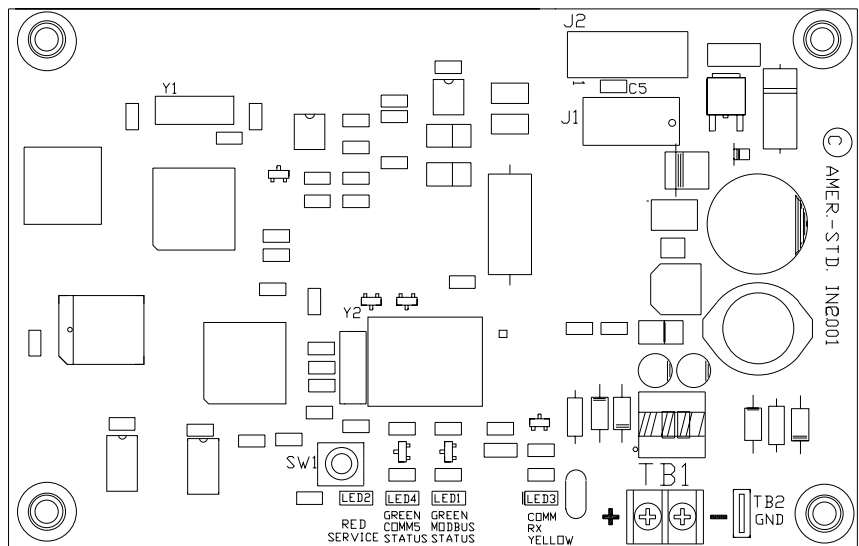**TRANE®**

Installation Manual

LonTalk® Communications Interface
with Discharge Air Control for ReliaTel™ controls

(General View - Not all Components shown)

LonTalk and LonWorks are registered trademarks of Echelon Corporation.

Model: BAYLTCI004A

Used with Models
27 1/2 - 50 Ton Variable Air Volume (VAV) Packaged Rooftop Air
Conditioners (YC, TC, TE) with Reliatel™ Communications Module

Important! This document is customer property, and must be retained for the customer and/or
maintenance personnel.

April 2004 **ACC-SVN21A-EN**

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NOTICE:

Warnings and Cautions appear at appropriate sections throughout this manual. Read these carefully.

⚠️ **WARNING**– Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ **CAUTION** – Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION – Indicates a situation that may result in equipment or property-damage-only accidents.

General Information

The Communication Interface board allows ReliaTel™ controls to communicate on a LonTalk Network at the unit level. This product is intended to be installed by a qualified System Integrator properly trained and experienced in LonTalk networks. Network variables are based on the LonMark® Discharge Air Controller Functional Profile Template. The LCI-R utilizes a Free Topology transceiver FTT-10A. The FTT-10A transceiver supports non-polarity sensitive, free topology wiring, allowing the system installer to utilize star, bus, and loop architecture.

LCI-R Shipment and Inspection

The Kit includes: a ReliaTel™ LCI-R communications board, a wiring harness and the mounting hardware needed for installation on a Packaged Rooftop Unit with ReliaTel™ Communications Module.

LCI-R kits include the following items:
- 1 - LCI-R communications board
- 1 - Wire harness
- 4 - LCI-R board mounting screws
- 1 - Pop-in wire tie

Storage

When the LCI-R board must be stored for a period of time prior to being installed, it must be protected from the elements. The temperature of the storage location should be between -40C and 65.6C (-40 F and 150 F) and the relative humidity should be 10 to 90 percent, non-condensing.

Mounting and Wiring

The LCI-R board mounts directly in the Unit Control Box. The following procedure explains how to mount and wire the LCI-R board. See Figure 1 for LCI-R board mounting location and wire bundle placement.

> Note: *Skip steps 1 – 8 if the LonTalk® Communication Interface board is already factory installed.*

⚠️ **WARNING**
Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

1. Disconnect the power source to the unit and remove the Access Panel to gain access to the electronic controls.

2. Mount the LonTalk® Communication Interface board to the right side of the ReliaTel™ Refrigeration Module on the control box back panel. Secure with 4 screws. See Figure 1.

3. Remove the five pin (four wire) connector from J4 on the RTRM and connect to J2 on the LonTalk® Communication Interface board.

4. Connect the four pin (four wire) end of the LonTalk® Communication Interface board wire harness to J1 on the LonTalk® Communication Interface board.

5. Connect the five pin (four wire) end of the LonTalk® Communication Interface board wire harness to J4 on the ReliaTel™ Refrigeration Module.

6. Route the LonTalk® Communication Interface board wire harness and secure with one wire tie.

7. Route the twisted pair communications wire from the BMS or CCP, through the hole located below TB1 on the LonTalk® Communication Interface board and connect these wires to TB1. Refer to the ICS Communications Link Wiring Requirements section for wire information.

8. Secure the wires connected to TB1 using the pop-in wire tie under the control box.

LonTalk Communication Link
Wiring Requirements

The LonTalk communications link is for connection to a Building LonTalk Network.

The Communications link wiring is dependent on the network architecture. It is recommended that a System Integrator refer to "LonWorks FTT-10A Free Topology Transceiver User's Guide" by the Echelon Corporation for proper wire selection. The physical limits are defined in Chapter 4, Network Cabling And Connection. This User's Guide is available on the Echelon Web page. A typical wire recommendation is Belden 85102, single twisted pair, stranded 19/29, unshielded, 150 C.

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Figure 1
LonTalk® Communication Interface Board Mounting and Wiring

