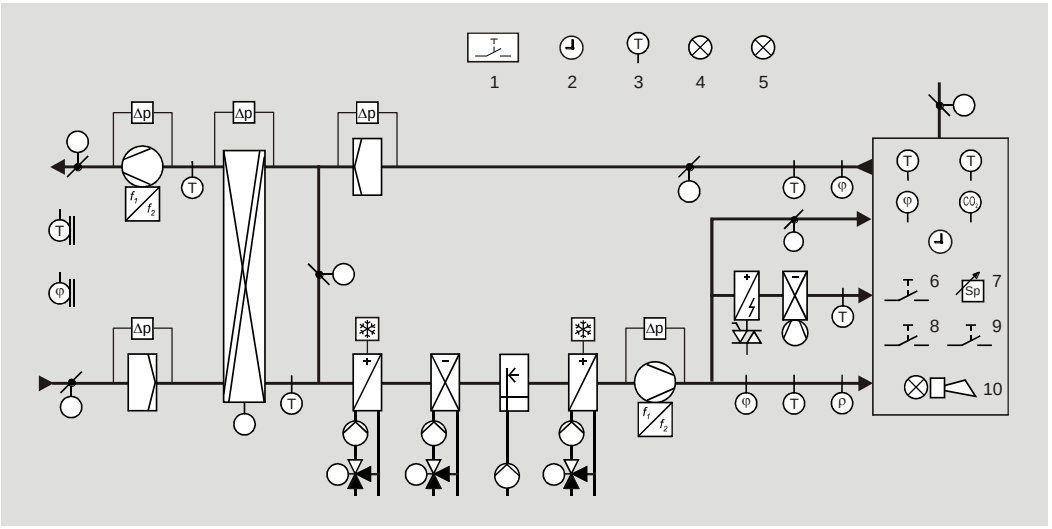


Climatix™
LON communication with POL906.00
SNVTs
for standard AHU application v1.0x

PRODUKT
Air handling with the focus on LCC

Table of contents

1 About this document

1.1 Revision history

Version	Date	Changes	Section	Pages
	20.08.2010	First edition		
	14.09.2010	Diagram (replaced by up-to-date version) Diagram ("nciMinSndTime" removed)	2.1 3.1	7 9

1.2 Before you start

Validity

This document applies to the following product:

Name	Type (ASN)	Version
Customer!! standard AHU application	POL63x.00/AHU	1.08
LON image POLXXX_Std_AHU_V100 (ClimatixAHU)		1.00

This document is a supplement to the general integration guide: "LON communication with POL906.00" *)

*) POL906.00: Climatix LON communication module

That document must be read first and all general information such as document conventions, important information on safety, trademarks, copyright etc. are valid for this document as well.

This document only contains the uniqe information for the product mentioned above. All general engineering information such as mounting modules, communication settings etc. are described in the integration guide.

Prerequisite

User has read the general LON integration guide for Climatix, CB1J3964en.

1.3 Reference documents

Further information

The following documents contain additional information on the products described in this manual:

Document	Order no.
Data sheet "Communication module LON"	CB1Q3931en
Basic documentation "LON communication module"	CB1P3931en
Integration Guide "LON communication with POL906.00"	CB1J3964en
Basic documentation "Standard Application AHU"	CB1P3977en

2 Application

2.1 General information

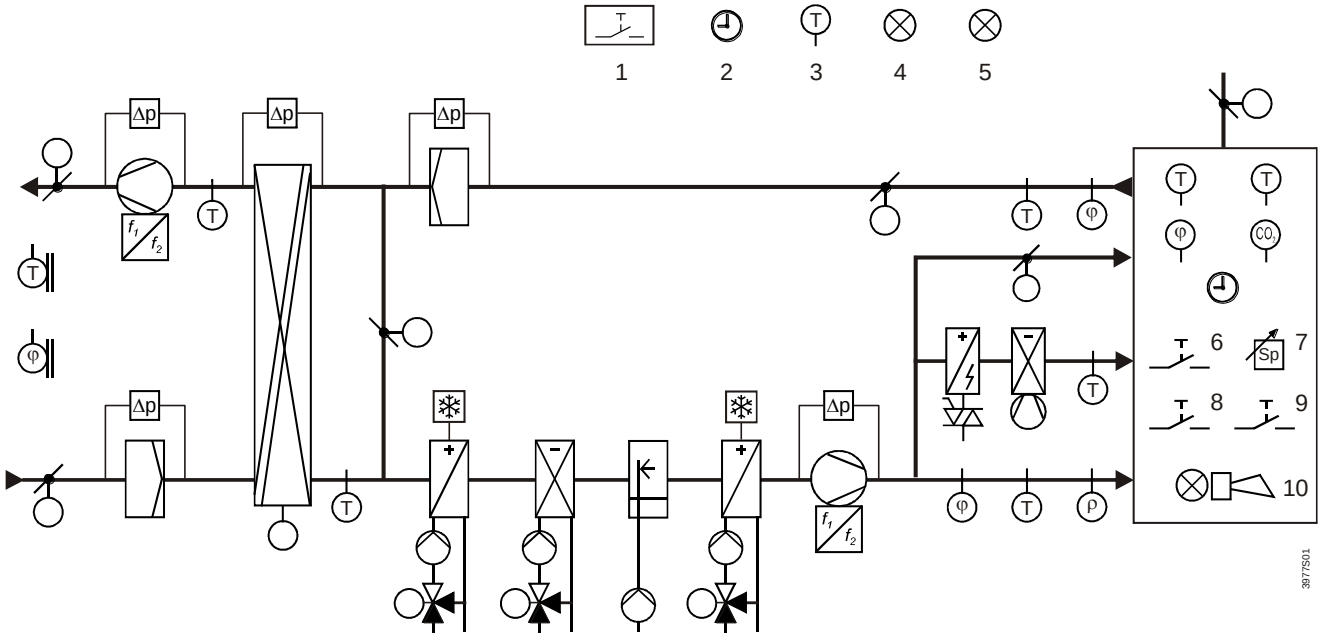
What are standard applications?

