

# ABB Drives

## User's Manual

### LONWORKS® Adapter Module

#### FLON-01





# LONWORKS<sup>®</sup> Adapter Module FLON-01

## **User's Manual**

3AUA0000041017 REV B EN

EFFECTIVE: 28.04.2010



# Safety instructions

---

## Overview

This chapter states the general safety instructions that must be followed when installing and operating the adapter module.

The material in this chapter must be studied before attempting any work on, or with, the unit.

In addition to the safety instructions given below, read the complete safety instructions of the specific drive you are working on.

## General safety instructions



---

**WARNING!** All electrical installation and maintenance work on the drive should be carried out by qualified electricians.

---

The drive and adjoining equipment must be properly earthed.

Do not attempt any work on a powered drive. After switching off the mains, always allow the intermediate circuit capacitors 5 minutes to discharge before working on the frequency converter, the motor or the motor cable. It is good practice to check (with a voltage indicating instrument) that the drive is in fact discharged before beginning work.

The motor cable terminals of the drive are at a dangerously high voltage when mains power is applied, regardless of motor operation.

There can be dangerous voltages inside the drive from external control circuits even when the drive mains power is shut off. Exercise appropriate care when working on the unit. Neglecting these instructions can cause physical injury or death.



# Table of contents

---

|                                               |               |
|-----------------------------------------------|---------------|
| <b>Safety instructions</b> .....              | <b>5</b>      |
| Overview .....                                | 5             |
| General safety instructions .....             | 5             |
| <br><b>Table of contents</b> .....            | <br><b>7</b>  |
| <br><b>Introduction</b> .....                 | <br><b>13</b> |
| Intended audience .....                       | 13            |
| Before you start .....                        | 13            |
| What this manual contains .....               | 13            |
| Further information .....                     | 14            |
| <br><b>Overview</b> .....                     | <br><b>15</b> |
| Overview .....                                | 15            |
| LonWorks® system .....                        | 15            |
| Adapter module .....                          | 16            |
| Compatibility .....                           | 17            |
| Delivery check .....                          | 17            |
| <br><b>Mechanical installation</b> .....      | <br><b>19</b> |
| Mounting .....                                | 19            |
| <br><b>Electrical installation</b> .....      | <br><b>21</b> |
| Overview .....                                | 21            |
| General cabling instructions .....            | 21            |
| Network connection .....                      | 22            |
| Bus termination .....                         | 22            |
| Earthing of the LonWorks® cable screens ..... | 23            |

---

|                                           |               |
|-------------------------------------------|---------------|
| <b>Drive configuration</b>                | <b>25</b>     |
| Overview                                  | 25            |
| Drive configuration                       | 25            |
| Control locations                         | 30            |
| <br><b>Communication</b>                  | <br><b>31</b> |
| Overview                                  | 31            |
| General                                   | 31            |
| LonMark® objects                          | 32            |
| Node object                               | 32            |
| Variable speed motor drive object         | 33            |
| Open loop actuator object: DigitalCommand | 35            |
| Open loop sensor object: DigitalStatus    | 35            |
| Open loop sensor object: DigitalInput     | 36            |
| Open loop sensor object: DigitalOutput    | 36            |
| Open loop actuator object: AnalogCmd      | 36            |
| Open loop sensor object: AnalogStatus     | 37            |
| Resource files                            | 38            |
| <br><b>Network variables</b>              | <br><b>39</b> |
| Supported input network variables         | 39            |
| nviAnlgCmd1 ... nviAnlgCmd8               | 41            |
| nviCtlOverrideCm                          | 42            |
| nviDigCmd1 ... nviDigCmd12                | 43            |
| nviDrvProcStpt                            | 44            |
| nviDrvSpeedScale                          | 45            |
| nviDrvSpeedStpt                           | 46            |
| nviEmrgOverride                           | 47            |
| nviExt1Ext2Ctrl                           | 48            |
| nviLocLock                                | 48            |
| nviRequest                                | 49            |
| nviResetFault                             | 50            |
| nviRunEnable                              | 51            |
| nviSavePars                               | 51            |
| nviStartEnable1                           | 52            |

|                                                   |    |
|---------------------------------------------------|----|
| nviStartEnable2 .....                             | 52 |
| Supported output network variables .....          | 53 |
| nvoAccelerating .....                             | 56 |
| nvoAlarm .....                                    | 57 |
| nvoAnlgInput1 ... nvoAnlgInput8 .....             | 58 |
| nvoAnlgOutput1 ... nvoAnlgOutput8 .....           | 59 |
| nvoAnlgSts1 ... nvoAnlgSts8 .....                 | 60 |
| nvoAtReference .....                              | 61 |
| nvoBypKwh_R .....                                 | 62 |
| nvoBypRunHours .....                              | 63 |
| nvoBypTemp .....                                  | 64 |
| nvoCtlOverrideSt .....                            | 65 |
| nvoDecelerating .....                             | 66 |
| nvoDigInput1 ... nvoDigInput12 .....              | 67 |
| nvoDigOutput1 ... nvoDigOutput12 .....            | 68 |
| nvoDigSts1 ... nvoDigSts12 .....                  | 69 |
| nvoDrvCurnt .....                                 | 70 |
| nvoDrvDCBus .....                                 | 71 |
| nvoDrvKwh_NR .....                                | 72 |
| nvoDrvKwh_R .....                                 | 73 |
| nvoDrvPwr .....                                   | 74 |
| nvoDrvRunHours .....                              | 75 |
| nvoDrvSpeed .....                                 | 76 |
| nvoDrvTemp .....                                  | 77 |
| nvoDrvTorque .....                                | 78 |
| nvoDrvVolt .....                                  | 79 |
| nvoEmrgOvrStat .....                              | 80 |
| nvoEnabled .....                                  | 81 |
| nvoExt1Ext2Stat .....                             | 82 |
| nvoFaultCode .....                                | 83 |
| nvoFaulted .....                                  | 84 |
| nvoForward .....                                  | 85 |
| nvoFreqAct .....                                  | 86 |
| nvoLimit .....                                    | 87 |
| nvoLineUVVolt, nvoLineVWVolt, nvoLineWUVolt ..... | 88 |
| nvoLineVolt .....                                 | 89 |
| nvoLocRemStat .....                               | 90 |
| nvoMtrRevCntM .....                               | 91 |

|                                            |     |
|--------------------------------------------|-----|
| nvoMtrTemp                                 | 92  |
| nvoNetCtrl                                 | 93  |
| nvoNetRef1                                 | 94  |
| nvoNetRef2                                 | 95  |
| nvoParReadValue                            | 96  |
| nvoPid1Dev, nvoPid2Dev                     | 97  |
| nvoPid1Fbk, nvoPid2Fbk                     | 98  |
| nvoReady                                   | 99  |
| nvoReverse                                 | 100 |
| nvoRunning                                 | 101 |
| nvoSpeedActRpm                             | 102 |
| nvoStarted                                 | 103 |
| nvoStatus                                  | 104 |
| nvoZeroSpeed                               | 105 |
| Supported network configuration properties | 106 |
| SCPTdefScale / nciDrvSpeedScale            | 109 |
| SCPTlocation / nciLocation                 | 109 |
| SCPTmaxRcvTime / nciAnlgRcvHrtBt           | 110 |
| SCPTmaxRcvTime / nciDigRcvHrtBt            | 111 |
| SCPTmaxRcvTime / nciVsmdRcvHrtBt           | 112 |
| SCPTmaxSendTime / nciAnlgSndHrtBt          | 113 |
| SCPTmaxSendTime / nciDigSndHrtBt           | 114 |
| SCPTmaxSendTime / nciVsmdSndHrtBt          | 115 |
| SCPTmaxSetpoint / nciMaxSpeed              | 116 |
| SCPTminSendTime / nciAnlgMinOutTm          | 117 |
| SCPTminSendTime / nciDigMinOutTm           | 118 |
| SCPTminSendTime / nciVsmdMinOutTm          | 119 |
| SCPTminSetpoint / nciMinSpeed              | 120 |
| SCPTnomFreq / nciNmlFreq                   | 121 |
| SCPTnomRPM / nciNmlSpeed                   | 122 |
| SCPTrampDownTm / nciRampDownTm             | 123 |
| SCPTrampUpTm / nciRampUpTm                 | 123 |
| UCPTbypRunDelay / nciBypRunDelay           | 124 |
| UCPTdrvCurntLimit / nciDrvCurntLimit       | 124 |
| UCPTparReadIndex / nciParReadIndex         | 125 |
| UCPTparValue / nciParWriteValue            | 125 |
| UCPTparWriteIndex / nciParWriteIndex       | 126 |
| UCPTpid1DerFiltTime / nciPid1DerFiltTi,    |     |

|                                                                             |            |
|-----------------------------------------------------------------------------|------------|
| UCPTpid2DerFiltTime / nciPid2DerFiltTi .....                                | 127        |
| UCPTpid1DerTime / nciPid1DerTime,<br>UCPTpid2DerTime / nciPid2DerTime ..... | 128        |
| UCPTpid1Gain / nciPid1Gain, UCPTpid2Gain / nciPid2Gain .....                | 129        |
| UCPTpid1IntTime / nciPid1IntTime,<br>UCPTpid2IntTime / nciPid2IntTime ..... | 130        |
| UCPTstopLevel / nciStopLevel .....                                          | 131        |
| UCPTstopMode / nciStopMode .....                                            | 132        |
| <b><i>Diagnostics</i> .....</b>                                             | <b>133</b> |
| LED indications .....                                                       | 133        |
| <b><i>Technical data</i> .....</b>                                          | <b>135</b> |
| FLON-01 .....                                                               | 135        |
| LonWorks® network .....                                                     | 136        |
| <b><i>Definitions and abbreviations</i> .....</b>                           | <b>141</b> |
| <b><i>APPENDIX: Compatibility table</i> .....</b>                           | <b>145</b> |
| Supported network variables in alphabetical order .....                     | 145        |



# Introduction

---

## Intended audience

The manual is intended for the people who are responsible for commissioning and using an adapter module. The reader is expected to have a basic knowledge of electrical fundamentals, electrical wiring practices and how to operate the drive.

## Before you start

It is assumed that the drive is installed and ready to operate before starting the installation of the extension module.

In addition to conventional installation tools, have the drive manuals available during the installation as they contain important information not included in this manual. The manuals are referred to at various points of this document.

## What this manual contains

**Note:** The contents of this manual are compatible with FLON-01 firmware 1.02d or later.

This manual contains information on the wiring, configuration and use of the adapter module.

*Safety instructions* are featured in the first few pages of this manual.

*Overview* contains a short description of the LONWORKS® system and the adapter module, and a delivery checklist.

*Mechanical installation* contains placing and mounting instructions for the module.

*Electrical installation* contains the wiring instructions.

*Drive configuration* explains how to program the drive before the communication through the adapter module can be started.

*Communication* contains a description of how data is transmitted through the adapter module.

*Network variables* presents the network variable list of the adapter module.

*Diagnostics* explains how to trace faults with the status LEDs on the adapter module.

*Technical data* contains information on physical dimensions, configurable settings and connectors of the module and the specification of the fieldbus link.

*Definitions and abbreviations*

*APPENDIX: Compatibility table* lists the network variables that are used with the drives compatible with the adapter module.

## **Further information**

Further information is available on the Internet from [www.lonmark.org](http://www.lonmark.org) and [www.echelon.com](http://www.echelon.com).

# Overview

---

## Overview

This chapter contains a short description of the LONWORKS® system and the adapter module, and a delivery checklist.

## LONWORKS® system

The LONWORKS® system is an open serial communication solution that enables data exchange between all kinds of automation components.

A LONWORKS® network consists of intelligent devices, called nodes, connected by one or more communications media that communicate with one another using the LonTalk® protocol. A LONWORKS® network can consist of up to 32385 nodes divided into 255 subnets (127 nodes/subnet). Nodes are programmed to send messages to one another in response to external events or messages they receive. Each intelligent device, for example a programmable thermostat in a building control system, is a LONWORKS® node. A node is connected to other nodes with appropriate communications media, such as twisted pair cable, RF link, or power line circuit.

Each node includes a physical interface, *transceiver*, that interfaces with the communication media. The adapter module uses the FT-X1 Free Topology Transceiver (compatible with the FTT-10A transceiver) from Echelon Corporation. This commonly used twisted-pair media supports star, bus, and loop wiring. The FT-X1 transceiver connects to a twisted pair cable with a baud rate of 78 kbit/s and appears as high impedance to the network when unpowered, hence it does not interfere with the network communications when powered down.

LONWORKS® nodes are objects that respond to various inputs and that produce desired outputs. Connecting the inputs and outputs

of these network objects enables the network to perform specific tasks.

While the function of any particular node may be quite simple, the interaction among nodes enables a LONWORKS® network to perform complex tasks. A benefit of LONWORKS® networks is that a small number of common node types may perform a broad spectrum of different functions depending on how they are configured and connected.

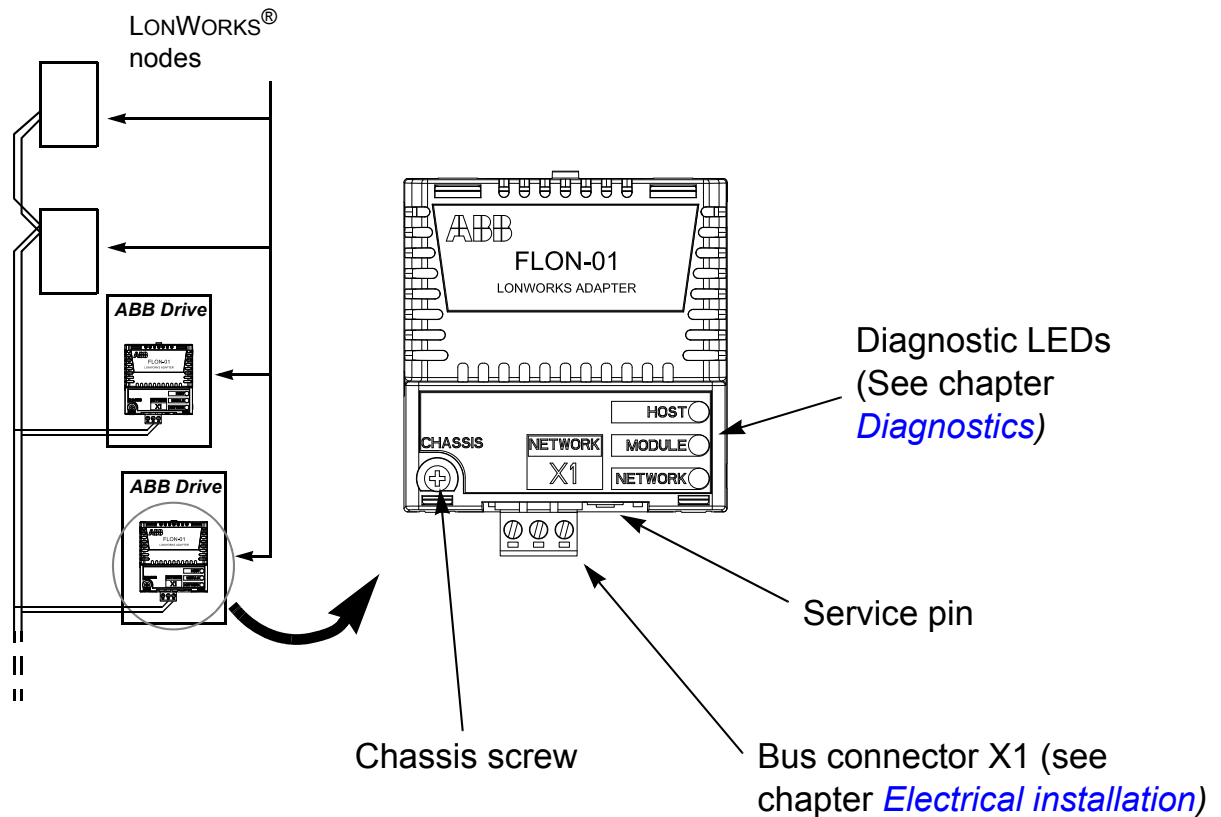
## Adapter module

The adapter module is an optional device which enables the connection of an ABB drive to a LONWORKS® network. See the figure below on the adapter module and the construction of the network. Through the adapter module, it is possible to:

- give control commands to the drive (Start, Stop, Run enable, etc)
- feed a motor speed or frequency reference to the drive
- give a process actual value or a process reference to the PID controller of the drive
- read status information and actual values from the drive
- change drive parameter values
- reset a drive fault
- control other LONWORKS® nodes.

The network variables and functions supported by the adapter module are discussed in chapters [Drive configuration](#), [Communication](#) and [Network variables](#).

The adapter module is mounted into an option slot on the motor control board of the drive. See the drive documentation for module placement options.



## Compatibility

The adapter module interoperates with all LONWORKS® devices.

**Note:** LONWORKS® supports a variety of media. The adapter module supports TP/FT-10 media. A LONWORKS® router would be required for the adapter module to interoperate with devices on other media.

For drive-specific network variables, see chapter [APPENDIX: Compatibility table](#).

## Delivery check

The option package for the adapter module contains:

- LONWORKS® Adapter module, type FLON-01
- this manual.



# Mechanical installation

---



**WARNING!** Follow the safety instructions given in this manual and the drive documentation.

---

## Mounting

The adapter module is to be inserted into its specific position on the drive. The adapter module is held in place with plastic pins and one screw. The screw also provides the earthing of the fieldbus cable shield connected to the adapter module.

On installation of the adapter module, the signal and power connection to the drive is made through a 20-pin connector. (The connector on the controlled equipment may have fewer pins as not all available signals are necessarily used.)

