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# **python\_ics Documentation**

***Release 2.5***

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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.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.EthernetSettings**  
Bases: object

EthernetSettings object

**auto\_neg**

**duplex**

**led\_mode**

**link\_speed**

**rsvd**

**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.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.

**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.

**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 network 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.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`

`ics.ClosePort()`

---

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

---

`ics.FindNeoDevices()`

---

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

---

`ics.GetDLLVersion()`

---

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

---

`ics.GetErrorMessages()`

---

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

---

`ics.GetHWFirmwareInfo()`

---

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

---

`ics.GetLastAPIError()`

---

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

---

`ics.GetMessages()`

---

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

---

`ics.GetPerformanceParameters()`

---

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

---

`ics.GetRTC()`

---

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

---

`ics.GetSerialNumber()`

---

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

---

`ics.OpenNeoDevice()`

---

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

---

`ics.RequestEnterSleepMode()`

---

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

---

`ics.ScriptClear()`

---

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

---

`ics.ScriptGetFBlockStatus()`

---

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

---

`ics.ScriptGetScriptStatus()`

---

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

---

`ics.ScriptLoad()`

---

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

---

`ics.ScriptReadAppSignal()`

---

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

---

`ics.ScriptReadRxMessage()`

---

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

---

`ics.ScriptReadTxMessage()`

---

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

---

`ics.ScriptStart()`

---

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

---

`ics.ScriptStartFBlock()`

---

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

---

`ics.ScriptStop()`

---

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

---

`ics.ScriptStopFBlock()`

---

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

---

`ics.ScriptWriteAppSignal()`

---

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

---

`ics.ScriptWriteRxMessage()`

---

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

---

`ics.ScriptWriteTxMessage()`

---

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

---

`ics.SetRTC()`

---

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

---

`ics.SetReflashDisplayCallback()`

---

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

---

`ics.TxMessages()`

---

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

---

`ics.ValidateHObject()`

---

**Note:** Identical to PEP8 compliant `ics.validate_hobject()` 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, ana-log_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.find\_devices** (*device\_type=ics.NEODEVICE\_ALL*)

Args: *device\_type* (int): Accepts *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
```

**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\_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*)  
Gets the settings in the device.

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

**Raises:** *ics.RuntimeError*

**Returns:** *ics.Vcan3Settings* or *ics.FireSettings*.

```
>>> device = ics.open_device()
>>> settings = ics.get_device_settings(device)
>>> type(settings)
<class 'ics.FireSettings'>
>>>
```

**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
>>> 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\_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)
```

(continues on next page)

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```
'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.icsneoFirmwareUpdateRequired** ()

---

**Note:** Identical to PEP8 compliant *ics.firmware\_update\_required()* method.

---

**ics.icsneoForceFirmwareUpdate** ()

---

**Note:** Identical to PEP8 compliant *ics.force\_firmware\_update()* method.

---

`ics.icsneoGetBackupPowerEnabled()`

---

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

---

`ics.icsneoGetBackupPowerReady()`

---

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

---

`ics.icsneoGetDLLFirmwareInfo()`

---

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

---

`ics.icsneoGetFireSettings()`

---

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

---

`ics.icsneoGetVCAN3Settings()`

---

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

---

`ics.icsneoLoadDefaultSettings()`

---

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

---

`ics.icsneoReadSDCard()`

---

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

---

`ics.icsneoScriptGetScriptStatusEx()`

---

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

---

`ics.icsneoSetBackupPowerEnabled()`

---

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

---



`ics.icsneoSetContext()`

---

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

---

`ics.icsneoSetFireSettings()`

---

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

---

`ics.icsneoSetVCAN3Settings()`

---

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

---

`ics.icsneoWriteSDCard()`

---

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

---

`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 available 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 available 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.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 immediate 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_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_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)`

Sets the settings in the device.

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

settings (*ics.Vcan3Settings*): *ics.Vcan3Settings*

or:

settings (*ics.FireSettings*): *ics.FireSettings*

**Raises:** *ics.RuntimeError*

**Returns:** None.

```
>>> device = ics.open_device()
>>> settings = ics.get_device_settings(device)
>>> type(settings)
<class 'ics.FireSettings'>
>>> settings.can1.Mode
0
>>> settings.can1.Mode = 3
>>> ics.set_device_settings(device, settings)
>>>
```

`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 1

---

## 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 = Jun 5 2017 23:26:17
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_CT_OBD = 32768
ics.NEODEVICE_DW_VCAN = 4
ics.NEODEVICE_ECU = 128
ics.NEODEVICE_ECU15 = 4194304
ics.NEODEVICE_ECU25 = 8388608
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_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_VCANRF = 33554432
ics.NEODEVICE_VIRTUAL_NEOVI = 1024
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
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