Standard applications for Climatix comprise predefined monitoring and control functions for a particular plant type.
Features:

- OEM customers receive standard applications as a set of loadable files. They can be loaded in the controller via SD card.
- An HMI operator unit allows for assigning inputs and outputs to the respective plant as well as select, configure and parameterize the required functions.

Standard application AHU V1.x

Standard application AHU V1.x is available at this time. It contains all common functions to control and monitor air conditioning units (**A**ir **H**andling **U**nits). The following diagram provides an overview of selectable measured values and control equipment:



Detailed information

See document CE1P3977en for a detailed description of standard application AHU V1.x.

Network variables

The set of loadable files mentioned above also includes a mapping file for integration in a higher building automation and control system via communications module. The Climatix controller automatically assumes the network variables required for integration as per the plant data points and functions configured and parameterized previously.

The following tables list all network variables as per the overview in Section 3.1.

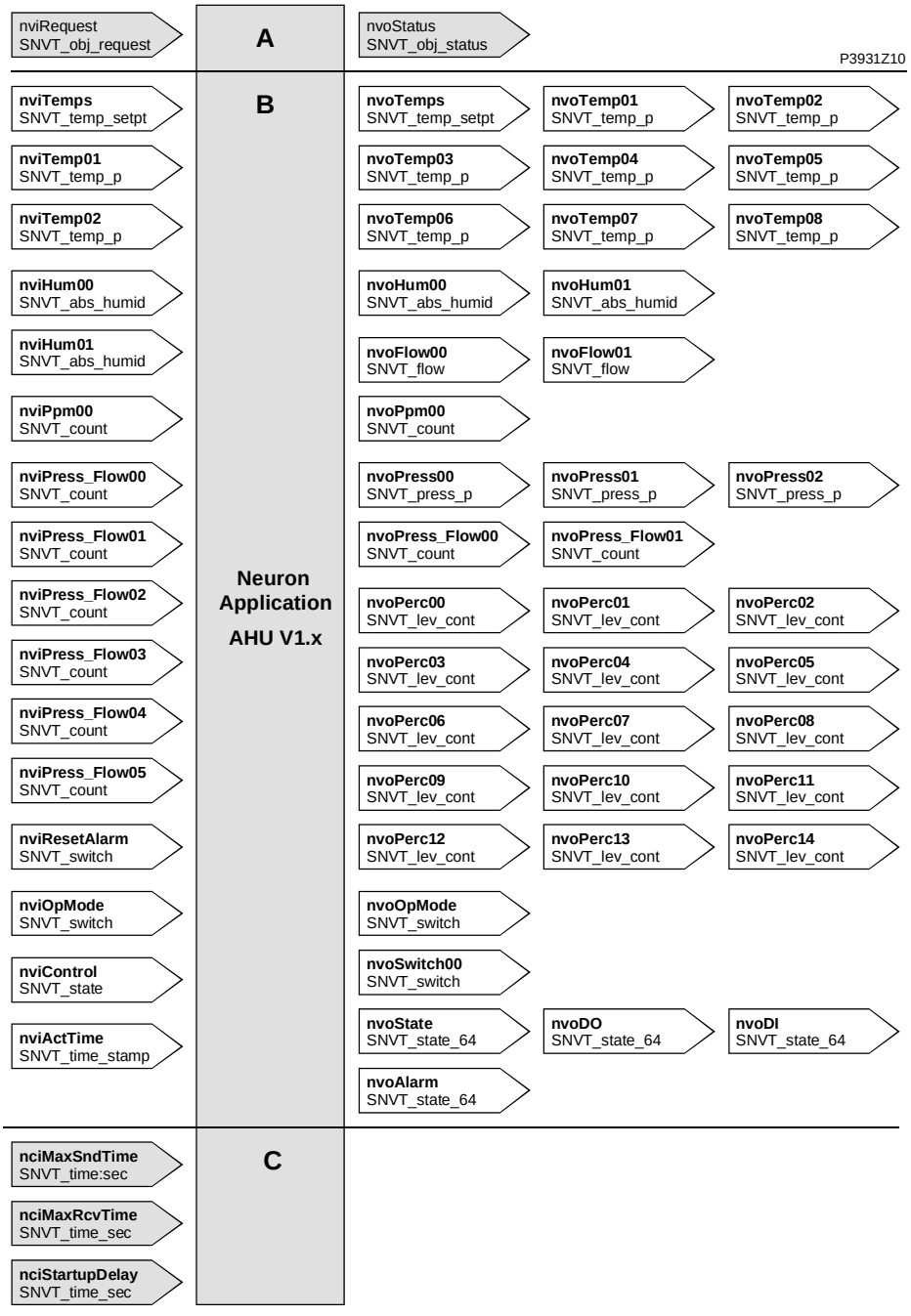
3 Network variables

3.1 Overview

Contents of LON image set AHU V1.x

The LON module's Neuron application supports 62 network variables to integrate controllers with air handling applications in a management station, and allow controllers to exchange data over LON. The figure shows the variables for LON image set (XIF) POLXXX_Std_AHU_V100 (ClimatixAHU V1.x) and their SNVTs, grouped as follows:

- Mandatory network variables (A)
- Optional network variables (B)
- Configuration parameters (C)



The sections below describe the network variables.

3.2 General

Purpose

The following sections describe the network variables used in the specific application and LON image (XIF), see Section 1.2 "Before you start".

SNVT handling

Pay attention to the following explanations concerning some specific characteristics of SNVTs and elements used:

SNVT / Element	Explanation
Heartbeat	All output (nvo) SNVTs send heartbeat. No SNVTs requires heartbeat from the network. All input (nvi) SNVTs write back changed values, from the controller, to the Neuron, means that a setpoint could be set from both the controller and the network, depending on BMS system.
Min Send time	Some output (nvo) SNVTs use the "Min send time". Means that this SNVT have fastest send interval of x seconds.
SNVT_state	Climatix are using SNVT_state binary counted from left to right and due to that some LON devices counts from right. In this case it is necessary to invert the bits, Bit0=Bit15, Bit1=Bit14....
SNVT_switch	The state part for SNVT_switch must be set to 1 (Active) to use the value part.
