
Controller Unit

301C
User Manual

ERP 510324
4/07

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Release 510324 April 2007**

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Honeywell Analytics
4005 Matte Blvd, Unit G
Brossard, Quebec, J4Y 2P4

Contacts

World Wide Web

The following Honeywell Websites may be of interest to our customers:

Honeywell Organization	WWW Address (URL)
Honeywell Analytics	http://www.honeywellanalytics.com
Corporate	http://www.honeywell.com
International	http://content.honeywell.com/global/

Telephone

Contact us by telephone at the numbers listed below:






	Organization	Phone Number
United States and Canada	Honeywell Analytics	1-800-563-2967
		1-450-619-2450
		Fax: 1-888-967-9938
Asia Pacific	Honeywell Asia Pacific Inc. Hong Kong	(852) 23 31 9133
Europe	Honeywell Pace Brussels, Belgium	[32-2]728-2711
Latin America	Honeywell International Inc. Sunrise, Florida, U.S.A.	(954) 845-2600

Sales Informations

Contact us at sales@vulcaininc.com

Symbol Definitions

The following table lists the symbols used in this document to denote certain conditions:

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration
	TIP: Identifies advice or hints for the user, often in terms of performing a task
	REFERENCE _ INTERNAL: Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	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: Symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death. WARNING symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.

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Introduction

The 301C controllers act as nerve centres for gas detection networks, providing continuous monitoring for up to 96 connected units (plus 1 301ADI). Since the controllers are factory programmed to your specifications, installation is limited simply to mounting and connecting them. Once installed and connected, the controllers allow you to monitor, adjust or reconfigure an entire network of units.

The 301C has a supplementary option of the wireless coordinator that enables this controller to communicate with and manage (up to 60) wireless gas detection devices in addition to its regular capabilities.

Intended Use

The controller is intended to monitor an entire gas detection network around the clock. The unit offers logging capabilities, creating log files of all transmitter concentrations and alarms for analysis. The unit is also equipped with grouping or zoning capabilities that allow users to query and monitor specific groups of transmitters or specific transmitter zones.

Receiving and Unpacking

When you receive your package:

- Check that the package is undamaged
- Carefully open the package.
- Locate the packing slip, or purchase order, and verify that all items on the order are present and undamaged

Note: If the package or any of its contents are damaged, please refer to the Warranty section at the back of the manual for instructions.

Installation Instructions

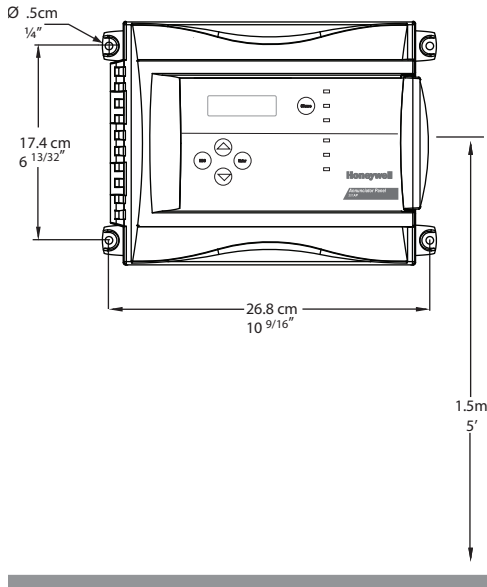
Basic Guidelines

Follow these instructions to the letter to ensure that the equipment will function properly. Failure to respect these guidelines will release Honeywell Analytics from any responsibility in the event of improper functioning:

- Make sure to locate all units in areas easily accessible for service.
- Avoid locations where instruments are subject to vibrations
- Avoid locating units near sources of electromagnetic interference
- Avoid locating units in areas subject to significant temperature swings
- Verify local requirements and existing codes that may impact choice of location.

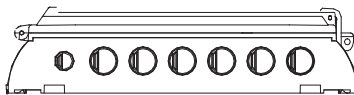
Surface Mount Installation

It is recommended that controllers be installed 5 feet (1.5 m) above the floor, at approximate eye level.



Mark the holes, as shown:

- Height markers 6 13/32" apart
- Width markers 10 9/16" apart
- Pre-drill 1/4" mounting holes as needed
- Securely mount the 301C using the appropriate screws

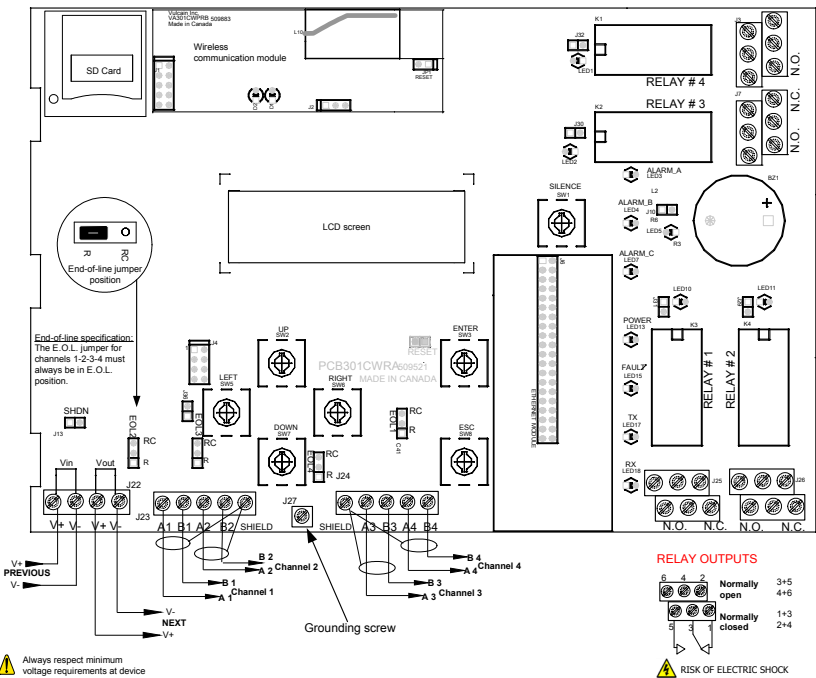


Wiring for the unit must be passed through the knock-outs provided at the bottom of the unit.

Wiring Details

The diagram below provides the details required to connect the 301C with the wireless communication module (coordinator). This module allows the controller to communicate with and manage the 301W wireless gas detectors.

Details concerning power supply, cables, capacities, etc., are provided in the Specifications section at the back of this manual.



COMMUNICATION

Communication Wire Gauge:
2-24 AWG (Belden 9841)
Twisted and shielded cable
2000 feet (600 m) per channel
T-tap: 65 feet (20 m) / T-tap
130 feet (40 m) total

Channel Specifications:

Channel 1-2: Modbus/Vulbus protocol
Channel 3: Modbus protocol only
Communicates only with Vulcan transmitters
Channel 4: Modbus output
Communicates only with VA301BDCM

*No transmitter can be connected to channel 4

Wireless Communication:
ISM worldwide
Indoor range 30m

BacNet/IP MODULE (-BIP option)

Ethernet: 10/100-compatible with 10Base-T interface, RJ-45

Visual Indicators:
Green LED LINK
Yellow LED ACT

The connectors, or ports on the PCB allow you to connect various wiring to the controller. The wiring includes power, communication, BACNet and relays, each with an assigned position (and number) on the board:

- J22 Power Input: Connect the power supply to the controller (see Wiring Details for cabling diagrams)
- J23, J24 Communication inputs: Connect communication cables to channels 1 through 3. Channel 4 is reserved for Modbus slave communication.
- Relay Outputs 1-4: Depending on the desired configuration, connect the relay cables to either N.O. or N.C.
- SHDN jumper Place the jumper over the Shutdown header pins to reset or restart the system.
- EOL Resistors 1-4: Place the jumper over the header pins to create the connection to attenuate communication echoes.

Power Connections

The 301C requires a power range of 17-27 Vac, 50/60 Hz (8.64 VA), 18-36 Vdc, 350 mA @24 Vdc (8.4 VA). Polarization is not important in either AC or DC mode. The system must be grounded on the transformer and a dedicated circuit breaker must be used.

Communication Connections

Communication cables must be grounded using the shield terminal, using twisted and shielded pair Belden 2-24 AWG #9841 cable (or equivalent).

The network cabling can extend up to a limit of 2000 feet (609 m) per channel.

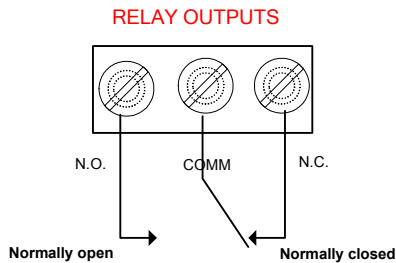
The length of a T-tap can reach 65 feet (20 m), up to a maximum of 130 feet (40 m) for all T-taps.