27 1/2 - 50 Ton Packaged Rooftop units
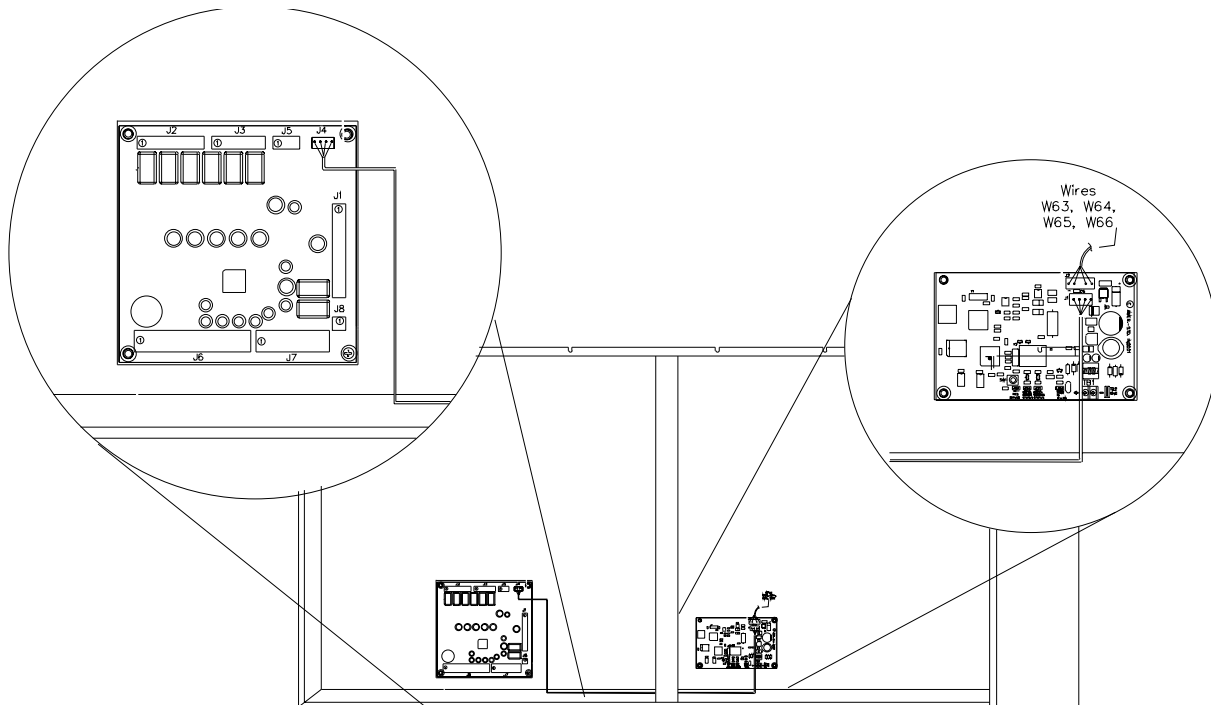
Status/Power/Wink/Test LED
(COMM5 STATUS LED)
The LCI-R board includes a green COMM5 Status LED located near the middle of the board. Refer to page 1 for location view. The operation for this LED is defined as follows:

+ *ON* - Power is applied and the LCI-R is normal.
+ *OFF* - There is either no power applied or the LCI-R is unconfigured or offline.
+ *Blinking twice per second for 10 seconds* - The LCI-R has been commanded to WINK.
+ *Continuous Blinking ; ON for 2.25 seconds , OFF for .25 seconds* - The unit is in a TEST mode.

Wink Response
The LCI-R responds to a network "Wink Request". Upon receipt of a Wink request the LCI-R will blink (0.25 second ON, 0.25 second OFF, 0.25 second ON, etc...) the STATUS LED continuously for 10 seconds. This Wink response is available both when the LCI-R node is configured and when it is unconfigured.

Communication LED
(COMM LED)
The LCI-R board includes a yellow COMM LED located left of the TB1 terminal. Refer to page 1 for location view. The operation for this LED is defined as follows:

+ *Flickering* - When communication activity is detected on the network. (This LED is not effected by transmitting data from the LCI-R.)
+ *OFF* - No current activity on the Network.

Service Switch
(SERVICE LED)
The LCI-R board includes a Service push-button switch (also known as Service Pin) and Service LED. The Service Switch is located on the bottom middle of the board (Refer to page 1 for location view) and may be used during configuration, installation, and maintenance of the node. The operation of the Switch button is as follows:

+ *Temporary press* - Broadcast Neuron ID and Program ID
+ *Extended press (more than 15 seconds)* - Force the node to it's unconfigured state.

Note : An Extended Press will disable the LCI-R completely and a network management tool will be required to put the LCI-R back into operation.

Provisions for holding the Timed Override button for 10 seconds will generate a Service Pin broadcast equal to a Service Pin temporary press.

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The LCI-R board includes a red Service LED located above the Service Switch, refer to page 1 for location view. The operation for this LED is defined as follows:

State	LED Output
Normal	Steady OFF
Bad Hardware	Steady ON
Unconfigured State	Flashing 1 second ON, 1 second OFF
Watchdog Timer Reset Occurring	Repeated flash

The Service LED turns on while the Service pin is being depressed.

Modbus STATUS
(Modbus Status LED)

The LCI-R Board includes a Green Modbus Status LED located to the right of the TB2 terminal block. Refer to page 1 for location view. This LED indicates communication between the LCI-R and the Reliatel Control. The operation for this LED is defined as follows:

State	LED Output
Normal Operation	Steady ON
LCI-R not operating	Steady OFF
ReliaTel Control not responding	Flashing- 0.25 seconds ON, 2.0 seconds OFF

Network Interface
Network Variables

The LCI-R contains 2 objects. Object index 0 is the Node Object. Object index 1 is the Rooftop Object.

The integer in the left column is the network variable index used for reference during binding or to perform a network variable browse. This index is different from the Discharge Air Controller (DAC) Functional Profile Template index as shown.

Rooftop Object Network Variables

Inputs			
NV Index	DAC Index	SNVT Type	NV Name
0	NV#26	SNVT_temp_p	nviSpaceTemp;
1	NV#7	SNVT_temp_p	nviDACISP;
2	NV#8	SNVT_temp_p	nviDAHtSP;*
3	NV#6	SNVT_press_p	nviDuctStaticSP;
4	NV#1	SNVT_tod_event	nviOccSchedule;
5	NV#2	SNVT_occupancy	nviOccManCmd;
6	NV#3	SNVT_hvac_mode	nviApplicMode;
7	NV#15	SNVT_switch	nviPriCoolEnable;
8	NV#16	SNVT_switch	nviPriHeatEnable;
9	NV#17	SNVT_switch	nviEconEnable;
10	NV#4	SNVT_hvac_emerg	nviEmergOverride;
13	NV#18	SNVT_lev_percent	nviOAMinPos;
14		SNVT_ppm	nviSpaceCO2;
15	NV#27	SNVT_lev_percent	nviSpaceRH;
16	NV#20	SNVT_temp_p	nviOutdoorTemp;
17	NV#21	SNVT_lev_percent	nviOutdoorRH;
Outputs			
NV Index	DAC Index	SNVT Type	NV Name
22	NV#66	SNVT_temp_p	nvoSpaceTemp;
23	NV#36	SNVT_hvac_status	nvoUnitStatus;
24	NV#37	SNVT_temp_p	nvoEffDATempSP;
25	NV#42	SNVT_occupancy	nvoEffectOccup;
26	NV#40	SNVT_hvac_mode	nvoHeatCool;
27	NV#39	SNVT_press_p	nvoEffDuctStatSP;
28	NV#38	SNVT_press_p	nvoDuctStatPress;
29	NV#35	SNVT_temp_p	nvoDischAirTemp;
30	NV#41	SNVT_hvac_mode	nvoApplicMode;
31	NV#56	SNVT_lev_percent	nvoOADamper;
32	NV#68	SNVT_lev_percent	nvoSpaceRH;
33	NV#61	SNVT_lev_percent	nvoOutdoorRH;
34	NV#59	SNVT_temp_p	nvoOutdoorTemp;
35	NV#55	SNVT_switch	nvoEconEnabled;
36	NV#46	SNVT_switch	nvoExhFanStatus;
37	NV#43	SNVT_switch	nvoSupFanStatus;
38		SNVT_ppm	nvoSpaceCO2;
41		SNVT_str_asc	nvoAlarmMessage;
42	NV#65	SNVT_temp_p	nvoMATemp;
43	NV#67	SNVT_temp_p	nvoRATemp;

* Not Supported

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Configuration Properties

The network management read and write messages can be used to modify 7 configuration parameters.