Mounting procedure:

- Insert the module carefully into its position on the drive.
- Fasten the screw.

**Note:** The correct installation of the screw is essential for fulfilling the EMC requirements and for proper operation of the adapter module.



# Electrical installation

---

## Overview

This chapter contains:

- general cabling instructions
- instructions for bus termination
- instructions for connecting the module to the LONWORKS<sup>®</sup> network.



**WARNING!** Before installation, switch off the drive power supply. Wait five minutes to ensure that the capacitor bank of the drive is discharged. Switch off all dangerous voltages connected from external control circuits to the inputs and outputs of the drive.

---

## General cabling instructions

Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs. Use bushings at cable entries.

Network connection

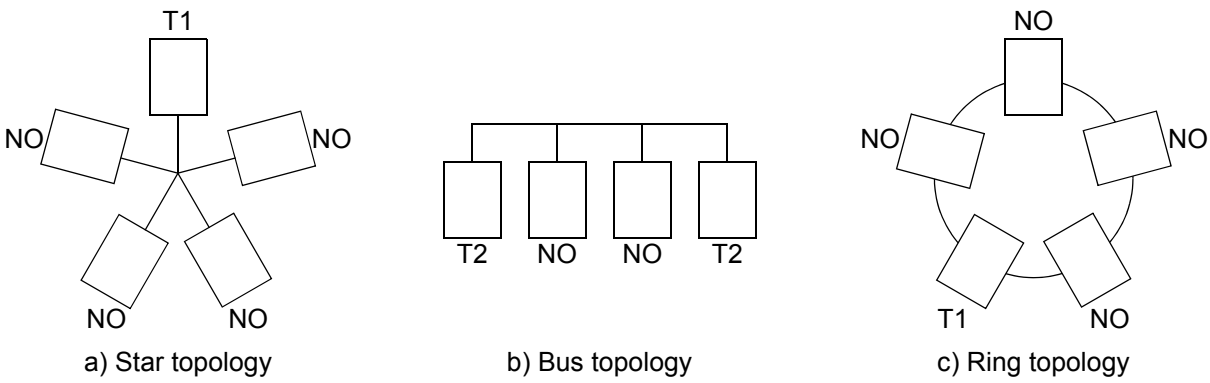
The bus cable is connected to terminal block X1 on the adapter module.

| X1 |       | Description                                 |
|----|-------|---------------------------------------------|
| 1  | SHLD  | RC-filtered connection to the module ground |
| 2  | NET A | Network Connection A*                       |
| 3  | NET B | Network Connection B*                       |

\*For the LONWORKS® TP/FT-10 topology, either network connection may be connected to either pin.

Bus termination

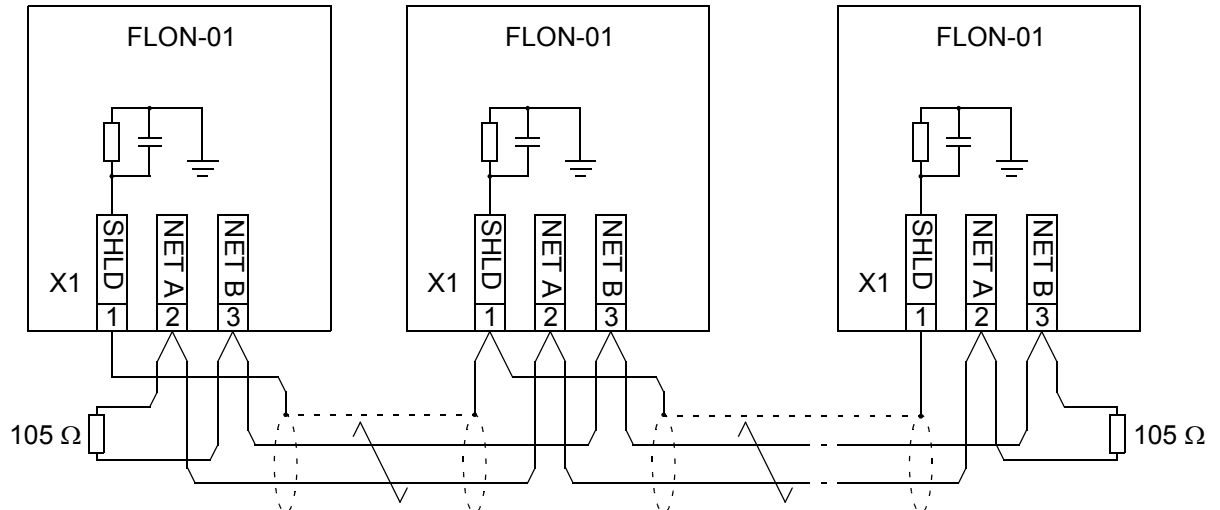
The bus line is terminated with resistors connected between the network cable conductors A and B when the adapter module is at the end of the bus. Termination prevents signal reflections from the bus cable ends. See the figure below on the bus termination for different network topologies.



|    |                                                             |
|----|-------------------------------------------------------------|
| T1 | 52.5-ohm termination at one of the nodes in one bus segment |
| T2 | 105-ohm termination at both ends of the line                |
| NO | No termination                                              |

## Earthing of the LONWORKS® cable screens

The LONWORKS® cable screen can be directly earthed at one station only. At other stations the screen should be earthed via an RC filter. See the figure below on the network cable connection for the bus topology.





# Drive configuration

---

## Overview

This chapter gives information on configuring the drive for communication through the adapter module.

**Note:** The adapter module cannot control the drive before it is configured for the LONWORKS<sup>®</sup> network. The LONWORKS<sup>®</sup> communication configuration does not require parametrisation of the drive. The LONWORKS<sup>®</sup> network is configured using a network installation tool. Refer to the installation tool documentation for network configuration and to chapter [Communication](#) for the resource files.

## Drive configuration

It is preferable to configure the drive before the adapter module is configured for the network. The reason for this is that the adapter module reads several parameter values from the drive to operate correctly and to select different modes. Furthermore, some of the configuration network variable values receive their defaults from the drive. The drive control location parameters should also be set accordingly to enable full and logical operation of the adapter module. See [Control locations](#). For more information on configuring the drive, refer to the drive documentation.

| Information parameters of the adapter module |                       |                                      |
|----------------------------------------------|-----------------------|--------------------------------------|
| Fieldbus par. no.                            | Parameter name        | Description                          |
| 1                                            | MODULE TYPE           | Type of the module (LonWorks)        |
| 2                                            | NODE STATE            | State of the adapter module          |
| 3-8                                          | NEURON ID [5 ... 0]   | Neuron <sup>®</sup> chip ID          |
| 9                                            | NODE ADDRESS 1        | ID of the node within this subnet    |
| 10                                           | NODE SUBNET 1         | Subnet (1) to which the node belongs |
| 11-16                                        | DOMAIN ID 1 [4 ... 0] | Domain ID in a LonWorks network      |
| 17                                           | NODE ADDRESS 2        | ID of the node within this subnet    |
| 18                                           | NODE SUBNET 2         | Subnet (2) to which the node belongs |
| 19-24                                        | DOMAIN ID 2 [4 ... 0] | ID in a LonWorks network             |
| 25                                           | XMIT ERRORS           | Number of CRC errors                 |
| 26                                           | TRANS TIMEOUTS        | Number of transmission failures      |

**Note:** These parameters become visible in the drive only after the adapter module has been configured on the network side.

#### MODULE TYPE

##### *Explanation:*

This parameter shows the module type as detected by the drive. The value cannot be adjusted by the user. (If this parameter is undefined, the communication between the drive and the module has not been established.)

#### NODE STATE

##### *Explanation:*

This parameter contains the current state of the network interface. Configured on-line is the normal run-time mode and means that the node is commissioned and on-line on the network. Soft/Bypass\*/Hard off-line means that the node is not participating actively on the network.

The byte has the following bit assignments:

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| B | x | x | x | M | S | S | S |
|---|---|---|---|---|---|---|---|

B = bypass\*

x = not used

M = mode

S = state.

| Bxxx | MSSS | State                              |
|------|------|------------------------------------|
| xxxx | x011 | Unconfigured – without application |
| xxxx | x010 | Unconfigured – with application    |
| xxxx | x110 | Configured – hard offline          |
| 0xxx | 1100 | Configured – soft offline          |
| 1xxx | 1100 | Configured – bypass offline*       |
| 0xxx | 0100 | Configured – offline               |

\* not for generic drive use

## NEURON ID

### *Explanation:*

This parameter displays the Neuron® chip ID of the module in decimal format. The ID is determined by the chip and cannot be changed.

Par. 3: NEURON ID [5] = byte 6 of the unique Neuron ID (MSB)

Par. 4: NEURON ID [4] = byte 5 of the unique Neuron ID

Par. 5: NEURON ID [3] = byte 4 of the unique Neuron ID

Par. 6: NEURON ID [2] = byte 3 of the unique Neuron ID

Par. 7: NEURON ID [1] = byte 2 of the unique Neuron ID

Par. 8: NEURON ID [0] = byte 1 of the unique Neuron ID (LSB)

The decimal values of the parameters are converted to Neuron ID as shown by the following example:

Parameter 3 = 4 = 04h

Parameter 4 = 118 = 76h

Parameter 5 = 213 = D5h

Parameter 6 = 244 = F4h

Parameter 7 = 1 = 01h

Parameter 8 = 0 = 00h

These decimal parameter values yield a Neuron ID of 0476D5F40100h.

#### NODE ADDRESS 1

This parameter indicates the ID of the node within the subnet.

##### *Range:*

1 - 127 (0 = node address 1 not assigned).

#### NODE SUBNET 1

##### *Explanation:*

This parameter indicates to which subnet the node belongs.

##### *Range:*

1 - 255 (0 = node subnet 1 not assigned).

#### DOMAIN ID 1

##### *Explanation:*

This parameter indicates the ID of the domain within this subnet. Each domain in a LonWorks® network has a unique ID of 0, 1, 3 or 6 bytes in length. If the ID is shorter than 6 bytes, it is left justified in this field.

DOMAIN ID 1 [5] = byte 6 of the domain ID (MSB)

DOMAIN ID 1 [4] = byte 5 of the domain ID

DOMAIN ID 1 [3] = byte 4 of the domain ID

DOMAIN ID 1 [2] = byte 3 of the domain ID

DOMAIN ID 1 [1] = byte 2 of the domain ID

DOMAIN ID 1 [0] = byte 1 of the domain ID (LSB)

#### NODE ADDRESS 2

##### *Explanation:*

This parameter indicates the ID of the node within this subnet.

*Range:*

1 - 127 (0 = node address 2 not assigned).

## NODE SUBNET 2

*Explanation:*

This parameter indicates to which subnet the node belongs.

*Range:*

1 - 255 (0 = node subnet 2 not assigned).

## DOMAIN ID 2

*Explanation:*

This parameter indicates the ID of the domain within this subnet. Each domain in a LonWorks® network has a unique ID of 0,1,3 or 6 bytes in length. If the ID is shorter than 6 bytes, it is left justified in this field.

DOMAIN ID 2 [5] = byte 6 of the domain ID (MSB)

DOMAIN ID 2 [4] = byte 5 of the domain ID

DOMAIN ID 2 [3] = byte 4 of the domain ID

DOMAIN ID 2 [2] = byte 3 of the domain ID

DOMAIN ID 2 [1] = byte 2 of the domain ID

DOMAIN ID 2 [0] = byte 1 of the domain ID (LSB)

## XMIT ERRORS

*Explanation:*

This parameter indicates the number of CRC errors detected during packet reception. An increasing value may be due to collisions or noise on the transceiver input.

## TRANS TIMEOUTS

*Explanation:*

This parameter indicates the number of times that the node failed to receive expected acknowledgements or responses after retrying configuring number of times. An increasing value may be

due to destination nodes being inaccessible on the network, transmission failures because of noise on the channel, or if any destination node has insufficient buffers or receive transaction records.

## **Control locations**

ABB drives can receive control information from multiple sources including digital inputs, analogue inputs, the drive control panel and a communication module (eg, adapter module). ABB drives allow the user to separately determine the source for each type of control information (Start, Stop, Direction, Reference, Fault Reset, etc). To give the fieldbus master station the most complete control over the drive, the communication module must be selected as source for this information. See the user documentation of the drive for information on the selection parameters.

# Communication

---

## Overview

This chapter describes the operation of the adapter module on a LONWORKS® network.

## General

In LONWORKS® networks, the network design emphasis is on designing the network variable connections. The connection design determines the amount of data flow between different nodes, thus determining the decision of transmission media and network topology overall in the network.

In designing the connections, the selection of protocol services is also crucial when determining the network data flow. By default, the network connections use acknowledged messaging with a certain retry count. This can, however, be changed by the installation tool to optimize the overall network performance.

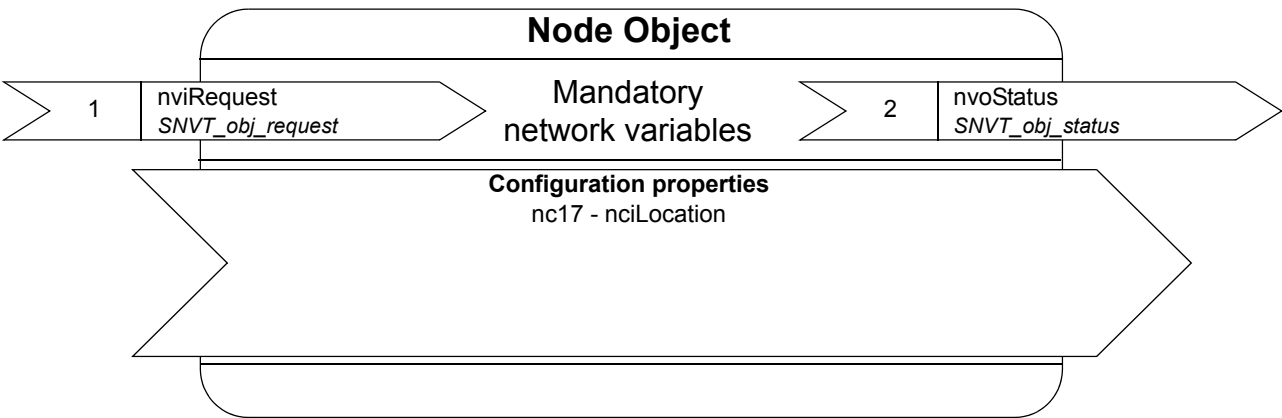
To be able to realize the required operation of the whole system, a clear picture of the capabilities of individual nodes is needed. These capabilities are determined by the network variables.

**LONMARK® objects**

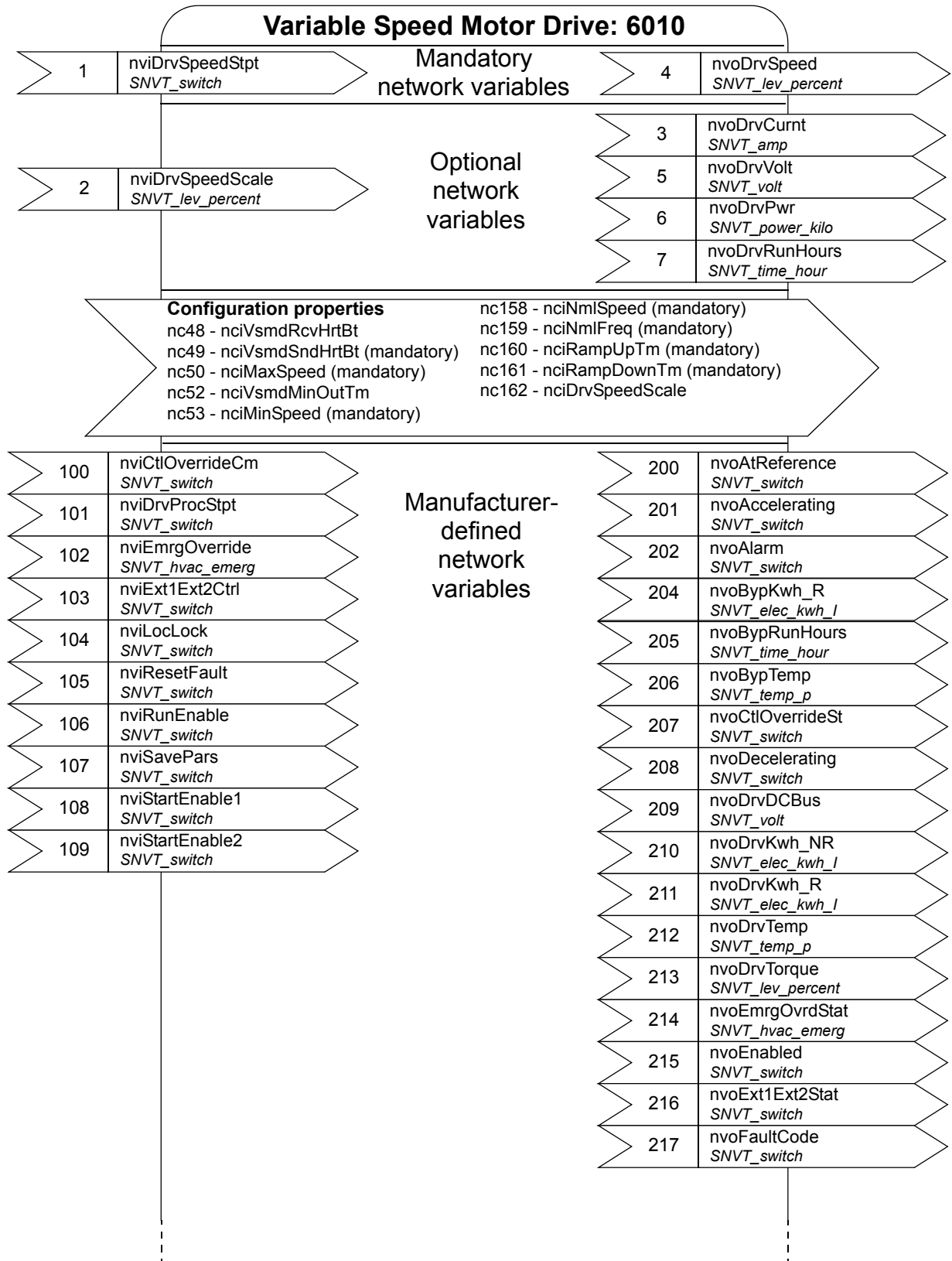
The adapter module includes a node object, a drive object and several open loop sensor or actuator objects. The node object is used to control the drive object. The drive object realizes the LONMARK® Functional Profile: ‘Variable Speed Motor Drive Version’, 1.1. The profile defines a set of network variables and configuration properties. In addition, the drive object includes a set of manufacturer defined network variables and configuration properties that are defined to realize functions only applicable for ABB drives.