Note: Channel 4 is the slave communication channel: No transmitters may be connected to this channel. Ex.: Channel 4 can be used for the BACnet (slave) connection.

All wireless devices associated to the controller will automatically be detected and communicate with the controller using wireless communication protocols.

Relay Output

The relay output can withstand up to 5A at 30Vdc or 250Vac (resistive load only). Relays can be used to activate horns and strobes. Although each relay is programmed with a default setting (below), they can be configured using the controller programming menu.



If relays are set to Normally closed, the relay is powered up with the controller and the device linked to the relay is functioning. The relay will shut down when the specified alarm condition is reached.

If the relay is set to normally open, the relay will remain off when the controller is powered up and the device connected to the relay will only be activated when the specified alarm condition is reached.

Note: These functions are reversed if the controller Failsafe mode has been activated.

Jumper Use Instructions

The many jumpers on the controller PCB allow you to perform a variety of operations manually:

- EOL 1-4:** Enables the user to add End-Of-Line jumpers that improve communication signals. Put the jumper in R position (as shown on wiring diagram) to activate the End-of-Line termination. (R provides a resistance termination and RC provides resistance and condensator termination.)
- SHDN:** Enables you to reset or temporarily shut down the microcontroller. This function is used mainly when system wiring adjustments are needed (power off for safety).
- Relays** These jumpers let you test the relay by activating it without
- J29-J32:** having any effect or impact on Events.

Getting Started

Though the controller units are fully customized to your specifications, you can alter programmed values using the menus provided. This section of the manual will take you through the programming menu options.

Initial Startup

Make sure that all wiring has been completed according to specifications in the wiring details before powering up the unit. When all is secure, remove the SHDN jumper to power-up the unit. It should only take a few seconds until the unit is fully operative.

Datalogger (SDcard)

The DLC (Data Logger Card) option for the controller automatically collects data and stores it on a digital Flash memory card (SDCard). In the event that the card memory becomes full:

- Information logging is stopped
- No SDcard flag is displayed on-screen
- The SDcard LED blinks

See the Acquisition section for more details on starting and stopping the datalogging function.

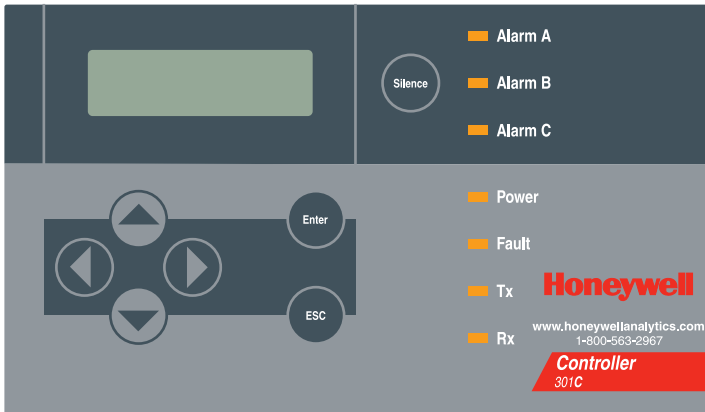
CAUTION

Always deactivate datalogging function before removing the SDcard. Never remove the card when its LED is on.

Programming Interface

The front panel of the 301C provides a programming keypad (buttons) and LEDs.

301C front panel Keypad



Keypad Functions

Each unit has 7 keypad keys, or buttons:

- Arrows:** Used to move the cursor through the various programming fields (Up, Down, Left and Right), or to adjust the display contrast (press and hold the up or down arrow until desired contrast is reached and release).
- ESC:** Used to exit the programming menu or to cancel a change or input.
- Enter:** Used to access the programming menu and to modify programming fields.
- Silence:** Turns off the controller's buzzer.

LED Definitions

The controller is equipped with 7 LEDs that provide a status for each function related to that indicator:

- Alarm A: When the red light is blinking, it indicates that an Event has been activated. When the LED is continuously lit, one or more transmitters has reached the corresponding alarm level.
- Alarm B and C: When the red indicator is on, it indicates that one or more transmitters has reached the corresponding alarm level
- Power: Green indicates that the unit is powered up and functional
- Fault: When the amber LED is on, it indicates a fault (i.e. a communication, maintenance or device problem)
- Tx: When the amber LED is blinking, it indicates that the controller is *sending* information or requests on the communication channel.
- Rx: When the green LED is blinking, it indicates that the controller is *receiving* information.

Each of these functions is linked to parameters programmed in the control unit, which we will discuss in the following section.

System Operation

The system operates in four (4) different modes that enable you to use, analyse, debug and simulate the actions that the system can perform. These modes are: Normal, Single Tx, Debug and Simulate. The default system operation mode is Normal. The other modes are available through the Tests menu (option 8 from the Main Menu).

Note: Systems services may be disrupted by some menu operations.



System Programming

The system's Normal programming mode offers several menu options that are accessible from the main menu screen:

- Tx Info: Allows you to program transmitter parameters
- Groups: Allows you to set up groups of transmitters
- Events: Allows you to program events and event behavior
- Acqui: Allows you to activate or deactivate the datalogging feature
- Copy: Allows you to copy data or parameters from the (controller) configuration to parameters
- Config: Allows you to set system parameters and password
- Network: Allows you to perform actions on the network, consult communication statistics and perform remote calibrations
- Tests: Allows you to test each device sequentially (inputs, outputs, communications, events, etc.) and validate operation of various parameters
- BACNet: Allows you to set a device's BACNet parameters
- Wireless: Allows you to configure, monitor and modify a network of wireless gas detection devices.

*Note: Access to the programming functions is password protected.
The default password is 2967.*

When you first begin, the screen display appears as follows, scrolling between information screens for each device connected to the controller:

VA301C	Ver. 3.00
Ad: 1	Gr:0
Ev:0	
 	
2007-01-17	13:18:18

If one or more of the connected devices is in an alarm mode, the controller will only scroll between the main information screen and the screens for device(s) in alarm mode. In this case, you must scroll manually to view screens for other devices.

The information screen also displays icons representing certain system functions. Here is a list of possible icons and their meaning:

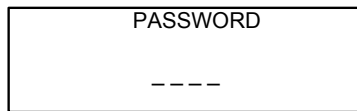
Icon	Description
	BACNet: Indicates that there is a BACNet module present and that it is communicating with the controller.
	BACNet error: Indicates that a BACNet module is present but communication with the controller has failed (error)
	Debug: Indicates whether the controller is in debug mode (Single TX, Debug or Simulation modes). When in simulation mode, SIM appears next to this icon.
	Log: Indicates that either "Tx Logging" or "Event logging" is enabled.
	Log error: Indicates that an error occurred during TX or Event logging. All logging functions are stopped.
	SDC: Indicates that an SDcard is present and functioning. The icon "fills" (from white to black) progressively as memory is used. A white icon indicates empty memory and black indicates full memory.
	SDC error: Indicates that an SDcard is present but not functioning properly. This card cannot be used.
	Wireless network: Indicates that the wireless network coordinator (wireless communication module) is present and communicating with the controller.
	Wireless network error: Indicates that the wireless network coordinator (wireless communication module) is present but is not communicating with the controller.

System Programming

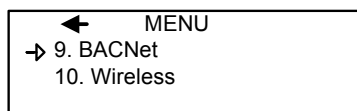
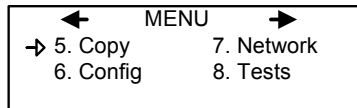
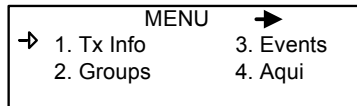
Programming Interface

Since the controller's programming functions are password protected, it is necessary to access the login screen:

- Press Enter to access the programming options. The password screen appears:
- Use the keypad Up or Down arrows to increase or decrease the value, one digit at a time, starting with the first digit
- When all the digits of the password are correct, press Enter to access the programming functions.



The first MENU options screen appears. Use the keypad arrows to navigate through multiple screens to the desired function and press Enter to access it.



