERR_RX_SYNC_NOT_55 = 8388608**

ics.**SPY_STATUS2_LIN_ERR_TX_RX_MISMATCH = 33554432**

ics.**SPY_STATUS2_LIN_ID_FRAME_ERROR = 268435456**

ics.**SPY_STATUS2_LIN_NO_SLAVE_DATA = -2147483648**

ics.**SPY_STATUS2_LIN_SLAVE_BYTE_ERROR = 536870912**

ics.**SPY_STATUS2_LIN_SYNC_FRAME_ERROR = 134217728**

ics.**SPY_STATUS2_LONG_MESSAGE = 8**

ics.**SPY_STATUS2_MOST_CHANGED_PAR = -2147483648**

ics.**SPY_STATUS2_MOST_CONTROL_DATA = 16777216**

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ics.**SPY_STATUS2_MOST_LOW_LEVEL = 8388608**

ics.**SPY_STATUS2_MOST_MHP_CONTROL_DATA = 67108864**

ics.**SPY_STATUS2_MOST_MHP_USER_DATA = 33554432**

ics.**SPY_STATUS2_MOST_MOST150 = 1073741824**

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ics.**SPY_STATUS2_MOST_PACKET_DATA = 2097152**

ics.**SPY_STATUS2_MOST_TOO_SHORT = 268435456**

ics.**SPY_STATUS2_RX_TIMEOUT_ERROR = 1073741824**

ics.**SPY_STATUS2_VALUE_IS_BOOLEAN = 2**

ics.**SPY_STATUS3_CANFD_BRS = 16**

ics.**SPY_STATUS3_CANFD_ESI = 1**

ics.**SPY_STATUS3_CANFD_FDF = 8**

ics.**SPY_STATUS3_CANFD_IDE = 2**

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ics.**SPY_STATUS_BREAK = 524288**

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ics.**SPY_STATUS_BUS_SHORTED_GND = 4096**

ics.**SPY_STATUS_BUS_SHORTED_PLUS = 2048**

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ics.**SPY_STATUS_EXPECTED_LEN_MISMATCH = 131072**

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ics.**SPY_STATUS_FLEXRAY_PDU = 536870912**

ics.**SPY_STATUS_FLEXRAY_PDU_NO_UPDATE_BIT = 8**

ics.**SPY_STATUS_FLEXRAY_PDU_UPDATE_BIT_SET = 1073741824**

ics.**SPY_STATUS_GLOBAL_ERR = 1**

ics.**SPY_STATUS_GPS_DATA = 8388608**

ics.**SPY_STATUS_HEADERCRC_ERROR = 32**

ics.**SPY_STATUS_HIGH_SPEED = 1073741824**

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ics.**SPY_STATUS_NETWORK_MESSAGE_TYPE = 67108864**

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ics.**SPY_STATUS_TEST_TRIGGER = 2097152**

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ics.**SPY_STATUS_TX_NOMATCH = 32768**

ics.**SPY_STATUS_UNDEFINED_ERROR = 256**

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ics.**SWCAN_AUTOSWITCH_DISABLED_RESISTOR_ENABLED = 3**

ics.**SWCAN_AUTOSWITCH_NO_RESISTOR = 1**

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