The network variables and configuration properties included by the node, drive and open loop sensor/actuator objects are detailed in chapter [Network variables](#).

**Node object**

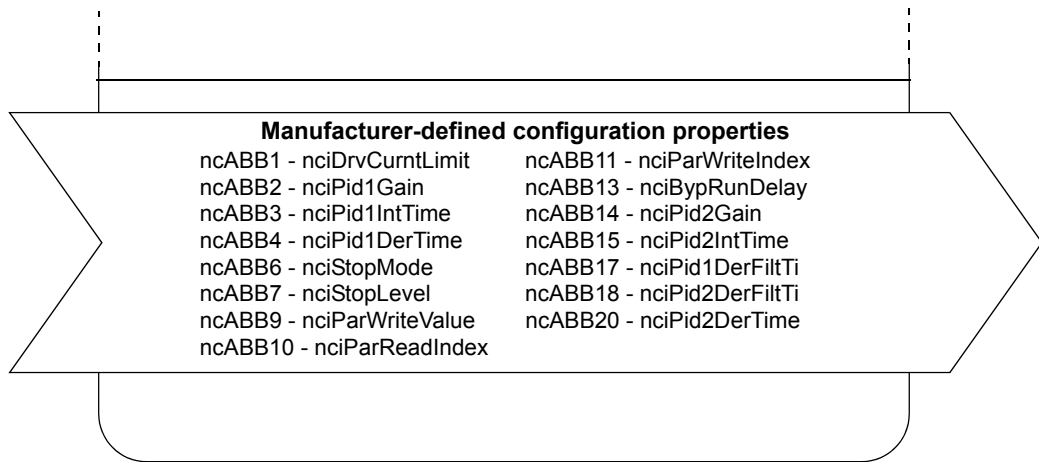


## Variable speed motor drive object

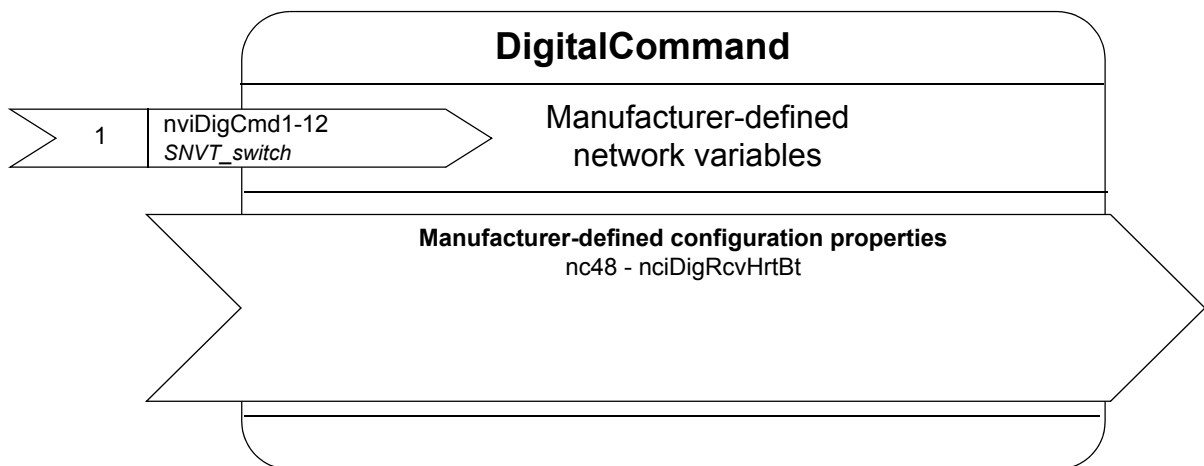


Manufacturer-  
defined  
network  
variables

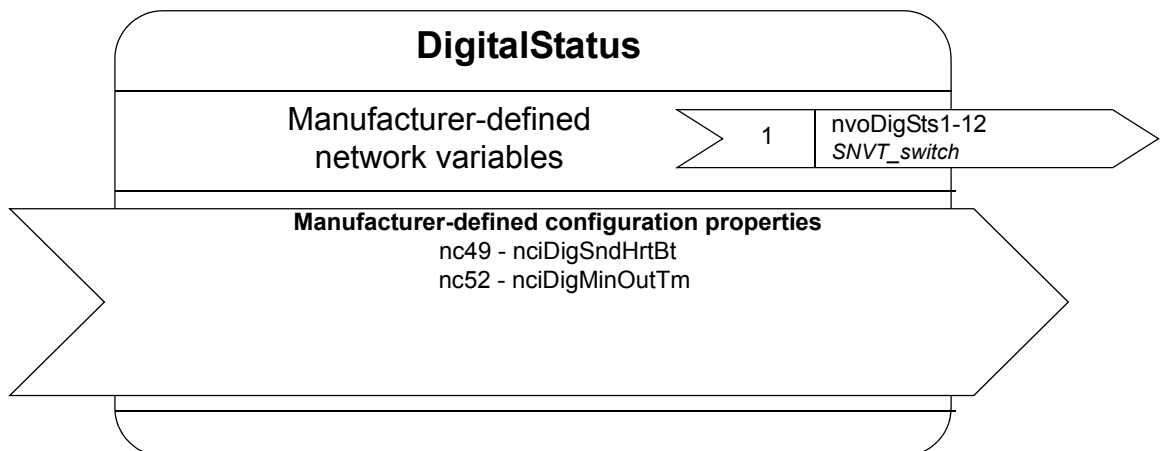
|     |                                         |
|-----|-----------------------------------------|
| 218 | nvoFaulted<br><i>SNVT_switch</i>        |
| 219 | nvoForward<br><i>SNVT_switch</i>        |
| 220 | nvoFreqAct<br><i>SNVT_freq_hz</i>       |
| 221 | nvoLimit<br><i>SNVT_switch</i>          |
| 222 | nvoLineVolt<br><i>SNVT_volt</i>         |
| 223 | nvoLineUVVolt<br><i>SNVT_volt</i>       |
| 224 | nvoLineVWVolt<br><i>SNVT_volt</i>       |
| 225 | nvoLineWUVolt<br><i>SNVT_volt</i>       |
| 226 | nvoLocRemStat<br><i>SNVT_switch</i>     |
| 227 | nvoMtrRevCntM<br><i>SNVT_count_32</i>   |
| 228 | nvoMtrTemp<br><i>SNVT_temp_p</i>        |
| 229 | nvoNetCtrl<br><i>SNVT_switch</i>        |
| 230 | nvoNetRef1<br><i>SNVT_switch</i>        |
| 231 | nvoNetRef2<br><i>SNVT_switch</i>        |
| 232 | nvoParReadValue<br><i>SNVT_count</i>    |
| 233 | nvoPid1Dev<br><i>SNVT_lev_percent</i>   |
| 234 | nvoPid1Fbk<br><i>SNVT_lev_percent</i>   |
| 235 | nvoPid2Dev<br><i>SNVT_lev_percent</i>   |
| 236 | nvoPid2Fbk<br><i>SNVT_lev_percent</i>   |
| 237 | nvoReady<br><i>SNVT_switch</i>          |
| 238 | nvoReverse<br><i>SNVT_switch</i>        |
| 239 | nvoRunning<br><i>SNVT_switch</i>        |
| 240 | nvoSpeedActRpm<br><i>SNVT_count_inc</i> |
| 241 | nvoStarted<br><i>SNVT_switch</i>        |
| 242 | nvoZeroSpeed<br><i>SNVT_switch</i>      |



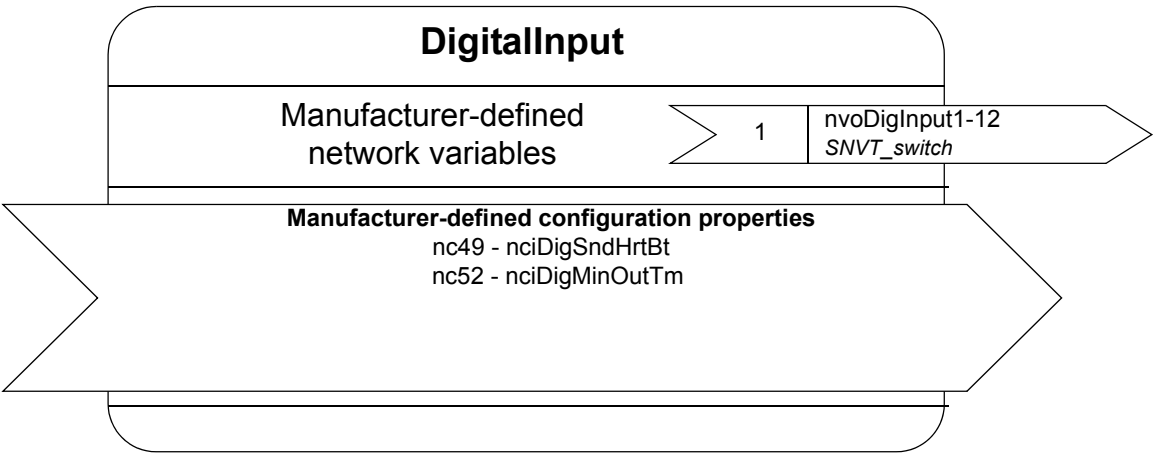
### Open loop actuator object: DigitalCommand



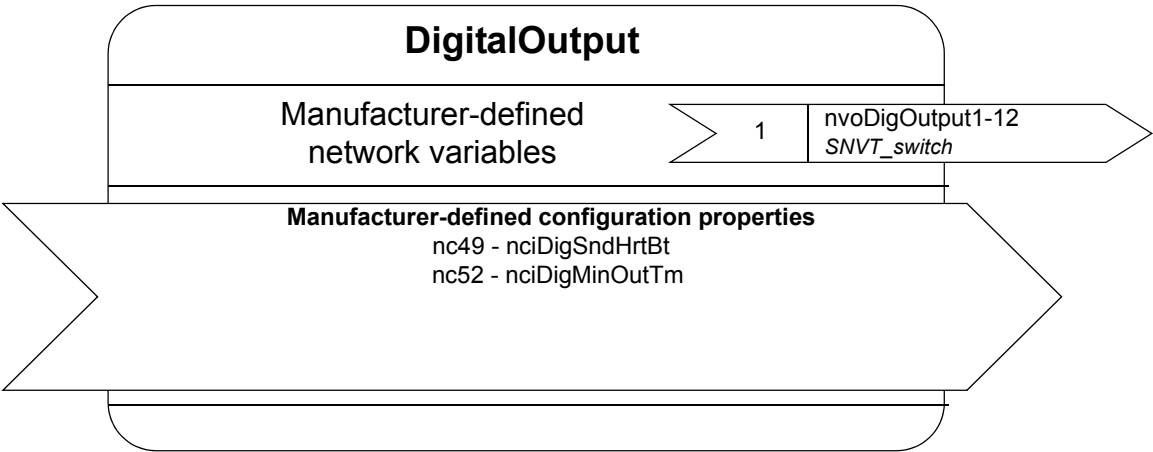
### Open loop sensor object: DigitalStatus



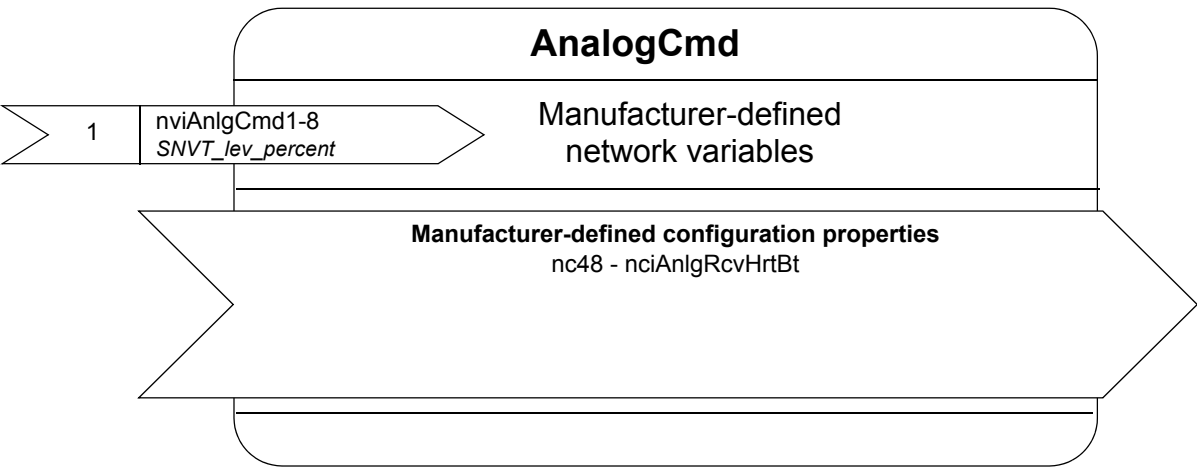
Open loop sensor object: DigitalInput



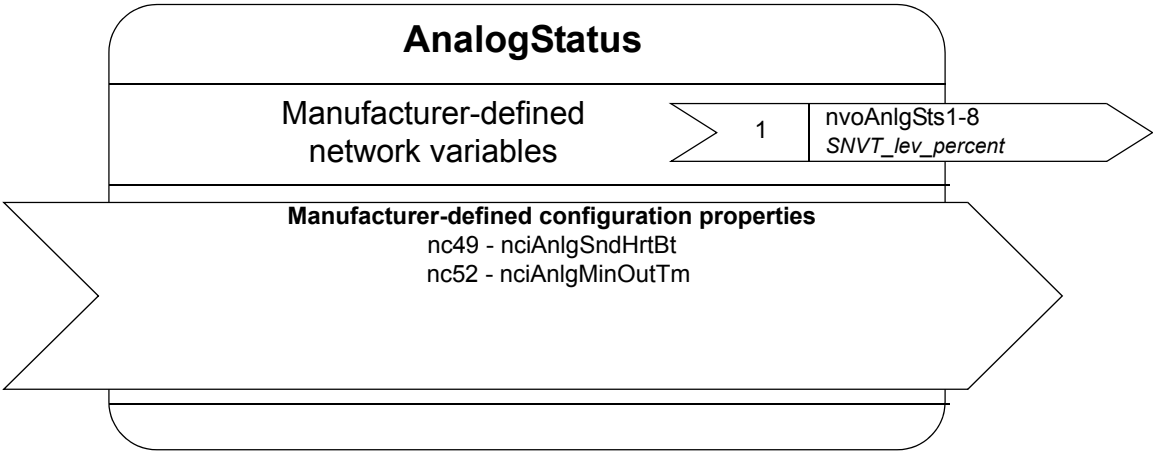
Open loop sensor object: DigitalOutput



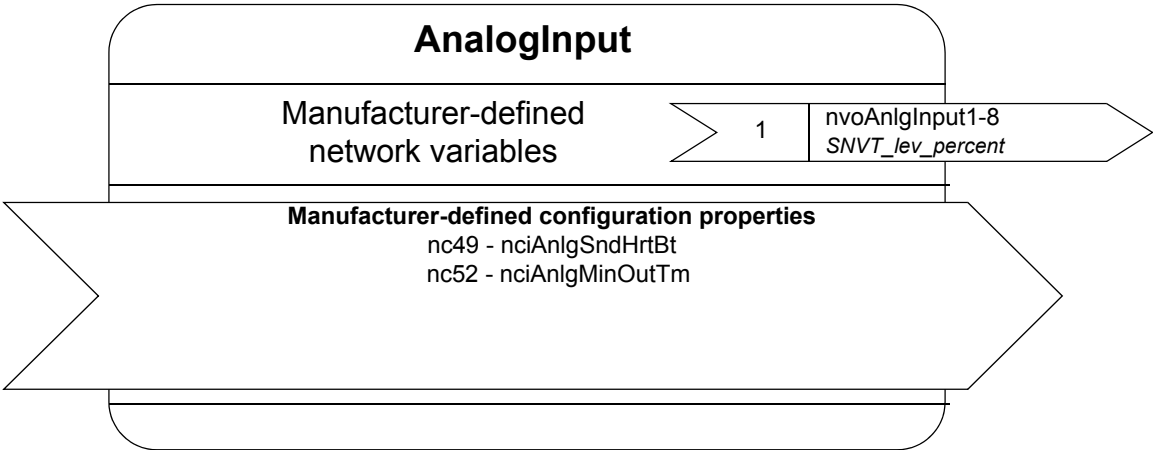
Open loop actuator object: AnalogCmd



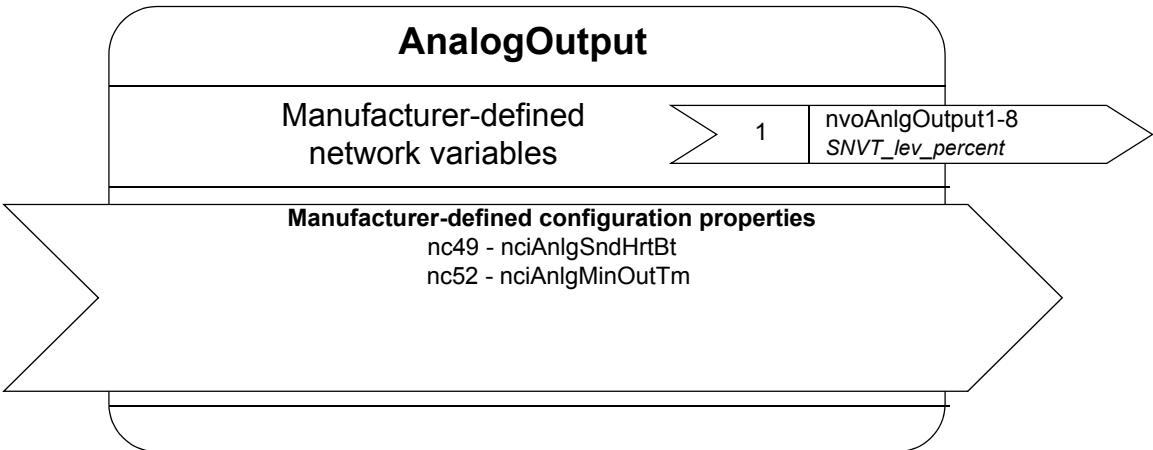
Open loop sensor object: AnalogStatus



Open loop sensor object: AnalogInput



Open loop sensor object: AnalogOutput



## Resource files

For the installation of the adapter module with different installation tools, resource files are needed. If you have not received these files together with the adapter module, consult your local ABB representative or ABB's web site.