Tx Info Menu

Tx Info is the menu option that is dedicated to Transmitter information and contains several sub-menu options, which may change, according to the device. Some devices will have the following Tx INFO menu options:

Ident:	Allows you to consult the network component's identification information.	<div style="text-align: right;">1. Tx Info 001 →</div> <div style="text-align: center;">-Ident-</div> <div style="text-align: left;">→ 301D2</div> <div style="text-align: left;">CO2 (IR)</div>
COM:	Allows you to consult or change the communication protocol	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-COM-</div> <div style="text-align: left;">MdbS RTU 8D 1S EP</div> <div style="text-align: left;">9600 bauds</div>
Detection:	Allows you to view or change the detection range and unit of measurement parameters	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info 001 →</div> <div style="text-align: center;">-Detection-</div> <div style="text-align: left;">→ scale: 0-0.00</div> <div style="text-align: left;">unit: %</div>
Display:	Allows you to consult or change the label (or name) given to a specific component	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-Display-</div> <div style="text-align: center;">edit (20 char.max)</div> <div style="text-align: left;">301D2 CH4 Ad001</div>
Alarm		<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-Alarm A-</div> <div style="display: flex; justify-content: space-between;"> <div style="text-align: left;">MIN 0.00%</div> <div style="text-align: right;">MAX 0.00%</div> </div>
A, B, C:	Allows you to program various alarm levels	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-Alarm B-</div> <div style="display: flex; justify-content: space-between;"> <div style="text-align: left;">MIN 0.00%</div> <div style="text-align: right;">MAX 0.00%</div> </div>
		<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-Alarm C-</div> <div style="display: flex; justify-content: space-between;"> <div style="text-align: left;">MIN 0.00%</div> <div style="text-align: right;">MAX 0.00%</div> </div>
Servicing:	Displays time in service and time until next required calibration	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-Servicing-</div> <div style="text-align: center;">4002 hours on 15514h before cal.</div>
Status Code:	Displays Tx or Node status and sensor status (in hexadecimal value)	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">-Status Code-</div> <div style="text-align: left;">Tx Status: 12FAh</div> <div style="text-align: left;">Snsr status: 4407h</div>
Erase Current Tx:	Erases all the configuration for the selected device entry	<div style="text-align: left;">←</div> <div style="text-align: right;">1. Tx Info → 001 →</div> <div style="text-align: center;">erase current Tx</div> <div style="text-align: left;">→ Change Tx Address</div>
Change Tx Address	Moves the selected device to a different Tx address	

System Programming

Tx Info Menu

Other devices will have the following Tx INFO menu options:

Ident: Allows you to consult the network component's identification information.

```
1. Tx Info 121 →
-Ident-
→ 301W
CO2 (IR)
```

Scale(1): Allows you to view or change the detection range

```
← 1. Tx Info → 121 →
-Scale(1)-
Max 00250
Min 00000
```

Scale(2): Allows you to view or change the range factor and unit of measurement

```
← 1. Tx Info 121 →
-Scale(2)-
→ Factor 00001
Units ppm
```

Display: Allows you to consult or change the label (or name) given to a specific component

```
← 1. Tx Info → 121 →
-Display-
edit (20 char.max)
301W NO2 Ad121
```

Alarm A, B, C: Allows you to program various alarm levels

```
← 1. Tx Info → 121 →
-Alarm A-
MIN MAX
0.00% 0.00%
```

```
← 1. Tx Info → 121 →
-Alarm B-
MIN MAX
0.00% 0.00%
```

```
← 1. Tx Info → 121 →
-Alarm C-
MIN MAX
0.00% 0.00%
```

Operating Times: Displays lifetime counter and time (in hours) since the last calibration

```
← 1. Tx Info → 121 →
-Operating Times-
Lifetime: 00000
Since Calib: 00730
```

Status Code: Displays Tx or Node status and sensor status (in hexadecimal value)

```
← 1. Tx Info → 121 →
-Status Code-
Tx Status: 12FAh
Snsr status: 4407h
```

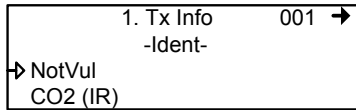
Erase Current Tx: Erases all the configuration for the selected device entry

```
← 1. Tx Info → 121 →
erase current Tx
Change Tx Address
```

Change Tx Address: Not available for addresses 97-170

Ident Menu

The Ident, or identification menu allows you to consult a component's network ID:



The upper right corner of the screen shows the component's address. If you know the address of the device whose information you wish to consult:

- Use the arrows to move the cursor arrow to the on-screen address
- Press Enter (you can edit the value when the number is flashing)
- Use the up or down arrows to increase or decrease the value
- Press Enter again to validate the entry and display the information for the desired device.

The bottom left corner of the display shows the transmitter name (ex.: 301D2 - product name) and the sensor type (ex.: CH4 - methane sensor). These values can also be changed for Group or Vulbus product types. The procedure is identical for both fields:

Programming or changing a product or sensor type

- Use the arrows to move the cursor to the product type field.
- Press Enter to select the field (the value can be modified when flashing)
- Use the arrows to scroll through the list of product types and press Enter when the desired product or sensor appears

System Programming

Tx Info Menu

Product and Sensor Types

This is a list of all the (preprogrammed) product types available from the Identification option in the Tx Info menu.

	1. Tx Info	121 →
	-Ident-	
→ 301W		
CO2 (IR)		

The order of the products below is not necessarily the order in which they will appear in the controller

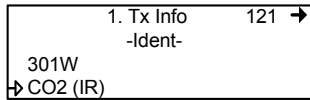
Product Types		
Addresses 1-96		
(?)	RgRt3	901T
301D2	301AP	201R
90DM3R	SQN8X	201T
301IRF	301EM	90DM2
IRT100	301EMRP	201D
EC-F9	GsPnt2	301D
201T2	S301RLC	NotVul
301T	Std.Device*	Group (see note)
GsPnt		

Product Types	
Addresses 97-120	Addresses 121-170
301ADI	(?)
(?)	301W
	301RW
	301RPT

* Std.Device represents the S301M, 90DM4, 420MDBS and 301ADI.

Note: When Group is selected as a product type, the remaining Tx INFO screens are not accessible (because each product in the group has already been individually programmed). Only the Ident and Erase current Tx screens will be available.

This is a list of all the (preprogrammed) sensor types available from the Identification option in the Tx Info menu.



Sensor Types

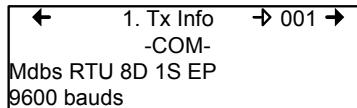
CH4	CH4	COCI2	R123 (IR)
CO	CO	B2H6	Comb (IR)
NH3	CO	H2	CO2 (IR)
NO2	H2	AsH3	CO2 (IR)
HCL	SO2	CIO2	R245A (IR)
R11	H2S	PH3	FE227 (IR)
R12	ETO	CO	R404A (IR)
R22	NO	Unknown IR sensor	R507A (IR)
R134A	Cl2	Comb (IR)	R401A (IR)
R125	SIH4	R11 (IR)	R13B1 (IR)
R123	HCN	R12 (IR)	R23 (IR)
F2	O3	R22 (IR)	No sensor
HF	HBr	R134A (IR)	
Comb	BCI3	R125 (IR)	

The sensor type list applies to address ranges 1-96 and is not dependent on the type of product selected. Devices in the address range from 97-170 will display a BACNet object identifier, rather than a sensor type.

*An additional Product Type, simply called “Group”, represents a group created in the Groups Menu in the controller. When scrolling through the available product type list, this name will appear as many times as there are groups created in the controller (example: Group 1, Group 2, Group 3, etc.). If a group is selected as the product type, then the sensor type options are limited to MIN, MAX and MEAN.

COM Menu

This screen displays the selected communication protocol for device addresses from 1 to 96. Each transmitter's protocol is defined by the controller (see Network Auto-configuration section)



If a transmitter is compatible with several different protocols, it can be modified using to one of the following options:

- Vulbus
- Mdb ASCII 7D 2S NP 9600 bauds
- Mdb RTU 8D 2S NP 9600 bauds
- Mdb RTU 8D 1S NP 9600 bauds
- Mdb RTU 8D 1S OP 9600 bauds

When a transmitter is configured with the Modbus communication protocol, the transmitters automatically sends the programmable parameters to the controller.

Note: Vulbus transmitter parameters must be programmed manually.

Scale Menus (1 and 2)

These menus appear only for certain devices . Scale(1) lets you define the detection range, minimum and maximum, for the selected device. Whatever value is specified is the value that will appear at the device display (if applicable). The Minimum value is generally left at 0.

←	1.	Tx Info	→ 001	→
		-Scale(1)-		
	Max		00250	
	Min		00000	

Scale(2) lets you determine the factor by which to divide the scale (between 0 and 65535) and the unit of measurement for the selected scale.

←	1.	Tx Info	001	→
		-Scale(2)-		
	→ Factor		00010	
	Units		%	

The factor allows you to set very precise scale limits for detection. By dividing the maximum scale value in the first Scale screen (250 in this example) by 10, you are able then to display a scale value of 25.0.