SNVT_temp_setpt	The SNVT_temp_setpt is used for different temperature set points and to show the actual set points, and it could be different set points than named within the SNVT due to these names are fixed. Example is the first value "occupied cool" used for Basic heating set point instead. See further in this document.

Override I/Os

Inputs that are possible to override via LON is marked with (I/O), theese must first be setup to be overridden via communication, see Integration guide.

SNVT info

The following tables briefly describe each variable used and it's SNVT.
Thereby the "NV index" presents the network variable number in the XIF file (LON image).

Refer to 4.1 "Description of SNVTs" for more information on the SNVTs.

3.3 Mandatory variables

Introduction

Two of the network variables supported by the LON module's Neuron application are mandatory. They are needed for system purposes: The two variables are:

- nviRequest
- nvoStatus

Input variable

Requires a particular mode for a specific object in a device.

nviRequest

Network Name:	**nviRequest**
Description:	**Object request**
Type:	SNVT_obj_request
NV index:	0
Remarks:	

Output variable

Signals the status of the requested object in the device.

nvoStatus

Network Name:	**nvoStatus**
Description:	**Object status**
Type:	SNVT_obj_status
NV index:	1
Remarks:	

3.4 Optional input variables

Introduction

The LON module's Neuron application supports 62 network variables. 56 of these are optional. The following tables briefly describe each variable and its SNVT.
The network variable tables are listed by:

- Input variables (23)
- Output variables (33)

Input variables

Inputs variables sorted according to the overview of Section 3.1:

nviTemps

Network Name:	**nviTemps**	Names in SNVT
Description:	• **Comfort basic/Comfort heating** • **Comfort deadzone/Comfort cooling** • **Economy basic/Economy heating** • **Economy deadzone/Economy cooling** • **Min supply temperature, cascade** • **Max supply temperature, cascade**	• occupied_cool • standby_cool • unoccupied_cool • occupied_heat • standby_heat • unoccupied_heat
Type:	SNVT_temp_setpt	
NV index:	14	
Remarks:	Structured setpoint variable for 6 temperature setpoints. Different setpoint combinations are used depending on configuration.	

nviTemp01

Network Name:	**nviTemp01**
Description:	**Extra sequence setpoint**
Type:	SNVT_temp_p
NV index:	15
Remarks:	

nviTemp02

Network Name:	**nviTemp02**
Description:	**Outside air temperature**
Type:	SNVT_temp_p
NV index:	16
Remarks:	(I/O)

nviHum00

Network Name:	**nviHum00**
Description:	**Humidity basic/Humidity**
Type:	SNVT_abs_humid
NV index:	8
Remarks:	Setpoint for absolute and relative humidity. Different setpoint combinations are used depending on configuration.

nviHum01

Network Name:	**nviHum01**
Description:	**Humidity deadzone/Dehumidity**
Type:	SNVT_abs_humid
NV index:	9
Remarks:	Setpoint for absolute and relative humidity. Different setpoint combinations are used depending on configuration.