The resource files are delivered as a compressed (\*.ZIP) archive. Copy the ZIP archive to your "LonWorks" directory and unpack the compressed files.

The directory

### **LONWORKS\TYPES\USER\ABB\FLON**

holds the user type and enumeration file (VSD\_FLON01.TYP), the user type formatting file (VSD\_FLON01.FMT), the functional profile template file (VSD\_FLON01.FPT) and the language file (VSD\_FLON01.ENU).

The directory

### **LONWORKS\IMPORT\ABB\FLON**

holds the external interface files (\*.XIF):

XIF version 2.0 (e.g. FLON\_V20.XIF)

XIF version 3.1 (e.g. FLON\_V31.XIF)

XIF version 4.1 (e.g. FLON\_V41.XIF)

XIF version 4.4 (e.g. FLON\_V44.XIF)

The device interface (XIF) file is a standalone file that documents the device interface for a type of device. It also documents the default values for all the configuration properties on the device.

The different XIF files are for the different versions of the LonMaker<sup>®</sup> tool. The appropriate XIF file version is chosen depending on the installation tool used.

# Network variables

---

## Supported input network variables

The actual valid range of a network input variable can be smaller than the one reported in this manual, depending on the drive firmware. Typically the drive discards the parameter changes, if the value coming from the fieldbus is outside the range of the drive parameter. For the list of the network variables that are used with the drives compatible with the adapter module, see chapter [APPENDIX: Compatibility table](#).

| Name                                        | Description                                                           | More info on page  |
|---------------------------------------------|-----------------------------------------------------------------------|--------------------|
| <a href="#">nviAnlgCmd1 ... nviAnlgCmd8</a> | Supply of analog commands to the host                                 | <a href="#">41</a> |
| <a href="#">nviCtlOverrideCm</a>            | Request for override of control and references sources by the network | <a href="#">42</a> |
| <a href="#">nviDigCmd1 ... nviDigCmd12</a>  | Control of state of digital outputs 1 to 12                           | <a href="#">43</a> |
| <a href="#">nviDrvProcStpt</a>              | Low-resolution process set point                                      | <a href="#">44</a> |
| <a href="#">nviDrvSpeedScale</a>            | Scaling for <a href="#">nviDrvSpeedStpt</a>                           | <a href="#">45</a> |
| <a href="#">nviDrvSpeedStpt</a>             | Low-resolution speed set point                                        | <a href="#">46</a> |
| <a href="#">nviEmrgOverride</a>             | Possibility to stop the motor in case of an emergency                 | <a href="#">47</a> |
| <a href="#">nviExt1Ext2Ctrl</a>             | Sets the control location that should be used (EXT1/EXT2)             | <a href="#">48</a> |
| <a href="#">nviLocLock</a>                  | Sets local lock on or off                                             | <a href="#">48</a> |
| <a href="#">nviRequest</a>                  | Enables control commands and updates from network                     | <a href="#">49</a> |
| <a href="#">nviResetFault</a>               | Input to the motor to clear the fault status in the drive             | <a href="#">50</a> |
| <a href="#">nviRunEnable</a>                | Sets the run enable for the host                                      | <a href="#">51</a> |

| Name                                   | Description                                                  | More info on page         |
|----------------------------------------|--------------------------------------------------------------|---------------------------|
| <a href="#"><i>nviSavePars</i></a>     | Request for parameter save to non-volatile memory by network | <a href="#"><i>51</i></a> |
| <a href="#"><i>nviStartEnable1</i></a> | Sets start enable 1 for the host                             | <a href="#"><i>52</i></a> |
| <a href="#"><i>nviStartEnable2</i></a> | Sets start enable 2 for the host                             | <a href="#"><i>52</i></a> |

**nviAnlgCmd1 ... nviAnlgCmd8***Definition:*

Network input SNVT\_lev\_percent nviAnlgCmd1  
Network input SNVT\_lev\_percent nviAnlgCmd2  
Network input SNVT\_lev\_percent nviAnlgCmd3  
Network input SNVT\_lev\_percent nviAnlgCmd4  
Network input SNVT\_lev\_percent nviAnlgCmd5  
Network input SNVT\_lev\_percent nviAnlgCmd6  
Network input SNVT\_lev\_percent nviAnlgCmd7  
Network input SNVT\_lev\_percent nviAnlgCmd8

*Explanation:*

Each variable supplies an analog command (1 ... 8) to the host.  
The configuration and mapping of these points is host-specific.

*Valid range:*

| <b>Value</b> | <b>Analog command</b> |
|--------------|-----------------------|
| -32768       | -163.84%              |
| 32766        | 163.83%               |
| 0x7FFF       | Invalid               |

*Default value:*

The default value is 0%.

**nviCtlOverrideCm***Definition:*

Network input SNVT\_switch nviCtlOverrideCm

*Explanation:*

This variable issues a request to override control and reference sources by the network.

*Valid range:*

| State | Value | Override command                        |
|-------|-------|-----------------------------------------|
| 0     | 0%    | No override                             |
| 1     | 100%  | Network overrides control and reference |

*Default value:*

The default value is No override (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

**nviDigCmd1 ... nviDigCmd12***Definition:*

Network input SNVT\_switch nviDigCmd1  
Network input SNVT\_switch nviDigCmd2  
Network input SNVT\_switch nviDigCmd3  
Network input SNVT\_switch nviDigCmd4  
Network input SNVT\_switch nviDigCmd5  
Network input SNVT\_switch nviDigCmd6  
Network input SNVT\_switch nviDigCmd7  
Network input SNVT\_switch nviDigCmd8  
Network input SNVT\_switch nviDigCmd9  
Network input SNVT\_switch nviDigCmd10  
Network input SNVT\_switch nviDigCmd11  
Network input SNVT\_switch nviDigCmd12

*Explanation:*

Each variable supplies a digital command (1 ... 12) to the host.  
The configuration and mapping of these points is host-specific.

*Valid range:*

| State | Value | Digital command |
|-------|-------|-----------------|
| 0     | 0%    | Inactive        |
| 1     | 100%  | Active          |

*Default value:*

The default value is Inactive (state 0, value 0%).

**nviDrvProcStpt***Definition:*

Network input SNVT\_switch nviDrvProcStpt

*Explanation:*

This variable provides start/stop control and a low resolution process set point. It is active when external control location EXT2 is selected.

*Valid range:*

| State | Value      | Command        |
|-------|------------|----------------|
| 0     | Not used   | Stop           |
| 1     | 0          | 0%             |
| 1     | 1 to 200   | 0.5 to 100.0%  |
| 1     | 201 to 255 | 100%           |
| 0xFF  | Not used   | AUTO (Invalid) |

*Default value:*

The default value is AUTO (state 0xFF). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## nviDrvSpeedScale

### Definition:

Network input SNVT\_lev\_percent nviDrvSpeedScale

### Explanation:

This variable provides scaling for [nviDrvSpeedStpt](#). For example, if the [nviDrvSpeedStpt](#) value is 100% and the [nviDrvSpeedScale](#) value is -150%, then the actual speed set point value is -150% meaning 1.5 times the nominal speed in the reverse direction.

### Valid range:

| Value  | Speed scaling |
|--------|---------------|
| -32768 | -163.840%     |
| 32766  | 163.830%      |
| 0x7FFF | Invalid       |

### Default value:

The value is defined by [SCPTdefScale](#) / [nciDrvSpeedScale](#). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## nviDrvSpeedStpt

### Definition:

Network input SNVT\_switch nviDrvSpeedStpt

### Explanation:

This variable provides start/stop control and a low-resolution speed set point for external control location EXT1. The speed set point is the result of multiplication of *nviDrvSpeedStpt* and *nviDrvSpeedScale*. For example, if the value of *nviDrvSpeedStpt* is 100% and the value of *nviDrvSpeedScale* is -150%, the actual speed set point value is -150% meaning 1.5 times nominal speed in the reverse direction.

### Valid range:

| State | Value    | Equivalent percentage | Requested speed |
|-------|----------|-----------------------|-----------------|
| 0     | Not used | Not used              | STOPPED         |
| 1     | 0        | 0%                    | 0%              |
| 1     | 1 to 100 | 1 to 100.0%           | 1 to 100.0%     |
| 0xFF  | Not used | Not used              | AUTO (invalid)  |

### Default value:

The default value is AUTO (state 0xFF). The value will be adapted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## nviEmrgOverride

### Definition:

Network input SNVT\_hvac\_emerg nviEmrgOverride (HVAC Emergency Mode)

### Explanation:

This variable provides the possibility to stop the motor in case of an emergency.

### Valid range:

| Setting            | Function                                  |
|--------------------|-------------------------------------------|
| EMERG_NORMAL       | No emergency mode, motor control enabled. |
| EMERG_PRESSURIZE   | See EMERG_NORMAL                          |
| EMERG_DEPRESSURIZE | See EMERG_NORMAL                          |
| EMERG_PURGE        | See EMERG_NORMAL                          |
| EMERG_SHUTDOWN     | Emergency shutdown mode. Stops motor.     |
| EMERG_FIRE         | See EMERG_NORMAL                          |
| EMERG_NULL         | See EMERG_NORMAL                          |

### Default value:

The default value is EMERG\_NORMAL. The value will be adapted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

**nviExt1Ext2Ctrl***Definition:*

Network input SNVT\_switch nviExt1Ext2Ctrl

*Explanation:*

This variable sets the external control location (EXT1/EXT2).

*Valid range:*

| State | Value | Control location |
|-------|-------|------------------|
| 0     | 0%    | EXT1             |
| 1     | 100%  | EXT2             |

*Default value:*

The default value is EXT1 (state 0, value 0%).

**nviLocLock***Definition:*

Network input SNVT\_switch nviLocLock

*Explanation:*

This variable sets local lock on or off.

*Valid range:*

| State | Value | Command           |
|-------|-------|-------------------|
| 0     | 0%    | Local lock is off |
| 1     | 100%  | Local lock is on  |

*Default value:*

The default value is Local lock off (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## nviRequest

### Definition:

Network input SNVT\_obj\_request nviRequest

### Explanation:

This variable enables control commands and updates from the network. The status of the node is reported in nvoStatus.

### Valid range:

| Object request       | Function                                                                                  |
|----------------------|-------------------------------------------------------------------------------------------|
| RQ_UPDATE_STATU<br>S | Updates nvoStatus.                                                                        |
| RQ_CLEAR_STATUS      | Clears nvoStatus.                                                                         |
| RQ_CLEAR_ALARM       | Resets fault in the drive/bypass.                                                         |
| RQ_REPORT_MASK       | Reports supported requests in nvoStatus.                                                  |
| RQ_NORMAL            | Sets object to default state. (normal request)                                            |
| RQ_DISABLE           | Stops the drive/bypass with the selected stop mode and disables the operation and object. |
| RQ_ENABLE            | Enables the drive for operation and enables the object.                                   |

The commands not listed above will be reported as invalid\_request in nvoStatus.

**nviResetFault***Definition:*

Network input SNVT\_switch nviResetFault

*Explanation:*

This variable clears the fault status in the host.

*Valid range:*

| State | Value | Command            |
|-------|-------|--------------------|
| 0     | 0%    | Enable reset fault |
| 1     | 100%  | Reset fault        |

On a transition from 0 to 1, this input network variable clears the fault condition in the drive. Following a fault reset, this variable should be set to 0 to enable the next reset fault.

*Default value:*

The default value is No action (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## nviRunEnable

### Definition:

Network input SNVT\_switch nviRunEnable

### Explanation:

This variable sets the run enable for the host.

### Valid range:

| State | Value | Command      |
|-------|-------|--------------|
| 0     | 0%    | Run disabled |
| 1     | 100%  | Run enabled  |

### Default value:

The default value is Run disabled (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## nviSavePars

### Definition:

Network input SNVT\_switch nviSavePars

### Explanation:

This variable indicates that the LONWORKS® network requests parameters to be saved to non-volatile memory.

### Valid range:

| State | Value | Command         |
|-------|-------|-----------------|
| 0     | 0%    | Do nothing      |
| 1     | 100%  | Save parameters |

### Default value:

The default value is Do nothing (state 0, value 0%). This value will be adopted at power-up.

**nviStartEnable1***Definition:*

Network input SNVT\_switch nviStartEnable1

*Explanation:*

This variable sets start enable 1 for the host.

*Valid range:*

| State | Value | Command          |
|-------|-------|------------------|
| 0     | 0%    | Start 1 disabled |
| 1     | 100%  | Start 1 enabled  |

*Default value:*

The default value is Start 1 disabled (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

**nviStartEnable2***Definition:*

Network input SNVT\_switch nviStartEnable2

*Explanation:*

This variable sets start enable 2 for the host.

*Valid range:*

| State | Value | Command          |
|-------|-------|------------------|
| 0     | 0%    | Start 2 disabled |
| 1     | 100%  | Start 2 enabled  |

*Default value:*

The default value is Start 2 disabled (state 0, value 0%). This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

## Supported output network variables

| Name                                                         | Description                                                                             | More info on page  |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------|
| <a href="#"><i>nvoAccelerating</i></a>                       | Indicates the drive is accelerating                                                     | <a href="#">56</a> |
| <a href="#"><i>nvoAlarm</i></a>                              | Indicates the drive has an alarm                                                        | <a href="#">57</a> |
| <a href="#"><i>nvoAnlgInput1 ...<br/>nvoAnlgInput8</i></a>   | Status of analog inputs 1 to 8                                                          | <a href="#">58</a> |
| <a href="#"><i>nvoAnlgOutput1 ...<br/>nvoAnlgOutput8</i></a> | Status of analog outputs 1 to 8                                                         | <a href="#">59</a> |
| <a href="#"><i>nvoAnlgSts1 ...<br/>nvoAnlgSts8</i></a>       | Analog statuses 1 to 8 from the host                                                    | <a href="#">60</a> |
| <a href="#"><i>nvoAtReference</i></a>                        | Indicates the drive is at reference                                                     | <a href="#">61</a> |
| <a href="#"><i>nvoBypKwh_R</i></a>                           | Value of the resettable bypass kWh counter *                                            | <a href="#">62</a> |
| <a href="#"><i>nvoBypRunHours</i></a>                        | Operation time for the motor by the bypass in whole hours *                             | <a href="#">63</a> |
| <a href="#"><i>nvoBypTemp</i></a>                            | Bypass PCB temperature in degrees C *                                                   | <a href="#">64</a> |
| <a href="#"><i>nvoCtlOverrideSt</i></a>                      | Indicates that the LonWorks® network has overridden other control and reference sources | <a href="#">65</a> |
| <a href="#"><i>nvoDecelerating</i></a>                       | Indicates the drive is decelerating                                                     | <a href="#">66</a> |
| <a href="#"><i>nvoDigInput1 ...<br/>nvoDigInput12</i></a>    | Status of digital inputs 1 to 8                                                         | <a href="#">67</a> |
| <a href="#"><i>nvoDigOutput1 ...<br/>nvoDigOutput12</i></a>  | Status of digital outputs 1 to 8                                                        | <a href="#">68</a> |
| <a href="#"><i>nvoDigSts1 ...<br/>nvoDigSts12</i></a>        | Digital statuses 1 to 8 from the host                                                   | <a href="#">69</a> |
| <a href="#"><i>nvoDrvCurnt</i></a>                           | Drive current in amperes                                                                | <a href="#">70</a> |
| <a href="#"><i>nvoDrvDCBus</i></a>                           | Drive DC bus voltage                                                                    | <a href="#">71</a> |
| <a href="#"><i>nvoDrvKwh_NR</i></a>                          | Value of the non-resettable drive kWh counter                                           | <a href="#">72</a> |
| <a href="#"><i>nvoDrvKwh_R</i></a>                           | Value of the resettable drive kWh counter                                               | <a href="#">73</a> |
| <a href="#"><i>nvoDrvPwr</i></a>                             | Drive power in kilowatts                                                                | <a href="#">74</a> |

