Connectivity

the evolution

HILON

User Manual

English
cod.272220 - rev.1.8 22/02/06

INDEX

1. Introduction

HILON is an interface between Microface E, communicating in Hironet protocol, and the LonWorks protocol.
The gateway is available for the following units:

- code 480056 version for HPAC,
- code 480102 version for Superchiller 2000
- code 480116 version for Matrix

HILON can be directly connected to Microface E - representing a node for a LonWorks BMS
In fact in a LonWorks network, Intelligent control devices, called nodes, communicate with each other using a common protocol. Each node in the network contains embedded intelligence that implements the protocol and performs control functions.
The LON system has the advantage of using existing wiring (it works with several types of connections) and it can implement communication without polling (avoiding data congestion in the BUS)

2. User connections

HILON will be mounted inside the electrical panel. The pictures below shows the connection that must be done.

2. 1 Hironet side:

Led Green between RJ9 and Supply connector: Receive data from Hironet.
Led Red between RJ9 and Supply connector: Send data to Hironet Microface E.

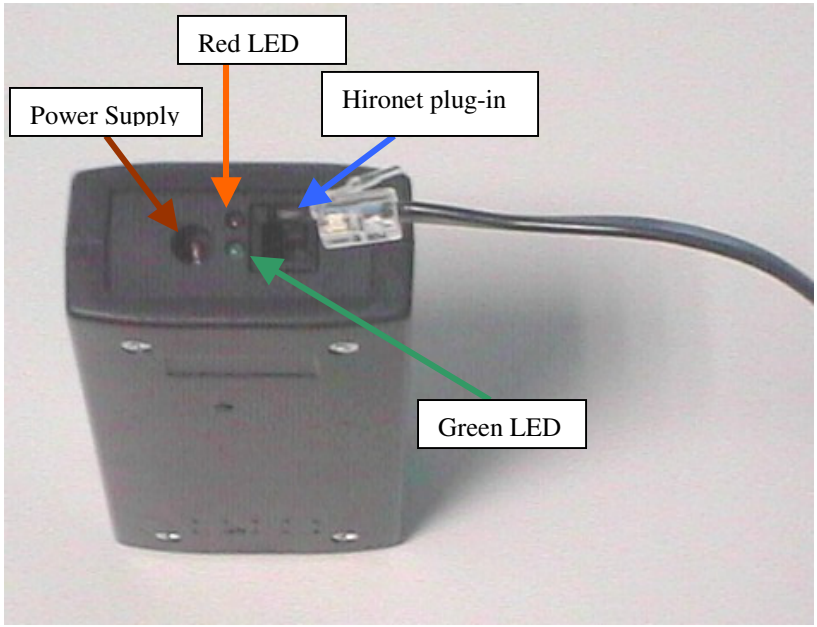


FIGURE 2.1: CONNECTIONS ON HIRONET SIDE OF THE HILON

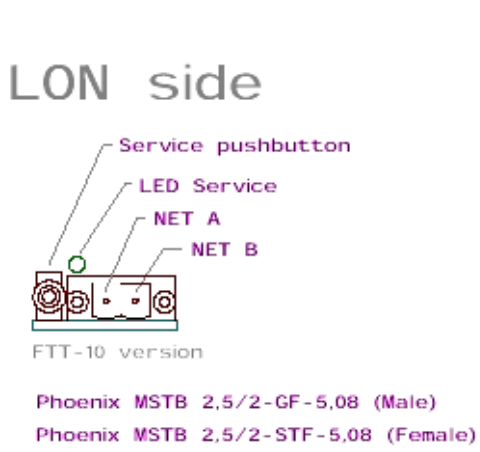
2. 2 Top side:

FIGURE 2.2: LEDS ON TOP SIDE OF THE HILON

Led Yellow blinking indicates communication failed with Echelon Network.. It should be off.. It goes on also when the Service push-button is pressed.
Led Red Hilon powered on.

2. 3 LON side:

Service push-button: used to install the HILON into a Node Manager and to become a part of a LON network.



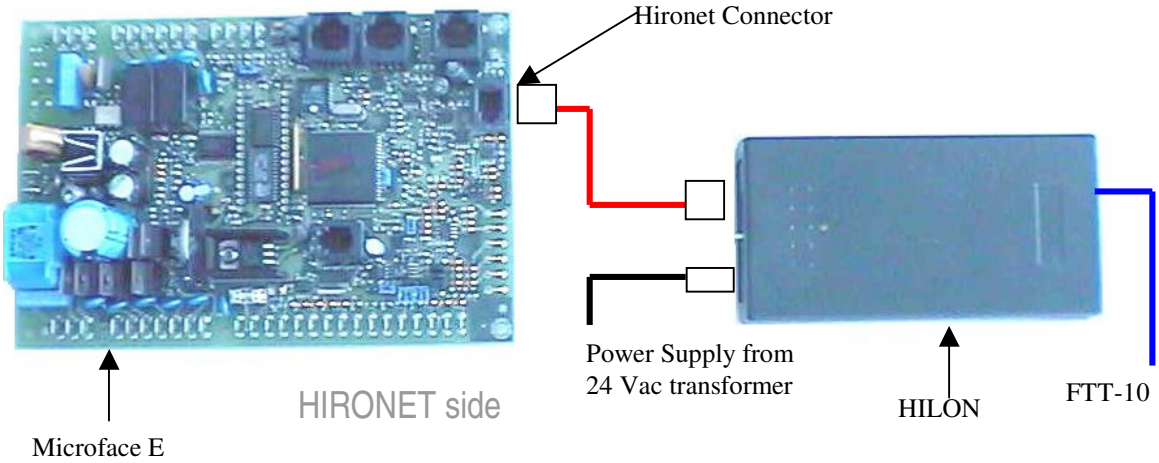


FIGURE 2.3:LON SIDE AND CONNECTION BETWEEN MICROFACE E AND HILON

The HILON, being a gateway is connected to the Hironet via a RJ9 connector and to the LonWorks Echelon BUS via a FTT-10 connector (twisted-pair cable, polarity insensitive).

The **Hironet cable** is F-type (code 480038) mentioned in the Visual Order Guide (code 272192).
The **Transformer** (24 Vac – 24 Vac) is included in the HILON package (code 255877).

FIGURE 2.4: FEEDING ISOLATION TRANSFORMER 24V AC – 24 V AC

Warning:
Be sure that when you connect the Hironet cable to the Microface E both devices are powered-on. After a few seconds both Green and Red LEDs on the HILON back-side shall blink simultanously. Otherwise do a power down/up sequence on the HILON and re-check LEDs status.

The **LON cable** must follow the FTT-10A transceiver specifications (see. User's Guide, 078-0156-01F Echelon Document), in relation to the ambient characteristic of the specific installation.

	Maximum bus length	*Units*
Belden 85102	2700	Meters
Belden 8471	2700	
Level IV, 22AWG	1400	
JY(St) Y 2x2x0.8	900	
TIA Category 5	900	

FIGURE 2.5: DOUBLY TERMINATED BUS TOPOLOGY SPECIFICATION

	Maximum node-to-node distance	*Maximum total Wire length*	*Units*
Belden 85102	500	500	Meters
Belden 8471	400	500	
Level IV, 22AWG	400	500	
JY(St) Y 2x2x0.8	320	500	
TIA Category 5	250	450	

FIGURE 2.6: FREE TOPOLOGY SPECIFICATION

Warning:
Many attention must be paid to particular hostile environments for the LON cable.
For example the presence of typical TLC devices (big inverters, UPS switching-feeders…) makes it necessary the use of screened cable, to avoid possible transmission data losses.

3. Architecture

All HPAC units with Microface E and standard software with Hironet protocol (A1M 160.xxx or EVM 160.xxx or SCM 101.138 or SCM 102.022 and higher) can be connected to HILON via the Hironet connector; one HILON is necessary for each unit. The units teamwork functions are granted by the Hirobus network.

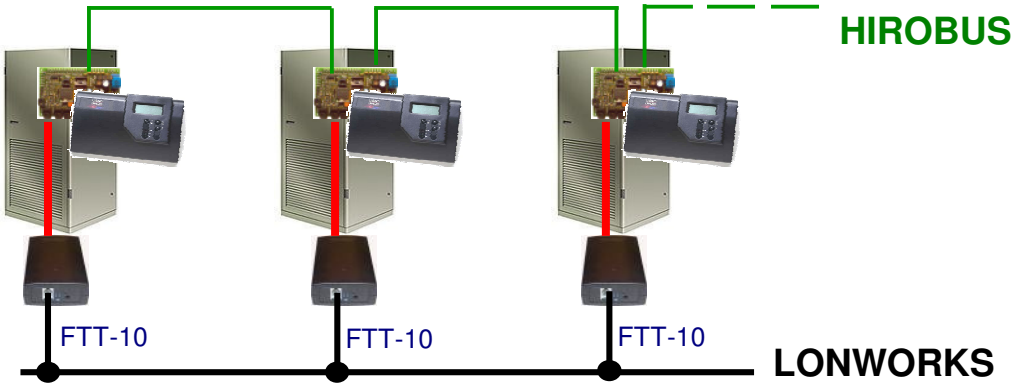


FIGURE 3.1: INSTALLATION ARCHITECTURE

The hardware interface (transceiver) vs LonWorks is Echelon TP/FTT10. This Echelon transceiver is the most used, because it allows free architectures (it doesn't matter where you tap-in the LonWorks BUS). An alternative solution implements the interface vs. LonWorks using a standard RS485 Transceiver which limits the free topology characteristics.

Examples of network topology:

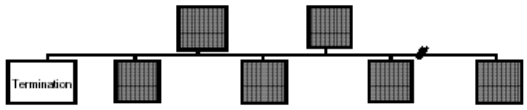


FIGURE 3.2: SINGLY TERMINATED BUS TOPOLOGY

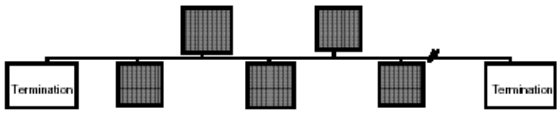


FIGURE 3.3: DOUBLY TERMINATED BUS TOPOLOGY

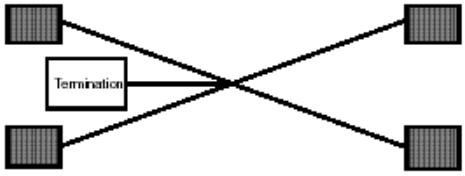


FIGURE 3.4: STAR TOPOLOGY

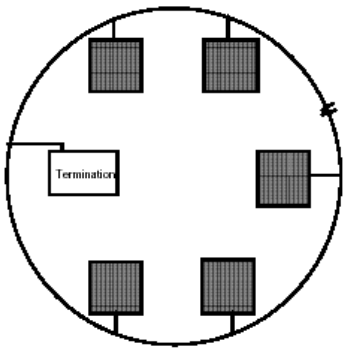


FIGURE 3.5: LOOP TOPOLOGY

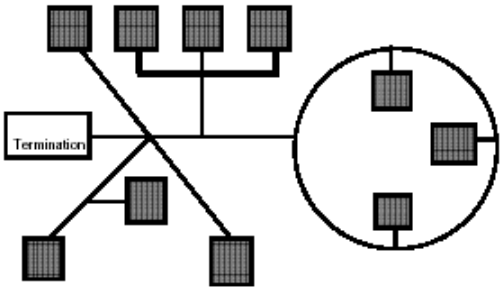


FIGURE 3.6: MIXED TOPOLOGY

4. Twelve steps to get the HILON into LonMaker

This chapter provides a brief guideline to get the HILON device available inside a LON network managed by the Echelon LonMaker ™ supervision application (see the http://www.echelon.com/products/integration/lonmaker/ for any information about this product). Each node, like the HILON, must be *committed* by LonMaker before being available in the net. The following twelve LonMaker ™ screenshots show the operations that we suggest to do to have the HILON committed into a LON network.