The “Units” allow you to select the unit of measurement for the device:

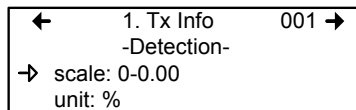
°F:	Sets degree Farenheit as the unit of measurement
°C	Sets degree Centigrade as the unit of measurement
%RH	Sets Relative Humidity as the unit of measurement
mV	Sets millivolts as the unit of measurement
V	Sets volts as the unit of measurement
mA	Sets milliamps as the unit of measurement
%	Sets the percentage of gas as the point unit of measurement
ppm	Sets parts per million of gas as the point unit of measurement

Detection Menu

The detection menu (available only for devices with addresses between 1 and 96) displays the detection range (scale: 0-100.0) and the unit of measurement (unit: %) for the selected component. If a transmitter uses the Modbus protocol, the detection parameters are automatically defined during network configuration and are not editable. Vulbus protocols must be manually defined by the programmer.

The detection scale is between 0 and the maximum value (0.00) and the unit of measurement is either ppm or percent (% for oxygen and % LEL for combustibles).

The detection menu is not available for the VA301R or VA301AP.



Programming or modifying the scale range or unit:

- Use the arrows to move the cursor to the scale or unit option
- Press Enter and use the arrow to increase or decrease the value
- Press Enter when the desired value is obtained

Display Menu

This option allows you to assign a specific label or name to the selected component (transmitters, relay modules, annunciators). You can use up to 20 characters, including spaces, in your label (example: BOILER ROOM). The default Modbus transmitter labels are composed of the component (or transmitter) name, sensor type and address.

Vulbus transmitter labels contain 20 blank characters (spaces).

←	1. Tx Info	→ 001 →
	-Display-	
edit	(20 char.max)	
301D2	CH4	Ad001

Alarm A, B and C Menus

Since the display screens are identical for each of the Alarms, they have been combined into one section for the purpose of this manual. However, each Alarm must be configured separately according to your specifications.

This option allows you to set minimum and maximum alarm levels for alarms A, B and C. What this does is set a tolerance range within which no actions are taken. However, if gas concentrations should go over the set maximum level, an alarm will be triggered. The alarm will not be shut off and reset until gas concentrations fall below the minimum level defined.

←	1. Tx Info	→ 001 →
	-Alarm A-	
MIN		MAX
0.00%		0.00%

- Use the keypad arrows to move the cursor arrow to either MIN or MAX
- Press Enter to select the field for modification
- Use the keypad up or down arrows to increase or decrease the value
- Press Enter to validate the value.

Servicing Menu

This function (available only for devices that support this function) displays the total time the device has been in service and amount of time (in hours) remaining until the next required calibration.

```
← 1. Tx Info → 001 →  
-Servicing-  
4002 hours on  
15514h before cal.
```

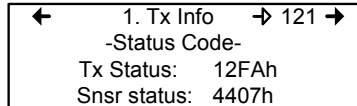
Operating Times Menu

This function (available only for devices that support this function) displays the total time the device has been in service and amount of time (in hours) elapsed since the last calibration.

```
← 1. Tx Info → 121 →  
-Operating Times-  
Lifetime: 00000  
Since Calib: 00730
```

Status Code

This screen displays transmission (Tx) or node status (displayed for wireless devices only) and sensor status for the selected device address in hexadecimal values. This screen is for information purposes only and the information displayed cannot be modified.

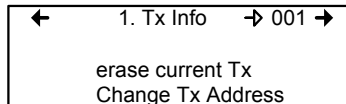


Note: The Status Code screen provides important information to qualified personnel for troubleshooting purposes.

Erase Current Tx

This function allows you to erase the configuration or to change the Tx address for the displayed component.

Note: Selecting erase current Tx only erases the current device entry Tx Info configuration. No other data is erased.



Change Tx Address

Selecting Change Tx Address allows users to move a device from one TX address to another:

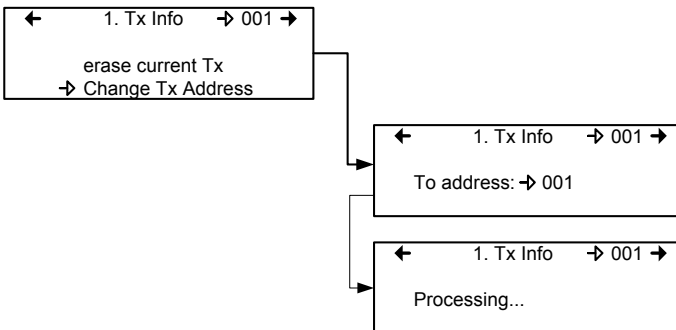
- Use the arrows to scroll to Change Tx Address and press Enter to select
- In the next screen, scroll to the address number and press Enter to select
- Use the up or down arrows to increase or decrease the address value and press Enter to validate the new address.

The Change Tx address option is only available (active) for device address 1 to 96 and if there is a Modbus device connected.

If the address is valid, the screen will display “Processing”.

If the address is invalid, the screen will display “Invalid Tx” and return to the Change Tx Address screen (you cannot change the address for GasPoint devices)

A final screen will display either “Error” or “Success” (re-start procedure if Error is displayed).



Note: If a device address is changed to an one already associated to another device, the existing data will be overwritten. Customers should know their network’s address assignments and be careful when changing a Tx address. Remember to delete the original Tx address to avoid duplicate entries.

Groups Menu

Programming groups of transmitters allows you to combine several units that then enables you to take actions (events) based on a series of units rather than each unit, individually.

```
←      MENU      →
  1. TxInfo      3. Events
→ 2. Groups      4. Acqui
```

```
                2. Groups      001→
→ <end>  [----] [----] [----]
  [----] [----] [----] [----]
      empty all groups
```

A group is a stack containing the addresses from each of the transmitters included in the group.

Groups are displayed in one single line; if your group contains more than four components, you will need to use the arrows to scroll left and right of the display window to view all members of a group.

The cursor in the Group screen is represented by the blinking brackets (<end>). Any information between the brackets can be edited.

Creating Groups

- Use the arrows to move the cursor to a group line and press Enter
- You can edit the field when the brackets cease to blink and the word “end” blinks
- Use the up or down arrows to scroll through the list of all units connected to the 301C, until the desired address is displayed .
- Press Enter again to validate the address.
- The address is added to the group and the <end> bracket is shifted one position to the right.

The process can be repeated until you have added all the desired transmitters in your group (up to 126). The address for each transmitter added in the Tx Info menu is available when creating groups.

Note: Groups created in the Groups menu will appear in the product type list (Tx Info - Ident screen) as “Group xx” (the number assigned to the group when it was created).

Deleting Groups

You can use the *empty all groups* command to delete all groups previously programmed in the controller.

Single groups can be deleted with a simple procedure:

- Scroll to the first transmitter in the group list,
- Select the transmitter (its address blinks) and scroll to (erases the entry and <end> marks the end of the stack)
- Press enter and the group is emptied.

This procedure makes it possible to delete one, several or all entries previously included in a group.

Note: You can create up to 126 groups, with a maximum of 128 members each.

Event Menu

Though the controller has a default setting for Event configuration (as shown below), the Event menu is programmable. Event programming lets you define specific actions:

Action:	What will be done if programmed criteria are reached
Delay:	Defines the length of time to wait before taking an action on an event and time to wait after an event has returned to normal before the action output is returned to normal state.
Conditions:	AND, OR or none (---); equations that allow more detailed control of an event
Coverage period:	Determines the period during which the event is applicable
Status: disabled:	Disables or enables a programmed Event
Database:	Erases the selected event or all events

System Programming

Event Menu

3. Events → 001→
-Action-
Target: Ctrl
Relay: #01

← 3. Events 001→
-Delays-
Before: → 99min
After: 01min

← 3. Events 001→
(1/3 Gr036 🔍) AND
= 2.01%

← 3. Events → 001→
-Coverage Period-
All day
All week

← 3. EVENEMENT → 001
-Status : disabled-
→ Enable event
.