| Name                                                                                     | Description                                                              | More info on page  |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------|
| <a href="#"><i>nvoDrvRunHours</i></a>                                                    | Operation time for the motor by the drive in whole hours                 | <a href="#">75</a> |
| <a href="#"><i>nvoDrvSpeed</i></a>                                                       | Speed of the drive as a percentage of the nominal speed                  | <a href="#">76</a> |
| <a href="#"><i>nvoDrvTemp</i></a>                                                        | Temperature in degrees C                                                 | <a href="#">77</a> |
| <a href="#"><i>nvoDrvTorque</i></a>                                                      | Output torque as a percentage of motor nominal torque                    | <a href="#">78</a> |
| <a href="#"><i>nvoDrvVolt</i></a>                                                        | Motor output voltage                                                     | <a href="#">79</a> |
| <a href="#"><i>nvoEmrgOvrStat</i></a>                                                    | Feedback for <a href="#"><i>nviEmrgOverride</i></a>                      | <a href="#">80</a> |
| <a href="#"><i>nvoEnabled</i></a>                                                        | Indicates the drive has received the run enable command                  | <a href="#">81</a> |
| <a href="#"><i>nvoExt1Ext2Stat</i></a>                                                   | Control location currently used (EXT1/EXT2)                              | <a href="#">82</a> |
| <a href="#"><i>nvoFaultCode</i></a>                                                      | Latest malfunction code that has occurred                                | <a href="#">83</a> |
| <a href="#"><i>nvoFaulted</i></a>                                                        | Information on the fault status of the drive                             | <a href="#">84</a> |
| <a href="#"><i>nvoForward</i></a>                                                        | Indicates the drive is running in the forward direction                  | <a href="#">85</a> |
| <a href="#"><i>nvoFreqAct</i></a>                                                        | Output frequency in Hz                                                   | <a href="#">86</a> |
| <a href="#"><i>nvoLimit</i></a>                                                          | Indicates the drive has reached a speed, frequency or torque limit       | <a href="#">87</a> |
| <a href="#"><i>nvoLineUVVolt,</i><br/><i>nvoLineVWVolt,</i><br/><i>nvoLineWUVolt</i></a> | Line-to-line input voltages in volts                                     | <a href="#">88</a> |
| <a href="#"><i>nvoLineVolt</i></a>                                                       | Drive input voltage                                                      | <a href="#">89</a> |
| <a href="#"><i>nvoLocRemStat</i></a>                                                     | Control mode (Local or Remote)                                           | <a href="#">90</a> |
| <a href="#"><i>nvoMtrRevCntM</i></a>                                                     | Accumulated revolutions of the motor in millions                         | <a href="#">91</a> |
| <a href="#"><i>nvoMtrTemp</i></a>                                                        | Motor temperature in degrees C                                           | <a href="#">92</a> |
| <a href="#"><i>nvoNetCtrl</i></a>                                                        | Indicates the LonWorks® network is selected as the active control source | <a href="#">93</a> |

| <b>Name</b>                                                              | <b>Description</b>                                                                                                | <b>More info<br/>on page</b> |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------|
| <a href="#"><i>nvoNetRef1</i></a>                                        | Indicates the LonWorks® network is selected as the active reference REF1 source                                   | <a href="#">94</a>           |
| <a href="#"><i>nvoNetRef2</i></a>                                        | Indicates the LonWorks® network is selected as the active reference REF2 source                                   | <a href="#">95</a>           |
| <a href="#"><i>nvoParReadValue</i></a>                                   | Data read at parameter set by<br><a href="#"><i>UCPTparReadIndex</i></a> / <a href="#"><i>nciParReadIndex</i></a> | <a href="#">96</a>           |
| <a href="#"><i>nvoPid1Dev</i></a> ,<br><a href="#"><i>nvoPid2Dev</i></a> | PID controller deviation values                                                                                   | <a href="#">97</a>           |
| <a href="#"><i>nvoPid1Fbk</i></a> ,<br><a href="#"><i>nvoPid2Fbk</i></a> | PID controller feedback values                                                                                    | <a href="#">98</a>           |
| <a href="#"><i>nvoReady</i></a>                                          | Indicates the drive is ready to receive a start command                                                           | <a href="#">99</a>           |
| <a href="#"><i>nvoReverse</i></a>                                        | Indicates the drive is running in the reverse direction                                                           | <a href="#">100</a>          |
| <a href="#"><i>nvoRunning</i></a>                                        | Motor running state                                                                                               | <a href="#">101</a>          |
| <a href="#"><i>nvoSpeedActRpm</i></a>                                    | Output speed in rpm                                                                                               | <a href="#">102</a>          |
| <a href="#"><i>nvoStarted</i></a>                                        | Indicates the drive has received a start command                                                                  | <a href="#">103</a>          |
| <a href="#"><i>nvoStatus</i></a>                                         | Reports the node object status                                                                                    | <a href="#">104</a>          |
| <a href="#"><i>nvoZeroSpeed</i></a>                                      | Indicates the drive is at zero speed                                                                              | <a href="#">105</a>          |

\* not for generic drive use

**nvoAccelerating***Definition:*

Network output SNVT\_switch nvoAccelerating

*Explanation:*

This variable indicates that the drive is accelerating.

*Valid range:*

| State | Value  | Status           |
|-------|--------|------------------|
| 0     | 0.0%   | Not accelerating |
| 1     | 100.0% | Accelerating     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoAlarm***Definition:*

Network output SNVT\_switch nvoAlarm

*Explanation:*

This variable indicates that the drive has an alarm.

*Valid range:*

| State | Value  | Status   |
|-------|--------|----------|
| 0     | 0.0%   | No alarm |
| 1     | 100.0% | Alarm    |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

## **nvoAnlgInput1 ... nvoAnlgInput8**

### *Definition:*

Network output SNVT\_lev\_percent nvoAnlgInput1  
 Network output SNVT\_lev\_percent nvoAnlgInput2  
 Network output SNVT\_lev\_percent nvoAnlgInput3  
 Network output SNVT\_lev\_percent nvoAnlgInput4  
 Network output SNVT\_lev\_percent nvoAnlgInput5  
 Network output SNVT\_lev\_percent nvoAnlgInput6  
 Network output SNVT\_lev\_percent nvoAnlgInput7  
 Network output SNVT\_lev\_percent nvoAnlgInput8

### *Explanation:*

Each variable indicates the value of the corresponding analog input (1 ... 8) of the host.

### *Valid range:*

| <b>Value</b> | <b>Analog input value</b> |
|--------------|---------------------------|
| -32768       | -163.84%                  |
| 32766        | 163.83%                   |
| 0x7FFF       | Invalid                   |

### *When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

### *Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

## nvoAnlgOutput1 ... nvoAnlgOutput8

### *Definition:*

Network output SNVT\_lev\_percent nvoAnlgOutput1  
 Network output SNVT\_lev\_percent nvoAnlgOutput2  
 Network output SNVT\_lev\_percent nvoAnlgOutput3  
 Network output SNVT\_lev\_percent nvoAnlgOutput4  
 Network output SNVT\_lev\_percent nvoAnlgOutput5  
 Network output SNVT\_lev\_percent nvoAnlgOutput6  
 Network output SNVT\_lev\_percent nvoAnlgOutput7  
 Network output SNVT\_lev\_percent nvoAnlgOutput8

### *Explanation:*

Each variable indicates the value of the corresponding analog output (1 ... 8) of the host.

### *Valid range:*

| Value  | Analog output value |
|--------|---------------------|
| -32768 | -163.84%            |
| 32766  | 163.83%             |
| 0x7FFF | Invalid             |

### *When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

### *Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

## nvoAnlgSts1 ... nvoAnlgSts8

### Definition:

Network output SNVT\_lev\_percent nvoAnlgSts1  
 Network output SNVT\_lev\_percent nvoAnlgSts2  
 Network output SNVT\_lev\_percent nvoAnlgSts3  
 Network output SNVT\_lev\_percent nvoAnlgSts4  
 Network output SNVT\_lev\_percent nvoAnlgSts5  
 Network output SNVT\_lev\_percent nvoAnlgSts6  
 Network output SNVT\_lev\_percent nvoAnlgSts7  
 Network output SNVT\_lev\_percent nvoAnlgSts8

### Explanation:

Each variable indicates an analog status (1 ... 8) from the host.  
 The configuration and mapping of these points is host-specific.

### Valid range:

| Value  | Analog status |
|--------|---------------|
| -32768 | -163.84%      |
| 32766  | 163.83%       |
| 0x7FFF | Invalid       |

### When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

### Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoAtReference***Definition:*

Network output SNVT\_switch nvoAtReference

*Explanation:*

This variable indicates that the drive is at reference.

*Valid range:*

| State | Value  | Status           |
|-------|--------|------------------|
| 0     | 0.0%   | Not at reference |
| 1     | 100.0% | At reference     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoBypKwh\_R***Definition:*

Network output SNVT\_elec\_kwh\_I nvoBypKwh\_R

*Explanation:*

This variable provides the value of the resettable bypass kWh counter.

*Valid range:*

| Value       | Energy           |
|-------------|------------------|
| -2147483648 | -214748364.8 kWh |
| 2147483646  | 214748364.6 kWh  |
| 0x7FFFFFFF  | Invalid          |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**Note:** This variable is not meant for generic drive use.

## nvoBypRunHours

### *Definition:*

Network output SNVT\_time\_hour nvoBypRunHours

### *Explanation:*

This variable provides the total operation time for the motor by the bypass in running hours.

### *Valid range:*

| Value | Time    |
|-------|---------|
| 0     | 0.0 h   |
| 65534 | 65534 h |
| 65535 | Invalid |

### *When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

### *Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**Note:** This variable is not meant for generic drive use.

**nvoBypTemp***Definition:*

Network output SNVT\_temp\_p nvoBypTemp

*Explanation:*

This variable provides the bypass PCB temperature in degrees C.

*Valid range:*

| Value  | Temperature |
|--------|-------------|
| -27317 | -273.17 °C  |
| 0      | 0 °C        |
| 32767  | 327.67 °C   |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**Note:** This variable is not meant for generic drive use.

**nvoCtlOverrideSt***Definition:*

Network output SNVT\_switch nvoCtlOverrideSt

*Explanation:*

This variable indicates that the LONWORKS<sup>®</sup> network has overridden other control and reference sources.

*Valid range:*

| State | Value | Control source |
|-------|-------|----------------|
| 0     | 0.0   | Other          |
| 1     | 100.0 | Network        |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDecelerating***Definition:*

Network output SNVT\_switch nvoDecelerating

*Explanation:*

This variable indicates that the drive is decelerating.

*Valid range:*

| State | Value  | Status           |
|-------|--------|------------------|
| 0     | 0.0%   | Not decelerating |
| 1     | 100.0% | Decelerating     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

## nvoDigInput1 ... nvoDigInput12

### Definition:

Network output SNVT\_switch nvoDigInput1  
 Network output SNVT\_switch nvoDigInput2  
 Network output SNVT\_switch nvoDigInput3  
 Network output SNVT\_switch nvoDigInput4  
 Network output SNVT\_switch nvoDigInput5  
 Network output SNVT\_switch nvoDigInput6  
 Network output SNVT\_switch nvoDigInput7  
 Network output SNVT\_switch nvoDigInput8  
 Network output SNVT\_switch nvoDigInput9  
 Network output SNVT\_switch nvoDigInput10  
 Network output SNVT\_switch nvoDigInput11  
 Network output SNVT\_switch nvoDigInput12

### Explanation:

Each variable indicates the status of the corresponding digital input (1 ... 12) of the host.

### Valid range:

| State | Value | Digital input status |
|-------|-------|----------------------|
| 0     | 0%    | Inactive             |
| 1     | 100%  | Active               |

### When transmitted:

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

### Update rate:

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

### nvoDigOutput1 ... nvoDigOutput12

*Definition:*

Network output SNVT\_switch nvoDigOutput1  
 Network output SNVT\_switch nvoDigOutput2  
 Network output SNVT\_switch nvoDigOutput3  
 Network output SNVT\_switch nvoDigOutput4  
 Network output SNVT\_switch nvoDigOutput5  
 Network output SNVT\_switch nvoDigOutput6  
 Network output SNVT\_switch nvoDigOutput7  
 Network output SNVT\_switch nvoDigOutput8  
 Network output SNVT\_switch nvoDigOutput9  
 Network output SNVT\_switch nvoDigOutput10  
 Network output SNVT\_switch nvoDigOutput11  
 Network output SNVT\_switch nvoDigOutput12

*Explanation:*

Each variable indicates the status of the corresponding digital output (1 ... 12) of the host.

*Valid range:*

| State | Value | Digital output status |
|-------|-------|-----------------------|
| 0     | 0%    | Inactive              |
| 1     | 100%  | Active                |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

## nvoDigSts1 ... nvoDigSts12

### *Definition:*

Network output SNVT\_switch nvoDigSts1  
 Network output SNVT\_switch nvoDigSts2  
 Network output SNVT\_switch nvoDigSts3  
 Network output SNVT\_switch nvoDigSts4  
 Network output SNVT\_switch nvoDigSts5  
 Network output SNVT\_switch nvoDigSts6  
 Network output SNVT\_switch nvoDigSts7  
 Network output SNVT\_switch nvoDigSts8  
 Network output SNVT\_switch nvoDigSts9  
 Network output SNVT\_switch nvoDigSts10  
 Network output SNVT\_switch nvoDigSts11  
 Network output SNVT\_switch nvoDigSts12

### *Explanation:*

Each variable indicates a digital status (1 ... 12) from the host. The configuration and mapping of these points is host-specific.

### *Valid range:*

| State | Value | Digital status |
|-------|-------|----------------|
| 0     | 0%    | Inactive       |
| 1     | 100%  | Active         |

### *When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

### *Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvCurnt***Definition:*

Network output SNVT\_amp nvoDrvCurnt

*Explanation:*

This variable provides the drive current in amperes.

*Valid Range:*

| Value  | Current  |
|--------|----------|
| 0      | 0.0 A    |
| 32766  | 3276.6 A |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvDCBus***Definition:*

Network output SNVT\_volt nvoDrvDCBus

*Explanation:*

This variable provides the drive DC bus voltage.

*Valid range:*

| Value  | Voltage  |
|--------|----------|
| 0      | 0.0 V    |
| 3276.6 | 3276.6 V |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvKwh\_NR***Definition:*

Network output SNVT\_elec\_kwh\_I nvoDrvKwh\_NR

*Explanation:*

This variable provides the value of the non-resettable drive kWh counter.

*Valid range:*

| Value       | Energy           |
|-------------|------------------|
| -2147483648 | -214748364.8 kWh |
| 2147483646  | 214748364.6 kWh  |
| 0x7FFFFFFF  | Invalid          |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvKwh\_R***Definition:*

Network output SNVT\_elec\_kwh\_I nvoDrvKwh\_R

*Explanation:*

This variable provides the value of the resettable drive kWh counter.

*Valid range:*

| Value       | Energy           |
|-------------|------------------|
| -2147483648 | -214748364.8 kWh |
| 2147483646  | 214748364.6 kWh  |
| 0x7FFFFFFF  | Invalid          |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvPwr***Definition:*

Network output SNVT\_power\_kilo nvoDrvPwr

*Explanation:*

This variable provides drive power in kilowatts.

*Valid range:*

| Value | Power     |
|-------|-----------|
| 0     | 0.0 kW    |
| 65534 | 6553.4 kW |
| 65535 | Invalid   |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvRunHours***Definition:*

Network output SNVT\_time\_hour nvoDrvRunHours

*Explanation:*

This variable provides the total operation time for the motor by the drive in running hours.

*Valid range:*

| Value | Time    |
|-------|---------|
| 0     | 0.0 h   |
| 65534 | 65534 h |
| 65535 | Invalid |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvSpeed***Definition:*

Network output SNVT\_lev\_percent nvoDrvSpeed

*Explanation:*

This variable provides the speed of the drive as a percentage of the nominal speed.

*Valid range:*

| Value  | Speed    |
|--------|----------|
| -32768 | -163.84% |
| 32766  | 163.83%  |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvTemp***Definition:*

Network output SNVT\_temp\_p nvoDrvTemp

*Explanation:*

This variable provides the drive temperature in degrees C.

*Valid range:*

| Value  | Temperature |
|--------|-------------|
| -27317 | -273.17 °C  |
| 0      | 0 °C        |
| 32767  | 327.67 °C   |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvTorque***Definition:*

Network output SNVT\_lev\_percent nvoDrvTorque

*Explanation:*

This variable provides output torque as a percentage of motor nominal torque.

*Valid range:*

| Value  | Torque   |
|--------|----------|
| -32768 | -163.84% |
| 32766  | 163.83%  |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoDrvVolt***Definition:*

Network output SNVT\_volt nvoDrvVolt

*Explanation:*

This variable provides the motor output voltage.

*Valid range:*

| Value  | Voltage  |
|--------|----------|
| 0      | 0.0 V    |
| 3276.6 | 3276.6 V |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoEmrgOvrStat***Definition:*

Network output SNVT\_hvac\_emerg nvoEmrgOvrStat

*Explanation:*

This variable provides feedback for the nviEmrgOverride.

*Valid range:*

| Value          | Function                                 |
|----------------|------------------------------------------|
| EMERG_NORMAL   | No emergency mode, motor control enabled |
| EMERG_SHUTDOWN | Emergency shutdown mode. Stops motor.    |
| EMERG_NUL      | Invalid                                  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoEnabled***Definition:*

Network output SNVT\_switch nvoEnabled

*Explanation:*

This variable indicates that the drive has received the run enable command.