Rooftop Object Configuration Property

DAC nci Index	SNVT Type	SCPT Index	NV Name
1	SNVT_time_sec	49	nciSndHrtBt
2	SNVT_temp_p	183	nciDACISP
3	SNVT_temp_p	184	nciDAHtSP*
4	SNVT_temp_setpt	60	nciSetpoints
5	SNVT_time_sec	52	nciMinOutTm
6	SNVT_time_sec	48	nciRcvHrtBt
7	SNVT_str_asc	17	nciLocation
8	SNVT_time_min	34	nciBypassTime
13	SNVT_press_p	189	nciDuctStaticSP
22	SNVT_lev_percent	23	nciOAMinPos
29	SNVT_lev_percent	202	nciExhStartPos

* Not Supported

Send Heartbeat
Network input config SNVT_time_sec nciSndHrtBt

This parameter defines the amount of time that expires before all bound output network variables associated with the Rooftop object are automatically updated. Network variable update messages are sent at periodic intervals. The default is 5 minutes and invalid (0xFFFF) is interpreted as zero.

Setting nciSndHrtBt =0.0 disables the Send Heartbeat.

Discharge Air Cooling Set Point
Network input config SNVT_temp_p nciDACISP

This property defines the default Discharge Air Control Cooling set point. The default is 12.78°C (55 °F). It is clamped to its valid range 4.44 °C to 26.67 °C (40°F to +80°F). Invalid (7FFF) or out of range is interpreted as default.

Discharge Air Heating Set Point
Network input config SNVT_temp_p nciDAHtSP

This property defines the default Discharge Air Control Heating set point. The default is Invalid (7FFF). This variable is not supported by the ReliaTel Controls.

Occupancy Temperature Setpoint
Network input config SNVT_temp_setpt nciSetpoints

This configuration parameter defines the space temperature setpoints for the various heat, cool and occupancy modes. The occupied and standby setpoints are defaults. The unoccupied setpoints are always valid.

If any setpoint is out of range or they are not in the proper order the LCI-R reverts to default values. The values of the individual setpoints within nciSetpoints must be kept in descending order as follows: unoccupied_cool, standby_cool, occupied_cool, occupied_heat, standby_heat and unoccupied_heat.

Typical Range and Default Values

	Minimum	Maximum	Default
unoccupied_cool	4.44 C	43.33 C	29.44 C
	40.00 F	110.00 F	85.00 F
standby_cool	4.44 C	43.33 C	25.55 C
	40.00 F	110.00 F	78.00 F
occupied_cool	4.44 C	43.33 C	23.33 C
	40.00 F	110.00 F	74.00 F
occupied_heat	4.44 C	40.55 C	21.67 C
	40.00 F	105.00 F	71.00 F
standby_heat	4.44 C	40.55 C	19.44 C
	40.00 F	105.00 F	67.00 F
unoccupied_heat	4.44 C	40.55 C	15.55 C
	40.00 F	105.00 F	60.00 F

Minimum Send Time
Network input config SNVT_time_sec nciMinOutTm

This parameter defines the minimum period of time which must elapse between updates of bound output network variables. The default is 0.2 seconds. An invalid value (0xFFFF) is considered the same as zero.

Setting nciMinOutTm = 0.0 disables the Minimum Send Time, allowing the LCI-R to send multiple network variable updates as fast as it can.

Receive Heartbeat
Network input config SNVT_time_sec nciRcvHrtBt

This parameter specifies the maximum period of time which can elapse between updates to an input network variable before the LCI-R begins to use the default value. Each input network variable is monitored for updates individually. The default is 15 minutes and invalid (0xFFFF) is interpreted as zero.

Setting nciRcvHrtBt = 0.0 disables the Receive Heartbeat. The following input network variables DO NOT revert back to their defaults, they are based on Receive Heartbeat:

nviOccManCmd	nviDAHISP
nviEmergOverride	nviDuctStaticSP
nviDACISP	nviOAMinPos

Location Label
Network input config SNVT_str_asc nciLocation

This parameter, if utilized, can provide more descriptive physical location information in an ASCII string. The default is null.

Local Bypass Time
Network input config SNVT_time_min nciBypassTime

This parameter defines the amount of time that the LCI-R will remain in the bypass mode after receiving a bypass request. The default is 120 minutes. It is clamped to its valid range (0-240 minutes). Invalid (0xFFFF) is interpreted as zero.

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If nciByassTime = 0 then no bypass is allowed and a Bypass request is ignored.

Duct Static Pressure Set Point
Network input config SNVT_press_p nciDuctStaticSP

This property defines the default Duct Static Pressure set point. The default is 375 Pa (1.5 In WC). It is clamped to its valid range 0 to 625 Pa (0 – 2.5 In WC). Invalid (7FFF) or out of range is interpreted as default.

Outdoor Air Damper Minimum Position
Network input config SNVT_lev_percent nciOAMinPos

This parameter can be used to set the outdoor air damper minimum position. If any of the following conditions are true, the outdoor air damper minimum position is set to zero. Otherwise it is set to the value specified by nciOAMinPos. The default is invalid (0x7FFF). This sets the set point to the local value. This parameter has a range of 0-50%.

```
nvoEffectOccup    = OC_UNOCCUPIED;
nvoHeatCool       = HVAC_MRNG_WRMUP;
nvoHeatCool       = HVAC_PRE_COOL;
nvoHeatCool       = HVAC_NIGHT_PURGE
```

Exhaust Enable Position
Network input config SNVT_lev_percent nciExhStartPos

This property defines the default Power Exhaust Enable set point. The default is 25%. It is clamped to its valid range 0 to 100%. An Invalid (7FFF) will return the set point to the local value.

Space Humidity Set Point
Network input config SNVT_lev_percent nciSpaceRHSetpt

This property defines the default Space Humidity set point. The default is Invalid (7FFF). It is clamped to its valid range 40 to 60%. However, 0 is also a legal value that can be used to disable the dehumidification/reheat function. An Invalid (7FFF) will return the set point to the local value.

Space CO2 Limit
Network input config SNVT_lev_percent nciSpaceCO2Lim

This property defines the default Space CO2 limit. The default is Invalid (FFFF). It is clamped to its valid range 500 to 1500 PPM. However, 0 is also a legal value that can be used to disable the CO2 function. An Invalid (FFFF) will return the set point to the local value.