← 3. Events 001→
-Database-
→ Erase current event
Erase all events

The system has a default setting for the actions to execute:

- Relay No. 1 will be activated when Alarm A is reached on any transmitter connected to the networker
- Alarm B will trigger relay No. 2
- Relay No. 3 will be activated when Alarm C is reached on any transmitter connected to the network
- Pressing the silence keypad button will acknowledge the *latched events* (if any) and silence the buzzer.
- Relay No. 4 will be activated in the event that on any transmitter connected to the network is in fault

Action Menu

Actions are comprised of two parameters:

3. Events	→ 001 →
-Action-	
Target:	Ctrl
Relay:	#01

- Target** Indicates which component is responsible for the action to be taken;
Tx (transmitter)
Re (Relay/Annunciator)
Ctrl (Controller)
- Relay** Indicates which of three possible outputs will be activated when the event is true;
#XX (activates the component's #xx relay), Buzzer (activates the component's audible alarm)
ALL (activates the relays and audible alarms)

Example: Tx 007 detects a concentration exceeding the set values. The target (controller) triggers relay 1 connected to that event (a fan perhaps).

Delays Menu

This option lets you program Before and After settings that will delay the activation or deactivation of an action.

Before Delays the action for the specified length of time. If the condition persists beyond this delay, the defined action is executed.

After The time to wait after an event has returned to normal before returning action output to normal state. The after delay also offers a Latch option, described below.

```
←      3. Events      001→  
-Delays-  
Before: → 99min  
After:   01min
```

Before and After delays can be configured at either 30 or 45 seconds or from 1 to 99 minutes, in one minute increments. Five dashes (-----) indicates that no delay has been programmed.

- Use the keypad arrows to scroll to the desired option
- Press Enter to select the option
- Use the keypad arrows to scroll through the second or minute settings
- Press Enter at the desired setting. The delay is set.

Latch Mode

- The Latch function is executed on an Event state
- It is possible to select the Latch mode by changing the after delay to “*latch*”
- The Event stays active until the Silence keypad button is pressed
- The Silence keypad button has two functions: Silence the buzzer and unlatch the event.
- When the Silence keypad button is pressed, events in Latch mode are unlatched and reevaluated. If the Event condition persists, the Event remains active and returns to Latch mode. If the condition does not persist, the event is deactivated.

Note: If the Event has a Before delay and the Silence button is pressed while the Event conditions are still true, the buzzer will be silenced only for the length of the programmed delay.

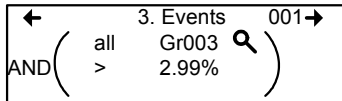
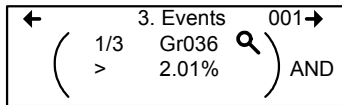
Conditions

Conditions are the parameters that define what makes an Event true. Each condition is defined by four elements and can be combined with other conditions to provide greater flexibility. A condition, as in the example provided below, defines:

IF at least 1/3 of group 36 detects concentrations greater than 2.01% of specified gas AND all of group 03 detects a concentration greater than 2.99% of gas, then the specified action (Actions were set at the first Event screen) for that Event will be triggered.

Since the display screens offer limited space, you will need to scroll left and right to view and edit further information.

Condition programming screens



The portion of the Events condition screen that is within the brackets is divided into four editable list fields:

The top left portion contains the statistic quantifier (available only for Groups) that take only the specified part of the group into the equation. Options available in this field are:

- all: includes all transmitters in the group
- mean: includes the average concentration for the group's transmitters
- max: includes the group's maximum concentration
- min: includes the group's minimum concentration
- 1/4: includes at least a quarter of the group's transmitters that meets set conditions
- 1/3: includes at least a third of the group's transmitters that meets set conditions
- 1/2: includes at least half of the group's transmitters that meets set conditions
- 2/3: includes at least two thirds of the group's transmitters that meets set conditions
- 3/4: includes at least three quarters of the group's transmitters that meets set conditions
- 1 or +: at least one or more than one of the group's transmitters that meets set conditions

System Programming

Event Menu

The bottom left portion contains the logic, or operator, quantifier that determines how conditions are calculated. Options available in this field are:

Operator Symbol	Meaning
---	No operator
=	Equal to
<=	Equal to or smaller than
<	Smaller than
>=	Equal to or larger than
>	Larger than
!=	Not equal to
max	When the maximum value is reached, an action is triggered. It will not be deactivated until levels fall below minimum value
min	When concentrations fall below minimum value, an action is triggered. It will not be deactivated until concentrations rise above set maximum value

The top right portion contains the source, which defines what device or group of devices the Event will be based on. The list provides the following options:

- GrAll: Includes all transmitters (see note)
- Gr000: Includes only the devices in the specified group (see note)
- Tx000: Includes only the specified transmitter (connected to the controller)
- Clock: Includes only information gathered between the specified times. Selecting clock sets a condition that is applied only between the start and end time frame. It is possible to set one condition screen to specific parameters and the second to clock, which means that the specified condition will trigger an event only if it occurs during the set time period.

Note: Clicking on the magnifying glass to the right of a Group number on the display opens a view of the Group for consultation or editing. Press Esc to close the group view and return to the Event condition screen.

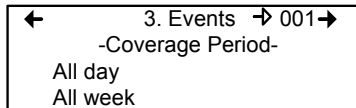
The bottom right portion contains the operand, which defines what device or group of devices on which the Event will be based. The list provides the following options:

- OFF Used for status on binary inputs (ex.: used with 301ADI)
- ON: Used for status on binary inputs (ex.: used with 301ADI)
- Fault: Bases trigger on maintenance alarm, communication failure or device failure
- Alrm A: If the chosen device or group is in alarm mode, an event will be triggered

The Coverage Period screen lets you define the period that will be covered by the Event. (The time frames for each of these periods can be defined in the controller Config menu.) This option provides two further selection fields:

Day definition field: lets you select All day, Daytime, Nighttime

Week definition field: Weekend, Working Days, All week

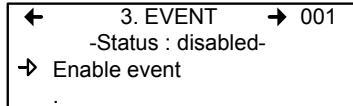


1. Use the keypad up or down arrows to scroll to either All day or All week
2. Press Enter to select. The value can now be changed
3. Use the keypad up or down arrows to scroll through options (see above)
4. Press Enter to select.

Status

This screens displays the current event status and allows you to either enable or disable, depending on the current status.

Enable event: This is a “toggle” switch; press Enter to change the value from Enable to Disable and vice versa



If you have just gone through all the steps and programmed an event, this screen will display “Enable event”. Press Enter to activate all the parameters and enable the Event.

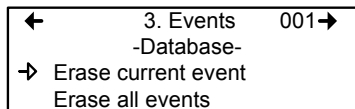
If you are consulting an existing Event, this screen would display “Disable event”. You can press Enter to disable an Event that you do not wish to delete but do not want functioning for any time. The programming of this Event is always present, which means that you can easily reactivate it by scrolling to this screen and pressing Enter.

Database

This screens displays the options linked to the database:

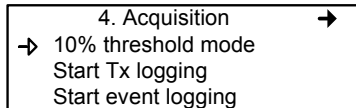
Erase current event: Lets user erase the current event

Erase all events: Lets user erase all events



Acquisition Menu

The Acquisition mode is only accessible when there is an SD card present (controllers with the Data Logging, or DLC function). It is used to enable or disable the logging of system Events or transmitter information. The information is logged (or recorded) on an SD card. You must define intervals, or conditions before using this option.



The first line of the Acquisition screen offers either :

- Delay mode: Allows for delay intervals of 10 to 59 seconds or 1 to 60 minutes.
- Threshold mode: Allows you to set log values according to set variation thresholds (based on last reading) of 3% or more, 5% or more or 10% or more of last detected concentration.

If you select a 3% threshold, the system will not log a value at 3% but will log a value of 3.1%. Remember that the sampling rate (system refresh rate) may have an impact on logging.

Here is an example of threshold logging. The logs a semi-colon delineated text files.

```
2005-04-27 11:05:20;1_CO2_ppm;574;-normal-:
2005-04-27 11:06:02;1_CO2_ppm;503;-normal-:
2005-04-27 11:06:15;1_CO2_ppm;562;-normal-:
2005-04-27 11:06:28;1_CO2_ppm;645;-normal-:
2005-04-27 11:06:39;1_CO2_ppm;557;-normal-:
2005-04-27 11:30:45;1_CO2_ppm;715;-normal-:
```

Starting and Stopping Tx Logging

In the previous step, “Acquisition”, you configured the frequency at which Tx logs would be recorded. Now, you can start the logging function:

When “Start Tx logging” appears on the display, it indicates that the acquisition, or logging, mode is inactive. When “Stop Tx logging” appears, it indicates that Tx data is being logged. The log message is displayed on the screen according to the chosen mode and LED 1 will light up.

Press the Enter keypad button to stop or start Tx logging.