*Valid range:*

| State | Value  | Status      |
|-------|--------|-------------|
| 0     | 0.0%   | Not enabled |
| 1     | 100.0% | Enabled     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoExt1Ext2Stat***Definition:*

Network output SNVT\_switch nvoExt1Ext2Stat

*Explanation:*

This output variable shows the external control location currently used (EXT1 or EXT2).

*Valid range:*

| State | Value | Control location |
|-------|-------|------------------|
| 0     | 0%    | EXT1             |
| 1     | 100%  | EXT2             |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoFaultCode***Definition:*

Network output SNVT\_switch nvoFaultCode

*Explanation:*

This variable provides the current fault (DRIVECOMM) reported by host.

*Valid range:*

| Value       | Fault code           |
|-------------|----------------------|
| 0 ... 65535 | DRIVECOMM fault code |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoFaulted***Definition:*

Network output SNVT\_switch nvoFaulted

*Explanation:*

This variable provides information on the fault status of the host.

*Valid range:*

| State | Value | Status      |
|-------|-------|-------------|
| 0     | 0.0   | Not faulted |
| 1     | 100.0 | Faulted     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoForward***Definition:*

Network output SNVT\_switch nvoForward

*Explanation:*

This variable indicates that the drive is running in the forward direction.

*Valid range:*

| State | Value  | Status      |
|-------|--------|-------------|
| 0     | 0.0%   | Not forward |
| 1     | 100.0% | Forward     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoFreqAct***Definition:*

Network output SNVT\_freq\_hz nvoFreqAct

*Explanation:*

This variable shows output frequency in Hz.

*Valid range:*

| Value | Frequency |
|-------|-----------|
| 0     | 0.0 Hz    |
| 65535 | 6553.5 Hz |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoLimit***Definition:*

Network output SNVT\_switch nvoLimit

*Explanation:*

This variable indicates that the drive has reached a speed, frequency or torque limit.

*Valid range:*

| State | Value  | Status        |
|-------|--------|---------------|
| 0     | 0.0%   | Within limits |
| 1     | 100.0% | Out of limits |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoLineUVVolt, nvoLineVWVolt, nvoLineWUVolt***Definition:*

Network output SNVT\_volt nvoLineUVVolt  
Network output SNVT\_volt nvoLineVWVolt  
Network output SNVT\_volt nvoLineWUVolt

*Explanation:*

Each variable provides the corresponding line-to-line input voltage in volts.

*Valid range:*

| Value  | Voltage  |
|--------|----------|
| 0      | 0.0 V    |
| 3276.6 | 3276.6 V |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoLineVolt***Definition:*

Network output SNVT\_volt nvoLineVolt

*Explanation:*

This variable provides the drive input voltage in volts.

*Valid range:*

| Value  | Voltage  |
|--------|----------|
| 0      | 0.0 V    |
| 3276.6 | 3276.6 V |
| 0x7FFF | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoLocRemStat***Definition:*

Network output SNVT\_switch nvoLocRemStat

*Explanation:*

This output variable shows if the drive is in the Local or Remote control mode.

*Valid range:*

| State | Value | Control mode |
|-------|-------|--------------|
| 0     | 0%    | Local        |
| 1     | 100%  | Remote       |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoMtrRevCntM***Definition:*

Network output SNVT\_count\_32 nvoMtrRevCntM

*Explanation:*

This variable shows accumulated revolutions of the motor in millions.

*Valid range:*

| Value      | Motor revolutions     |
|------------|-----------------------|
| 0          | 0                     |
| 1          | 1,000,000             |
| 4294967295 | 4,294,967,295,000,000 |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoMtrTemp***Definition:*

Network output SNVT\_temp\_p nvoMtrTemp

*Explanation:*

This variable provides the motor temperature in degrees C.

*Valid range:*

| Value  | Temperature |
|--------|-------------|
| -27317 | -273.17 °C  |
| 0      | 0 °C        |
| 32767  | 327.67 °C   |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoNetCtrl***Definition:*

Network output SNVT\_switch nvoNetCtrl

*Explanation:*

This variable indicates that the LONWORKS<sup>®</sup> network is selected as the active control source.

*Valid range:*

| State | Value  | Control source |
|-------|--------|----------------|
| 0     | 0.0%   | Other          |
| 1     | 100.0% | Network        |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoNetRef1***Definition:*

Network output SNVT\_switch nvoNetRef1

*Explanation:*

This variable indicates that the LONWORKS<sup>®</sup> network is selected as the active reference REF1 source.

*Valid range:*

| State | Value  | Reference Source |
|-------|--------|------------------|
| 0     | 0.0%   | Other            |
| 1     | 100.0% | Network          |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoNetRef2***Definition:*

Network output SNVT\_switch nvoNetRef2

*Explanation:*

This variable indicates that the LONWORKS<sup>®</sup> network is selected as the active reference REF2 source.

*Valid range:*

| State | Value  | Reference Source |
|-------|--------|------------------|
| 0     | 0.0%   | Other            |
| 1     | 100.0% | Network          |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoParReadValue***Definition:*

Network output SNVT\_count nvoParReadValue

*Explanation:*

This variable contains the value read from the parameter set by [UCPTparReadIndex / nciParReadIndex](#).

*Valid range:*

| Value       | Parameter value     |
|-------------|---------------------|
| 0 ... 65534 | Parameter-dependent |
| 0xFFFF      | Invalid             |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoPid1Dev, nvoPid2Dev***Definition:*

Network output SNVT\_lev\_percent nvoPID1Dev

Network output SNVT\_lev\_percent nvoPID2Dev

*Explanation:*

This variable shows the PID controller deviation values.

*Valid range:*

| Value  | Feedback |
|--------|----------|
| -32768 | -163.84% |
| 32766  | 163.83%  |
| 32767  | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoPid1Fbk, nvoPid2Fbk***Definition:*

Network output SNVT\_lev\_percent nvoPid1Fbk

Network output SNVT\_lev\_percent nvoPid2Fbk

*Explanation:*

This variable shows the PID controller feedback values.

*Valid range:*

| Value  | Feedback |
|--------|----------|
| -32768 | -163.84% |
| 32766  | 163.83%  |
| 32767  | Invalid  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoReady***Definition:*

Network output SNVT\_switch nvoReady

*Explanation:*

This variable indicates that the drive is ready to receive a start command.

*Valid range:*

| State | Value  | Status    |
|-------|--------|-----------|
| 0     | 0.0%   | Not ready |
| 1     | 100.0% | Ready     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoReverse***Definition:*

Network output SNVT\_switch nvoReverse

*Explanation:*

This variable indicates that the drive is running in the reverse direction.

*Valid range:*

| State | Value  | Status      |
|-------|--------|-------------|
| 0     | 0.0%   | Not reverse |
| 1     | 100.0% | Reverse     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoRunning***Definition:*

Network output SNVT\_switch nvoRunning

*Explanation:*

This variable indicates the motor running state.

*Valid range:*

| State | Value  | Status      |
|-------|--------|-------------|
| 0     | 0.0%   | Not running |
| 1     | 100.0% | Running     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoSpeedActRpm***Definition:*

Network output SNVT\_count\_inc nvoSpeedActRpm

*Explanation:*

This variable shows output speed in rpm.

*Valid range:*

| Value  | Speed      |
|--------|------------|
| -32768 | -32767 rpm |
| 32767  | 32767 rpm  |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoStarted***Definition:*

Network output SNVT\_switch nvoStarted

*Explanation:*

This variable indicates that the drive has received a start command.

*Valid range:*

| State | Value  | Status      |
|-------|--------|-------------|
| 0     | 0.0%   | Not started |
| 1     | 100.0% | Started     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

**nvoStatus***Definition:*

Network output SNVT\_obj\_status nvoStatus

*Explanation:*

This variable reports the node object status.

*Valid range:*

| Bit settings     | Description/Function       |
|------------------|----------------------------|
| invalid_id       | Invalid node ID requested  |
| report_mask      | Reporting supported fields |
| disabled         | RQ_DISABLE active          |
| electrical_fault | Fault bit in Status word   |
| in_alarm         | Alarm bit in Status word   |

**nvoZeroSpeed***Definition:*

Network output SNVT\_switch nvoZeroSpeed

*Explanation:*

This variable indicates that the drive is at zero speed.

*Valid range:*

| State | Value  | Status            |
|-------|--------|-------------------|
| 0     | 0.0%   | Not at zero speed |
| 1     | 100.0% | At zero speed     |

*When transmitted:*

This value is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as specified by the Maximum Sent Time (nciVsmdSndHrtBt) configuration value.

*Update rate:*

This value will be updated no faster than the Minimum Send Time (nciVsmdMinOutTm) configuration value, if used.

## Supported network configuration properties

All configuration properties are defined as configuration network variables in this product. Some network management tools will show these variables as SCPT/UCPT configuration properties and some as network configuration variables. The difference in the network management tools only affects the presentation of the variables but not their functionality.

| Name                                                     | Description                                                                                                                                                                                                                                              | More info on page   |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <a href="#"><i>SCPTdefScale / nciDrvSpeedScale</i></a>   | Default value for <a href="#"><i>nviDrvSpeedScale</i></a>                                                                                                                                                                                                | <a href="#">109</a> |
| <a href="#"><i>SCPTlocation / nciLocation</i></a>        | Location label                                                                                                                                                                                                                                           | <a href="#">109</a> |
| <a href="#"><i>SCPTmaxRcvTime / nciAnlgRcvHrtBt</i></a>  | Defines the maximum time after the last update of <a href="#"><i>nviAnlgCmd1 ... nviAnlgCmd8</i></a> .                                                                                                                                                   | <a href="#">110</a> |
| <a href="#"><i>SCPTmaxRcvTime / nciDigRcvHrtBt</i></a>   | Defines the maximum time after the last update of <a href="#"><i>nviDigCmd1 ... nviDigCmd12</i></a> .                                                                                                                                                    | <a href="#">111</a> |
| <a href="#"><i>SCPTmaxRcvTime / nciVsmdRcvHrtBt</i></a>  | Defines the maximum allowed update interval for input network variables <a href="#"><i>nviDrvSpeedStpt</i></a> and <a href="#"><i>nviDrvSpeedScale</i></a>                                                                                               | <a href="#">112</a> |
| <a href="#"><i>SCPTmaxSendTime / nciAnlgSndHrtBt</i></a> | Maximum time that expires before network variables <a href="#"><i>nvoAnlgSts1 ... nvoAnlgSts8</i></a> , <a href="#"><i>nvoAnlgInput1 ... nvoAnlgInput8</i></a> , <a href="#"><i>nvoAnlgOutput1 ... nvoAnlgOutput8</i></a> will automatically be updated. | <a href="#">113</a> |
| <a href="#"><i>SCPTmaxSendTime / nciDigSndHrtBt</i></a>  | Maximum time that expires before network variables <a href="#"><i>nvoDigSts1 ... nvoDigSts12</i></a> , <a href="#"><i>nvoDigInput1 ... nvoDigInput12</i></a> , <a href="#"><i>nvoDigOutput1 ... nvoDigOutput12</i></a> will automatically be updated.    | <a href="#">114</a> |
| <a href="#"><i>SCPTmaxSendTime / nciVsmdSndHrtBt</i></a> | Maximum send time for the variable <a href="#"><i>nvoDrvSpeed</i></a>                                                                                                                                                                                    | <a href="#">115</a> |
| <a href="#"><i>SCPTmaxSetpoint / nciMaxSpeed</i></a>     | Defines the maximum motor speed                                                                                                                                                                                                                          | <a href="#">116</a> |

| Name                                                        | Description                                                                                                                                                                                                      | More info on page   |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <a href="#"><i>SCPTminSendTime / nciAnlgMinOutTm</i></a>    | Defines the minimum wait time before network output variables <a href="#"><i>nvoAnlgSts1 ... nvoAnlgSts8, nvoAnlgInput1 ... nvoAnlgInput8, nvoAnlgOutput1 ... nvoAnlgOutput8</i></a> can be propagated (resent). | <a href="#">117</a> |
| <a href="#"><i>SCPTminSendTime / nciDigMinOutTm</i></a>     | Defines the minimum wait time before network output variables <a href="#"><i>nvoDigSts1 ... nvoDigSts12, nvoDigInput1 ... nvoDigInput12, nvoDigOutput1 ... nvoDigOutput12</i></a> can be propagated (resent).    | <a href="#">118</a> |
| <a href="#"><i>SCPTminSendTime / nciVsmdMinOutTm</i></a>    | Defines the minimum wait time before the network output variables can be propagated (resent)                                                                                                                     | <a href="#">119</a> |
| <a href="#"><i>SCPTminSetpoint / nciMinSpeed</i></a>        | Defines the minimum speed of the motor as a percentage of the nominal speed defined by the Nominal Speed ( <a href="#"><i>SCPTnomRPM / nciNmISpeed</i></a> ) configuration value                                 | <a href="#">120</a> |
| <a href="#"><i>SCPTnomFreq / nciNmIFreq</i></a>             | Sets the nominal frequency of the motor                                                                                                                                                                          | <a href="#">121</a> |
| <a href="#"><i>SCPTnomRPM / nciNmISpeed</i></a>             | Sets the nominal motor speed                                                                                                                                                                                     | <a href="#">122</a> |
| <a href="#"><i>SCPTrampDownTm / nciRampDownTm</i></a>       | Sets the ramp down time of the drive                                                                                                                                                                             | <a href="#">123</a> |
| <a href="#"><i>SCPTrampUpTm / nciRampUpTm</i></a>           | Sets the ramp up time of the drive                                                                                                                                                                               | <a href="#">123</a> |
| <a href="#"><i>UCPTbypRunDelay / nciBypRunDelay</i></a>     | Additional pick-up delay for bypass contactor *                                                                                                                                                                  | <a href="#">124</a> |
| <a href="#"><i>UCPTdrvCurntLimit / nciDrvCurntLimit</i></a> | Drive current limit                                                                                                                                                                                              | <a href="#">124</a> |
| <a href="#"><i>UCPTparReadIndex / nciParReadIndex</i></a>   | Chooses the parameter value to be read from the drive                                                                                                                                                            | <a href="#">125</a> |

| Name                                                                                                  | Description                                                                                                | More info on page   |
|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------|
| <a href="#"><i>UCPTparValue / nciParWriteValue</i></a>                                                | Value input for the user selected parameter<br><a href="#"><i>UCPTparWriteIndex / nciParWriteIndex</i></a> | <a href="#">125</a> |
| <a href="#"><i>UCPTparWriteIndex / nciParWriteIndex</i></a>                                           | Defines the parameter value to be written to the drive                                                     | <a href="#">126</a> |
| <a href="#"><i>UCPTpid1DerFiltTime / nciPid1DerFiltTi, UCPTpid2DerFiltTime / nciPid2DerFiltTi</i></a> | PID controller derivation filter times in seconds                                                          | <a href="#">127</a> |
| <a href="#"><i>UCPTpid1DerTime / nciPid1DerTime, UCPTpid2DerTime / nciPid2DerTime</i></a>             | PID controller derivation times in seconds                                                                 | <a href="#">128</a> |
| <a href="#"><i>UCPTpid1Gain / nciPid1Gain, UCPTpid2Gain / nciPid2Gain</i></a>                         | PID controller gain values in percent                                                                      | <a href="#">129</a> |
| <a href="#"><i>UCPTpid1IntTime / nciPid1IntTime, UCPTpid2IntTime / nciPid2IntTime</i></a>             | PID controller integration times in seconds                                                                | <a href="#">130</a> |
| <a href="#"><i>UCPTstopLevel / nciStopLevel</i></a>                                                   | Stop level value in the ramp stop mode                                                                     | <a href="#">131</a> |
| <a href="#"><i>UCPTstopMode / nciStopMode</i></a>                                                     | Selects between coast and ramp stop                                                                        | <a href="#">132</a> |

\* not for generic drive use

## SCPTdefScale / nciDrvSpeedScale

### Definition:

Network input config SNVT\_lev\_percent nciDrvSpeedScale

### Explanation:

This variable shows the default value for [nviDrvSpeedScale](#).

### Valid range:

| Value  | Speed scaling |
|--------|---------------|
| -32768 | -163.840%     |
| 32766  | 163.830%      |
| 32767  | Invalid       |

### Default value:

The default value is 100%.

## SCPTlocation / nciLocation

### Definition:

Network input config SNVT\_str\_asc nciLocation

### Explanation:

This variable provides Location Label; used to provide more descriptive physical location information than can be provided by the Neuron Chip's 6-byte location string.

### Valid range:

Any NULL terminated ASCII string of 31 characters.

### Default value:

The default value is empty spaces.

**SCPTmaxRcvTime / nciAnlgRcvHrtBt***Definition:*

Network config input SNVT\_time\_sec nciAnlgRcvHrtBt

*Explanation:*

This variable controls the maximum time that elapses after the last update of *nviAnlgCmd1 ... nviAnlgCmd8* before the default values are used.

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | Disabled |
| 1     | 0.1 s    |
| 65534 | 6553.4 s |
| 65535 | Invalid  |

*Default value:*

The default value is 0 (no failure detect).

**SCPTmaxRcvTime / nciDigRcvHrtBt***Definition:*

Network config input SNVT\_time\_sec nciDigRcvHrtBt

*Explanation:*

This variable controls the maximum time that elapses after the last update of *nviDigCmd1 ... nviDigCmd12* before the default values are used.

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | Disabled |
| 1     | 0.1 s    |
| 65534 | 6553.4 s |
| 65535 | Invalid  |

*Default value:*

The default value is 0 (no failure detect).