4. 1 Network interface configuration

To create a new network from the main dialog of LonMaker follow the steps through this sequence of Dialogs.
Be sure that the HILON is properly connected to the PC where LonMaker is running. The PC must be equipped with a LON interface Card, such as PCC10 (for Laptop PCs) or PCLTA 20 (fro Desktop PCs).
In the first Dialog choose "*Network Attached*":

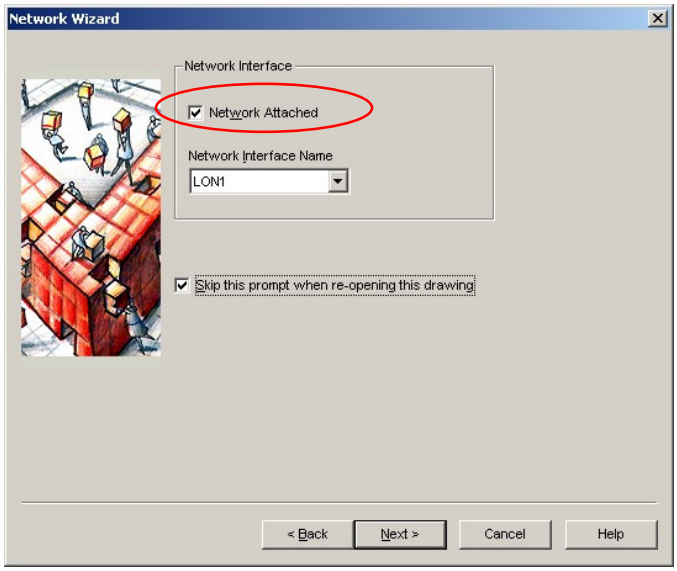


FIGURE 4.1

In this step check the "*Onnet*" option.

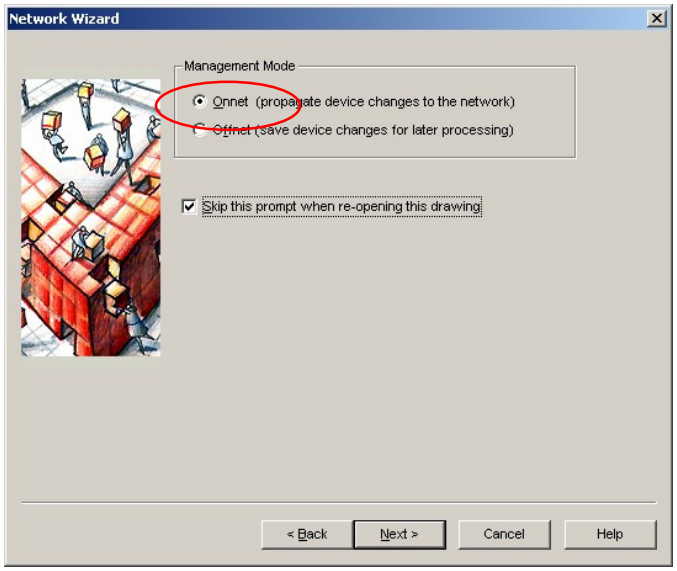


FIGURE 4.2

Provided that all the necessary *Echelon plug-ins* are already installed (this is normally performed during LonMaker setup and installation) choose "Remove All" in this Dialog and click "*Finish*".

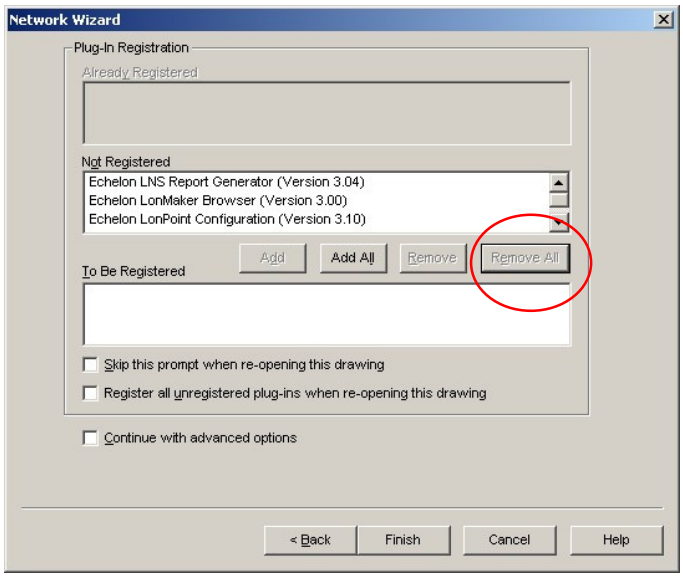


FIGURE 4.3

The configuration of the LNS interface is finished, so that it is possible to add the HILON device to the LON network.

4. 2 Node (HILON) configuration

To add the node representing the HILON into the net the user has to *drag and drop* the first icon in the top left of the tool box in the left side of the window:

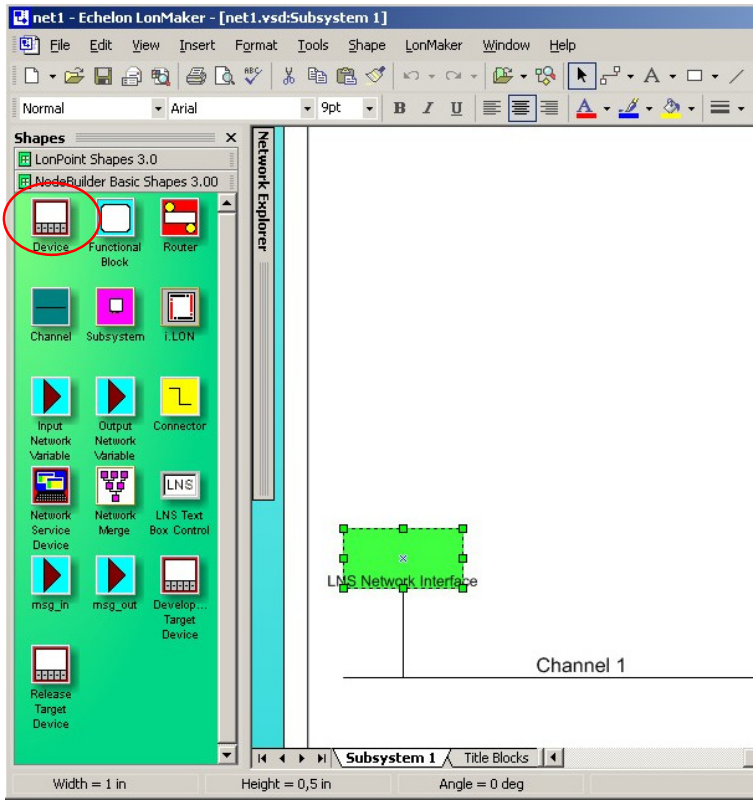


FIGURE 4.4

then the following dialogs appers and the user should choose "*Commission Device*":

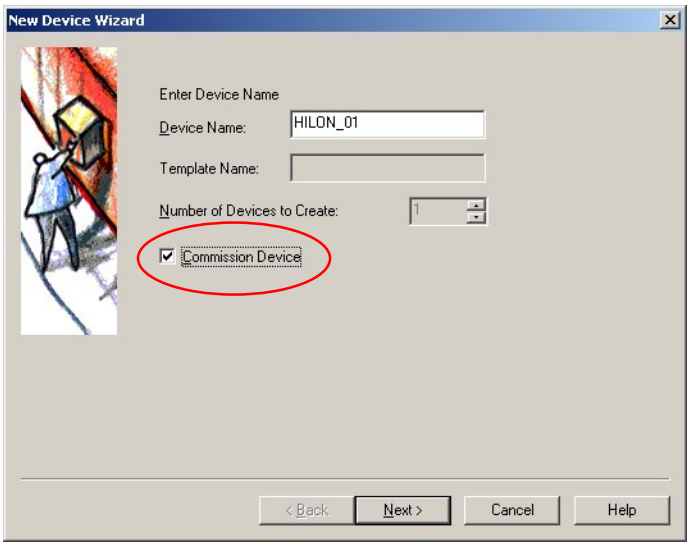


FIGURE 4.5

Second step is fundamental to load the correct XIF file for the Device. Using the "*Browse…*" button select the correct XIF file (provided by Liebert HIROSS s.p.a.) and then click "*Next >*".

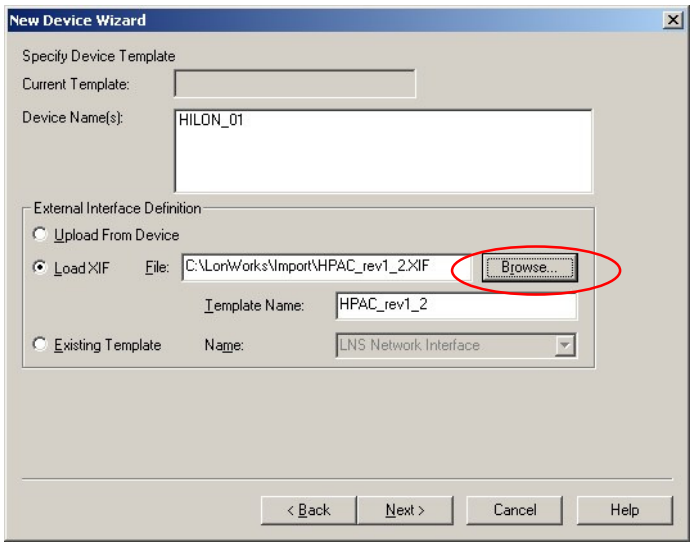


FIGURE 4.6

Next Step is to select the right Transceiver type used by the device for the LON Network. Choose TP/FT-10.

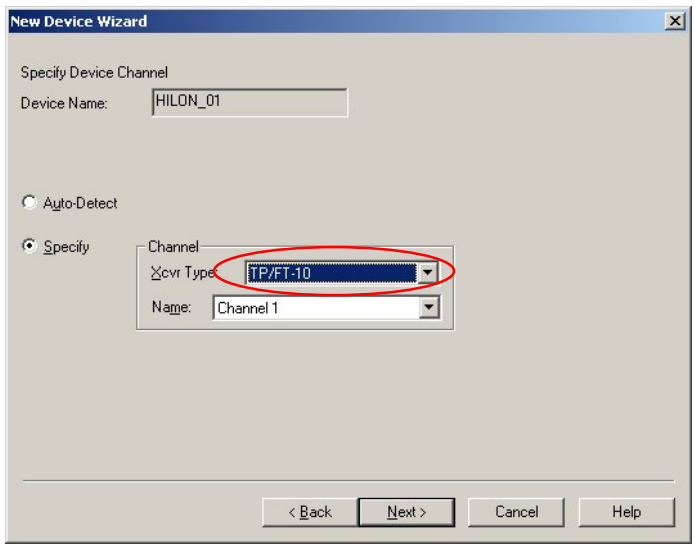


FIGURE 4.7

On the following Dialog click *"Next >"*.

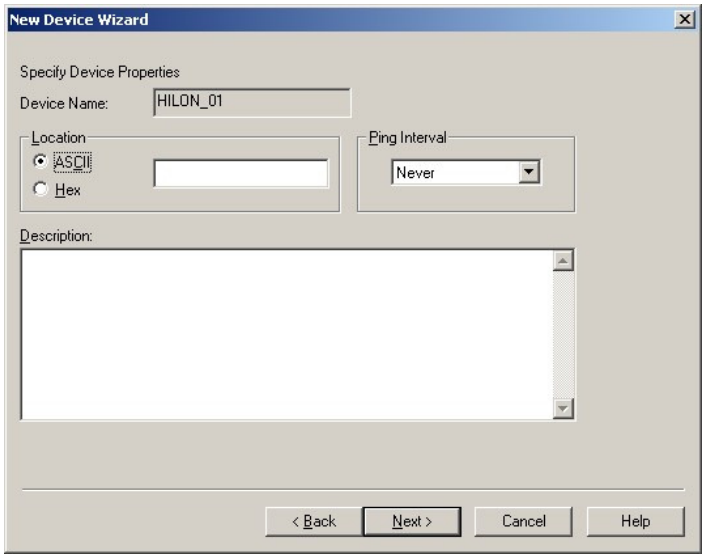


FIGURE 4.8

The following Dialog permits to LonMaker ™ to identify univocally the device. If the Neuron ID is already known it is possible to insert it manually, otherwise leave "Service Pin" selected and choose *"Next >"*.

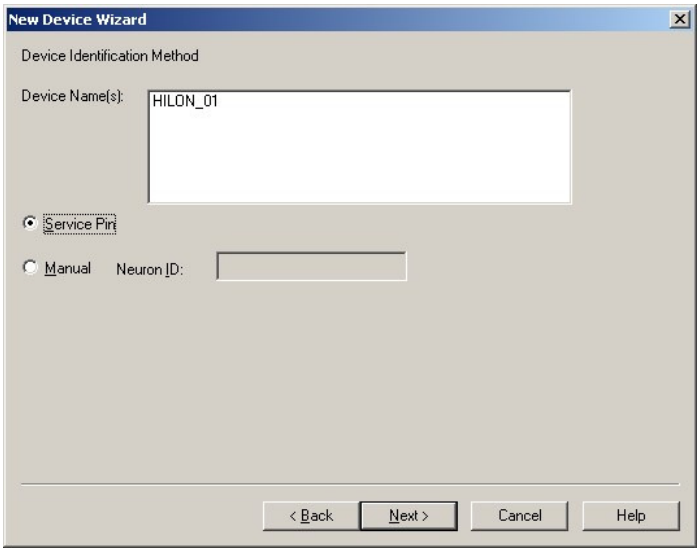

New Device Wizard
Device Identification Method
Device Name(s):
HILON_01
Service Pin
Manual
Neuron ID:
< Back
Next >
Cancel
Help

FIGURE 4.9

The following step is important because the user must **NOT** Load Application Image.
N.B.: we do **NOT** provide .APB or .NXE files to the client.