When Tx data is logged, the system creates files named **tayymmdd.log**, **tbyymmdd.log** and **tcyymmdd.log**, each representing one third of the network. The record includes the transmitter’s date, time and address, the sensor type, the concentration read, as well as the alarm status. Here is a sample of what a Tx log looks like:

```
2004-01-23 17:54:25; 001_CO_ppm;0;-normal;-002_NO2_ppm;1.5;-normal;-003_CO_ppm;0;-nor  
2004-01-23 17:55:25; 001_CO_ppm;0;-normal;-002_NO2_ppm;0.5;-normal;-003_CO_ppm;0;-nor  
2004-01-23 17:56:25; 001_CO_ppm;0;-normal;-002_NO2_ppm;0.5;-normal;-003_CO_ppm;0;-nor  
2004-01-23 17:57:25; 001_CO_ppm;0;-normal;-002_NO2_ppm;1.0;-normal;-003_CO_ppm;0;-nor  
2004-01-23 17:58:25; 001_CO_ppm;0;-normal;-002_NO2_ppm;1.5;-normal;-003_CO_ppm;0;-nor
```

The first column of the Tx log displays the date (yyyy-mm-dd) and the time (hh:mm:ss) of the log. In this example, you can see that the “Delay mode” was set to one minute intervals.

The third column of the Tx log displays the transmitter address and the fourth displays the gas type, gas concentration and unit of measurement.

The display then lists the next transmitter address with its gas type, concentration and unit of measurement, and so on until all the transmitters have been listed.

Starting and Stopping Event Logging

The Acquisition menu offers an event logging option. Event Logging records controller transactions, events, Tx and alarm flags and relay status.

When “Start Event logging” appears on the display, it indicates that the acquisition, or logging, mode is inactive. When “Stop Event logging” appears, it indicates that Event data is being logged.

Press the Enter keypad button to stop or start Event logging.

When Event data is logged, the system creates a file named **evyymmdd.log**. The record includes the date, time and the event. Here is a sample of what an Event log looks like:

```
2004-01-23 17:54:25: Event logging enable
2004-01-23 17:55:25: Event logging enabled
2004-01-23 19:05:47; Simulation sequence activated
2004-01-23 19:05:48; Tx 6 communication no more in fault
2004-01-23 19:05:48; Tx 8 communication no more in fault
```

The first column of the Event log displays the date (yyyy-mm-dd) and time (hh:mm:ss) of the log. Column A displays the date and time of the log. In this example, you can see that the event’s “Delay mode” was set to one minute intervals.

The system logs the following types of events:

- Event Log
- Event status changed
- Alarm A, B, C, Fault, and X status changed

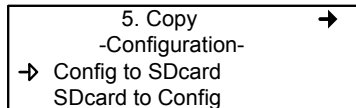
Note: New log files are created when the existing files reach 32 000 lines or at the start of a new week (0h00 Sunday)

Copy Menu

The Copy menu allows you to copy and transfer programmed parameters. You can transfer data from the SD card to a controller or from a controller to the SD card or copy parameters from one device to the next. The Copy option offers three screens: Configuration, Parameters and System Log.

Configuration

If the controller is equipped with an SD card, the configuration function allows you to transfer data either from the 301C to the SD card or the reverse. This makes it possible to transfer the controller's programming to a computer or from a computer to the controller.



The first option in the configuration screen is 301C to SDcard. Selecting this option copies the controller's configuration and parameters into a "config.ini" file ¹.

The second option is SDcard to 301C allows you to copy the configuration and parameters of the "config.ini" file (saved on) an SDcard into the controller.

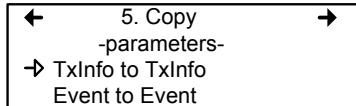
Note: The "config.ini" file contents can be modified at any time and from any computer.

1. When you are transferring data, the system will automatically search for an existing "config.ini" file before proceeding. If one exists, the system searches for a "config.bak" file. If found, the file is deleted. Then, the pre-existing "config.ini" file is renamed "config.bak", making it possible to save the new "config.ini" file and keep a backup copy of the previous one.

When you insert an SD card into the controller, the controller's system looks for an existing "config.ini" file that contains an "autoload" tag equal to 1 (yes). If the tag is found, the system loads the contents of the file and resets "autoload" to 0 (no). This is a useful feature for editing the file on a computer without having any impact on the controller (such as recorded Events).

Parameters

The “parameters” function allows you to copy one transmitter’s configuration to another or to copy one event’s parameters to another event. This allows you to more quickly configure several devices that share identical or similar parameters.



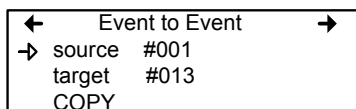
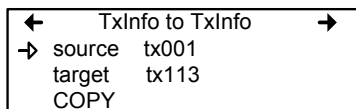
The options within this screen are:

Tx Info to Tx Info copies transmitter parameters from one device to another.

Event to Event copies parameters from Event to Event.

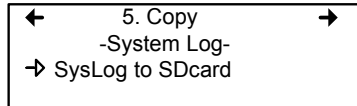
The process is identical for both options:

- Select source, (the data that you want to copy) using the up/down keypad arrows and press Enter.
- When the transmitter address is flashing, use the up/down keypad buttons to search for the desired device address.
- Press Enter to select the new address
- Select your target address (where you want the data copied to) in exactly the same way as source
- Select COPY and press Enter. The parameters have been copied.



System Log Menu

The controller will record log information to its internal memory. If the controller is equipped with an SD card, the system log function allows users to save system log information to the memory card in text format.



When this option is selected, a log of all the last actions performed on the controller is copied to the SDcard, with the filename **slyymmdd.log**. This file can contain up to a maximum of 64Kb of information in text format. Once the memory card is full, the oldest log entries are erased and replaced by new entries.

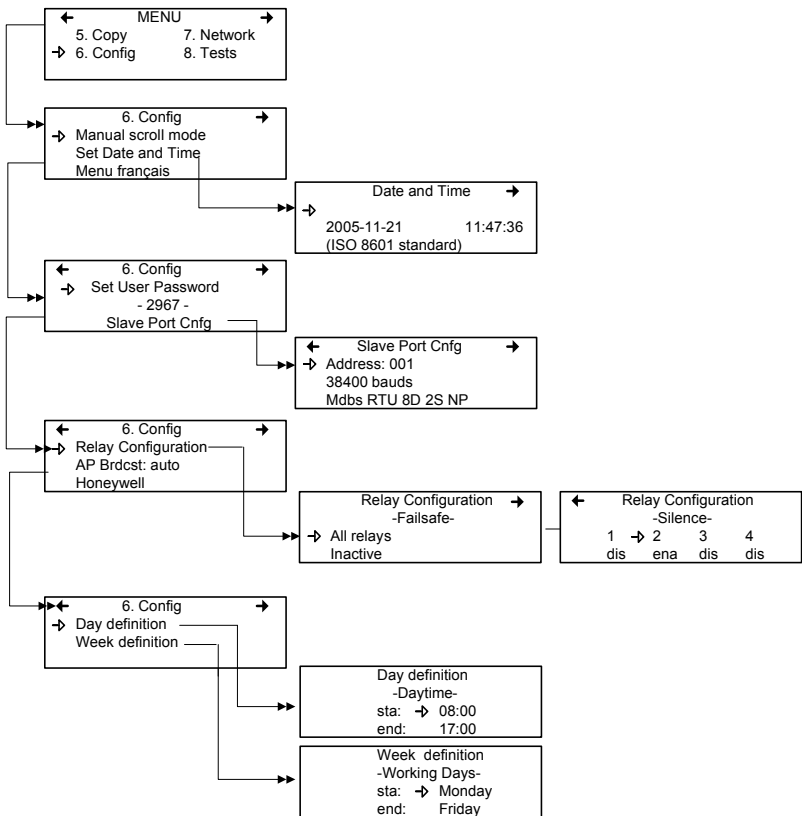
Here is an example of a system log:

```
--- START of system log dump : 2007-04-18 13:19:05 ---  
2007-04-04 18:42:06;Accessing menu;  
2007-04-04 18:43:47;Event 1 definition modified;  
2007-04-04 18:48:12;Exiting menu;  
2007-04-04 18:54:49;System power-down;  
2007-04-04 18:56:40;System power-up;  
2007-04-04 19:02:44;Accessing menu;  
2007-04-04 19:03:07;Event 6 definition modified;  
2007-04-04 19:03:21;Exiting menu;  
2007-04-05 10:51:28;Accessing menu;  
2007-04-05 10:54:59;Database reset;  
2007-04-05 10:55:18;Tx 25 parameters modified;  
2007-04-05 10:55:29;Group 0 definition modified;  
2007-04-05 10:55:36;Group 0 definition modified;  
2007-04-05 10:55:46;Group 0 definition modified;  
2007-04-05 10:55:55;Group 4 definition modified;  
2007-04-05 10:55:57;Exiting menu;  
2007-04-05 10:56:02;Accessing menu;  
2007-04-05 10:56:19;Tx 24 parameters modified;
```

Config Menu

The Config menu contains several main configuration screens and is used to program the controller display mode, adjust the date and time, select the display language, change the controller access password, modify the Slave Port configuration, set the Relay Configuration, and select the AP Broadcast mode.