Optional input variables, *continued*

nviPpm00

Network Name:	**nviPpm00**
Description:	**Air quality setpoint**
Type:	SNVT_count
NV index:	10
Remarks:	

nviPress_Flow00

Network Name:	**nviPress_Flow00**	
Description:	**Supply fan step 1 setpoint**	
Type:	SNVT_count	
NV index:	2	
Remarks:	For Pressure, Flow and %, depending on configuration.	(max 32766 Pa or l/sec)

nviPress_Flow01

Network Name:	**nviPress_Flow01**	
Description:	**Supply fan step 2 setpoint**	
Type:	SNVT_count	
NV index:	3	
Remarks:	For Pressure, Flow and %, depending on configuration.	(max 32766 Pa or l/sec)

nviPress_Flow02

Network Name:	**nviPress_Flow02**	
Description:	**Supply fan step 3 setpoint**	
Type:	SNVT_count	
NV index:	4	
Remarks:	For Pressure, Flow and %, depending on configuration.	(max 32766 Pa or l/sec)

nviPress_Flow03

Network Name:	**nviPress_Flow03**	
Description:	**Exhaust fan step 1 setpoint**	
Type:	SNVT_count	
NV index:	5	
Remarks:	For Pressure, Flow and %, depending on configuration.	(max 32766 Pa or l/sec)

nviPress_Flow04

Network Name:	**nviPress_Flow04**	
Description:	**Exhaust fan step 2 setpoint**	
Type:	SNVT_count	
NV index:	6	
Remarks:	For Pressure, Flow and %, depending on configuration.	(max 32766 Pa or l/sec)

nviPress_Flow05

Network Name:	**nviPress_Flow05**	
Description:	**Exhaust fan step 3 setpoint**	
Type:	SNVT_count	
NV index:	7	
Remarks:	For Pressure, Flow and %, depending on configuration.	(max 32766 Pa or l/sec)

Optional input variables, *continued*

nviResetAlarm

Network Name:	**nviResetAlarm**		
Description:	**Reset/Acknowledge alarms**		
Type:	SNVT_switch		
NV index:	11		
Values:	0	Normal	
	1	ResetA/Acknowledge	
	> 1	Not defined	
State:	0: Inactive		
	1: Active		
Default:	Value: 0		
	State : 0		
Remarks:	State part must be set to 1 to use the value part.		

nviOpMode

Network Name:	**nviOpMode**		
Description:	**BMS control/overide time switch program**		
Type:	SNVT_switch		
NV index:	12		
Values:	0	Auto, internal time scheduler	Steps
	1	Stop mode	
	2	Step 1	
	3	Step 2	
	4	Step 3	
	> 4	Not defined	
	OR		
	0	Auto, internal time scheduler	Steps/temperature
	1	Stop mode	
	2	Economy, Step 1	
	3	Comfort, Step 1	
	4	Economy, Step 2	
	5	Comfort, Step 2	
	6	Economy, Step 3	
	7	Comfort, Step 3	
	> 7	Not defined	
State	0: Inactive		
	1: Active		
Default:	Value: 0		
	State : 0		
Remarks:	State part must be set to 1 to use the value part.		
	Value part depending on configuration.		

Optional input variables, *continued*

nviControl

Network Name:	**nviControl**		
Description:	**Control signals**		
Type:	SNVT_state (16 bit)		
NV index:	13		
Bits:	Bit [0 ...15]	Binary:	* Reverse:
	- Emergency stop input (I/O)	0	15
	- External control input 1 (I/O)	1	14
	- External control input 2 (I/O)	2	13
	- Summer/winter changeover switch (I/O)	3	12
	-	4	11
	-	5	10
	-	6	9
	- Fire alarm input (I/O)	7	8
	-	8	7
	-	9	6
	-	10	5
	-	11	4
	-	12	3
	-	13	2
	-	14	1
	- Communicationtest puls	15	0
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

nviActTime

Network Name:	**nviActTime**
Description:	**System clock**
Type:	SNVT_time_stamp
NV index:	57
Remarks:	