Node Object

A LonMark compatible Node Object is required to access configuration parameters using network management read and write memory messages. The Node Object (object index 0) has three network variables:

NV Index	SNVT Type	NV Name
11	SNVT_obj_request	nviRequest
39	SNVT_obj_status	nvoStatus
40	SNVT_address	nvoFileDirectory

The LonMark object model enables a different node to send a request to an object in the LCI-R node. While the Node Object itself does not support requests via nviRequest, the Rooftop Object does. The Node Object is responsible for managing all request / response activity.

The Rooftop Object (object index 1) supports four request modes:

RQ_NORMAL
The object will always be in the normal state but a request to enter the normal state is not considered an error.

RQ_UPDATE_STATUS
The Rooftop object supports the following 2 optional status flags in SNVT_obj_status.

> **out_of_service** is zero if the LCI-R and the Reliatel Control are successfully communicating. Otherwise it is one.

> **in_alarm** is one if out_of_service is zero (LCI-R and ReliaTel Control are communicating) and nvoUnitStatus.in_alarm indicates an alarm. Otherwise it is zero.

RQ_REPORT_MASK
The two supported status bits listed above are set to one. All others are set to zero.

RQ_CLEAR_ALARM
This request will initiate a reset of the ReliaTel Control. If communications with the ReliaTel module has failed, the request will remain pending until it is honored or the LCI-R node resets.

The output nvoStatus is updated and propagated whenever an update to nviRequest is received regardless of whether or not the request or ID is valid. The nvoStatus is only updated when an update to nviRequest occurs. If the nviRequest is polled, it is not guaranteed to return valid data.

nvoFileDirectory (SNVT_address) enables a network management tool to access the Configuration Parameter Template and Value Files.

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Self-Documentation

Network Variable Optional documentation
The optional part (after the semicolon) of the network variable self-documentation string contains the name of the SNVT as defined in the template.
For example:
"@1|5;nviOccSchedule"

Optional Node Self-documentation
Contains the name.
For example:
"ReliaTel LCI-R"

Standard Program ID
Device Class = 8,000
Trane Manufacturer ID = 42
Subclass = 3/4 (Commercial usage/FTT-10 xcvr)
Model Number = 2

Default Address
The LCI-R will be initially programmed to be configured with a valid address in the second domain table slot (index 1). The first slot will be unused. The default address is:

Domain id: 0 ("zero length domain")
Subnet number: 1
Node number: 1

Network Variable Descriptions:

Network Variable description NV refers to the DAC NV #. An example would be NV#1 is DAC NV#1 as referenced on the Rooftop Object Network Variables table on page 5.

Network Variable Inputs:

Space CO2 Input
Network input SNVT_ppm nviSpaceIAQ;

This network variable does not follow the Discharge Controller Profile Template. Unit does not have a DAC NV number.

This input network variable is used to connect an external space CO_2 sensor to the LCI-R. It does not have to be bound to a sensor node if the unit has a locally wired space CO_2 sensor. In any case, the nviSpaceIAQ has priority if a valid value is present.

Valid Range
The valid range is 0 to +2000 ppm. The value 0xFFFF (65535) will be handled as an invalid value.

Default Value
The default Value is 0xFFFF (65535). This value will be adopted at power-up and in case of not receiving an update within the specified receive heartbeat time.

NV#1 Occupancy Scheduler Input
Network input SNVT_tod_event nviOccSchedule;

This input network variable is used to command the Voyager into different occupancy modes. It is typically sent by a scheduler or a supervisory node. SNVT_tod_event is a structure containing three parts. Only the current_state is used for this network variable input. This input is used in conjunction with nviOccManCmd and nviOccSensor (if provided) to determine the effective occupancy mode. Refer to Effective Occupancy Output (nvoEffectOccup) for more information.

Valid Range
For current_state:
0 = OC_OCCUPIED: The ReliaTel Control should operate in the occupied mode (e.g. occupied setpoint).

1 = OC_UNOCCUPIED: The ReliaTel Control should operate in the unoccupied mode (e.g. unoccupied setpoint and fan mode in AUTO).

3 = OC_STANDBY: The ReliaTel Control should operate in the standby mode (e.g. standby setpoint).

0xFF = OC_NUL: This is the initial value after power-up and it remains until another value is received. It is used to indicate that this network variable input is invalid or unused.

All other enumerations are ignored, the previous valid update is used.

Default Value
Current_state = 0xFF = OC_NUL
This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

NV#2 Occupancy Override Input
Network input SNVT_occupancy nviOccManCmd;

This input network variable is used to command the ReliaTel Control into different occupancy modes. It is typically sent by an externally mounted occupant-interface module or a supervisory node, to manually control occupancy modes, or to override the scheduled occupancy.

The bypass timer is started when an update to nviOccManCmd occurs in which nviOccManCmd = OC_BYPASS. There is no Receive Heartbeat associated with nviOccManCmd, so any update in which nviOccManCmd = OC_BYPASS will restart the bypass timer. Any other update will clear the bypass timer. When the timer expires, nviOccManCmd reverts to OC_NUL.

This input is used in conjunction with nviOccSchedule to determine the effective occupancy mode. Refer to Effective Occupancy Output (nvoEffectOccup) for more information.

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Valid Range

0 = OC_OCCUPIED: The ReliaTel Control should operate in the occupied mode (e.g. occupied setpoint).

1 = OC_UNOCCUPIED: The ReliaTel Control should operate in the unoccupied mode (e.g. unoccupied setpoint and fan mode in AUTO).

2 = OC_BYPASS: The ReliaTel Control should operate in the occupied mode for a period of time defined by nciBypassTime.

3 = OC_STANDBY: The ReliaTel Control should operate in the standby mode (e.g. standby setpoint).

0xFF = OC_NUL: This is the initial value after power-up and it remains until another value is received. It is used to indicate that this network variable input is invalid or unused, or to cancel a previous command.

Default Value
The default value OC_NUL = 0xFF.
This value will be adopted at power-up. This network variable input does not use the Receive Heartbeat function.

NV# 3 Application Mode Input
Network input SNVT_hvac_mode nviApplicMode;

This network variable input is used to coordinate the ReliaTel Control with any supervisory controller. If a mode is requested that is not supported by the ReliaTel Control, the ReliaTel Control will ignore the request.

The nviApplicMode overrides nviHeatCool, unless nviApplicMode is HVAC_AUTO, HVAC_TEST, or HVAC_NUL. If nviApplicMode is HVAC_AUTO, HVAC_TEST or HVAC_NUL, then nviHeatCool determines the effective mode of the unit. Refer to Effective Heat/Cool Output (nvoHeatCool) for more information.