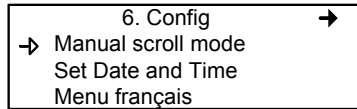
Each main screen offers further programming options, as shown.



System Programming

Config Menu

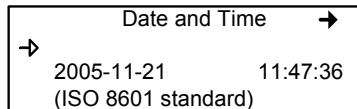
Selecting the first line of the first screen lets you select from three different display modes: Manual scroll, 3-second scroll, 5-second scroll. If you choose Manual scroll mode, the screen will only advance if you press on the arrow keypad buttons. If you choose 3 or 5 second scroll modes, the screens will automatically scroll display readings for all devices connected to the controller after 3 or 5 seconds.



3 or 5 second scroll modes do not prevent you from using the keypad arrows to return to a previous screen or move ahead through the screens manually.

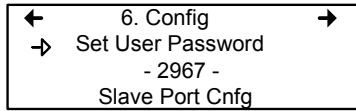
Selecting the second line lets you adjust the date and time in a new screen; Date and Time. When a number is flashing, you can change the value using the up/down keypad arrows. You can change the year, month, day and the hour, minute and second values.

The controller does not manage Daylight Savings Time, therefore, users must manually adjust any time changes.



Selecting the third line allows you to change the display language. If the display is already in English, it will then display the Menu français option (and vice-versa). Simply scroll to the line and press Enter to change the language.

The second main screen in the Config menu allows you to set a new user password and to modify the slave port configuration.



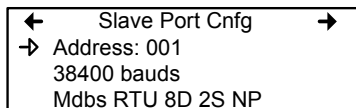
The default password is 2967. Select Set User Password to change your password:

- When the first digit blinks, change the value by using the up/down keypad arrows to increase or decrease the number
- Use the left/right keypad arrows to move from one digit to the next.
- When you have the desired password, press Enter to validate it and exit the editing mode.

Note: Contact Honeywell technical support for help with lost passwords at 1-800-563-2967.

To change the address, baud rate or to view the communication protocol for the slave port:

Place the cursor arrow next to Slave Port Cnfg and press Enter.



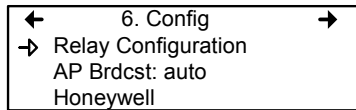
- Use the keypad arrows to scroll to the desired parameter (address or baud rate)
- Press Enter to select the parameter
- Use the arrows to scroll through the list of available settings
- Press Enter to validate the new parameter and exit the field.

System Programming

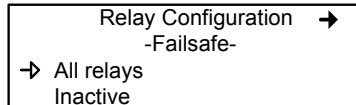
Config Menu

Scroll through the main Config menu screens using the left (previous) or right (next) keypad arrows.

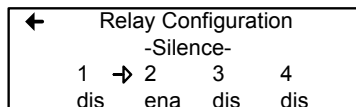
The third main screen in the Config menu allows you to set the relay configuration, the AP broadcast mode and to select from four separate manufacturers for the given controller.



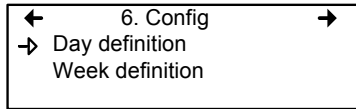
When you select *Relay Configuration*, you have two further options to configure the relays: The first screen, *Failsafe*, appears allowing you to activate the failsafe for all relays using the Enter keypad button. This function is used in case of a power failure: if power is cut, the relay will activate the connected device (ex. a light) to signal the problem.



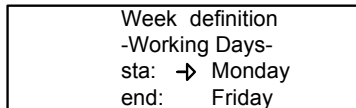
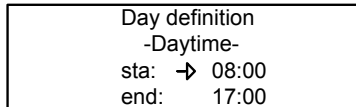
Scrolling to the right displays the “Silence” screen that lets you enable or disable the silence option for each relay, using the Enter keypad button.



The fourth screen in the Config menu allows you to program a definition of a day and of a week.



Day and Week definition lets you define hours (time frames) for either Daytime and Working Days respectively.



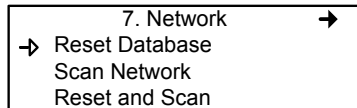
Note: Remember, the controller uses a 24 hour clock (0:00 to 23:59). Any time changes (DST) must be made manually or through BACNet time synchronisation (BACNet module required).

Network Menu

The Network menu allows you to either reset or scan network device information.

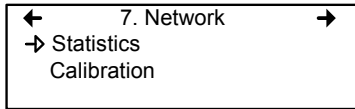
This menu offers four options, divided into two screens; the first screen contains three options:

- Reset Database: Resets all network device Tx information in the database. This only resets the Tx information for the network device. It does not affect programmed Groups or Events.
- Network Scan: Begins an auto-detect of all network devices that allows the system to configure the Tx database for network devices (i.e. it will scan and add new devices but will not overwrite or erase the old database)
- Reset and Scan: Performs both previous functions simultaneously.



Note: Once you have selected one of these options, you must wait until the controller completes the process. You cannot interrupt or stop the process once it has begun.

The second Network screen offers the Statistics and Calibration options.



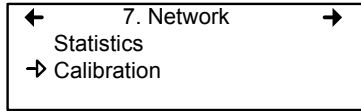
Selecting Statistics from the Network menu displays a screen containing the statistics for the selected device address.

Statistics		
Valid	16	100%
Errors	0	0%
Timeouts	0	0%

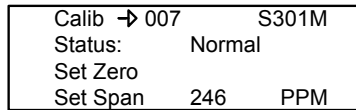
- Valid: Indicates the number of valid responses for the last 16 requests
- Errors: Indicates the number of errors in the response for the last 16 requests
- Timeouts: Indicates the number of timeouts (no response) for the last 16 requests

Remote Calibration

The network menu also offers a Calibration option for use with devices that support network calibration.

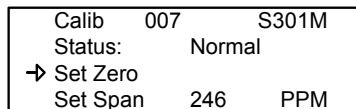


The Calibration screen contains four (4) lines of information:



- Line 1: Indicates the mode (Calib, meaning calibration), the (Modbus) address of the device to calibrate (001) and the type of device to calibrate (301D2)
- Line 2: Indicates the status (Normal or In calib...) of the specified device
- Line 3: Displays the function to perform (Set Zero)
- Line 4: Displays the function to perform (Set Span) and the span gas concentration value (246 ppm)

5. On the first line, scroll to the device address and press Enter
6. Scroll through the devices to display the desired device* and press Enter to select.
7. The second line displays the device's status
8. Scroll to select the desired function, Set Zero to set the device's zero, and press Enter to select.
9. Upon pressing Set Zero, the controller requests confirmation.



**The device must be configured in the 301C's database in order to be included in the device addresses displayed on screen.*

10. Press Enter to confirm or Esc to cancel. If confirmed, the controller calibrates the sensor's Zero. This takes only a few moments and the display returns to the default calibration screen.

Note: Never calibrate any unit's Zero with ambient air. Always use Nitrogen (N₂) at the calibration port to calibrate the Zero.

11. To calibrate the device, scroll to Set Span** and change the span gas calibration value using this procedure;

Calib 001 : 301D2
Status : Normal
Set Zero
Set Span → 2.60 ppm

- a. Using the right arrow, move the cursor to xxx PPM (span value field). Press Enter to select the field (it is editable when flashing).
- b. Use the up or down arrows to increase or decrease the value, press Enter to validate the new value.
- c. Move the cursor back to Set Span and press Enter to start the calibration.