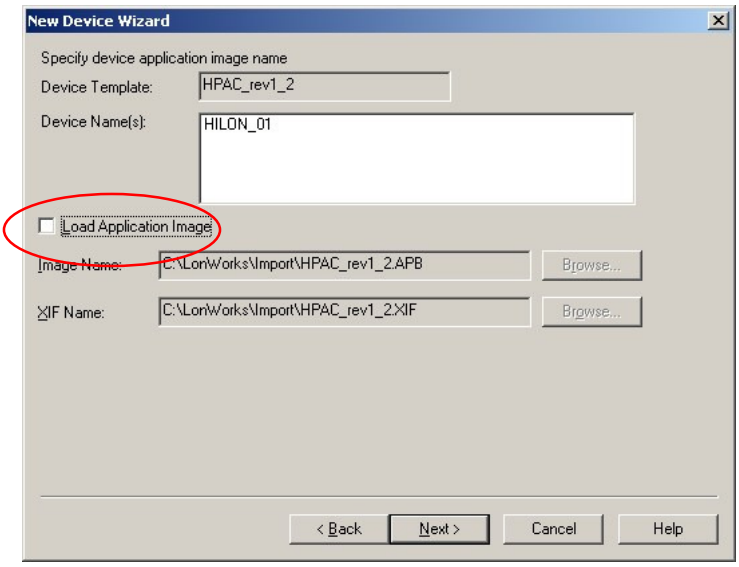


FIGURE 4.10

Here the user decides to have the HILON immediately online into the LON Network.

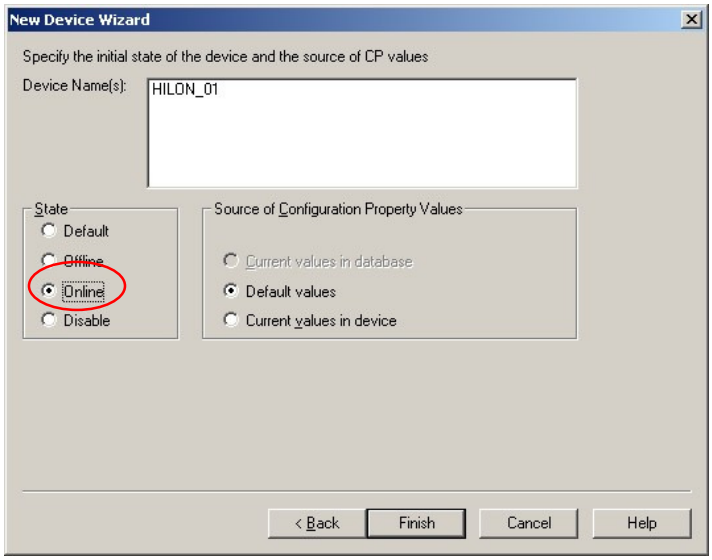


FIGURE 4.11

After the click on *"Finish"* button the last operation is performed by clicking the Service Pin button of the HILON (in the case you didn't write it manually before).

FIGURE 4.12

After this LonMaker performes commissioning and initialization activities. When the operation is successfully accomplished the icon representing the HILON device must be green.

NB:

If the Section "Total Received" of the Dialog shows incrementing numbers but nothing happens, probably the problem is due to a wrong .XIF file. In this case contact Liebert HIROSS service.

Now the HILON device is commissioned inside the LON network and ready to use. To have a quick browsing of the SNVTs, right click on the Device icon and choose *"Configure":*

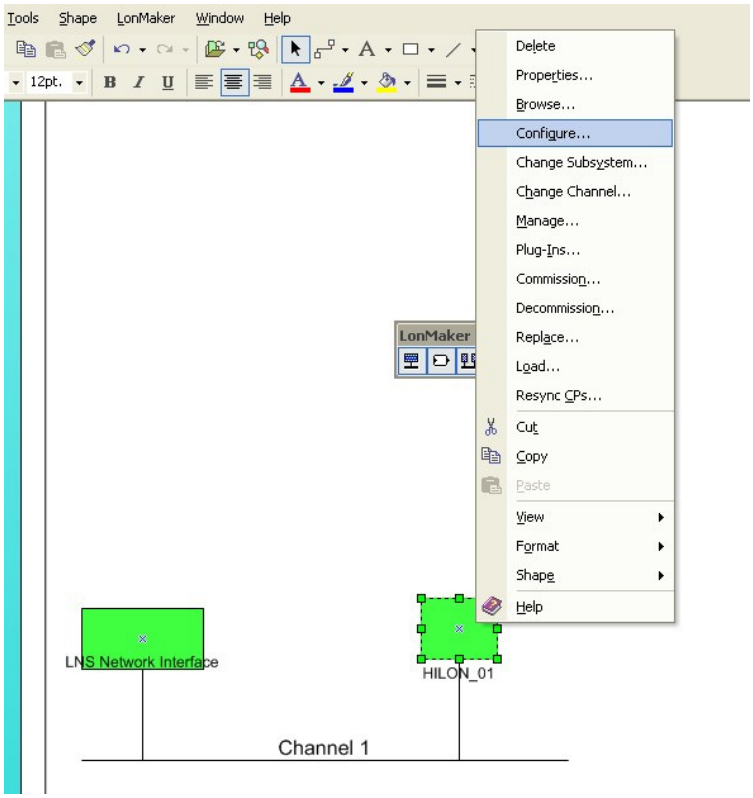


FIGURE 4.13

5. Unit Alarms

The alarms/warning/messages of the HPAC unit which will be available are all the events which can be triggered by the control system. Their availability will be as a number that is the column Nr in the following three tables (HPAC/Superchiller200/Matrix versions):

5. 1 Alarms for A1M 160.xxx and EVM 160.xxx Software types

Nr.	Type	Variable	Description
0	Al	GEN_ALARM	GENERAL ALARM
1	Al	HP1	COMP. 1 HIGH PRESSURE
2	Al	LP1	COMPRESSOR 1 LOW PRESSURE
3	Wa	HIGH_CW_TEMP	HIGH CHILLED WATER
4	Wa	LOW_CW_TEMP	LOW CHILLED WATER FLOW
5	Wa	EL_HEATER	ELECTRICAL HEATERS OVERHEATED
6	Wa	FAN_FAILURE	FAN FAILURE
7	Al	AL_FAN_FAILURE	FAN FAILURE
8	Wa	CLOGGED_FILTER	CLOGGED FILTERS
9	Wa	WATER_LEAKAGE	WATER LEAKAGE
10	Al	WATER_LEAKAGE_AL	WATER LEAKAGE
11	Wa	USER1_WARNING	USER INPUT 1 TRIGGERED
12	Al	USER1_ALARM	USER INPUT 1 TRIGGERED
13	Wa	HUMIDIFIER_FAILURE	HUMIDIFIER FAILURE
14	Wa	HUMIDIFIER_FAILURE	HUMIDIFIER HIGH CURRENT
15	Wa	HUMIDIFIER_FAILURE	HUMIDIFIER FAILURE
16	Wa	HUMIDIFIER_FAILURE	HUMIDIFIER FAILURE
17	Wa	HUMIDIFIER_MAINT	HUMIDIFIER CYLINDER WORN
18	Wa	HIGH_ROOM_TEMP	HIGH ROOM TEMPERATURE
19	Wa	LOW_ROOM_TEMP	LOW ROOM TEMPERATURE
20	Wa	HIGH_ROOM_HUM	HIGH ROOM HUMIDITY
21	Wa	LOW_ROOM_HUM	LOW ROOM HUMIDITY
22	Wa	HIGH_ROOM_TEMP2	HIGH ROOM TEMPERATURE
23	Wa	LOW_ROOM_TEMP2	LOW ROOM TEMPERATURE
24	Wa	HIGH_ROOM_HUM2	HIGH ROOM HUMIDITY
25	Wa	LOW_ROOM_HUM2	LOW ROOM HUMIDITY
26	Wa	UNIT_MAINT	CONDITIONER WORKING HOURS EXCEEDED
27	Wa	COMPRESSOR1_MAINT	COMPRESSOR 1 WORKING HOURS EXCEEDED
28	Wa	HUMIDIF_MAINT	HUMIDIFIER WORKING HOURS EXCEEDED
29	Wa	PTC_FAILURE	PTC SENSOR FAILURE
30	Wa	ROOM_SENSOR_FAIL	ROOM SENSOR FAILURE
31	Al	ROOM_SENSOR_FAIL_AL	ROOM SENSOR FAILURE
32	Wa	EEAP_SENSOR_FAIL	EEAP SENSOR FAILURE
33	Wa	LIQUISTAT_SENSOR_FAIL	WATER PRESENCE SENSOR FAILURE
34	Wa	NETWORK_FAILURE	NETWORK FAILURE
35	Wa	OUT_OF_MEMORY	OUT OF MEMORY
36	Msg (AR, NA)	UNIT_ON	UNIT ON
37	Msg (AR, NA)	UNIT_OFF	UNIT OFF
38	Msg (AR, NA)	SLEEP_MODE	SLEEP MODE
39	Msg (AR, NA)	UNIT_STAND_BY	STANDBY MODE
40	Msg (AR, NA)	POWER_ON	POWER ON UNIT LOGIN
41	Msg (AR, NA)	POWER_OFF	POWER OFF
42	Wa (AR)	Unit_1_DISCONN	Unit 1 disconnected
43	Wa (AR)	Unit_2_DISCONN	Unit 2 disconnected

44	Wa (AR)	Unit_3_DISCONN	Unit 3 disconnected
45	Wa (AR)	Unit_4_DISCONN	Unit 4 disconnected
46	Wa (AR)	Unit_5_DISCONN	Unit 5 disconnected
47	Wa (AR)	Unit_6_DISCONN	Unit 6 disconnected
48	Wa (AR)	Unit_7_DISCONN	Unit 7 disconnected
49	Wa (AR)	Unit_8_DISCONN	Unit 8 disconnected
50	Wa (AR)	Unit_9_DISCONN	Unit 9 disconnected
51	Wa (AR)	Unit_10_DISCONN	Unit 10 disconnected
52	Wa (AR)	Unit_11_DISCONN	Unit 11 disconnected
53	Wa (AR)	Unit_12_DISCONN	Unit 12 disconnected
54	Wa (AR)	Unit_13_DISCONN	Unit 13 disconnected
55	Wa (AR)	Unit_14_DISCONN	Unit 14 disconnected
56	Wa (AR)	Unit_15_DISCONN	Unit 15 disconnected
57	Wa (AR)	Unit_16_DISCONN	Unit 16 disconnected
58	Al	HP_COMP_2	COMP. 2 HIGH PRESSURE
59	Al	LP_COMP_2	COMPRESSOR 2 LOW PRESSURE
60	Wa	COMP_2_MAINT	COMPRESSOR 2 WORKING HOURS EXCEEDED
61	Wa (AA, AR)	OUTDOOR_SENSOR_FAIL	OUTDOOR TEMP. SENSOR
62	Wa (AA, AR)	GLYCOL_SENSOR_FAIL	GLYCOL TEMP. SENSOR
63	Msg (AR, NA)	STOP_FC	FREECOOLING STOPPED FOR 1 HOUR
64	Wa (AR)	HM_ON_OFF_DISABLED	ON-OFF BY HIROMATIC NOT ENABLED
65	Wa	SMOKE_ALARM	SMOKE ALARM
66	Msg (AR,NA)	NO_POWER	NO POWER (USER INPUT)
67	Msg (AR,NA)	POWER_ON	POWER ON (USER INPUT)
68	Wa	USER_INPUT2_WA	USER INPUT 2 TRIGGERED
69	Al	USER_INPUT2_AL	USER INPUT 2 TRIGGERED
70	Wa (AA, AR)	WaNetMast	NO CONNECTION TO UNIT 1
71	Al	TH_COMP_1	COMPRESSOR 1 MOTOR PROTECTION
72	Al	TH_COMP_2	COMPRESSOR 2 MOTOR PROTECTION
73	Al	FIRE_ALARM	FIRE ALARM
74	Wa	OUT_OF_MEMORY	OUT OF MEMORY
75	Wa	COND_1_FAN_FAILURE	CONDENSER 1 FAN FAILURE
76	Wa	COND_2_FAN_FAILURE	CONDENSER 2 FAN FAILURE
77	Wa (AR)	NET_PING	NETWORK PING (=HIROBUS ERROR)
78	Wa (AR)	SUB_NOT_UNIQUE	SUBGROUP-ID NOT UNIQUE
79	Wa (AR)	SUB_UNIT_1_NOT_CON	SUBGROUP-UNIT 1 NOT CONNECTED
80	Wa (AR)	SUB_UNIT_2_NOT_CON	SUBGROUP-UNIT 2 NOT CONNECTED
81	Wa (AA, AR)	SHARE_ROOM_TEMP_FAIL	SHARE ROOM SENSOR FAILURE
82	Al (AA, AR)	SHARE_ROOM_TEMP_FAIL_AL	SHARE ROOM SENSOR FAILURE
83	Wa (AA, AR)	SHARE_OUTDOOR_TEMP	SHARE OUTDOOR TEMP. SENSOR
84	Wa (AA, AR)	SHARE_GLYCOL_TEMP	SHARE GLYCOL TEMP. SENSOR
85	Msg (AR, NA)	UNIT_SYNCRONISATION	UNIT SYNCHRONISATION (=Short Reset)
86	Al (AA, AR)	HUMIDIF_HIGH_TEMP	HUMIDIFIER HIGH TEMPERATURE
87	Al	HUMIDIF_OVERFLOW	HUMIDIFIER OVERFLOW
88	Wa	HEATER_1_2_MAINT	HEATER 1/2 WORKING HOURS EXCEEDED
89	Wa	FREECOOLING_MAINT	FREECOOLING WORKING HOURS EXCEEDED
90	Wa	AIRFLOW_DEV_NOT_READY	AIRFLOW DEVICE NOT READY, PLS. CHECK