Valid Range
    0 = HVAC_AUTO (Mode determined by Reliatel Control)
    1 = HVAC_HEAT (Use heat setpoints)
    2 = HVAC_MRNG_WRMUP (Morning warmup)
    3 = HVAC_COOL (Use cool setpoints)
    4 = HVAC_NIGHT_PURGE (Free cooling)
    5 = HVAC_PRE_COOL (Morning cooldown)
    6 = HVAC_OFF (No unit operation allowed)
    7 = HVAC_TEST (same as HVAC_NUL)
    8 = HVAC_EMERG_HEAT (Emergency heat)
    9 = HVAC_FAN_ONLY (No heating or cooling allowed)
   12 = HVAC_MAX_HEAT (Same as HVAC_HEAT)
   14 = HVAC_DEHUMID (Same as HVAC_AUTO)
 0xFF = HVAC_NUL (same as HVAC_AUTO)
All other enumerations will be ignored.

Default Value
The default value is HVAC_AUTO.
This value will be adopted at power-up and in case of not receiving an update within the specified Receive Heartbeat time.

NV#4 Emergency Override Input
Network input SNVT_hvac_emerg nviEmergOverride;

This input network variable is used to command the device into different emergency modes. It is typically set by a supervisory node.

Valid Range
    The valid range is described in the table below:

    0 = EMERG_NORMAL: Normal operation
    1 = EMERG_PRESSURIZE: Start the PRESSURIZE operation
    2 = EMERG_DEPRESSURIZE: Start the DEPRESSURIZE operation
    3 = EMERG_PURGE: Start the PURGE operation
    4 = EMERG_SHUTDOWN: SHUTDOWN all unit functions
    0xFF = EMERG_NUL: Invalid mode (same as EMERG_NORMAL).

nviEmergOverride	Supply Fan	Outdoor Air Damper	Cooling Stages	Heating Stages
EMERG_NORMAL	Normal Operation			
EMERG_NUL				
EMERG_PRESSURIZE	On	Open	0	0
EMERG_DEPRESSURIZE	Off	Closed	0	0
EMERG_PURGE	On	Open	0	0
EMERG_SHUTDOWN	Off	Closed	0	0

Default Value
The default value is EMERG_NORMAL.
This value will be adopted at power-up, until an update is received. This network variable input does not use the Receive Heartbeat function.

NV#6   Duct Static Pressure Set Point
Network input SNVT_press_p nviDuctStaticSP

This input network variable is used to allow the duct static pressure set point to be changed via the network. If a valid value is not present, either a local set point or appropriate set point as configured in nciDuctStaticSP will be used. Refer to Effective Duct Static Pressure Set Point (nvoEffDuctStatSP) for more information.

Valid Range
The valid range is 0 Pa to 625 Pa (0 to 2.5 inWc). The value 0x7FFF (32767) will be handled as an invalid value.

Default Value
Default Value is INVALID (0x7FFF or 32767). This value will be adopted at power-up and in case of not receiving an update within the specified heartbeat time.

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NV#7 Discharge Air Cooling Set Point
Network input SNVT_temp_p nviDACISP

This input network variable is used to allow the discharge air cooling set point to be changed via the network. If a valid value is not present, either a local set point or appropriate set point as configured in nciDACISP will be used. Refer to Effective Discharge Air Temperature Set Point (nvoEffDATempSP) for more information.

Valid Range
The valid range is 4.44 °C to 26.67 °C (40°F to +80°F). The value 0x7FFF=+327.67C will be handled as an invalid value.

Default Value
Default Value is INVALID (0x7FFF or +327.67). This value will be adopted at power-up and in case of not receiving an update within the specified heartbeat time.

NV#8 Discharge Air Heating Set Point
Network input SNVT_temp_p nviDAHtSP

This input network variable is used to allow the discharge air Heating set point to be changed via the network. This variable is not supported by the ReliaTel Controls.

NV#15 Compressor Enable Input
Network input SNVT_switch nviPriCoolEnable;

This input is used to disable compressor operation. The input is typically sent from a supervisory controller.

This input can be used for simple enable/disable functions, or can be used to enable a portion of the unit's compressor capacity. For example, if a unit has 2 compressors, a value of 100 (50.0%) could indicate that only one compressor is enabled.

Valid Range
The action initiated by this input depends upon the number of compressors in the unit.

Number of Compressors	nviPriCoolEnable			Number of Compressors enabled
	State	Value	Equiv. %	
1	0	n/a	n/a	0
	1	0	0%	0
	1	1 to 255	.05% to 100%	1
	0xFF	n/a	n/a	1
2 *	0	n/a	n/a	0
	1	0	0%	0
	1	01 to 100	.05% to 50%	1
	1	101 to 200	50.5% to 100%	2
	1	201 to 255	100%	2
	0xFF	n/a	n/a	2

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

NV#16 Heat Enable Input
Network input SNVT_switch nviPriHeatEnable;

This input is used to disable auxiliary heat operation. This input is typically sent from a system supervisor panel. For example, during peak electrical demand periods, electric heat operation could be disabled.

This input can be used for simple enable/disable functions, or can be used to enable a portion of the unit's auxiliary heat capacity. For example, if a unit has 2 stages of electric heat, a value of 100 (50.0%) could indicate that only one stage is enabled.

Valid Range

Heat Type	nviPriHeatEnable			Number of Heating Stages to be enabled
	State	Value	Equiv.%	
2 Stage Electric	0	n/a	n/a	0
	1	0	0%	0
	1	01 to 100	.05% to 50%	1
	1	101 to 200	50.5% to 100%	2
	1	201 to 255	100%	2
	0xFF	n/a	n/a	2
Gas	0	n/a	n/a	0
	1	0	0%	0
	1	1 to 255	.05% to 100%	2
	0xFF	n/a	n/a	2

Illegal updates (states) are discarded

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

Installation

NV#17 Economizer Enable Input
Network input SNVT_switch nviEconEnable;

This input is used to enable and disable economizer operation. This input is typically sent from a system supervisor panel to override the local economizer enable/disable decision. For this input, economizer Auto means that the ReliaTel Control determines economizer operation. Enabled or Disabled means that economizer operation is allowed or not allowed (respectively), overriding the local decision.

Valid Range

nvoHeatCool	nviEconEnable			Economizer State
	State	Value	Equiv. %	
HVAC_MRNG_WRMUP	X	X		Disabled
HVAC_NIGHT_PURGE	X	X		Enabled
X	0	n/a	n/a	Disabled
X	1	0	0%	Disabled
X	1	1 to 255	0.05% to 100%	Enabled
X	0xFF	n/a	n/a	Auto (Invalid)

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

NV#18 Outdoor Air Damper Minimum Position Input
Network input SNVT_lev_percent nviOAMinPos;

This input network variable is used to connect an external damper minimum position to the LCI-R. It does not have to be bound to a sensor node if the unit has a local minimum position potentiometer. In any case, the nviOAMinPos has priority if a valid value is present.