3.5 Optional output variables

Output variables

Output variables sorted according to the overview on Section 3.1:

nvoTemps

Network Name:	**nvoTemps**	Names in SNVT
Description:	• **Actual heating setpoint, Main** • **Actual cooling setpoint, Main** • **External setpoint** • **Actual supply heating setpoint, when use of cascade control** • **Actual supply cooling setpoint, when use of cascade control** • **Heating 2 (Extra) frost temperature**	• occupied_cool • standby_cool • unoccupied_cool • occupied_heat (Uses Min Send time) • standby_heat (Uses Min Send time) • unoccupied_heat (COV 1.0)
Type:	SNVT_temp_setpt	
NV index:	40	
Remarks:	Structured setpoint variable for 6 setpoints. Actual main setpoints are depending on actual controlmode.	

nvoTemp01

Network Name:	**nvoTemp01**	
Description:	**Supply air temperature**	
Type:	SNVT_temp_p	
NV index:	41	
Remarks:		

nvoTemp02

Network Name:	**nvoTemp02**	
Description:	**Heating frost temperature**	
Type:	SNVT_temp_p	
NV index:	42	
Remarks:		

nvoTemp03

Network Name:	**nvoTemp03**	
Description:	**Outside air temperature**	
Type:	SNVT_temp_p	
NV index:	43	
Remarks:		Uses Min Send time

nvoTemp04

Network Name:	**nvoTemp04**	
Description:	**Actual room temperature**	
Type:	SNVT_temp_p	
NV index:	44	
Remarks:	Depending on configuration	

nvoTemp05

Network Name:	**nvoTemp05**	
Description:	**Exhaust air temperature**	(Return air)
Type:	SNVT_temp_p	
NV index:	45	
Remarks:		

Optional output variables, *continued*

nvoTemp06

Network Name:	**nvoTemp06**	
Description:	**Extract air temperature**	
Type:	SNVT_temp_p	
NV index:	46	
Remarks:		

nvoTemp07

Network Name:	**nvoTemp07**	
Description:	**Heat recovery water temperature**	
Type:	SNVT_temp_p	
NV index:	47	
Remarks:		

nvoTemp08

Network Name:	**nvoTemp08**	
Description:	**Supply air temperature 2**	For extra sequence
Type:	SNVT_temp_p	
NV index:	48	
Remarks:		

nvoPpm00

Network Name:	**nvoPpm00**	
Description:	**Air quality**	
Type:	SNVT_count	
NV index:	49	
Remarks:		COV 1.0

nvoPress00

Network Name:	**nvoPress00**	
Description:	**Supply air pressure**	Pa
Type:	SNVT_press_p	
NV index:	19	
Remarks:		COV 5.0

nvoPress01

Network Name:	**nvoPress01**	
Description:	**Exhaust air pressure**	Pa
Type:	SNVT_press_p	
NV index:	20	
Remarks:		COV 5.0

nvoPress02

Network Name:	**nvoPress02**	
Description:	**Heat recovery frost pressure**	Pa
Type:	SNVT_press_p	
NV index:	21	
Remarks:		COV 5.0

Optional output variables, *continued*

nvoPress_Flow00

Network Name:	**nvoPress_Flow00**	
Description:	**Actual supply fan setpoint**	
Type:	SNVT_count	
NV index:	22	
Remarks:	%, Pa or l/sec depending on configuration	COV 1.0

nvoPress_Flow01

Network Name:	**nvoPress_Flow01**	
Description:	**Actual exhaust fan setpoint**	
Type:	SNVT_count	
NV index:	23	
Remarks:	%, Pa or l/sec depending on configuration	COV 1.0

nvoFlow00

Network Name:	**nvoFlow00**	
Description:	**Supply air flow**	l/sec
Type:	SNVT_flow	
NV index:	17	
Remarks:		COV 10.0

nvoFlow01

Network Name:	**nvoFlow01**	
Description:	**Exhaust air flow**	l/sec
Type:	SNVT_flow	
NV index:	18	
Remarks:		COV 10.0

nvoPerc00

Network Name:	**nvoPerc00**	
Description:	**Heating output signal**	
Type:	SNVT_lev_cont	
NV index:	24	
Remarks:		COV 1.0

nvoPerc01

Network Name:	**nvoPerc01**	
Description:	**Cooling output signal**	
Type:	SNVT_lev_cont	
NV index:	25	
Remarks:		COV 1.0

nvoPerc02

Network Name:	**nvoPerc02**	
Description:	**Heat recovery output signal**	
Type:	SNVT_lev_cont	
NV index:	26	
Remarks:		COV 1.0