TABLE 5.1: UNIT ALARM, WARNINGS AND MESSAGES (WXM,EVM 160 UNITS)

5. 2 Alarms for SCM.101.138 Software type

Nr.	Type	Variable	Description
0	Al	GenAlarm	GENERAL ALARM
1	Al	AlHP1	COMP. 1 HIGH PRESSURE
2	Al	AlLP1	COMPRESSOR 1 LOW PRESSURE
3	Wa	WaFlowSwit	FLOW SWITCH WARNING
4	Al	AlFlowSwit	FLOW SWITCH ALARM
5	Wa	WaUserInp	USER INPUT TRIGGERED
6	Al	AlUserInp	USER INPUT TRIGGERED
7	Wa	WaHWTempIn	HIGH WATER TEMP. IN
8	Wa	WaHWTempOu	HIGH WATER TEMP. OUT
9	Wa	WaLWTempIn	LOW WATER TEMP. IN
10	Wa	WaLWTempOu	LOW WATER TEMP. OUT
11	Al	AlHWTempIn	HIGH WATER TEMP. IN
12	Al	AlHWTempOu	HIGH WATER TEMP. OUT
13	Al	AlLWTempIn	LOW WATER TEMP. IN
14	Al	AlLWTempOu	LOW WATER TEMP. OUT
15	Wa	WaPump1Hou	PUMP 1 WORKING HOURS EXCEEDED
16	Wa	WaPump2Hou	PUMP 2 WORKING HOURS EXCEEDED
17	Wa	WaComp1Hou	CIRCUIT 1 WORKING HOURS EXCEEDED
18	Wa	WaComp2Hou	CIRCUIT 2 WORKING HOURS EXCEEDED
19	Wa (AA, AR)	WaPTCIn	INLET TEMPERATURE SENSOR FAILURE
20	Al (AA, AR)	AlPTCIn	INLET TEMPERATURE SENSOR FAILURE
21	Wa (AA, AR)	Wa1PTCOut	OUTLET TEMPERATURE SENSOR 1 FAILURE
22	Wa	WaCondFanF	CONDENSER 1 FANS FAILURE
23	Wa	WaHWPressu	WATER PRESSURE WARNING
24	Al	AlHWPressu	WATER PRESSURE ALARM
25	Al	AlHP2	COMP. 2 HIGH PRESSURE
26	Al	AlLP2	COMPRESSOR 2 LOW PRESSURE
27	Wa	WaNet	NETWORK FAILURE
28	Wa	WaOr	OUT OF MEMORY
29	Al	AlEEPROM	EEPROM FAILURE
30	Al	AlTH1	COMPRESSOR 1 THERMAL PROTECTION
31	Al	AlTH2	COMPRESSOR 2 THERMAL PROTECTION
32	Al	AlOil1	COMPRESSOR 1 OIL PRESSURE
33	Al	AlOil2	COMPRESSOR 2 OIL PRESSURE
34	Al (AA, AR)	Wa1Freeze	FREEZE ALARM (Auto-Reset)
35	Al (AA, AR)	Wa2Freeze	FREEZE ALARM COMP.2 (Auto-Reset)
36	Msg (AR, NA)	MeUnitOn	UNIT ON
37	Msg (AR, NA)	MeUnitOff	UNIT OFF
38	Msg (AR, NA)	MeSleepMod	TIMER MODE
39	Msg (AR, NA)	MeStandby	STANDBY MODE
40	Msg (AR, NA)	MePowOnHM	POWER ON
41	Msg (AR, NA)	MePowOffHM	POWER OFF
42	Wa (AR)	Unit1Dc	Unit 1 disconnected
43	Wa (AR)	Unit2Dc	Unit 2 disconnected
44	Wa (AR)	Unit3Dc	Unit 3 disconnected
45	Wa (AR)	Unit4Dc	Unit 4 disconnected
46	Wa (AR)	Unit5Dc	Unit 5 disconnected
47	Wa (AR)	Unit6Dc	Unit 6 disconnected
48	Wa (AR)	Unit7Dc	Unit 7 disconnected
49	Wa (AR)	Unit8Dc	Unit 8 disconnected

50	Wa (AR)	Unit9Dc	Unit 9 disconnected
51	Wa (AR)	Unit10Dc	Unit 10 disconnected
52	Wa (AR)	Unit11Dc	Unit 11 disconnected
53	Wa (AR)	Unit12Dc	Unit 12 disconnected
54	Wa (AR)	Unit13Dc	Unit 13 disconnected
55	Wa (AR)	Unit14Dc	Unit 14 disconnected
56	Wa (AR)	Unit15Dc	Unit 15 disconnected
57	Wa (AR)	Unit16Dc	Unit 16 disconnected
58	Wa (AR)	WaHM_OnOff	ON-OFF BY HIROMATIC NOT ENABLED
59	Msg (AR, NA)	MeHP1_Wa	COMPRESSOR 1 HIGH PRESSURE WARNING
60	Msg (AR, NA)	MeHP2_Wa	COMPRESSOR 2 HIGH PRESSURE WARNING
61	Msg (AR, NA)	MeHP1_Ok	COMPRESSOR 1 HIGH PRESSURE WARNING OK
62	Msg (AR, NA)	MeHP2_Ok	COMPRESSOR 2 HIGH PRESSURE WARNING OK
63	Wa (AA, AR)	Wa2PTCOut	OUTLET TEMPERATURE SENSOR 2 FAILURE
64	Wa	WaNetMast	NO CONNECTION TO UNIT 1
65	Wa	Wa1FreezeM	FREEZE ALARM (Manual Reset)
66	Wa	Wa2FreezeM	FREEZE ALARM COMP.2 (Manual Reset)
67	Wa	WaMemOutHM	OUT OF MEMORY
68	Al	AlCondFanF	CONDENSER 1 FANS FAILURE ALARM
69	Wa (AA, AR)	WaPTCAmb	AMBIENT TEMP. SENSOR WARNING
70	Al (AA, AR)	Al1PTCOut	OUTLET TEMPERATURE SENSOR 1 FAILURE
71	Al (AA, AR)	Al2PTCOut	OUTLET TEMPERATURE SENSOR 2 FAILURE
72	Wa (AA, AR)	WaPTCEva	EVAPORATOR INLET SENSOR WARNING
73	Al (AA, AR)	AlPTCEva	EVAPORATOR INLET SENSOR ALARM
74	Wa (AA, AR)	WaShPTCEva	EVAPORATOR INLET SENSOR WARNING (TEAM)
75	Al (AA, AR)	AlShPTCEva	EVAPORATOR INLET SENSOR ALARM (TEAM)
76	Wa (AA, AR)	WaShPTCIn	INLET TEMPERATURE SENSOR FAILURE (TEAM)
77	Wa (AA, AR)	WaHb_Error	HIROBUS ERROR
78	Wa (AA, AR)	WaSubGrErr	SUBGROUP-ID NOT UNIQUE
79	Wa (AA, AR)	WaSubGr1nc	SUBGROUP-UNIT 1 NOT CONNECTED
80	Wa (AA, AR)	WaSubGr2nc	SUBGROUP-UNIT 2 NOT CONNECTED
81	Wa	WaFC_Hou	FC WORKING HOURS EXCEEDED
82	Wa	WaCond2Fan	CONDENSER 2 FANS FAILURE
83	Al	AlCond2Fan	CONDENSER 2 FANS FAILURE ALARM
84	Al	AlLoCondP1	LOW CONDENSER PRESSURE 1
85	Al	AlLoCondP2	LOW CONDENSER PRESSURE 2
86	Al	AlHP_TH1	COMP. 1 HIGH PRESSURE / TH. PROTECTION
87	Al	AlHP_TH2	COMP. 2 HIGH PRESSURE / TH. PROTECTION
88	Al (AA, AR)	AlSubGr1nc	SUBGROUP-UNIT 1 NOT CONNECTED
89	Al (AA, AR)	AlSubGr2nc	SUBGROUP-UNIT 2 NOT CONNECTED
90	Wa		Hirosensor 1 Failure
91	Wa		Hirosensor 2 Failure
92	Wa		Slave Board not connected

TABLE 5.2: UNIT ALARM, WARNINGS AND MESSAGES (SCM 101.138 UNITS)

5. 3 Alarms for SCM.102.022 Software type

Nr.	Type	Variable	Description
0	Al	GenAlarm	GENERAL ALARM
1	Al	AlHP1	COMP. 1 HIGH PRESSURE
2	Al	AlLP1	COMPRESSOR 1 LOW PRESSURE
3	Wa	WaFlowSwit	FLOW SWITCH WARNING
4	Al	AlFlowSwit	FLOW SWITCH ALARM
5	Wa	WaUserInp	USER INPUT TRIGGERED
6	Al	AlUserInp	USER INPUT TRIGGERED
7	Wa	WaHWTempIn	HIGH WATER TEMP. IN
8	Wa	WaHWTempOu	HIGH WATER TEMP. OUT
9	Wa	WaLWTempIn	LOW WATER TEMP. IN
10	Wa	WaLWTempOu	LOW WATER TEMP. OUT
11	Al	AlHWTempIn	HIGH WATER TEMP. IN
12	Al	AlHWTempOu	HIGH WATER TEMP. OUT
13	Al	AlLWTempIn	LOW WATER TEMP. IN
14	Al	AlLWTempOu	LOW WATER TEMP. OUT
15	Wa	WaPump1Hou	PUMP 1 WORKING HOURS EXCEEDED
16	Wa	WaPump2Hou	PUMP 2 WORKING HOURS EXCEEDED
17	Wa	WaComp1Hou	CIRCUIT 1 WORKING HOURS EXCEEDED
18	Wa	WaComp2Hou	CIRCUIT 2 WORKING HOURS EXCEEDED
19	Wa (AA, AR)	WaPTCIn	INLET TEMPERATURE SENSOR FAILURE
20	Al (AA, AR)	AlPTCIn	INLET TEMPERATURE SENSOR FAILURE
21	Wa (AA, AR)	Wa1PTCOut	OUTLET TEMPERATURE SENSOR 1 FAILURE
22	Wa	WaCondFanF	CONDENSER 1 FANS FAILURE
23	Wa	WaHWPressu	WATER PRESSURE WARNING
24	Al	AlHWPressu	WATER PRESSURE ALARM
25	Al	AlHP2	COMP. 2 HIGH PRESSURE
26	Al	AlLP2	COMPRESSOR 2 LOW PRESSURE
27	Wa	WaNet	NETWORK FAILURE
			(Data Conflict Inside The Bus)
28	Wa	WaOrEEPROM	OUT OF MEMORY (or EEPROM FAILURE)
29	Al	ALCompCont	COMP. NOT STOPPING. CHECK MF OUTPUTS.
30	Al	AlTH1	COMPRESSOR 1 THERMAL PROTECTION
31	Al	AlTH2	COMPRESSOR 2 THERMAL PROTECTION
32	Al	AlOil1	COMPRESSOR 1 OIL PRESSURE
33	Al	AlOil2	COMPRESSOR 2 OIL PRESSURE
34	Al (AA, AR)	Wa1Freeze	FREEZE ALARM 1 (Auto-Reset)
35	Al (AA, AR)	Wa2Freeze	FREEZE ALARM 2 (Auto-Reset)
36	Msg (AR, NA)	MeUnitOn	UNIT ON
37	Msg (AR, NA)	MeUnitOff	UNIT OFF
38	Msg (AR, NA)	MeSleepMod	TIMER MODE
39	Msg (AR, NA)	MeStandby	STANDBY MODE
40	Msg (AR, NA)	MePowOnHM	POWER ON
		MePowerOn	
41	Msg (AR, NA)	MePowOffHM	POWER OFF
		MePowerOff	
42	Wa (AR)	Unit1Dc	Unit 1 disconnected
43	Wa (AR)	Unit2Dc	Unit 2 disconnected
44	Wa (AR)	Unit3Dc	Unit 3 disconnected
45	Wa (AR)	Unit4Dc	Unit 4 disconnected