**SCPTmaxRcvTime / nciVsmdRcvHrtBt***Definition:*

Network config input SNVT\_time\_sec nciVsmdRcvHrtBt

*Explanation:*

This variable controls the maximum time that elapses after the last update of the network variables before the VSMD object starts to use its default values.

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | Disabled |
| 1     | 0.1 s    |
| 65534 | 6553.4 s |
| 65535 | Invalid  |

*Default value:*

The default value is 0 (no failure detect).

**SCPTmaxSendTime / nciAnlgSndHrtBt***Definition:*

Network config input SNVT\_time\_sec nciAnlgSndHrtBt

*Explanation:*

This variable defines the maximum period of time that expires before network variables *nvoAnlgSts1 ... nvoAnlgSts8*, *nvoAnlgInput1 ... nvoAnlgInput8*, *nvoAnlgOutput1 ... nvoAnlgOutput8* will automatically be updated.

*Valid range:*

| Value | Time                |
|-------|---------------------|
| 0     | No automatic update |
| 1     | 0.1 s               |
| 65534 | 6553.4 s            |
| 65535 | Invalid             |

*Default value:*

The default value is 0 (no automatic update).

**SCPTmaxSendTime / nciDigSndHrtBt***Definition:*

Network config input SNVT\_time\_sec nciDigSndHrtBt

*Explanation:*

This variable defines the maximum period of time that expires before network variables *nvoDigSts1 ... nvoDigSts12*, *nvoDigInput1 ... nvoDigInput12*, *nvoDigOutput1 ... nvoDigOutput12* will automatically be updated.

*Valid range:*

| Value | Time                |
|-------|---------------------|
| 0     | No automatic update |
| 1     | 0.1 s               |
| 65534 | 6553.4 s            |
| 65535 | Invalid             |

*Default value:*

The default value is 0 (no automatic update).

**SCPTmaxSendTime / nciVsmdSndHrtBt***Definition:*

Network config input SNVT\_time\_sec nciVsmdSndHrtBt

*Explanation:*

This variable defines the maximum period of time that expires before the network variables will automatically be updated.

*Valid range:*

| Value | Time                |
|-------|---------------------|
| 0     | No automatic update |
| 1     | 0.1 s               |
| 65534 | 6553.4 s            |
| 65535 | Invalid             |

*Default value:*

The default value is 300 (automatic update every 5 minutes).

**SCPTmaxSetpoint / nciMaxSpeed***Definition:*

Network config input SNVT\_lev\_percent nciMaxSpeed

*Explanation:*

This variable is used to define the maximum motor speed. The value is entered as a percent of nominal speed, as defined by the Nominal Speed ([SCPTnomRPM / nciNmISpeed](#)) configuration value.

The value of the maximum speed must be defined so that  
 $-163.840 \leq \text{minimum speed} \leq \text{maximum speed} \leq 163.830$

*Valid range:*

| Value  | Maximum speed |
|--------|---------------|
| -32768 | -163.840%     |
| 32766  | 163.830%      |
| 32767  | Invalid       |

*Default value:*

The default value is read from the host on power-up.

**SCPTminSendTime / nciAnlgMinOutTm***Definition:*

Network config input SNVT\_time\_sec nciAnlgMinOutTm

*Explanation:*

This variable defines the minimum wait time before network output variables *nvoAnlgSts1 ... nvoAnlgSts8, nvoAnlgInput1 ... nvoAnlgInput8, nvoAnlgOutput1 ... nvoAnlgOutput8* can be propagated (resent).

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | Disabled |
| 1     | 0.1 s    |
| 65534 | 6553.4 s |
| 65535 | Invalid  |

*Default value:*

The default value is 0.5 s.

**SCPTminSendTime / nciDigMinOutTm***Definition:*

Network config input SNVT\_time\_sec nciDigMinOutTm

*Explanation:*

This variable defines the minimum wait time before network output variables *nvoDigSts1 ... nvoDigSts12, nvoDigInput1 ... nvoDigInput12, nvoDigOutput1 ... nvoDigOutput12* can be propagated (resent).

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | Disabled |
| 1     | 0.1 s    |
| 65534 | 6553.4 s |
| 65535 | Invalid  |

*Default value:*

The default value is 0.5 s.

**SCPTminSendTime / nciVsmdMinOutTm***Definition:*

Network config input SNVT\_time\_sec nciVsmdMinOutTm

*Explanation:*

This variable defines the minimum wait time before the network output variables can be propagated (resent).

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | Disabled |
| 1     | 0.1 s    |
| 65534 | 6553.4 s |
| 65535 | Invalid  |

*Default value:*

The default value is 15 s.

**SCPTminSetpoint / nciMinSpeed***Definition:*

Network config input SNVT\_lev\_percent nciMinSpeed

*Explanation:*

This variable defines the minimum speed of the motor as a percentage of the nominal speed defined by the Nominal Speed ([SCPTnomRPM / nciNmlSpeed](#)) configuration value.

The value of the minimum speed must be defined so that

$-163.840 \leq \text{minimum speed} \leq \text{maximum speed} \leq 163.830$

*Valid range:*

| Value  | Minimum speed |
|--------|---------------|
| -32768 | -163.840%     |
| 32766  | 163.830%      |
| 32767  | Invalid       |

*Default value:*

The default value is read from host on power-up.

**SCPTnomFreq / nciNmlFreq***Definition:*

Network config input SNVT\_freq\_hz nciNmlFreq

*Explanation:*

This variable provides the nominal frequency of the motor in Hz.

*Valid range:*

| <b>Value</b> | <b>Nominal frequency</b> |
|--------------|--------------------------|
| 0            | 0 Hz                     |
| 100          | 100 Hz                   |

*Default value:*

The default value is read from the host on power-up/refresh.

**SCPTnomRPM / nciNmISpeed***Definition:*

Network config input SNVT\_rpm nciNmISpeed

*Explanation:*

This variable provides the nominal motor speed in rpm. This value is necessary to determine the minimum and maximum speed for the motor, based on the configuration properties

[\*SCPTminSetpoint / nciMinSpeed\*](#) and [\*SCPTmaxSetpoint / nciMaxSpeed\*](#).

*Valid range:*

| Value | Nominal speed |
|-------|---------------|
| 0     | 0 rpm         |
| 65534 | 65534 rpm     |
| 65535 | Invalid       |

*Default value:*

The default is read from the host on power-up/refresh.

**SCPTrampDownTm / nciRampDownTm***Definition:*

Network config input SNVT\_time\_sec nciRampDownTm

*Explanation:*

This variable provides the ramp down time of the motor.

*Valid range:*

| Value | Ramp down time |
|-------|----------------|
| 0     | 0.0 s          |
| 65534 | 6553.4 s       |
| 65535 | Invalid        |

*Default value:*

The default value is read from the host on power-up/refresh.

**SCPTrampUpTm / nciRampUpTm***Definition:*

Network config input SNVT\_time\_sec nciRampUpTm

*Explanation:*

This variable provides the ramp up time of the motor.

*Valid range:*

| Value | Ramp up time |
|-------|--------------|
| 0     | 0.0 s        |
| 65534 | 6553.4 s     |
| 65535 | Invalid      |

*Default value:*

The default is read from the host on power-up/refresh.

**UCPTbypRunDelay / nciBypRunDelay***Definition:*

Network input config SNVT\_time\_sec nciBypRunDelay

*Explanation:*

This sets the additional pick-up delay for the bypass contactor.

*Valid Range:*

| Value | Pick-up delay |
|-------|---------------|
| 0     | Disabled      |
| 1     | 0.1 s         |
| 65534 | 6553.4 s      |
| 65535 | Invalid       |

*Default Value:*

The default is read from the host on power-up/refresh.

**Note:** This variable is not meant for generic drive use.

**UCPTdrvCurntLimit / nciDrvCurntLimit***Definition:*

Network input config SNVT\_amp nciDrvCurntLimit

*Explanation:*

This variable sets the drive output current limit in amperes.

*Valid Range:*

| Value  | Current limit |
|--------|---------------|
| 0      | 0.0 A         |
| 32766  | 3276.6 A      |
| 0x7FFF | Invalid       |

*Default Value:*

The default value is read from the host on power-on/refresh.

**UCPTparReadIndex / nciParReadIndex***Definition:*

Network config input SNVT\_count nciParReadIndex

*Explanation:*

This variable contains the parameter to read for [nvoParReadValue](#).

*Valid range:*

| Value       | Parameter value     |
|-------------|---------------------|
| 0 ... 65535 | Parameter-dependent |

*Default value:*

The default value is 0.

**UCPTparValue / nciParWriteValue***Definition:*

Network config input SNVT\_count\_inc nciParWriteValue

*Explanation:*

This variable contains the value to be written to the parameter set by [UCPTparWriteIndex / nciParWriteIndex](#).

*Valid range:*

| Value       | Parameter value     |
|-------------|---------------------|
| 0 ... 65534 | Parameter-dependent |
| 0xFFFF      | Invalid             |

*Default value:*

The default value is 0.

**UCPTparWriteIndex / nciParWriteIndex***Definition:*

Network config input SNVT\_count nciParWriteIndex

*Explanation:*

This variable contains the parameter to write for *UCPTparValue* / *nciParWriteValue*.

*Valid range:*

| Value       | Parameter value     |
|-------------|---------------------|
| 0 ... 65535 | Parameter-dependent |

*Default value:*

The default value is 0.

**UCPTpid1DerFiltTime / nciPid1DerFiltTi,  
UCPTpid2DerFiltTime / nciPid2DerFiltTi***Definition:*

Network config input SNVT\_time\_sec nciPid1DerFiltTi

Network config input SNVT\_time\_sec nciPid2DerFiltTi

*Explanation:*

This variable shows the PID controller derivation filter times in seconds.

*Valid range:*

| Value | Filter time |
|-------|-------------|
| 0     | 0 s         |
| 1     | 0.1 s       |
| 65535 | 6553.5 s    |
| 65537 | Invalid     |

*Default value:*

The default value is read from the host on power-on/refresh.

**UCPTpid1DerTime / nciPid1DerTime,  
UCPTpid2DerTime / nciPid2DerTime***Definition:*

Network config input SNVT\_time\_sec nciPid1DerTime

Network config input SNVT\_time\_sec nciPid2DerTime

*Explanation:*

This variable shows the PID controller derivation times in seconds.

*Valid range:*

| Value | Derivation time |
|-------|-----------------|
| 0     | 0 s             |
| 1     | 0.1 s           |
| 65535 | 6553.5 s        |
| 65537 | Invalid         |

*Default value:*

The default value is read from the host on power-on/refresh.

**UCPTpid1Gain / nciPid1Gain, UCPTpid2Gain / nciPid2Gain***Definition:*

Network config input SNVT\_lev\_percent nciPid1Gain

Network config input SNVT\_lev\_percent nciPid2Gain

*Explanation:*

This variable provides the PID controller gain values.

*Valid Range:*

| Value  | Gain     |
|--------|----------|
| -32768 | -163.84% |
| 32766  | 163.83%  |
| 32767  | Invalid  |

*Default Value:*

The default is read from the host on power-on/refresh.

**UCPTpid1IntTime / nciPid1IntTime,  
UCPTpid2IntTime / nciPid2IntTime***Definition:*

Network config input SNVT\_time\_sec nciPid1IntTime

Network config input SNVT\_time\_sec nciPid2IntTime

*Explanation:*

This variable shows the PID controller integration times in seconds.

*Valid range:*

| Value | Time     |
|-------|----------|
| 0     | 0 s      |
| 1     | 0.1 s    |
| 65535 | 6553.5 s |
| 65537 | Invalid  |

*Default value:*

The default is read from the host on power-on/refresh.

**UCPTstopLevel / nciStopLevel***Definition:*

Network config input SNVT\_lev\_percent nciStopLevel

*Explanation:*

This variable provides the stop level value in the ramp stop mode. When the speed of the drive reaches this level, a coast stop is performed. The value corresponds to *nvoDrvSpeed*, ie, the value of 5% causes a coast stop when *nvoDrvSpeed* reaches 5%.

*Valid range:*

| Value  | Stop level |
|--------|------------|
| -32768 | -163.84%   |
| 32766  | 163.83%    |
| 32767  | Invalid    |

*Default value:*

The default value is 5%.

**UCPTstopMode / nciStopMode***Definition:*

Network config input SNVT\_switch nciStopMode

*Explanation:*

This variable is used to select between coast and ramp stop.

*Valid range:*

| State | Value | Stop mode |
|-------|-------|-----------|
| 0     | 0.0   | Coast     |
| 1     | 100   | Ramp      |

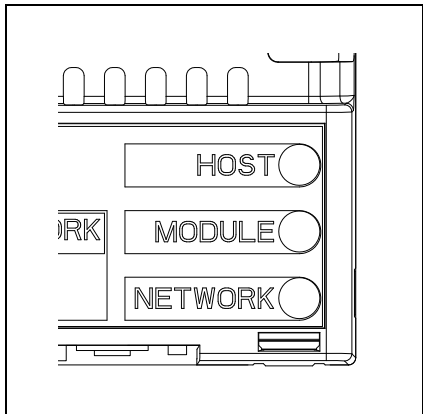
*Default value:*

The default value is Coast (state 0, value 0.0).

# Diagnostics

## LED indications

The adapter module is equipped with three bicolour diagnostic LEDs. The LEDs are described below.



| Name    | Colour          | Function                                                          |
|---------|-----------------|-------------------------------------------------------------------|
| HOST    | Green           | Connection to host OK                                             |
|         | Flashing red    | Establishing communication to host, or communication to host lost |
| MODULE  | Off             | Off/Initializing/Invalid                                          |
|         | Red             | Unconfigured (with or without application)                        |
|         | Yellow          | Configured – offline (hard, soft or bypass)                       |
|         | Flashing yellow | Configured – online (with receive timeout)                        |
|         | Flashing green  | Wink                                                              |
|         | Green           | Configured – online                                               |
| NETWORK | Yellow          | Transmitting                                                      |
|         | Green           | Receiving                                                         |
|         | Off             | Inactive                                                          |

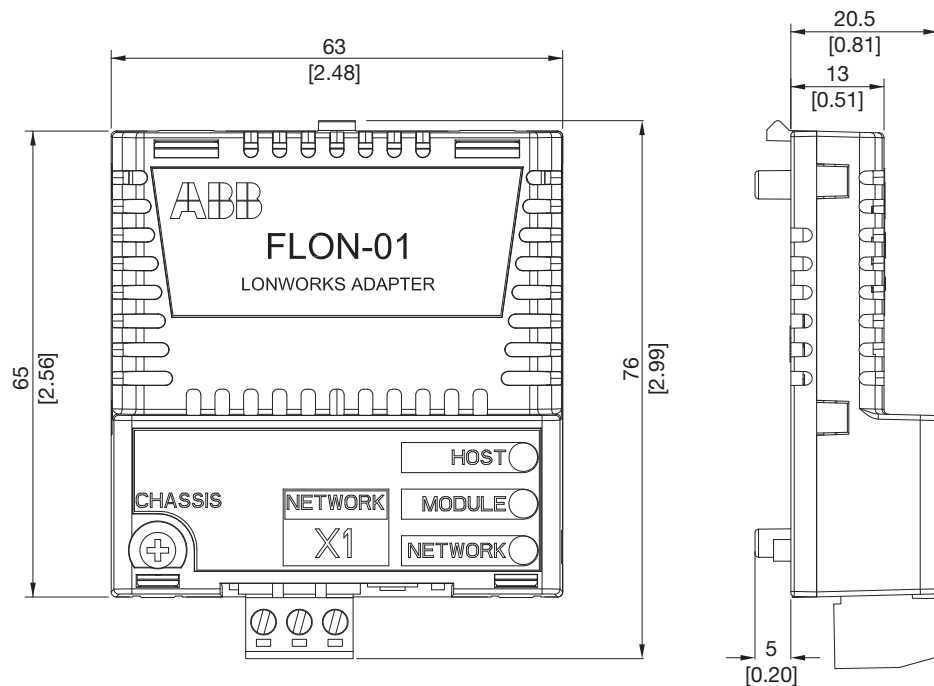


# Technical data

---

## FLON-01

### Enclosure:



**Mounting:** Into the option slot on the drive

**Degree of protection:** IP20

**Ambient conditions:** The applicable ambient conditions specified for the drive in its manuals are in effect.

**Indicators:** Three bicolour LEDs (HOST, MODULE, NETWORK)

### Connectors:

- 20-pin connector to drive (X2)
- 3-pole detachable screw terminal block (X1)

**Power supply:**

- +3.3 V  $\pm 5\%$  max 450 mA (supplied by the drive)

**General:**

- Estimated min. lifetime: 100 000 h
- All materials UL/CSA-approved
- Complies with EMC standards EN 61000-6-4:2001 and EN 61800-3
- Bus interface functionally isolated from drive

**LONWORKS® network****FLON-01 compatible devices:**

All devices equipped with FT-X1 and FTT-10A compatible transceivers

**Size of the network:**

32385 nodes divided into 127 nodes / subnet with 255 subnets / domain

**Medium:**

- Termination: 105  $\Omega$  / 52.5  $\Omega$ , depending on the network topology. See [Bus termination](#) on page 22.
- Cable specifications: See the following tables.