Valid Range
The valid range is 0 to 50 %. The value 0x7FFF will be handled as an invalid value.

Default Value
The default Value is 0x7FFF. This value will be adopted at power-up and in case of not receiving an update within the specified receive heartbeat time.

NV#20 Outdoor Temperature Input
Network input SNVT_temp_p nviOutdoorTemp;

This input network variable is used to connect an external outdoor temperature sensor to the LCI-R. It does not have to be bound to a sensor node if the unit has a locally wired space temperature sensor. In any case, the nviOutdoorTemp has priority if a valid value is present.

Valid Range
The valid range is -40C to 70C (-40F to 158F). The value 0x7FFF=+327.67C will be handled as an invalid value.

Default Value
Default Value is 0x7FFF (=+327.67C). This value will be adopted at power-up and in case of not receiving an update within the specified receive heartbeat time.

NV#21 Outdoor Relative Humidity Input
Network input SNVT_lev_percent nviOutdoorRH;

This input network variable is used to connect an external outdoor RH sensor to the LCI-R. It does not have to be bound to a sensor node if the unit has a locally wired space RH sensor. In any case, the nviOutdoorRH has priority if a valid value is present.

Valid Range
The valid range is 0 to 100%. The value 0x7FFF will be handled as an invalid value.

Default Value
The default Value is 0x7FFF. This value will be adopted at power-up and in case of not receiving an update within the specified receive heartbeat time.

NV#26 Space Temperature Input
Network input SNVT_temp_p nviSpaceTemp;

This input network variable is used to connect an external space temperature sensor to the LCI-R. It does not have to be bound to a sensor node if the unit has a locally wired space temperature sensor. In any case, the nviSpaceTemp has priority if a valid value is present.

Valid Range
The valid range is -40C to 65.5C (-40F to 149.9F). The value 0x7FFF=+327.67C will be handled as an invalid value.

Default Value
Default Value is 0x7FFF (=+327.67C). This value will be adopted at power-up and in case of not receiving an update within the specified receive heartbeat time.

NV#27 Space Relative Humidity Input
Network input SNVT_lev_percent nviSpaceRH;

This input network variable is used to connect an external space RH sensor to the LCI-R. It does not have to be bound to a sensor node if the unit has a locally wired space RH sensor. In any case, the nviSpaceRH has priority if a valid value is present.

Valid Range
The valid range is 0 to 100%. The value 0x7FFF will be handled as an invalid value.

Default Value
The default Value is 0x7FFF. This value will be adopted at power-up and in case of not receiving an update within the specified receive heartbeat time.

Installation

Network Variable Outputs:

Space CO2 Output
Network output SNVT_ppm nvoSpaceCO2;

This network variable does not follow the Discharge Controller Profile Template. Unit does not have a DAC NV number.

This output network variable indicates the space CO_2 in ppm, if the unit has a locally wired CO_2 sensor.

Range
The range is 0 ppm to 2000 ppm. The value 0xFFFF will be sent as an invalid value to indicate that the locally wired CO_2 sensor is failed.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#35 Discharge Air Temperature Output
Network output SNVT_temp_p nvoDischAirTemp;

This output network variable is used to monitor the temperature of the air that leaves the unit, if the temperature sensor is installed.

Range
The range is 0C to 100C (32F to 212F). The value 0x7FFF=+327.67C will be sent as an invalid value in case of a sensor failure.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#36 Unit Status Output
Network output SNVT_hvac_status nvoUnitStatus;

This output network variable is used to report the ReliaTel Control status. It combines the operating mode, the capacity of heating and cooling used and an indication if any alarms are present in the unit. SNVT_hvac_status allows this information to be provided in one network variable.

Mode:
Refer to Effective Heat/Cool Output (nvoHeatCool) for additional information regarding the value reported in the mode field. The value in the mode field is the same value as the Effective Heat/Cool Output.

Valid Range
Mode:	same as nvoHeatCool
heat_output_primary:	0-100%, 0xFFFF (Invalid)
heat_output_secondary:	0-100%, 0xFFFF (Invalid)
cool_output:	0-100%, 0xFFFF (Invalid)
econ_output:	0-100%, 0xFFFF (Invalid)
fan_output:	0-100%, 0xFFFF (Invalid)
in_alarm:	0 Means there is no alarm.
	1 Means there is an alarm.

Heat Output Primary:
Heat Output Primary is compatible with SNVT_lev_percent
This value indicates the capacity of heat that is currently operating in the Unit, for the following unit types:
+Gas Heat: Capacity of Gas Heat stages
+Electric Heat: Capacity of Electric Heat stages.
+Cooling Only: A value of 0xFFFF (Invalid) is sent.

Unit Type	# of Stages Operating	Heat Output Primary
Two Stage	0	0%
Gas Heat or Electric	1	50%
	2	100%
Cooling Only	-	0xFFFF (Invalid)

Installation

Heat Output Secondary:
Heat Output Secondary is compatible with
SNVT_lev_percent
This value indicates the capacity of auxiliary electric heat that
is currently operating in Heat Pump units. If the unit is not a
Heat Pump, a value of 0x7FFF (Invalid) is sent.

Cool Output :
Cool Output is compatible with SNVT_lev_percent
This value indicates the capacity of mechanical cooling that
is currently operating in the unit. If the unit has no mechani-
cal cooling, a value of 0xFFFF (Invalid) is sent.

Unit Type	# of Stages Operating	Cool Output
Two Stage Cooling	0	0%
	1	50%
	2	100%
Three Stage Cooling	0	0%
	1	33%
	2	66%
	3	100%
Heating Only	-	0xFFFF (Invalid)

Econ Output
Econ Output is compatible with SNVT_lev_percent.
This value indicates the position (percent open) of the unit's
Outdoor Air Damper (economizer). If the unit does not have
an Outdoor Air Damper, a value of 0x7FFF (Invalid) is sent.

Fan Output
Fan Output is compatible with SNVT_lev_percent.
This value indicates the status of the unit's Supply Fan. If the
fan is off, the value is 0%. If the fan is on, the value is 100%,
if Inlet Guide Vanes (IGV) or Variable Frequency Drive (VFD)
is not installed. If IGV or VFD is installed and the fan is on,
the value will be between 1 and 100%.