46	Wa (AR)	Unit5Dc	Unit 5 disconnected
47	Wa (AR)	Unit6Dc	Unit 6 disconnected
48	Wa (AR)	Unit7Dc	Unit 7 disconnected
49	Wa (AR)	Unit8Dc	Unit 8 disconnected
50	Wa (AR)	Unit9Dc	Unit 9 disconnected
51	Wa (AR)	Unit10Dc	Unit 10 disconnected
52	Wa (AR)	Unit11Dc	Unit 11 disconnected
53	Wa (AR)	Unit12Dc	Unit 12 disconnected
54	Wa (AR)	Unit13Dc	Unit 13 disconnected
55	Wa (AR)	Unit14Dc	Unit 14 disconnected
56	Wa (AR)	Unit15Dc	Unit 15 disconnected
57	Wa (AR)	Unit16Dc	Unit 16 disconnected
58	Wa (AR)	WaHM_OnOff	ON-OFF BY HIROMATIC NOT ENABLED
59	Msg (AR, NA)	MeHP1_Wa	COMPRESSOR 1 HIGH PRESSURE WARNING
60	Msg (AR, NA)	MeHP2_Wa	COMPRESSOR 2 HIGH PRESSURE WARNING
61	Msg (AR, NA)	MeHP1_Ok	COMPRESSOR 1 PRESSURE OK
62	Msg (AR, NA)	MeHP2_Ok	COMPRESSOR 2 PRESSURE OK
63	Wa (AA, AR)	Wa2PTCOut	OUTLET TEMPERATURE SENSOR 2 FAILURE
64	Wa	WaNetMast	NO CONNECTION TO UNIT 1
65	Wa	Wa1FreezeM	FREEZE ALARM 1 (Manual Reset)
66	Wa	Wa2FreezeM	FREEZE ALARM 2 (Manual Reset)
67	Wa	WaMemOutHM	OUT OF MEMORY
68	Al	AlCondFanF	CONDENSER 1 FANS FAILURE ALARM
69	Wa (AA, AR)	WaPTCAmb	AMBIENT TEMP. SENSOR WARNING
70	Al (AA, AR)	Al1PTCOut	OUTLET TEMPERATURE SENSOR 1 FAILURE
71	Al (AA, AR)	Al2PTCOut	OUTLET TEMPERATURE SENSOR 2 FAILURE
72	Wa (AA, AR)	WaPTCEva	EVAPORATOR INLET SENSOR WARNING
73	Al (AA, AR)	AlPTCEva	EVAPORATOR INLET SENSOR ALARM
74	Wa (AA, AR)	WaShPTCEva	EVAPORATOR INLET SENSOR WARNING (TEAM)
75	Al (AA, AR)	AlShPTCEva	EVAPORATOR INLET SENSOR ALARM (TEAM)
76	Wa (AA, AR)	WaShPTCIn	INLET TEMPERATURE SENSOR FAILURE (TEAM)
77	Wa (AA, AR)	WaHb_Error	HIROBUS ERROR
78	Wa (AA, AR)	WaSubGrErr	SUBGROUP-ID NOT UNIQUE
79	Wa (AA, AR)	WaSubGr1nc	SUBGROUP-UNIT 1 NOT CONNECTED
80	Wa (AA, AR)	WaSubGr2nc	SUBGROUP-UNIT 2 NOT CONNECTED
81	Wa	WaFC_Hou	FC WORKING HOURS EXCEEDED
82	Wa	WaCond2Fan	CONDENSER 2 FANS FAILURE
83	Al	AlCond2Fan	CONDENSER 2 FANS FAILURE ALARM
84	Al	AlLoCondP1	LOW CONDENSER PRESSURE 1
85	Al	AlLoCondP2	LOW CONDENSER PRESSURE 2
86	Al	AlHP_TH1	COMP. 1 HIGH PRESSURE / TH. PROTECTION
87	Al	AlHP_TH2	COMP. 2 HIGH PRESSURE / TH. PROTECTION
88	Al (AA, AR)	AlSubGr1nc	SUBGROUP-UNIT 1 NOT CONNECTED
89	Al (AA, AR)	AlSubGr2nc	SUBGROUP-UNIT 2 NOT CONNECTED
90	Al	AlNoDifPr1	NO DIFFERENTIAL PRESSURE COMP.1

91	Al	AlNoDifPr2	NO DIFFERENTIAL PRESSURE COMP.2
92	Al (AA, AR)	AlMicAsIO	SLAVE MICROFACE NOT CONNECTED
93	Wa	WaHiroSen1	HIROSENSOR 1 FAILURE
94	Wa	WaHiroSen2	HIROSENSOR 2 FAILURE
95	Al	AlCond3Fan	CONDENSER 3 FANS FAILURE ALARM
96	Al	AlCond4Fan	CONDENSER 4 FANS FAILURE ALARM
97	Al	AlHP_TH3	COMP. 3 HIGH PRESSURE / TH. PROTECTION
98	Al	AlHP_TH4	COMP. 4 HIGH PRESSURE / TH. PROTECTION
99	Al	AlHP3	COMP. 3 HIGH PRESSURE
100	Msg (AR, NA)	reserved	UNIT CONNECTED
101	Msg (AR, NA)	reserved	UNIT NOT CONNECTED
102	Al	AlHP4	COMP. 4 HIGH PRESSURE
103	Al	AlLP3	COMPRESSOR 3 LOW PRESSURE
104	Al	AlLP4	COMPRESSOR 4 LOW PRESSURE
105	Al	AlOil3	COMPRESSOR 3 OIL PRESSURE
106	Al	AlOil4	COMPRESSOR 4 OIL PRESSURE
107	Al	AlTH3	COMPRESSOR 3 THERMAL PROTECTION
108	Al	AlTH4	COMPRESSOR 4 THERMAL PROTECTION
109	Al	AlLoCondP3	LOW CONDENSER PRESSURE 3
110	Al	AlLoCondP4	LOW CONDENSER PRESSURE 4
111	Al	AlNoDifPr3	NO DIFFERENTIAL PRESSURE COMP.3
112	Al	AlNoDifPr4	NO DIFFERENTIAL PRESSURE COMP.4
113	Msg (AR, NA)	MeHP3_Ok	COMPRESSOR 3 HIGH PRESSURE WARNING OK
114	Msg (AR, NA)	MeHP4_Ok	COMPRESSOR 4 HIGH PRESSURE WARNING OK
115	Msg (AR, NA)	MeHP3_Wa	COMPRESSOR 3 HIGH PRESSURE WARNING
116	Msg (AR, NA)	MeHP4_Wa	COMPRESSOR 4 HIGH PRESSURE WARNING
117	Al (AA, AR)	AlSubGr3nc	SUBGROUP-UNIT 3 NOT CONNECTED
118	Al (AA, AR)	AlSubGr4nc	SUBGROUP-UNIT 4 NOT CONNECTED
119	Wa (AA, AR)	WaSubGr3nc	SUBGROUP-UNIT 3 NOT CONNECTED
120	Wa (AA, AR)	WaSubGr4nc	SUBGROUP-UNIT 4 NOT CONNECTED
121	Wa	WaComp3Hou	CIRCUIT 3 WORKING HOURS EXCEEDED
122	Wa	WaComp4Hou	CIRCUIT 4 WORKING HOURS EXCEEDED
123	Wa	WaCond3Fan	CONDENSER 3 FANS FAILURE
124	Wa	WaCond4Fan	CONDENSER 4 FANS FAILURE
125	Al (AA, AR)	AlMicAsIO2	SLAVE MICROFACE 2 NOT CONNECTED
126	Wa	WaUserInp2	USER INPUT 2 TRIGGERED
127	Al	AlUserInp2	USER INPUT 2 TRIGGERED
128	Msg (AR, NA)	MeRecovSto	RECOVERY STOPPED
129	Msg (AR, NA)	MeRecovOK	RECOVERY OK
130	Wa	DummyAL130	130
131	Wa	DummyAL131	131
132	Wa	DummyAL132	132
133	Wa	DummyAL133	133
134	Wa	DummyAL134	134
135	Wa	DummyAL135	135
136	Wa	DummyAL136	136
137	Wa	DummyAL137	137
138	Wa	DummyAL138	138
139	Wa	DummyAL139	139
140	Wa	DummyAL140	140

141	Wa	DummyAL141	141
142	Wa	DummyAL142	142
143	Wa	DummyAL143	143
144	Wa	DummyAL144	144
145	Wa	DummyAL145	145
146	Wa	DummyAL146	146
147	Wa	DummyAL147	147
148	Wa	DummyAL148	148
149	Wa	DummyAL149	149
150	Wa	DummyAL150	150
151	Wa	DummyAL151	151
152	Wa	DummyAL152	152

TABLE 5.3: UNIT ALARM, WARNINGS AND MESSAGES (SCM 102.022[AND HIGHER] UNITS)

Further important information about the Alarms collection by an external BMS are available in Chapter 6. 4.

6. SNVT used in the LonWorks application

All variables related to an HPAC unit can be represented by a LonWork SNVT type. Values stored in the SNVTs are updated through the RS485 channel by the Microface E interface of the HPAC. In the opposite direction values asynchronously set by some Device in the LonWorks network update SNTVs defined as input variables.
When a change occurs, the Echelon network automatically propagates the information updating the values in every Monitor/Control point of the external BMS. These transactions are asynchronous so that they don't congest the transmission BUS.
The following types of SNVT are used by the LonWorks application running on the HILON device.

SNVT Type	**Structure description and available range**
SNVT_OBJ_REQUEST	Structure 3 bytes long containing the Device ID (2 bytes) and the object_request field
SNVT_obj_status	Structure 6 bytes long containing the Device ID and other 23 boolean parameters + 9 bits reserved
SNVT_char_ascii	Ascii character. Range: [0..255]
SNVT_temp	Tenth of degrees above –274 °C. Range [-274 .. 6279.5] (steps of 0.1 °C)
SNVT_lev_percent	Range: [-163.84% - 163.83%] (steps of 0.005%)
SNVT_lev_disc	Enum type identifying 5 discrete levels: 0: ST_OFF 1: ST_LOW 2: STMED 3: ST_HIGH 4: ST_ON 0xFF is reserved as status NULL (ST_NULL)
SNVT_count	A counter from –32768 to 32767
SNVT_str_asc	C string of 30 characters + NULL terminator
SNVT_press	Signed long. The Unit is KiloPascal, but the valure in HILON application represents Bar. Range [-3276.8.. 3276.7]
SNVT_switch	Structure reporting a percentage level or a load value and a discrete ON/OFF state Range: [0 – 200 (meaning 100%); 0/1]

TABLE 6.1: TYPES OF SNVT IN USE

Connecting a Supervisor Node to the net where a certain number of HILON are present it is possible to retrieve SNVT values using two different techniques, offered by the Echelon networking framework:

- Read SNVTs by polling
- Read SNVTs by binding

In the first case the Supervisor has a typical master role, requiring with a fixed rate the value of each SNVT.
In the second case the Supervisor waits for SNVTs updates (the peripheral nod has got an active role, sending the new value only when an update occours).

Warning:
It is strongly recommended to adopt the Binding mechanism, to reduce drastically the amount of messages flowing in the Echelon BUS, and avoiding possible pocket loss in big installations.

The following tables shows the actual implementations of the SNVT using the types above mentioned. It's reported both the HPAC name and the HILON name. The tables respects the internal progressive number identifying each SNVT.