| <b>LONWORKS® network cable specifications</b>           |                                                                 |                                                            |                                                                                                                                                                  |                                                      |
|---------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
|                                                         | <b>Control /<br/>signalling<br/>grade</b><br>16 AWG<br>(1.3 mm) | <b>General<br/>purpose<br/>grade</b><br>16 AWG<br>(1.3 mm) | <b>Data grade<br/>level 4</b><br>22 AWG<br>(0.65 mm)                                                                                                             | <b>JY (St) Y<br/>2×2×0.8</b><br>20.4 AWG<br>(0.8 mm) |
| <b>Max DC resistance<br/>at 20 °C loop</b>              | 28.2 Ω/km                                                       | 28.2 Ω/km                                                  | 118 Ω/km                                                                                                                                                         | 74.0 Ω/km                                            |
| <b>Max DC resistance<br/>unbalance</b>                  |                                                                 |                                                            | 5%                                                                                                                                                               |                                                      |
| <b>Max mutual<br/>capacitance<br/>of a pair</b>         | 58 nF/km                                                        | 74 nF/km                                                   | 56 nF/km                                                                                                                                                         | 100 nF/km                                            |
| <b>Max pair-to-ground<br/>capacitance<br/>unbalance</b> |                                                                 |                                                            | 3.28 nF/km                                                                                                                                                       |                                                      |
| <b>Nominal<br/>impedance</b>                            | 95 Ω at<br>1.0 MHz                                              | 100 Ω at<br>1.0 MHz                                        | 102 Ω ±15% at<br>772 kHz<br>100 Ω ±15% at 1, 4,<br>8, 10, 16 and 20 MHz                                                                                          |                                                      |
| <b>Max attenuation<br/>at 20 °C</b>                     |                                                                 |                                                            | 15 dB/km at 772 kHz<br>18 dB/km at 1.0 MHz<br>36 dB/km at 4.0 MHz<br>49 dB/km at 8.0 MHz<br>56 dB/km at 10.0 MHz<br>72 dB/km at 16.0 MHz<br>79 dB/km at 20.0 MHz |                                                      |
| <b>Pair twists<br/>per metre</b>                        | 20<br>(nominal)                                                 | 20<br>(minimum)                                            |                                                                                                                                                                  | 5<br>(minimum)                                       |

| <b>LONWORKS® network cable specifications</b> |                                                                                          |                                                                                        |                                                                 |                                                                           |
|-----------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------|
|                                               | <b>Control / signalling grade</b><br>16 AWG<br>(1.3 mm)                                  | <b>General purpose grade</b><br>16 AWG<br>(1.3 mm)                                     | <b>Data grade level 4</b><br>22 AWG<br>(0.65 mm)                | <b>JY (St) Y 2×2×0.8</b><br>20.4 AWG<br>(0.8 mm)                          |
| <b>Cable parameters</b>                       | single twisted pair stranded 19/29 unshielded Tefzel Insulation & Jacket High 150 °C max | single twisted pair stranded 19/29 unshielded PVC Insulation & Jacket Medium 80 °C max | twisted pair, single or multiple typically solid and unshielded | wire pair: red/black per DIN VDE 0815 4-wire helical twist solid shielded |

| <b>LONWORKS® network, maximum bus lengths</b> |                              |                                                         |                                                    |                                                  |                                                  |
|-----------------------------------------------|------------------------------|---------------------------------------------------------|----------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
|                                               |                              | <b>Control / signalling grade</b><br>16 AWG<br>(1.3 mm) | <b>General purpose grade</b><br>16 AWG<br>(1.3 mm) | <b>Data grade level 4</b><br>22 AWG<br>(0.65 mm) | <b>JY (St) Y 2×2×0.8</b><br>20.4 AWG<br>(0.8 mm) |
| <b>Doubly terminated bus topology</b>         | <b>Bus length</b>            | 2200 m                                                  | 2200 m                                             | 1150 m                                           | 750 m                                            |
|                                               | <b>Stub length</b>           | 3 m                                                     | 3 m                                                | 3 m                                              | 3 m                                              |
| <b>Singly-terminated free topology</b>        | <b>Node-to-node distance</b> | 500 m                                                   | 400 m                                              | 400 m                                            | 320 m                                            |
|                                               | <b>Total wire length</b>     | 500 m                                                   | 500 m                                              | 500 m                                            | 500 m                                            |

**Topology:**

Supports free topology wiring, and will accommodate bus, star, loop, or any combination of these topologies

**Serial communication type:**

Asynchronous, half duplex

**Transfer rate:**

78 kbit/s

**Protocol:**

LonTalk®

**Documents:**

LONMARK® Layers 1-6 Interoperability Guidelines, version 3.4



# Definitions and abbreviations

---

## *Communication Module*

Communication Module is a parameter name/parameter selection name for a device (eg, a fieldbus adapter) through which the drive is connected to an external serial communication network (eg, a fieldbus). The communication with the communication module is activated by a parameter.

## *CRC*

Cyclic Redundancy Check

## *FLON-01*

A device through which an ABB drive is connected to a LONWORKS® network.

## *Functional profile*

Functional profiles may contain one or more objects that interact to perform the required profile defined operability. The Variable Speed Motor Drive Profile contains the general LONMARK® Node Object, application-specific Variable Speed Motor Drive Object, and the Open Loop Sensor and Open Loop Actuator objects.

## *LonMark®*

Products that conform to LONMARK® Interoperability Guidelines, defined by the LONMARK® Interoperability Association, are eligible to carry the LONMARK® logo.

## *LonTalk®*

The communication protocol in LONWORKS® networks

## *LSB*

Least significant bit

## *MSB*

Most significant bit

*nci*

Network configuration variable

*Neuron® ID*

Every LONWORKS® device or – as synonym – node must have a unique ID. This is called the Neuron® ID. This ID is, on Neuron® Chip-based nodes, stored in the chip itself and cannot be changed.

*nv*

Network variable

*nvi*

Input network variable

*nvo*

Output network variable

*Object*

An object is a set of one or more network variables implemented as SNVTs with semantic definitions relating the behaviour of the object to the network variable values, in addition to a set of configuration properties. For example, the Variable Speed Motor Drive Object and the Node Object represent two types of objects.

*Parameter*

A parameter is an operating instruction for the drive. Parameters can be read and programmed by using the drive control panel, or through the adapter module.

*Service Pin*

The Service Pin is used in installing the node. Pressing the Service Pin causes the LONWORKS® node to send the so-called Service Pin Message which includes, among other things, the Neuron® ID. This informs the network or installation tool about the node. Holding the Service Pin for more than 10 seconds forces the module to "Go Unconfigured".

*SNVT*

Standard Network Variable Type

*UCPT*

User Configuration Property Type



## APPENDIX: Compatibility table

---

### Supported network variables in alphabetical order

The following table lists the network variables that are used with the drives compatible with the adapter module.

**Note:** Bypass Firmware version (bypass parameter 3301) 1.01B or later is required with E-Clipse + ACH550.

| Network variable | E-Clipse + ACH550 | ACS355 | ACS850/ACQ810 |
|------------------|-------------------|--------|---------------|
| nciAnlgMinOutTm  | x                 |        | x             |
| nciAnlgRcvHrtBt  | x                 |        | x             |
| nciAnlgSndHrtBt  | x                 |        | x             |
| nciBypRunDelay   | x                 |        |               |
| nciDigMinOutTm   | x                 |        | x             |
| nciDigRcvHrtBt   | x                 |        | x             |
| nciDigSndHrtBt   | x                 |        | x             |
| nciDrvCurmtLimit | x                 |        | x             |
| nciDrvSpeedScale | x                 | x      | x             |
| nciLocation      | x                 | x      | x             |
| nciMaxSpeed      | x                 |        | x             |
| nciMinSpeed      | x                 |        | x             |
| nciNmlFreq       | x                 | x      | x             |
| nciNmlSpeed      | x                 | x      | x             |
| nciParReadIndex  | x                 | x      | x             |
| nciParWriteIndex | x                 | x      | x             |
| nciParWriteValue | x                 | x      | x             |
| nciPid1DerFiltTi | x                 |        | x             |
| nciPid1DerTime   | x                 |        | x             |
| nciPid1Gain      | x                 |        | x             |
| nciPid1IntTime   | x                 |        | x             |
| nciPid2DerFiltTi | x                 |        |               |
| nciPid2DerTime   | x                 |        |               |

| Network variable | E-Clipse + ACH550 | ACS355 | ACS850/ACQ810 |
|------------------|-------------------|--------|---------------|
| nciPid2Gain      | x                 |        |               |
| nciPid2IntTime   | x                 |        |               |
| nciRampDownTm    | x                 | x      | x             |
| nciRampUpTm      | x                 | x      | x             |
| nciStopLevel     | x                 | x      | x             |
| nciStopMode      | x                 | x      | x             |
| nciVsmdMinOutTm  | x                 | x      | x             |
| nciVsmdRcvHrtBt  | x                 | x      | x             |
| nciVsmdSndHrtBt  | x                 | x      | x             |
| nviAnlgCmd_1     | x                 |        |               |
| nviAnlgCmd_2     | x                 |        |               |
| nviAnlgCmd_3     | x                 |        |               |
| nviAnlgCmd_4     | x                 |        |               |
| nviAnlgCmd_5     | x                 |        |               |
| nviAnlgCmd_6     | x                 |        |               |
| nviAnlgCmd_7     | x                 |        |               |
| nviAnlgCmd_8     |                   |        |               |
| nviCtlOverrideCm | x                 | x      | x             |
| nviDigCmd_1      | x                 |        |               |
| nviDigCmd_10     | x                 |        |               |
| nviDigCmd_11     | x                 |        |               |
| nviDigCmd_12     | x                 |        |               |
| nviDigCmd_2      | x                 |        |               |
| nviDigCmd_3      | x                 |        |               |
| nviDigCmd_4      | x                 |        |               |
| nviDigCmd_5      | x                 |        |               |
| nviDigCmd_6      | x                 |        |               |
| nviDigCmd_7      | x                 |        |               |
| nviDigCmd_8      | x                 |        |               |
| nviDigCmd_9      | x                 |        |               |
| nviDrvProcStpt   | x                 | x      | x             |
| nviDrvSpeedScale | x                 | x      | x             |
| nviDrvSpeedStpt  | x                 | x      | x             |

| Network variable | E-Clipse + ACH550 | ACS355 | ACS850/ACQ810 |
|------------------|-------------------|--------|---------------|
| nviEmrgOvrd      | x                 | x      | x             |
| nviExt1Ext2Ctrl  | x                 | x      | x             |
| nviLocLock       | x                 | x      |               |
| nviRequest       | x                 | x      | x             |
| nviResetFault    | x                 | x      | x             |
| nviRunEnable     | x                 | x      | x             |
| nviSavePars      | x                 | x      | x             |
| nviStartEnable1  | x                 | x      |               |
| nviStartEnable2  | x                 | x      |               |
| nvoAccelerating  | x                 | x      |               |
| nvoAlarm         | x                 | x      | x             |
| nvoAnlgInput_1   | x                 |        |               |
| nvoAnlgInput_2   | x                 |        |               |
| nvoAnlgInput_3   |                   |        |               |
| nvoAnlgInput_4   |                   |        |               |
| nvoAnlgInput_5   |                   |        |               |
| nvoAnlgInput_6   |                   |        |               |
| nvoAnlgInput_7   |                   |        |               |
| nvoAnlgInput_8   |                   |        |               |
| nvoAnlgOutput_1  | x                 |        |               |
| nvoAnlgOutput_2  | x                 |        |               |
| nvoAnlgOutput_3  |                   |        |               |
| nvoAnlgOutput_4  |                   |        |               |
| nvoAnlgOutput_5  |                   |        |               |
| nvoAnlgOutput_6  |                   |        |               |
| nvoAnlgOutput_7  |                   |        |               |
| nvoAnlgOutput_8  |                   |        |               |
| nvoAnlgSts_1     | x                 |        |               |
| nvoAnlgSts_2     | x                 |        |               |
| nvoAnlgSts_3     | x                 |        |               |
| nvoAnlgSts_4     |                   |        |               |
| nvoAnlgSts_5     |                   |        |               |
| nvoAnlgSts_6     |                   |        |               |

| Network variable | E-Cclipse + ACH550 | ACS355 | ACS850/ACQ810 |
|------------------|--------------------|--------|---------------|
| nvoAnlgSts_7     |                    |        |               |
| nvoAnlgSts_8     |                    |        |               |
| nvoAtReference   | x                  | x      | x             |
| nvoBypKwh_R      | x                  |        |               |
| nvoBypRunHours   | x                  |        |               |
| nvoBypTemp       | x                  |        |               |
| nvoCtlOverrideSt | x                  | x      | x             |
| nvoDecelerating  | x                  | x      |               |
| nvoDigInput_1    | x                  |        |               |
| nvoDigInput_10   | x                  |        |               |
| nvoDigInput_11   | x                  |        |               |
| nvoDigInput_12   | x                  |        |               |
| nvoDigInput_2    | x                  |        |               |
| nvoDigInput_3    | x                  |        |               |
| nvoDigInput_4    | x                  |        |               |
| nvoDigInput_5    | x                  |        |               |
| nvoDigInput_6    | x                  |        |               |
| nvoDigInput_7    | x                  |        |               |
| nvoDigInput_8    | x                  |        |               |
| nvoDigInput_9    | x                  |        |               |
| nvoDigOutput_1   | x                  |        |               |
| nvoDigOutput_10  |                    |        |               |
| nvoDigOutput_11  |                    |        |               |
| nvoDigOutput_12  |                    |        |               |
| nvoDigOutput_2   | x                  |        |               |
| nvoDigOutput_3   | x                  |        |               |
| nvoDigOutput_4   | x                  |        |               |
| nvoDigOutput_5   | x                  |        |               |
| nvoDigOutput_6   | x                  |        |               |
| nvoDigOutput_7   | x                  |        |               |
| nvoDigOutput_8   | x                  |        |               |
| nvoDigOutput_9   |                    |        |               |
| nvoDigSts_1      | x                  |        |               |

| Network variable | E-Clipse + ACH550 | ACS355 | ACS850/ACQ810 |
|------------------|-------------------|--------|---------------|
| nvoDigSts_10     |                   |        |               |
| nvoDigSts_11     |                   |        |               |
| nvoDigSts_12     |                   |        |               |
| nvoDigSts_2      | x                 |        |               |
| nvoDigSts_3      |                   |        |               |
| nvoDigSts_4      |                   |        |               |
| nvoDigSts_5      |                   |        |               |
| nvoDigSts_6      |                   |        |               |
| nvoDigSts_7      |                   |        |               |
| nvoDigSts_8      |                   |        |               |
| nvoDigSts_9      |                   |        |               |
| nvoDrvCurnt      | x                 | x      | x             |
| nvoDrvDCBus      | x                 | x      | x             |
| nvoDrvKwh_NR     | x                 | x      |               |
| nvoDrvKwh_R      | x                 |        | x             |
| nvoDrvPwr        | x                 | x      | x             |
| nvoDrvRunHours   | x                 | x      | x             |
| nvoDrvSpeed      | x                 | x      | x             |
| nvoDrvTemp       | x                 | x      |               |
| nvoDrvTorque     | x                 | x      | x             |
| nvoDrvVolt       | x                 | x      |               |
| nvoEmrgOvrdStat  | x                 | x      | x             |
| nvoEnabled       | x                 | x      | x             |
| nvoExt1Ext2Stat  | x                 | x      | x             |
| nvoFaultCode     | x                 | x      | x             |
| nvoFaulted       | x                 | x      | x             |
| nvoForward       | x                 | x      | x             |
| nvoFreqAct       | x                 | x      | x             |
| nvoLimit         | x                 | x      | x             |
| nvoLineUVVolt    | x                 |        |               |
| nvoLineVolt      | x                 |        |               |
| nvoLineWUVolt    | x                 |        |               |
| nvoLineVWVolt    | x                 |        |               |

| Network variable | E-Cclipse + ACH550 | ACS355 | ACS850/ACQ810 |
|------------------|--------------------|--------|---------------|
| nvoLocRemStat    | x                  | x      | x             |
| nvoMtrRevCntM    | x                  |        |               |
| nvoMtrTemp       | x                  | x      | x             |
| nvoNetCtrl       | x                  | x      | x             |
| nvoNetRef1       | x                  | x      |               |
| nvoNetRef2       | x                  | x      |               |
| nvoParReadValue  | x                  | x      | x             |
| nvoPid1Dev       | x                  |        | x             |
| nvoPid1Fbk       | x                  |        | x *           |
| nvoPid2Dev       | x                  |        |               |
| nvoPid2Fbk       | x                  |        |               |
| nvoReady         | x                  | x      | x             |
| nvoReverse       | x                  | x      | x             |
| nvoRunning       | x                  | x      | x             |
| nvoSpeedActRpm   | x                  | x      | x             |
| nvoStarted       | x                  | x      | x             |
| nvoStatus        | x                  | x      | x             |
| nvoZeroSpeed     | x                  | x      | x             |

\* not supported by ACQ810





3AUA0000041017 REV B EN  
EFFECTIVE: 28.04.2010

---

**ABB Oy**

Drives

P.O. Box 184

FIN-00381 HELSINKI

FINLAND

Telephone +358 10 22 11

Fax +358 10 22 22681

Internet [www.abb.com/drives](http://www.abb.com/drives)

**ABB Inc.**

Automation Technologies

Drives & Motors

16250 West Glendale Drive

New Berlin, WI 53151

USA

Telephone 262 785-3200

1-800-HELP-365

Fax 262 780-5135

Internet [www.abb.com/drives](http://www.abb.com/drives)

**ABB Beijing Drive  
Systems Co. Ltd.**

No. 1, Block D,

A-10 Jiuxianqiao Beilu

Chaoyang District

Beijing, P.R. CHINA, 100015

Telephone +86 10 5821 7788

Fax +86 10 5821 7618

Internet [www.abb.com/drives](http://www.abb.com/drives)