Optional output variables, *continued*

nvoPerc03

Network Name:	**nvoPerc03**	
Description:	**Heat recovery damper output signal**	
Type:	SNVT_lev_cont	
NV index:	27	
Remarks:		COV 1.0

nvoPerc04

Network Name:	**nvoPerc04**	
Description:	**Heat recovery efficiency**	
Type:	SNVT_lev_cont	
NV index:	28	
Remarks:		COV 1.0

nvoPerc05

Network Name:	**nvoPerc05**	
Description:	**Electrical heating output signal**	
Type:	SNVT_lev_cont	
NV index:	29	
Remarks:		COV 1.0

nvoPerc06

Network Name:	**nvoPerc06**	
Description:	**Supply fan output signal**	
Type:	SNVT_lev_cont	
NV index:	30	
Remarks:		COV 1.0

nvoPerc07

Network Name:	**nvoPerc07**	
Description:	**Exhaust fan output signal**	
Type:	SNVT_lev_cont	
NV index:	31	
Remarks:		COV 1.0

nvoPerc08

Network Name:	**nvoPerc08**	
Description:	**Heating 2 output signal**	Extra heating
Type:	SNVT_lev_cont	
NV index:	32	
Remarks:		COV 1.0

nvoPerc09

Network Name:	**nvoPerc09**	
Description:	**Supply air humidity, relative**	
Type:	SNVT_lev_cont	
NV index:	33	
Remarks:		COV 1.0

Optional output variables, *continued*

nvoPerc10

Network Name:	**nvoPerc10**	
Description:	**Room humidity, relative**	
Type:	SNVT_lev_cont	
NV index:	34	
Remarks:		COV 1.0

nvoPerc11

Network Name:	**nvoPerc11**	
Description:	**Outside air humidity, relative**	
Type:	SNVT_lev_cont	
NV index:	35	
Remarks:		COV 1.0

nvoPerc12

Network Name:	**nvoPerc12**	
Description:	**Humidifier output signal**	
Type:	SNVT_lev_cont	
NV index:	36	
Remarks:		COV 1.0

nvoPerc13

Network Name:	**nvoPerc13**	
Description:	**Actual dehumidity value**	
Type:	SNVT_lev_cont	
NV index:	37	
Remarks:		COV 1.0

nvoPerc14

Network Name:	**nvoPerc14**	
Description:	**Electrical heating 2 output signal**	Extra electrical heating
Type:	SNVT_lev_cont	
NV index:	38	
Remarks:		COV 1.0

nvoHum00

Network Name:	**nvoHum00**	
Description:	**Supply air humidity, absolute**	
Type:	SNVT_abs_humid	
NV index:	51	
Remarks:		COV 1.0

nvoHum01

Network Name:	**nvoHum01**	
Description:	**Room humidity, absolute**	
Type:	SNVT_abs_humid	
NV index:	52	
Remarks:		COV 1.0

Optional output variables, *continued*

nvoOpMode

Network Name:	**nvoOpMode**
Description:	**Actual operating mode**
Type:	SNVT_switch
NV index:	50
Values:	0 Off
	1 On/Comfort
	2 Economy
	3 Not used
	4 Osstp
	5 Nightcooling
	6 Unoccupied (temperature start)
	7 Nightkick (test temperature)
	8 Firedamper test
	9 Fire
	10 Stop
	11 Overrun
	12 Startup
	> 12 Not defined
State:	0 :Inactive :Value = 0
	1 :Active :Value > 0
Default:	Value : 0
	State : 0
Remarks:	

nvoSwitch00

Network Name:	**nvoSwitch00**
Description:	**Actual fan step**
Type:	SNVT_switch
NV index:	39
Values:	0 OFF
	1 Step 1
	2 Step 2
	3 Step 3
	> 3 Not defined
State:	0 :Inactive :Value = 0
	1 :Active :Value > 0
Default:	Value : 0
	State : 0
Remarks:	

Optional output variables, *continued*

nvoState

Network Name:	**nvoState**		
Description:	**General status**		
Type:	SNVT_state_64 (64 bit)		
NV index:	55		
Bits	Bit [0 … 63]	Binary:	* Reverse:
	- Alarm class danger (A)	0	63
	- Alarm class critical (A)	1	62
	- Alarm class low (B)	2	61
	- Alarm class warning (C)	3	60
	-	4	59
	- Manual control active	5	58
	- Summer mode	6	57
	- Communicationtest puls	7	56
	- Preheating, heating register	8	55
	- Preheating, heating 2 (extra) register	9	54
	-	10	53
	- Actual control mode temp, room	11	52
	- Actual control mode temp, exh	12	51
	- Actual control mode temp, sply	13	50
	- Actual control mode humidity, room	14	49
	- Actual control mode humidity, supply	15	48
	-	16	47
		17	46
		18	45
		19	44
		20	43
		21	42
		22	41
		23	40
		24	39
		25	38
		26	37
		27	36
		28	35
		29	34
		30	33
		31	32
		32	31
		33	30
		34	29
		35	28
		36	27
		37	26
		38	25
		39	24
		40	23
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoState, *cont.*

Network Name:	**nvoState**		
Description:	**Bit array for general status**		
Type:	SNVT_state_64 (64 bit)		
NV index:	55		
Bits	Bit [0 … 63]	Binary:	* Reverse:
		41	22
		42	21
		43	20
		44	19
		45	18
		46	17
		47	16
		48	15
		49	14
		50	13
		51	12
		52	11
		53	10
		54	9
		55	8
		56	7
		57	6
		58	5
		59	4
		60	3
		61	2
		62	1
		63	0
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoDO

Network Name:	**nvoDO**		
Description:	**All digital outputs**		
Type:	SNVT_state_64 (64 bit)		
NV index:	54		
Bits:	Bit [0 … 63]	Binary:	* Reverse:
	- Supply damper	0	63
	- Extract damper	1	62
	- Fire damper	2	61
	-	3	60
	- Supply fan, running	4	59
	- Supply fan, off	5	58
	- Supply fan, stage 1	6	57
	- Supply fan, stage 2	7	56
	- Supply fan, stage 3	8	55
	- Exhaust fan, running	9	54
	- Exhaust fan, off	10	53
	- Exhaust fan, stage 1	11	52
	- Exhaust fan, stage 2	12	51
	- Exhaust fan, stage 3	13	50
	-	14	49
	-	15	48
	- Cooling pump	16	47
	- Cooling DX, off	17	46
	- Cooling DX, stage 1	18	45
	- Cooling DX, stage 2	19	44
	- Cooling DX, stage 3	20	43
	-	21	42
	- Heat recovery pump/command	22	41
	-	23	40
	- Heating pump	24	39
	-	25	38
	- Electrical heating, off	26	37
	- Electrical heating, stage 1	27	36
	- Electrical heating, stage 2	28	35
	- Electrical heating, stage 3	29	34
	-	30	33
	-	31	32
	- Extra cooling (2) pump	32	31
	- Extra cooling (2) DX, off	33	30
	- Extra cooling (2) DX, stage 1	34	29
	- Extra cooling (2) DX, stage 2	35	28
	- Extra cooling (2) DX, stage 3	36	27
	-	37	26
	- Extra heating (2) pump	38	25
	-	39	24
	- Extra electrical heating (2), off	40	23
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoDO, *cont.*

Network Name:	**nvoDO**		
Description:	**All digital outputs**		
Type:	SNVT_state_64 (64 bit)		
NV index:	54		
Bits:	Bit [0 … 63]	Binary:	* Reverse:
	- Extra electrical heating (2), stage 1	41	22
	- Extra electrical heating (2), stage 2	42	21
	- Extra electrical heating (2), stage 3	43	20
	-	44	19
	- Humidifier command	45	18
	- Humidifier pump	46	17
	-	47	16
	- Aux TSP command	48	15
	- Aux operation mode indication	49	14
	-	50	13
	-	51	12
	-	52	11
	-	53	10
	-	54	9
	-	55	8
	- Alarm output, high	56	7
	- Alarm output, low	57	6
	-	58	5
		59	4
		60	3
		61	2
		62	1
		63	0
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoDI

Network Name:	**nvoDI**		
Description:	**All digital inputs**		
Type:	SNVT_state_64 (64 bit)		
NV index:	53		
Bits:	Bit [0 … 63]	Binary:	* Reverse:
	- Emergency stop	0	63
	- External control 1	1	62
	- External control 2	2	61
	- Summer/winter changeover	3	60
	- Alarm acknowledge	4	59
	-	5	58
	-	6	57
	-	7	56
	- Aux input	8	55
	-	9	54
	-	10	53
	-	11	52
	-	12	51
	-	13	50
	-	14	49
	-	15	48
	- Dampers open	16	47
	- Fire dampers open	17	46
	- Fire dampers closed	18	45
	-	19	44
	- Supply fan feedback	20	43
	- Exhaust fan feedback	21	42
	-	22	41
		23	40
		24	39
		25	38
		26	37
		27	36
		28	35
		29	34
		30	33
		31	32
		32	31
		33	30
		34	29
		35	28
		36	27
		37	26
		38	25
		39	24
		40	23
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoDI, *cont.*

Network Name:	**nvoDI**		
Description:	**All digital inputs**		
Type:	SNVT_state_64 (64 bit)		
NV index:	53		
Bits:	Bit [0 … 63]	Binary:	* Reverse:
		41	22
		42	21
		43	20
		44	19
		45	18
		46	17
		47	16
		48	15
		49	14
		50	13
		51	12
		52	11
		53	10
		54	9
		55	8
		56	7
		57	6
		58	5
		59	4
		60	3
		61	2
		62	1
		63	0
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoAlarm

Network Name:	**nvoAlarm**		
Description:	**All alarms**		
Type:	SNVT_state_64 (64 bit)		
NV index:	56		
Bits:	Bit [0 … 63]	Binary:	* Reverse:
	- Dampers	0	63
	- Fire dampers	1	62
	-	2	61
	- Supply fan	3	60
	- Exhaust fan	4	59
	- Fan operating hours	5	58
	-	6	57
	-	7	56
	- Cooling	8	55
	-	9	54
	- Heating recovery	10	53
	- Heating recovery pump	11	52
	- Heating recovery frost	12	51
	- Heating recovery efficiency	13	50
	- Heating recovery damper	14	49
	-	15	48
	- Heating pump	16	47
	- Heating frost	17	46
	- Electrical heating	18	45
	-	19	44
	- Extra cooling (2)	20	43
	-	21	42
	- Extra heating (2)	22	41
	- Extra heating (2) frost	23	40
	- Extra electrical heating (2)	24	39
	-	25	38
	- Humidifier pump	26	37
	- Humidifier command	27	36
	-	28	35
	- Fire alarm	29	34
	-	30	33
	- Filter alarm	31	32
	- Out temperature	32	31
	- Supply temperature	33	30
	- Heating frost temperature	34	29
	- Room temperature 1	35	28
	- Room temperature 2	36	27
	- Exhaust temperature	37	26
	- Extract temperature	38	25
	- Heat recovery supply temperature	39	24
	- Heat recovery water temperature	40	23
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

Optional output variables, *continued*

nvoAlarm, *cont.*

Network Name:	**nvoAlarm**		
Description:	**All alarms**		
Type:	SNVT_state_64 (64 bit)		
NV index:	56		
Bits:	Bit [0 … 63]	Binary:	* Reverse:
	- Extra supply temperature (2)	41	22
	- Extra heating (2) frost temperature	42	21
	- Auxiliary temperature	43	20
	-	44	19
	- Roomunits	45	18
	- Supply temperature deviation	46	17
	- Room/Exhaust temperature deviation	47	16
	- Supply pressure/flow deviation	48	15
	- Exhaust pressure/flow deviation	49	14
	-	50	13
	- Outside humidity	51	12
	- Supply humidity and deviation	52	11
	- Room humidity and deviation	53	10
	- Dewpoint	54	9
	-	55	8
	- Air quality	56	7
	- External setpoint	57	6
	- Auxiliary alarm	58	5
	-	59	4
	- Manual control	60	3
	-	61	2
	- Communication test	62	1
	- Modbus master	63	0
Remarks:		* On some LON tools the bits are named in the other direction, so take care	

3.6 Configuration parameters

Introduction

The LON module's Neuron application supports 62 network variables. 4 3 of these must be used as configuration parameters as described below.

nciMaxSndTime

Network Name:	**nciMaxSndTime**
Description:	**Send heartbeat** Max. time an output variable has to be sent even if there hasn't changed anything.
Type:	SNVT_time_sec
NV index:	58
Remarks:	

nciMaxRcvTime

Network Name:	**nciMaxRcvTime**
Description:	**Receive heartbeat** Max. time an input variable has to be received. If it wasn't received during this time the value of this input variable is invalid.
Type:	SNVT_time_sec
NV index:	59
Remarks:	

nciStartupDelay

Network Name:	**nciStartupDelay**
Description:	
Type:	SNVT_time_sec
NV index:	60
Remarks:	

4 Appendix

4.1 Description of SNVTs

You can find current descriptions of SNVTs (Standard Network Variable Types) used in set ClimatixAHU V1.x per Section 2.1, on the homepage of "LonMark International" at:

http://types.lonmark.org/index.html
"LONMARK Resource Files, version XX.XX"

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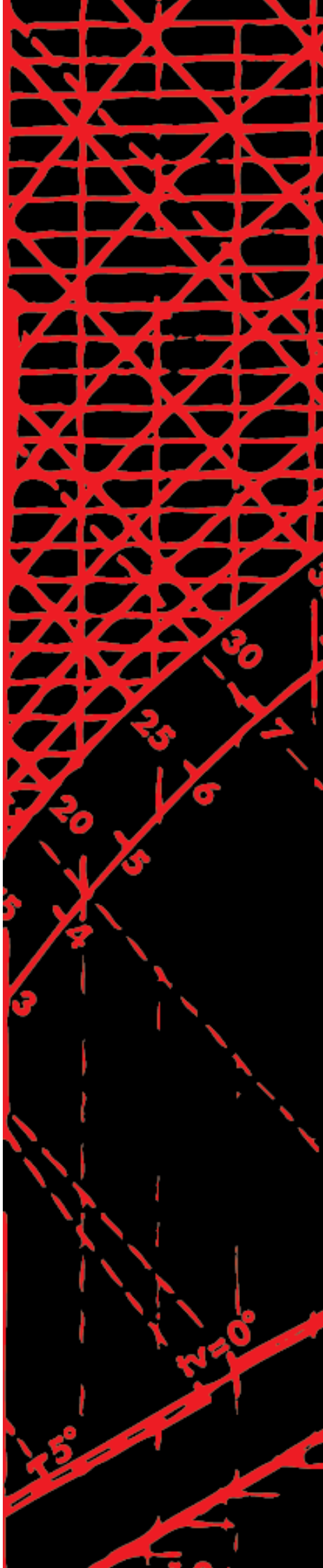

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