The following SNVTs are intended to manage requests and updates between HILON and the device connected to:

ID	Name	Type	Values	Direction
0	Object Request	SNVT_obj_request	First 2 byte: ObjectID (only 1 object, ID = 0).Third byte; request • 2 = RQ_UPDATE_STATUS ,requests node state. • 5 = RQ_REPORT_MASK ,reports possible enabled requests	In
1	Object Status	SNVT_obj_status	First 2 byte: ObjectID (only 1 object, ID = 0). Remaining 4 bytes: 1) 0x80 invalid_id, 0x40 invalid_request, 0x01 feedback_failure, 0x08 open_circuit. 2) 0x08 communication_failure. 3) 0x10 report_mask, 0x08 programming_mode,0x48 programming mode + alarm 4) not used	Out

TABLE 6.2: MANDATORY SNVT

6. 1 Parameters for EVM 160.xxx and A1M 160.xxx software types

The other SNVTs related to Unit variables:

HILON		HPAC Name	Type	Range/Meaning	Direction
ID	Name				
2	Unit Status	SinglState	SNVT_char_ascii	Range 0-10. 0 = Alarm Off 1 = Manual Mode 2 = Local Off (Unit sopped with local On/Off Switch) 3 = System Off (Unit stopped through Bus) 4 = Alarm Standby 5 = Standby Mode 6 = Unit in Sleepmode, Fan Off 7 = Unit On 8 = Unit On, with active Warning 9 = Unit On, with active Alarm 10 = Unit in Sleepmode, Fan On (Control with Deadband)	Out
3	Return Air Temperature	LocTemp	SNVT_temp	0.0 to 50.0 ºC	Out

4	Return Air Humidity	HT_Humi	SNVT_lev_percent	20.0 to 80.0 %r.H.	Out
5	PTC Temerature	PTC_Temp	SNVT_temp	-27.0 to 100.0 ºC	Out
6	Outdoor Temperature	AMB_Temp	SNVT_temp	-27.0 to 100.0 ºC	Out
7	Glycol Temperature	GLYC_Temp	SNVT_temp	-27.0 to 100.0 ºC	Out
8	EEAP Temperature	EEAPTemp	SNVT_temp	0.0 to 50.0 ºC	Out
9	EEAP Humidity	EEAPHumi	SNVT_lev_percent	20.0 to 80.0 %r.H.	Out
10	Freecooling Status	FC_Cond	SNVT_lev_disc	0 = off 1 = start 2 = on 3 = not-FC	Out
11	Conditioner Working Hours	HourCond	SNVT_count	0 to 32000 hours	Out
12	Compressor 1 Working Hours	HourComp	SNVT_count	0 to 32000 hours	Out
13	Compressor 2 Working Hours	HourComp2	SNVT_count	0 to 32000 hours	Out
14	Humidifier Working Hours	HourHumi	SNVT_count	0 to 32000 hours	Out
15	Heater Working Hours	HourHeat	SNVT_count	0 to 32000 hours	Out
16	Freecooling Working Hours	HourFC	SNVT_count	0 to 32000 hours	Out
17	Status Fan	ManFan	SNVT_char_ascii	0 = off 1 = on	Out
18	Status Compressor 1	ManComp	SNVT_char_ascii	0 = off 1 = on	Out
19	Status Compressor 2	ManComp2	SNVT_char_ascii	0 = off 1 = on	Out
20	Status Humidifier	ManHumi	SNVT_char_ascii	0 = off 1 = on	Out
21	Status Heater 1	ManHeat1	SNVT_char_ascii	0 = off 1 = on	Out
22	Status Heater 2	ManHeat2	SNVT_char_ascii	0 = off 1 = on	Out
23	Status Dehumidification	ManDehum	SNVT_char_ascii	0 = off 1 = on	Out
24	Status 3 Point Actuor	Valve3P	SNVT_lev_percent	0 to 100 %r.H.	Out
25	Temperature Integration Factor	TempIntg	SNVT_char_ascii	4 means no integration factor 5 to 15 min	Out
26	Temperature Difference Room - Outdoor	dt_RoomAMB	SNVT_temp	0 means no measured difference 1 no sensor Outdoor 2 cooling only 3 to 25 ºK	Out
27	Temperature Difference Room - Glycol	dt_RoomGLY	SNVT_temp	0 means no measured difference 1 no sensor Glycol 2 to 25 ºK	Out
28	Room Temperature Setpoint	TempSet	SNVT_temp	5.0 to 40.0 ºC	Out
29	Room Humidity Setpoint	HumiSet	SNVT_lev_percent	19 means no humidity control 20 to 80 %r.H.	Out
30	Temperature Proportional Band	TempProp	SNVT_temp	1.0 to 30.0 ºK	Out
31	Humidity Proportional Band	HumiProp	SNVT_lev_percent	2 to 60 %r.H.	Out

32	Humidity Integration Factor	HumiIntg	SNVT_char_ascii	4 means no integration factor 5 to 15 min	Out
33	High Temperature Warning	HiTemp	SNVT_temp	0 means no high temperature warning 1 to 99 ºC	Out
34	Low Temperature Warning	LoTemp	SNVT_temp	0 means no low temperature warning 1 to 99 ºC	Out
35	High Humidity Warning	HiHumi	SNVT_lev_percent	0 means no high humidity warning 1 to 99 % r.H.	Out
36	Low Humidity Warning	LoHumi	SNVT_lev_percent	0 means no low humidity warning 1 to 99 % r.H.	Out
37	High Temperature EEAP Warning	HiTempE	SNVT_temp	0 means no high temperature EEAP warning 1 to 99 ºC	Out
38	Low Temperature EEAP Warning	LoTempE	SNVT_temp	0 means no low temperature EEAP warning 1 to 99 ºC	Out
39	High Humidity EEAP Warning	HiHumiE	SNVT_lev_percent	0 means no high humidity EEAP warning 1 to 99 % r.H.	Out
40	Low Humidity EEAP Warning	LoHumiE	SNVT_lev_percent	0 means no low humidity EEAP warning 1 to 99 % r.H.	Out
41	Number of Standby Unit	StdByUnit	SNVT_char_ascii	0 to 15	Out
42	Unit Alarm acknowledge / Reset	GenAlarm	SNVT_char_ascii	**Please note that the value returned by the device holds the current alarm-status of the unit.** 0 .. No alarm present 1 .. Message acknowledged (inactive) 3 .. Message acknowledged (active) 5 .. Message not acknowledged (inactive) 7 .. Message not acknowledged (active) 9 .. Warning acknowledged (inactive) 11.. Warning acknowledged (active) 13.. Warning not acknowledged (inactive) 15.. Warning not	Out

				acknowledged (active) 17.. Alarm acknowledged (inactive) 19.. Alarm acknowledged (active) 21...Alarm not acknowledged (inactive) 23.. Alarm not acknowledged (active) 25.. Alarm and warning acknowledged (inactive) 27.. Alarm and warning acknowledged (active) 29.. Alarm and warning not acknowledged (inactive) 31.. Alarm and warning not acknowledged (active)	
43		ALARME	SNVT_ switch	(##, 0, 1) with ## representing the number of the ALARM in TABLE 5. 1	Out
44	Room Temperature Setpoint	TempSet	SNVT_temp	*The same for Out variable*	In
45	Room Humidity Setpoint	HumiSet	SNVT_lev_percent	*The same for Out variable*	In
46	Temperature Proportional Band	TempProp	SNVT_temp	*The same for Out variable*	In
47	Humidity Proportional Band	HumiProp	SNVT_lev_percent	*The same for Out variable*	In
48	Humidity Integration Factor	HumiIntg	SNVT_char_ascii	*The same for Out variable*	In
49	Stop FC Roomsetpoint +	Stop_FC_at	SNVT_temp	0.0 means no measured difference 1 to 25 ºK	In
50	High Temperature Warning	HiTemp	SNVT_temp	*The same for Out variable*	In
51	Low Temperature Warning	LoTemp	SNVT_temp	*The same for Out variable*	In
52	High Humidity Warning	HiHumi	SNVT_lev_percent	*The same for Out variable*	In
53	Low Humidity Warning	LoHumi	SNVT_lev_percent	*The same for Out variable*	In
54	High Temperature EEAP Warning	HiTempE	SNVT_temp	*The same for Out variable*	In
55	Low Temperature	LoTempE	SNVT_temp	*The same for Out*	In

	EEAP Warning			*variable*	
56	High Humidity EEAP Warning	HiHumiE	SNVT_lev_percent	*The same for Out variable*	In
57	Low Humidity EEAP Warning	LoHumiE	SNVT_lev_percent	*The same for Out variable*	In
58	Number of Standby Unit	StdByUnit	SNVT_char_ascii	[0..15]	In
59	Unit Alarm acknowledge / Reset	GenAlarm	SNVT_char_ascii	4 (Alarm Acknowledge) 2 (Alarm Reset) **Please note that the value returned by the device holds the current alarm-status of the unit. Possible values are:** 0 .. No alarm present 1 .. Message acknowledged (inactive) 3 .. Message acknowledged (active) 5 .. Message not acknowledged (inactive) 7 .. Message not acknowledged (active) 9 .. Warning acknowledged (inactive) 11.. Warning acknowledged (active) 13.. Warning not acknowledged (inactive) 15.. Warning not acknowledged (active) 17.. Alarm acknowledged (inactive) 19.. Alarm acknowledged (active) 21...Alarm not acknowledged (inactive) 23.. Alarm not acknowledged (active)	In
60	Unit On-Off	HMSysOn_Mi	SNVT_lev_disc	0 = Off (ST_OFF) 4 = On (ST_ON)	In

TABLE 6.3: SNVT USED IN HILON FOR EVM 160.XXX AND A1M 160.XXX

6. 2 Parameters for SCM.101.138 software type

The other SNVTs related to Unit variables:

HILON		HPAC Name	Type	Range/Meaning	Direction
ID	**Name**				
2	Number of Standby Units	StdByUnits	SNVT_char_ascii	0 to 15	Out
3	Rotation Frequency (No, Daily, Every Monday, …)	RotationEN	SNVT_char_ascii	0=NO 1=Daily 2=Monday 3=Tuesday 4=Wednesday 5=Thursday 6=Friday 7=Saturday 8=Sunday	Out
4	Rotation Hour	RotatHou	SNVT_char_ascii	0 – 23 hours	Out
5	Rotation Minute	RotatMin	SNVT_char_ascii	0 – 59 minutes	Out
6	System On (Microface)	HMSysOn_Mi	SNVT_lev_disc	0 (Unit OFF) 4 (Unit ON)	Out
7	Stop Compressor Lower Than this value in °C	Stop_Co_LT	SNVT_temp	–8.0 to 8.0 °C	Out
8	High Water Temp. Warning Inlet at	HWTempInWa	SNVT_temp	0.0 to 99.0 °C	Out
9	High Water Temp. Warning Outlet at	HWTempOuWa	SNVT_temp	0.0 to 99.0 °C	Out
10	High Water Temp. Alarm Inlet at	HWTempInAl	SNVT_temp	0.0 to 99.0 °C	Out
11	High Water Temp. Alarm Outlet at	HWTempOuAl	SNVT_temp	0.0 to 99.0 °C	Out
12	Pump 1 Working Hours	HourPump1	SNVT_count	0 to 32000 hours	Out
13	Pump 2 Working Hours	HourPump2	SNVT_count	0 to 32000 hours	Out
14	Compressor 1 Working Hours	HourComp1	SNVT_count	0 to 32000 hours	Out
15	Compressor 2 Working Hours	HourComp2	SNVT_count	0 to 32000 hours	Out
16	Freecooling On Working Hours	HourFC	SNVT_count	0 to 32000 hours	Out
17	Pump 1 Working Hours Warning At	HourPump1M	SNVT_count	0 to 32000 hours	Out
18	Pump 2 Working Hours Warning At	HourPump2M	SNVT_count	0 to 32000 hours	Out
19	Comp. 1 Working Hours Warning At	HourComp1M	SNVT_count	0 to 32000 hours	Out
20	Comp. 2 Working Hours Warning At	HourComp2M	SNVT_count	0 to 32000 hours	Out
21	Freecooling On Working Hours Warning At	HourFCM	SNVT_count	0 to 32000 hours	Out
22	General Alarm Microface	GenAlarm	SNVT_char_ascii	**Please note that the value returned by the device holds the current alarm-status of the unit.** 0 .. No alarm present 1 .. Message acknowledged (inactive) 3 .. Message acknowledged (active) 5 .. Message not	Out

				acknowledged (inactive) 7 .. Message not acknowledged (active) 9 .. Warning acknowledged (inactive) 11.. Warning acknowledged (active) 13.. Warning not acknowledged (inactive) 15.. Warning not acknowledged (active) 17.. Alarm acknowledged (inactive) 19.. Alarm acknowledged (active) 21...Alarm not acknowledged (inactive) 23.. Alarm not acknowledged (active) 25.. Alarm and warning acknowledged (inactive) 27.. Alarm and warning acknowledged (active) 29.. Alarm and warning not acknowledged (inactive) 31.. Alarm and warning not acknowledged (active)	
23	Analog Condenser Output 1	AnaConden1	SNVT_lev_percent	0 to 100 %.	Out
24	Analog Condenser Output 2	AnaConden2	SNVT_lev_percent	0 to 100 %.	Out
25	Actual Position of the 3 Point Valve in %	Valve3P	SNVT_lev_percent	0 to 100 %.	Out
26	Current Pressure Circuit 1 in Bar	C1PresBar	SNVT_press	-10 to 50 Bar	Out
27	Current Pressure Circuit 2 in Bar	C2PresBar	SNVT_press	-10 to 50 Bar	Out
28	Status of the unit (Sleep, Manual, Unit On, …) Mic	SinglState	SNVT_char_ascii	Range 0-10. 0 = Alarm Off 1 = Manual Mode 2 = Local Off (Unit sopped with local On/Off Switch)	Out