In Alarm
This value indicates whether an alarm condition currently ex-
ists in the unit. A value of 0 = No alarm exists, while a value
of 1 = an alarm exists. The following alarm conditions in the
ReliaTel Control will indicate an alarm:

Normal
Normal
Maintenance Required
Space Temp Sensor Fail (Optional)
Outdoor Temp Sensor Fail
Compressor 1 HPC Lockout
Compressor 1 LPC Lockout
Comp 1 Disable Input/LPC
Compressor 2 HPC Lockout
Compressor 2 LPC Lockout
Comp 2 Disable Input/LPC
Smoke Detector
Heat Fail
Dirty Filter

Supply Fan Fail
Emergency Stop Input
FroStat™ Trip
Unit Comm Fail
Mixed Air Temp Sensor Fail(Optional)
OA Rel Humidity Fail(Optional)
RA Temp Sensor Fail(Optional)
RA Rel Humidity Fail(Optional)
Vent Override – Purge (Optional)
Vent Override – Exhaust (Optional)
Vent Override – Pressurize (Optional)
External Auto / Stop (Optional)
Freeze Stat Tripped (Future Option)
Discharge Temp Sensor Fail
CO2 Sensor Failure (Optional)
CO2 Setpoint Failure (Optional)
Dehumid Sensor Failure (Future Option)
Dehumid Setpoint Failure (Future Option)
Outdoor Air CFM Sensor Fail (Optional)
Outdoor Air CFM Setpt Fail (Future Option)
Space Pressure Setpt Fail (Future Option)
Space Pressure Sensor Fail (Future Option)
Heating High Temp Limit Open
No Flame Sensed on Heat Call
Flame Sensed w/Gas Valve Off
Gas Heat Module Failure
Economizer Actuator Fault
MWU Set Point Failure
SA Reset Amount Failure
SA Cooling Set Point Failure
SA Reset Set Point Failure
SA Pressure Set Point Failure
SA Pressure Dead Band Failure
SA Pressure Sensor Failure
SA Duct Pressure Limit Fault
SA Pressure PWM Fault
Comp 1 Disable Input/HPC
Comp 2 Disable Input/HPC

Installation

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#37 Effect Discharge Air Temperature Set Point
Network output SNVT_temp_p nvoEffDATempSP

This output network variable is used to monitor the effective discharge air temperature set point that the ReliaTel control is using for control. If the nviDACISP has a valid value, this output will echo the value of the input. If a valid value for nviDACISP does not exist, the ReliaTel control will use the nciDACISP value.

Valid Range
The valid range is 4.4C to 26.6C (40F to +80F).

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#38 Effect Duct Static Pressure
Network output SNVT_press_p nvoEffDuctStatPress

This output network variable indicates the duct static in Pa, if the unit has a locally wired duct static sensor.

Valid Range
The valid range is 0 Pa to1250 Pa (0 to 5 inWc). The value 0x7FFF=+32767 Pa will be sent as an invalid value to indicate that the locally wired duct sensoris failed.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#39 Effect Duct Static Pressure Set Point
Network output SNVT_press_p nvoEffDuctStatSP

This output network variable is used to monitor the effective duct static pressure set point that the ReliaTel control is using for control. If the nviDuctStaticSP has a valid value, this output will echo the value of the input. If a valid value for nviDuctStaticSP does not exist, the ReliaTel control will use the nciDuctStaticSP value.

Valid Range
The valid range is 0 Pa to 625 Pa (0 to 2.5 inWc).

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

Installation

NV#40 Effective Heat/Cool Output
Network output SNVT_hvac_mode nvoHeatCool

This output network variable is used to indicate the actual heat/cool mode of the unit. This information is typically reported to a supervisory controller, or provided to another unit to coordinate the operation of multiple units. The "mode" value reported in nvoUnitStatus is the same as nvoHeatCool.

Valid Range
The valid range is described in the table below:
- 1 = HVAC_HEAT (Controller is using heat setpoints)
- 2 = HVAC_MRNG_WRMUP (Morning warmup)
- 3 = HVAC_COOL (Controller is using cool setpoints)
- 4 = HVAC_NIGHT_PURGE (Free cooling)
- 5 = HVAC_PRE_COOL (Morning cooldown)
- 6 = HVAC_OFF (No unit operation allowed)
- 7 = HVAC_TEST
     (See note 2 of Effective Heat/Cool Output Table)
- 8 = HVAC_EMERG_HEAT (Emergency heat)
- 9 = HVAC_FAN_ONLY (No heating or cooling allowed)
- 12 = HVAC_MAX_HEAT
      (Controller is using heat setpoints)
- 14 = HVAC_DEHUMID (Humidification Mode)

The value of nvoHeatCool is determined by the values of nviApplicMode, nviHeatCool and logic in the Reliatel Control, as described in the following table.

Effective Heat/Cool Output

nviApplicMode	nvoHeatCool [1], [2]
HVAC_AUTO HVAC_NUL HVAC_TEST [2]	Determined by Reliatel
HVAC_HEAT	HVAC_HEAT
HVAC_MRNG_WRMUP	HVAC_MRNG_WRMUP
HVAC_COOL	HVAC_COOL
HVAC_NIGHT_PURGE	HVAC_NIGHT_PURGE
HVAC_PRE_COOL	HVAC_PRE_COOL
HVAC_OFF	HVAC_OFF
HVAC_EMERG_HEAT	HVAC_EMERG_HEAT
HVAC_FAN_ONLY	HVAC_FAN_ONLY

[1] The "mode" field of nvoUnitStatus will typically report the same value as nvoHeatCool.

[2] nvoHeatCool will report HVAC_TEST if the Reliatel Control is put into the Service Test Mode locally. HVAC_TEST is not supported as an input.

The nvoHeatCool is also used to help determine other operating parameters in the unit, including the Fan Mode, the Economizer Enable/Disable state and Economizer Minimum Position. In certain states, nvoHeatCool overrides the normal decisions for these parameters as shown in the table below:

nvoHeatCool	Fan Mode	Economizer	Economizer Minimum Position
HVAC_HEAT	nviFanModeCmd	nviEconEnable	nciOAMinPos
HVAC_COOL	nviFanModeCmd	nviEconEnable	nciOAMinPos
HVAC_MRNG_WRMUP	nviFanModeCmd	DISABLE	0
*HVAC_NIGHT_PURGE	nviFanModeCmd	ENABLE	0
HVAC_PRE_COOL	nviFanModeCmd	nviEconEnable	0
HVAC_OFF	AUTO	nviEconEnable	nciOAMinPos
HVAC_EMERG_HEAT	nviFanModeCmd	nviEconEnable	nciOAMinPos
HVAC_FAN_ONLY	ON	nviEconEnable	nciOAMinPos

*HVAC_NIGHT_PURGE disables compressors allowing for free cooling

Note: Whenever the Fan is OFF the Outdoor Air Damper (Economizer) will be closed.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#41 Application Mode
Network output SNVT_hvac_mode nvoApplicMode
This output network variable is used to control the mode of other controllers, such as VAV box controllers.