				3 = System Off (Unit stopped through Bus) 4 = Alarm Standby 5 = Standby Mode 6 = Unit in Sleepmode, Fan Off 7 = Unit On 8 = Unit On, with active Warning 9 = Unit On, with active Alarm 10 = Unit in Sleepmode, Fan On (Control with Deadband)	
29	Actual Temperature Setpoint	TempSet_ac	SNVT_temp	-10.0 to 30.0 °C.	Out
30	Current PTC Inlet Temperature	PTCIn_Temp	SNVT_temp	-25.0 to 100.0 °C	Out
31	Current PTC Outlet Temperature	PTCOu_Temp	SNVT_temp	-25.0 to 100.0 °C	Out
32	Current PTC Ambient Temperature	PTCAmb_Temp	SNVT_temp	-30.0 to 100.0 °C	Out
33	Current PTC Evaporator Inlet Temperature	PTCEva_Temp	SNVT_temp	-25.0 to 100.0 °C	Out
34	Freecooling Condition (OFF, START or ON)	FC_Cond	SNVT_lev_disc	0 = Off 1 = Start 2 = On	Out
35	Pump 1 Status (digital output)	ManPump1	SNVT_lev_disc	1=ON 0=OFF	Out
36	Pump 2 Status (digital output)	ManPump2	SNVT_lev_disc	1=ON 0=OFF	Out
37	Compressor 1.1 Status (digital output)	ManComp1	SNVT_lev_disc	1=ON 0=OFF	Out
38	Compressor 1.2 Status (digital output)	ManComp1Pa	SNVT_lev_disc	1=ON 0=OFF	Out
39	Compressor 2.1 Status (digital output)	ManComp2	SNVT_lev_disc	1=ON 0=OFF	Out
40	Compressor 2.2 Status (digital output)	ManComp2Pa	SNVT_lev_disc	1=ON 0=OFF	Out
41	Current Status Report Entries	ALARME	SNVT_ switch	(##, 0, 1) with ## representing the number of the ALARM in TABLE 5. 2	Out
42	Outlet temperature setpoint 1	OuTempSet1	SNVT_temp	5.0 to 17.0 °C	In
43	Number of Standby Units	StdByUnits	SNVT_char_ascii	*The same for Out variable*	In
44	Rotation Frequency (No, Daily, Every Monday, …)	RotationEN	SNVT_char_ascii	*The same for Out variable*	In
45	Rotation Hour	RotatHou	SNVT_char_ascii	*The same for Out variable*	In
46	Rotation Minute	RotatMin	SNVT_char_ascii	*The same for Out variable*	In
47	Stop Compressor Lower Than this value in °C	Stop_Co_LT	SNVT_temp	*The same for Out variable*	In

48	High Water Temp. Warning Inlet at	HWTempInWa	SNVT_temp	*The same for Out variable*	In
49	High Water Temp. Warning Outlet at	HWTempOuWa	SNVT_temp	0.0 means no measured difference 1 to 25 ºK	In
50	High Water Temp. Alarm Inlet at	HWTempInAl	SNVT_temp	*The same for Out variable*	In
51	High Water Temp. Alarm Outlet at	HWTempOuAl	SNVT_temp	*The same for Out variable*	In
52	Pump 1 Working Hours Warning At	HourPump1M	SNVT_count	*The same for Out variable*	In
53	Pump 2 Working Hours Warning At	HourPump2M	SNVT_count	*The same for Out variable*	In
54	Comp. 1 Working Hours Warning At	HourComp1M	SNVT_count	*The same for Out variable*	In
55	Comp. 2 Working Hours Warning At	HourComp2M	SNVT_count	*The same for Out variable*	In
56	Freecooling On Working Hours Warning At	HourFCM	SNVT_count	*The same for Out variable*	In
57	General Alarm Microface	GenAlarm	SNVT_char_ascii	4 (Alarm Acknowledge) 2 (Alarm Reset) **Please note that the value returned by the device holds the current alarm-status of the unit. Possible values are:** 0 .. No alarm present 1 .. Message acknowledged (inactive) 3 .. Message acknowledged (active) 5 .. Message not acknowledged (inactive) 7 .. Message not acknowledged (active) 9 .. Warning acknowledged (inactive) 11.. Warning acknowledged (active) 13.. Warning not acknowledged (inactive) 15.. Warning not acknowledged (active) 17.. Alarm acknowledged (inactive) 19.. Alarm acknowledged (active) 21...Alarm not acknowledged	In

				(inactive) 23.. Alarm not acknowledged (active)	
58	System On (Microface)	HMSysOn_Mi	SNVT_lev_disc	*The same for Out variable*	In

TABLE 6.4: SNVT USED IN HILON FOR SCM 101.138

6. 3 Parameters for SCM.102.022 software type

The other SNVTs related to Unit variables:

HILON		HPAC Name	Type	Range/Meaning	Direction
ID	**Name**				
2	Number of Standby Units	StdByUnits	SNVT_char_ascii	0 to 15	Out
3	Rotation Frequency (No, Daily, Every Monday, …)	RotationEN	SNVT_char_ascii	0=NO 1=Daily 2=Monday 3=Tuesday 4=Wednesday 5=Thursday 6=Friday 7=Saturday 8=Sunday	Out
4	Rotation Hour	RotatHou	SNVT_char_ascii	0 – 23 hours	Out
5	Rotation Minute	RotatMin	SNVT_char_ascii	0 – 59 minutes	Out
6	System On (Microface)	HMSysOn_Mi	SNVT_lev_disc	0 (Unit OFF) 4 (Unit ON)	Out
7	High Water Temp. Warning Inlet at	HWTempInWa	SNVT_temp	0.0 to 99.0 °C	Out
8	High Water Temp. Warning Outlet at	HWTempOuWa	SNVT_temp	0.0 to 99.0 °C	Out
9	High Water Temp. Alarm Inlet at	HWTempInAl	SNVT_temp	0.0 to 99.0 °C	Out
10	High Water Temp. Alarm Outlet at	HWTempOuAl	SNVT_temp	0.0 to 99.0 °C	Out
11	Pump 1 Working Hours	HourPump1	SNVT_count	0 to 32000 hours	Out
12	Pump 2 Working Hours	HourPump2	SNVT_count	0 to 32000 hours	Out
13	Compressor 1 Working Hours	HourComp1	SNVT_count	0 to 32000 hours	Out
14	Compressor 2 Working Hours	HourComp2	SNVT_count	0 to 32000 hours	Out
15	Compressor 3 Working Hours	HourComp3	SNVT_count	0 to 32000 hours	Out
16	Compressor 4 Working Hours	HourComp4	SNVT_count	0 to 32000 hours	Out
17	Freecooling On Working Hours	HourFC	SNVT_count	0 to 32000 hours	Out
18	Pump 1 Working Hours Warning At	HourPump1M	SNVT_count	0 to 32000 hours	Out
19	Pump 2 Working Hours Warning At	HourPump2M	SNVT_count	0 to 32000 hours	Out
20	Comp. 1 Working Hours Warning At	HourComp1M	SNVT_count	0 to 32000 hours	Out
21	Comp. 2 Working Hours Warning At	HourComp2M	SNVT_count	0 to 32000 hours	Out

22	Comp. 3 Working Hours Warning At	HourComp3M	SNVT_count	0 to 32000 hours	Out
23	Comp. 4 Working Hours Warning At	HourComp4M	SNVT_count	0 to 32000 hours	Out
24	Freecooling On Working Hours Warning At	HourFCM	SNVT_count	0 to 32000 hours	Out

25	General Alarm Microface	GenAlarm	SNVT_char_ascii	**Please note that the value returned by the device holds the current alarm-status of the unit.** 0 .. No alarm present 1 .. Message acknowledged (inactive) 3 .. Message acknowledged (active) 5 .. Message not acknowledged (inactive) 7 .. Message not acknowledged (active) 9 .. Warning acknowledged (inactive) 11.. Warning acknowledged (active) 13.. Warning not acknowledged (inactive) 15.. Warning not acknowledged (active) 17.. Alarm acknowledged (inactive) 19.. Alarm acknowledged (active) 21...Alarm not acknowledged (inactive) 23.. Alarm not acknowledged (active) 25.. Alarm and warning acknowledged (inactive) 27.. Alarm and warning acknowledged (active) 29.. Alarm and warning not acknowledged (inactive) 31.. Alarm and warning not acknowledged (active)	Out
26	Analog Condenser Output 1	AnaConden1	SNVT_lev_percent	0 to 100 %.	Out

27	Analog Condenser Output 2	AnaConden2	SNVT_lev_percent	0 to 100 %.	Out
28	Analog Condenser Output 3	AnaConden3	SNVT_lev_percent	0 to 100 %.	Out
29	Analog Condenser Output 4	AnaConden4	SNVT_lev_percent	0 to 100 %.	Out
30	Actual Position of the 3 Point Valve in %	Valve3P	SNVT_lev_percent	0 to 100 %.	Out
31	Current Pressure Circuit 1 in Bar	C1PresBar	SNVT_press	-10 to 50 Bar	Out
32	Current Pressure Circuit 2 in Bar	C2PresBar	SNVT_press	-10 to 50 Bar	Out
33	Current Pressure Circuit 3 in Bar	C3PresBar	SNVT_press	-10 to 50 Bar	Out
34	Current Pressure Circuit 4 in Bar	C4PresBar	SNVT_press	-10 to 50 Bar	Out
35	Status of the unit (Sleep, Manual, Unit On, …) Mic	SinglState	SNVT_char_ascii	Range 0-10. 0 = Alarm Off 1 = Manual Mode 2 = Local Off (Unit stopped with local On/Off Switch) 3 = System Off (Unit stopped through Bus) 4 = Alarm Standby 5 = Standby Mode 6 = Unit in Sleepmode, Fan Off 7 = Unit On 8 = Unit On, with active Warning 9 = Unit On, with active Alarm 10 = Unit in Sleepmode, Fan On (Control with Deadband)	Out
36	Actual Temperature Setpoint	TempSet_ac	SNVT_temp	-10.0 to 30.0 °C.	Out
37	Current PTC Inlet Temperature	PTCIn_Temp	SNVT_temp	-25.0 to 100.0 °C	Out
38	Current PTC Outlet Temperature	PTCOu_Temp	SNVT_temp	-25.0 to 100.0 °C	Out
39	Current PTC Ambient Temperature	PTCAmb_Temp	SNVT_temp	-30.0 to 100.0 °C	Out
40	Pump 1 Status (digital output)	ManPump1	SNVT_lev_disc	1=ON 0=OFF	Out
41	Pump 2 Status (digital output)	ManPump2	SNVT_lev_disc	1=ON 0=OFF	Out
42	Compressor 1.1 Status (digital output)	ManComp1	SNVT_lev_disc	1=ON 0=OFF	Out
43	Compressor 1.2 Status (digital output)	ManComp1Pa	SNVT_lev_disc	1=ON 0=OFF	Out
44	Compressor 2.1 Status (digital output)	ManComp2	SNVT_lev_disc	1=ON 0=OFF	Out
45	Compressor 2.2 Status (digital output)	ManComp2Pa	SNVT_lev_disc	1=ON 0=OFF	Out
46	Compressor 3 Status (digital output)	ManComp3	SNVT_lev_disc	1=ON 0=OFF	Out

47	Compressor 4 Status (digital output)	ManComp4	SNVT_lev_disc	1=ON 0=OFF	Out
48	Current Status Report Entries	ALARME	SNVT_ switch	(##, 0, 1) with ## representing the number of the ALARM in TABLE 5. 3	Out
49	Outlet temperature setpoint 1	OuTempSet1	SNVT_temp	5.0 to 17.0 °C	In
50	Number of Standby Units	StdByUnits	SNVT_char_ascii	*The same for Out variable*	In
51	Rotation Frequency (No, Daily, Every Monday, …)	RotationEN	SNVT_char_ascii	*The same for Out variable*	In
52	Rotation Hour	RotatHou	SNVT_char_ascii	*The same for Out variable*	In
53	Rotation Minute	RotatMin	SNVT_char_ascii	*The same for Out variable*	In
54	Stop Compressor Lower Than this value in °C	Stop_Co_LT	SNVT_temp	-25.0 to 8.0 C°	In
55	High Water Temp. Warning Inlet at	HWTempInWa	SNVT_temp	*The same for Out variable*	In
56	High Water Temp. Warning Outlet at	HWTempOuWa	SNVT_temp	0.0 means no measured difference 1 to 25 °K	In
57	High Water Temp. Alarm Inlet at	HWTempInAl	SNVT_temp	*The same for Out variable*	In
58	High Water Temp. Alarm Outlet at	HWTempOuAl	SNVT_temp	*The same for Out variable*	In

59	General Alarm Microface	GenAlarm	SNVT_char_ascii	4 (Alarm Acknowledge) 2 (Alarm Reset) 0 .. No alarm present 1 .. Message acknowledged (inactive) 3 .. Message acknowledged (active) 5 .. Message not acknowledged (inactive) 7 .. Message not acknowledged (active) 9 .. Warning acknowledged (inactive) 11.. Warning acknowledged (active) 13.. Warning not acknowledged (inactive) 15.. Warning not acknowledged (active) 17.. Alarm acknowledged (inactive) 19.. Alarm acknowledged (active) 21...Alarm not acknowledged (inactive) 23.. Alarm not acknowledged (active)	In
60	System On (Microface)	HMSysOn_Mi	SNVT_lev_disc	*The same for Out variable*	In

TABLE 6.5: SNVT USED IN HILON FOR SCM 102.022

In Appendix A are reported three.XIF file (External Interface File) for the following software versions:

- EVM/A1M 160.xxx (file available in the CD provided with the HILON: HPAC_rev1_3.XIF)
- SCM 101.138 (file available in the CD provided with the HILON: SCH_rev1_1.XIF)
- SCM102.022 and higher (file available in the CD provided with the HILON: MATRIX_rev1_1.XIF

This files can be used by some Tools implementing a Supervision System on a LonWork Network (e.g. LonMaker) to upload all the information about SNVTs instead of configure them manually, following the tables above.

6. 4 Timing constraints in collecting Alarm/Warning/Message events

HILON Device have a limited buffer storage but enough to store all multiple Alarms (in the same communication frame) coming up from the AC units.

Alarm collection in BINDING MODE
This means that the SNVT variable, containing the integer value related to the Event, SNVT_switch nvoALARME (for all versions) MUST be read by the BMS before the next incoming Alarm. Therefore the BINDING of SNVT_switch nvoALARME variable, by the monitoring BMS, is strongly suggested. In this way each variation is automatically sent to the BMS and no information loss is possible.

Alarm collection in POLLING MODE
In case that the BMS is forced to use polling method, to query the SNVT variables, timing constraints might arise in order grant the collection of all Alarm events. When multiple events are sent from the AC Unit in the same communication frame, HILON makes available the events in sequence with a fixed rate of 7 seconds. Provided that, the BMS should query this variable with a polling rate lower than 7 seconds (e.g. 5 second) in order togrant the collection of all Alarm events.

7. Codes

Description	**Code**
HILON for HPAC	480056
HILON for Superchiller 2000	480102
HILON for Matrix	480116
Spare parts description	
Hironet Connection Cable (F type)	480038
Transformer 24VAC/24VAC 10VA	255877

8. Appendix A: .

8. 1 XIF configuration File for EVM/A1M 160.xxx (rev 1.3)

The following External Interface File may be processed by a super visioning application to read HILON SNVTs configuration.

```
File: \HiroDevTempl.XIF generated by LONNCC32 Version 4.00.86, XIF Version 4.0
Copyright (c) 1989 - 2001  Echelon Corp
All Rights Reserved.  Run on Wed Feb 22 15:15:45 2006

90:00:A6:46:00:04:04:03
2 10 0 61 0 3 3 3 3 3 3 11 9 2 4 0 0 16 30 1 1 11
0 5 12 13 28 1382 0 15 5 3 398 4
1 7 1 0 4 4 4 15 200 0
78125 0 0 0 0 0 0 0 0 0 0 0
90 0 240 0 0 0 40 40 0 5 8 5 12 14 15
*
"&3.2@0NodeObject

VAR nviRequest 0 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
"@0|1
92 *   2
2 0 0 0 0
1 0 0 1 0
VAR nvoStatus 1 0 0 0
0 1 63 1 0 1 0 1 0 1 0 1 0
"@0|2
93 *  26
2 0 0 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 8 0 0
VAR nvoSinglState 2 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
```

```
VAR nvoLocTemp 3 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHT_Humi 4 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoPTC_Temp 5 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoAMB_Temp 6 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoGLYC_Temp 7 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoEEAPTemp 8 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoEEAPHumi 9 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoFC_Cond 10 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoHourCond 11 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp 12 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp2 13 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourHumi 14 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
```

```
VAR nvoHourHeat 15 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourFC 16 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoManFan 17 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoManComp 18 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoManComp2 19 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoManHumi 20 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoManHeat1 21 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoManHeat2 22 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoManDehum 23 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoValve3P 24 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoTempIntg 25 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvodt_RoomAMB 26 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
```

```
VAR nvodt_RoomGLY 27 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoTempSet 28 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHumiSet 29 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoTempProp 30 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHumiProp 31 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoHumiIntg 32 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoHiTemp 33 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoLoTemp 34 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHiHumi 35 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoLoHumi 36 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoHiTempE 37 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoLoTempE 38 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
```

```
VAR nvoHiHumiE 39 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoLoHumiE 40 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoStdByUnit 41 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoGenAlarm 42 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoALARME 43 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
95 *   2
1 0 0 0 0
1 0 0 1 0
VAR nviTempSet 44 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHumiSet 45 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nviTempProp 46 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHumiProp 47 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nviHumiIntg 48 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviStop_FC_at 49 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHiTemp 50 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
```

```
2 0 0 0 0
VAR nviLoTemp 51 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHiHumi 52 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nviLoHumi 53 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nviHiTempE 54 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviLoTempE 55 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHiHumiE 56 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nviLoHumiE 57 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nviStdByUnit 58 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviGenAlarm 59 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviHMSysOn_Mi 60 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
```

8. 2 XIF configuration File for SCM 101.138 (rev 1.2)

The following External Interface File may be processed by a super visioning application to read HILON SNVTs configuration.

```
File: \DevTFt10.XIF generated by LONNCC32 Version 4.00.86, XIF Version 4.0
Copyright (c) 1989 - 2001  Echelon Corp
All Rights Reserved.  Run on Wed Feb 22 15:19:20 2006

90:00:A6:46:00:04:04:05
2 10 0 59 0 3 3 3 3 3 3 11 9 2 4 0 0 16 30 1 1 11
0 5 12 13 28 1382 0 15 5 3 390 4
1 7 1 0 4 4 4 15 200 0
78125 0 0 0 0 0 0 0 0 0 0 0
90 0 240 0 0 0 40 40 0 5 8 5 12 14 15
*
"&3.2@0NodeObject

VAR nviRequest 0 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
"@0|1
92 *   2
2 0 0 0 0
1 0 0 1 0
VAR nvoStatus 1 0 0 0
0 1 63 1 0 1 0 1 0 1 0 1 0
"@0|2
93 *  26
2 0 0 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 8 0 0
VAR nvoStdByUnits 2 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoRotationEN 3 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
```

```
7 *   1
0 0 0 0 0
VAR nvoRotatHou 4 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoRotatMin 5 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoHMSysOn_Mi 6 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoStop_Co_LT 7 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHWTempInWa 8 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHWTempOuWa 9 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHWTempInAl 10 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHWTempOuAl 11 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHourPump1 12 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourPump2 13 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp1 14 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp2 15 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
```

```
8 *   1
2 0 0 0 0
VAR nvoHourFC 16 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourPump1M 17 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourPump2M 18 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp1M 19 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp2M 20 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourFCM 21 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoGenAlarm 22 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoAnaConden1 23 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoAnaConden2 24 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoValve3P 25 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoC1PresBar 26 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
30 *   1
2 0 0 1 0
VAR nvoC2PresBar 27 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
```

```
30 *   1
2 0 0 1 0
VAR nvoSinglState 28 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoTempSet_ac 29 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCIn_Temp 30 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCOu_Temp 31 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCAmb_Temp 32 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCEva_Temp 33 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoFC_Cond 34 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManPump1 35 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManPump2 36 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp1 37 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp1Pa 38 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp2 39 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
```

```
22 *   1
1 0 0 1 0
VAR nvoManComp2Pa 40 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoALARME 41 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
95 *   2
1 0 0 0 0
1 0 0 1 0
VAR nviOuTempSet1 42 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviStdByUnits 43 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviRotationEN 44 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviRotatHou 45 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviRotatMin 46 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviStop_Co_LT 47 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempInWa 48 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempOuWa 49 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempInAl 50 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempOuAl 51 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
```

```
*
39 *   1
2 0 0 0 0
VAR nviHourPump1M 52 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nviHourPump2M 53 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nviHourComp1M 54 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nviHourComp2M 55 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nviHourFCM 56 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nviGenAlarm 57 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviHMSysOn_Mi 58 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
```

8. 3 XIF configuration File for SCM102.022 (or greater) (rev 1.2)

The following External Interface File may be processed by a super visioning application to read HILON SNVTs configuration.

```
File: \DevTFt10.XIF generated by LONNCC32 Version 4.00.86, XIF Version 4.0
Copyright (c) 1989 - 2001  Echelon Corp
All Rights Reserved.  Run on Wed Feb 22 15:18:26 2006

90:00:A6:46:00:04:04:04
2 10 0 61 0 3 3 3 3 3 3 11 9 2 4 0 0 15 30 1 1 11
0 5 12 13 28 1382 0 15 5 3 398 4
1 7 1 0 4 4 4 15 200 0
78125 0 0 0 0 0 0 0 0 0 0 0
90 0 240 0 0 0 40 40 0 5 8 5 12 14 15
*
"&3.2@0NodeObject

VAR nviRequest 0 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
"@0|1
92 *   2
2 0 0 0 0
```

```
1 0 0 1 0
VAR nvoStatus 1 0 0 0
0 1 63 1 0 1 0 1 0 1 0 1 0
"@0|2
93 *  26
2 0 0 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 1 0 0
3 1 1 0 0
3 2 1 0 0
3 3 1 0 0
3 4 1 0 0
3 5 1 0 0
3 6 1 0 0
3 7 1 0 0
3 0 8 0 0
VAR nvoStdByUnits 2 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoRotationEN 3 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoRotatHou 4 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoRotatMin 5 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoHMSysOn_Mi 6 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoHWTempInWa 7 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
```

```
2 0 0 0 0
VAR nvoHWTempOuWa 8 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHWTempInAl 9 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHWTempOuAl 10 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoHourPump1 11 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourPump2 12 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp1 13 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp2 14 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp3 15 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp4 16 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourFC 17 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourPump1M 18 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourPump2M 19 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
```

```
2 0 0 0 0
VAR nvoHourComp1M 20 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp2M 21 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp3M 22 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourComp4M 23 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoHourFCM 24 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
8 *   1
2 0 0 0 0
VAR nvoGenAlarm 25 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoAnaConden1 26 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoAnaConden2 27 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoAnaConden3 28 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoAnaConden4 29 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoValve3P 30 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
81 *   1
2 0 0 1 0
VAR nvoC1PresBar 31 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
30 *   1
```

```
2 0 0 1 0
VAR nvoC2PresBar 32 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
30 *   1
2 0 0 1 0
VAR nvoC3PresBar 33 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
30 *   1
2 0 0 1 0
VAR nvoC4PresBar 34 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
30 *   1
2 0 0 1 0
VAR nvoSinglState 35 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nvoTempSet_ac 36 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCIn_Temp 37 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCOu_Temp 38 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoPTCAmb_Temp 39 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nvoManPump1 40 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManPump2 41 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp1 42 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp1Pa 43 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
```

```
1 0 0 1 0
VAR nvoManComp2 44 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp2Pa 45 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp3 46 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoManComp4 47 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
VAR nvoALARME 48 0 0 0
0 1 63 1 0 1 0 1 0 1 0 0 0
*
95 *   2
1 0 0 0 0
1 0 0 1 0
VAR nviOuTempSet1 49 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviStdByUnits 50 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviRotationEN 51 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviRotatHou 52 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviRotatMin 53 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviStop_Co_LT 54 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempInWa 55 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
```

```
39 *   1
2 0 0 0 0
VAR nviHWTempOuWa 56 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempInAl 57 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviHWTempOuAl 58 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
39 *   1
2 0 0 0 0
VAR nviGenAlarm 59 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
7 *   1
0 0 0 0 0
VAR nviHMSysOn_Mi 60 0 0 0
0 1 63 0 0 1 0 1 0 1 0 0 0
*
22 *   1
1 0 0 1 0
```