Valid Range

Outputs

nvoApplicMode
HVAC_AUTO
HVAC_COOL
HVAC_MAX_HEAT

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

Installation

NV#42 Effective Occupancy Output
Network output SNVT_occupancy nvoEffectOccup;

This output network variable is used to indicate the actual occupancy mode of the unit. This information is typically reported to a supervisory controller, or provided to another unit to coordinate the operation of multiple units. The occupancy mode is determined by a combination of optional input network variables and logic in the controller.

Valid Range
0 = OC_OCCUPIED: The ReliaTel Control should operate in the occupied mode (e.g. occupied setpoint).

1 = OC_UNOCCUPIED: The ReliaTel Control should operate in the unoccupied mode (e.g. unoccupied setpoint and fan mode in Auto.).

2 = OC_BYPASS: The ReliaTel Control should operate in the occupied mode for a period of time defined by nciBypassTime.

3 = OC_STANDBY: The ReliaTel Control should operate in the standby mode (e.g. standby setpoints).

When Transmitted
The variable is transmitted immediately when its value has changed. Additionally, this network variable will be transmitted as a heartbeat output on a regular basis as dictated by the Maximum Send Time (nciSndHrtBt) configuration value.

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

Effective Occupancy Output

nviOccManCmd	nviOccSchedule[2]	nvoEffectOccup
OC_OCCUPIED	X	OC_OCCUPIED
OC_UNOCCUPIED	X	OC_UNOCCUPIED
OC_BYPASS[1]	OC_OCCUPIED	OC_OCCUPIED
	OC_UNOCCUPIED	OC_BYPASS[1]
	OC_STANDBY	OC_BYPASS[1]
	OC_NUL	OC_OCCUPIED
OC_STANDBY	X	OC_STANDBY
OC_NUL	OC_OCCUPIED	OC_OCCUPIED
	OC_UNOCCUPIED	OC_UNOCCUPIED
	OC_STANDBY	OC_STANDBY
	OC_NUL	OC_OCCUPIED

Notes:

1. OC_BYPASS can be initiated by the nviOccManCmd or local sensor mounted switch. nvoEffectOccup w ill only be OC_BYPASS for the duration of the Local Bypass Time (nciBypassTime), until reinitiated by an update to nviOccManCmd or local switch.

2. For nviOccSchedule, this refers to the "current state" field.

3. "X" = Any State

NV#43 Supply Fan Status
Network output SNVT_switch nvoSupFanStatus
This output network variable indicates the supply fan status mode echoed back from the ReliaTel Control.

Valid Range

State	Value	Equivalent Percent	Actual or Requested Supply Fan State
0	N/A	0.0%	OFF
1	1 to 200	1.0 % to 100%	ON

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#46 Exhaust Fan Status
Network output SNVT_switch nvoExhFanStatus
This output network variable indicates the supply fan status mode echoed back from the ReliaTel Control.

Valid Range

State	Value	Equivalent Percent	Actual or Requested Exhaust Fan State
0	N/A	0.0%	OFF
1	1 to 200	1.0 % to 100%	ON

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

Installation

NV#55 Economizer Enabled
Network output SNVT_switch nvoEconEnabled
This output network variable indicates the economizer enable status mode echoed back from the ReliaTel Control.

Valid Range

State	Value	Equivalent Percent	Economizer Mode
0	N/A	0.0%	Disabled
1	200	100.0%	Enabled

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#56 Outdoor Air Damper Output
Network output SNVT_lev_percent nvoOADamper;

This output network variable indicates the outdoor air damper position in percent, if the unit has an economizer.

Range
The range is 0 % to 100 %. The value 0x7FFF will be sent as an invalid value to indicate that the unit does not have an economizer.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged

NV#59 Outdoor Air Temperature Output
Network output SNVT_temp_p nvoOutdoorTemp;

This output network variable is used to monitor the effective outdoor temperature that the ReliaTel control is using. If the input nviOutdoorTemp has a valid value, this output will echo the value of the input. If a valid value for nviOutdoorTemp does not exist, the locally wired sensor value is used. If neither value is available, the input will send the INVALID value.

Range
The range from the unit is -40C to 70C (-40F to 158F). The value 0x7FFF = +327.67C will be handled as an invalid value in case of a sensor failure.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#61 Outdoor Air Humidity Output
Network output SNVT_lev_percent nvoOutdoorRH;

This output network variable is used to monitor the effective outdoor relative humidity that the ReliaTel control is using. If the input nviOutdoorRH has a valid value, this output will echo the value of the input. If a valid value for nviOutdoorRH does not exist, the locally wired sensor value is used. If neither value is available, the output will send the INVALID value.

Range
The range is 0 % to 100 %. The value 0x7FFF = +163.835 % will be sent as an invalid value to indicate that the locally wired humidity sensor is failed.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

Installation

NV#65 Mixed Air Temperature Output
Network output SNVT_temp_p nvoMATemp;

This output network variable is used to monitor the mixed air temperature of the unit, if the temperature sensor is installed.

Range
The range is 0C to 100C (32F to 212F). The value 0x7FFF = +327.67C will be handled as an invalid value in case of a sensor failure.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#66 Effective Space Temperature Output
Network output SNVT_temp_p nvoSpaceTemp;

This output network variable is used to monitor the effective space temperature that ReliaTel Control is using for control. If the input nviSpaceTemp has a valid value, this output will echo the value of the input. If a valid value for nviSpaceTemp does not exist, the locally wired sensor value is used. If neither value is available, the output will send the INVALID value.

Range
The range is -10C to 50C (14F to 122F). The value 0x7FFF=+327.67C will be used as an invalid value in case of a sensor failure.

When Transmitted
The variable is transmitted immediately when its value has changed significantly. Additionally, this network variable will also be transmitted as a heartbeat output on a regular basis as dictated by the Maximum Send Time (nciSndHrtBt) configuration value.

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#67 Return Air Temperature Output
Network output SNVT_temp_p nvoRATemp;

This output network variable is used to monitor the return air temperature of the unit, if the temperature sensor is installed.

Range
The range is 0C to 100C (32F to 212F). The value 0x7FFF = +327.67C will be handled as an invalid value in case of a sensor failure.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

NV#68 Space Humidity Output
Network output SNVT_lev_percent nvoSpaceRH;

This output network variable is used to monitor the effective space relative humidity that the ReliaTel control is using. If the input nviSpaceRH has a valid value, this output will echo the value of the input. If the valid value for the nviSpaceRH does not exist, the locally wired sensor value is used. If neither value is available, the output will send the INVALID value.

Range
The range is 0 % to 100 %. The value 0x7FFF = +163.835 % will be sent as an invalid value to indicate that the locally wired humidity sensor is failed.

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

Update Rate
This value will be updated no faster than the Minimum Send Time (nciMinOutTm) configuration value.

Default Service Type
The default service type is unacknowledged.

TRANE®

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