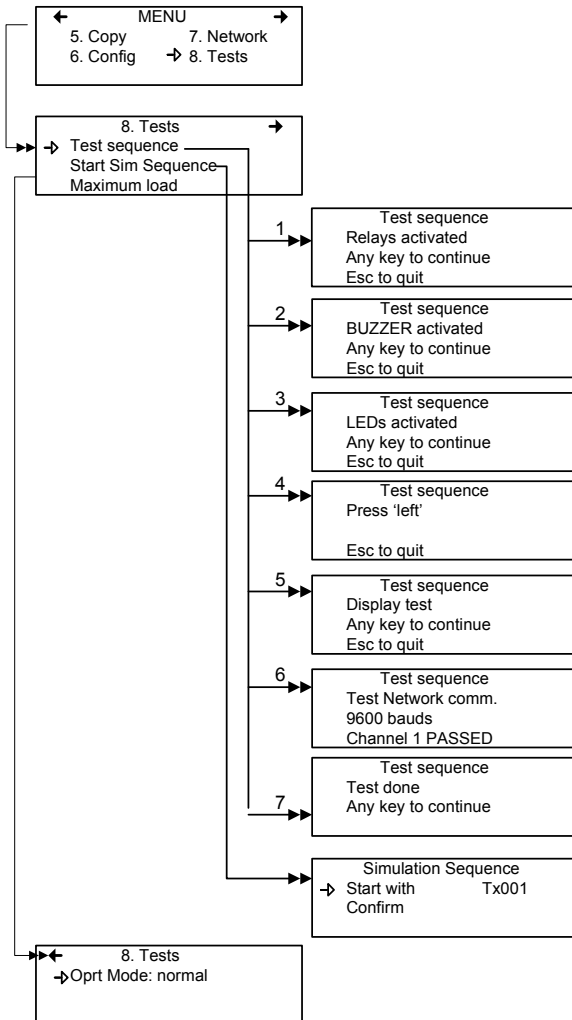
Calib 001 : 301D2
Status : In calib...
Set Zero
→ Set Span 2.60 ppm

The device Span is being calibrated. The screen will display the device's status as "In calib..." until the calibration is complete.

***When selecting Set Span, make sure that the device has been supplied with the appropriate calibration gas before and during the calibration process.*

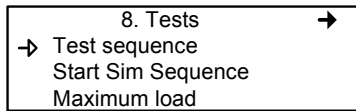
Tests Menu

The Tests menu allows you to perform a variety of tests on components, on the network communications. It also allows you to operate the system in four different mode which, in turn, provide different functionalities.



The Tests menu provides four main options, divided between two screens. Each of these options offers different capabilities.

The first screen presents three options:

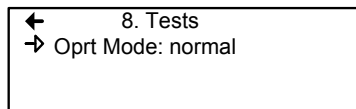


Test sequence: Enables you to activate each output and validate operation of each controller keypad buttons, display pixels and various communication protocols.

Start Sim Sequence: This options starts or stops the Simulation mode, which allows a simulation of a gas concentration over an associated scale range on all transmitters. The simulated gas concentration values are local (on the controller) and do not affect logging functions. (Events will be activated for the simulation but detection devices are not affected.)

Maximum load: Activates all controller components

The second screen option is “Oprt Mode”, which offers three separate operation settings: Normal, Single Tx or Debug.



Normal: Normal controller operation mode

Single Tx: Activates the polling mode on a single transmitter.

Debug: Activates the service mode to allow you to perform a calibration and to test Events without triggering actions.

Test Sequence

When you select test sequence from the main Tests menu, the controller will display the Test sequence screen.

```
Test sequence
Relays activated
Any key to continue
Esc to quit
```

If you press Esc on the keypad, you will return to the main Tests menu screen. However, if you wish to perform system tests, press any key to proceed to the first test screen.

```
Test sequence
BUZZER activated
Any key to continue
Esc to quit
```

This screen will test each component individually and will only advance to the next component when you press a key. This option will display 13 separate screens in all. Screens 1, 2 and 3 test Relays, BUZZER and LEDs.

The following six screens prompt you to press the keypad buttons, in turn: left, right, up, down, Silence, Enter and Esc. The system will not advance unless you press the key.

```
Test sequence
Press 'left'

Esc to quit
```

The system then moves to the Display test. When the blank screen is displayed, it is testing for display pixels. Press any key to proceed to the next step.

```
Test sequence
Display test
Any key to continue
Esc to quit
```

The final test that the system performs is a network communication test:

```
Test sequence
Test Network comm.
9600 bauds
Channel 1 PASSED
```

Once these tests have begun, you cannot interrupt or stop them. The system tests all five bauds (communication speed: 9600, 19200, 38400, 57600, 115200) and each of the 4 channels per baud.

When the system has completed the test, it displays the final Tests screen. Press any key to return to the main Tests menu.

```
Test sequence
Test done
Any key to continue
```

Normal Mode

This is the system's normal (default) operation mode. When the system is in normal mode, some values can be changed without interrupting services. When a value has been changed in any of the menu fields, the change will take effect when you return to the main menu screen.

Single Tx Mode

This mode allows you to analyse transmitters one at a time, or single. The controller polls only the selected device, which subsequently has its information updated. This mode does not interfere with Event Evaluation functions.

Debug Mode

This mode allows you to evaluate and test complete system operation without affecting operations (outside of debug mode). **Events are evaluated and displayed as necessary but no action is triggered.**

Simulation Mode

This mode deactivates network communication Information Updates. It can be combined with any of the three previous modes (example: using the Simulation mode when in Debug mode allows the user to test the entire system [groups, events, etc] without triggering any actions or using any additional material such as gases). It allows you to simulate gas concentrations over an associated scale for each transmitter, sequentially:

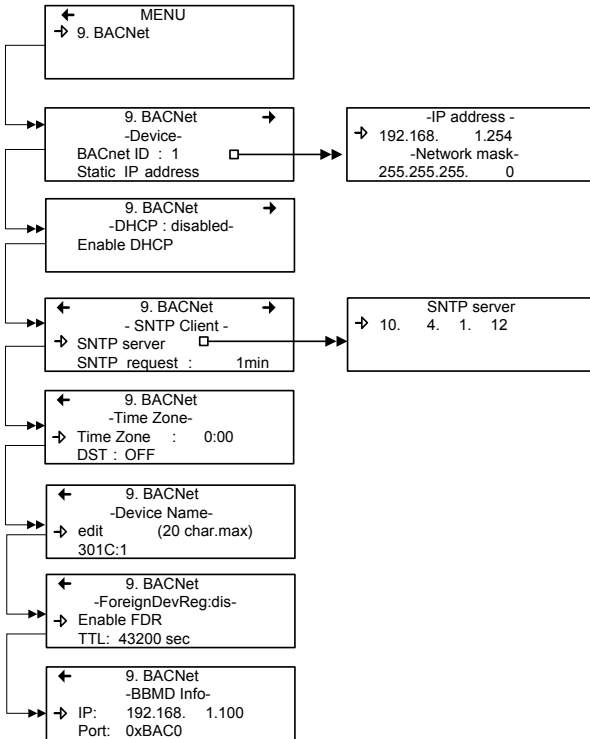
Alarm levels A, B and C are evaluated according to the simulated gas concentration and events are evaluated and actions are taken.

While in simulation mode, the controller is unaware of the device's actual network status. This mode can be stopped at any time in the Test menu (see Normal System Operation).

If one of these modes has been activated, the system will automatically return to Normal Mode after 12 hours of inactivity. (No changes will be lost.)

Bacnet Menu

The BACNet menu offers several main menu screens that let you configure the BACNET IP connection, DHCP, server, time zone information and more.



The first of these screens allows you to configure the identification and address:

9. BACNet	→
-Device-	
BACnet ID : 1	
Static IP address	

BACnet ID: (Building Automation and Control Networks) is the identification number assigned to this particular controller on a network.

Static IP address: This is an address that is continually assigned to a specific controller (rather than addresses that are recycled when no longer in use)

Changing BACNet values

- Use the keypad arrows to scroll down to select the desired line and press Enter to select it.
- Selecting BACnet ID activates the field and you can increase or decrease the ID value (0-4194303) using the up or down keypad arrows

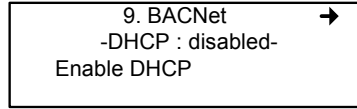
If you select the Static IP address option, the following screen appears. All controllers are shipped with a preset IP address as shown in the example below.

	-IP address-
→	192.168. 1.254
	-Network mask-
	255.255.255. 0

System Programming

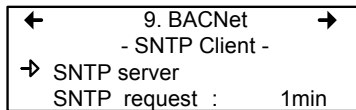
Bacnet Menu

The next screen allows you to disable or enable the device DHCP (Dynamic Host Configuration Protocol).



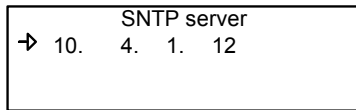
- Simply press Enter to change the field value. **Please consult your IT department for details concerning this option.**

The next main BACNet screen lets you modify the SNTP (Simple Network Time Protocol) server IP address and configure the frequency at which the system will make SNTP server requests. Honeywell has made these options available to better adapt to your building's network protocol, however we do not provide configuration or support for these options.



Selecting Server request activate the minute The SNTP server option opens another screen that allows you to change the SNTP server IP address

The SNTP server option opens a secondary screen that allows you to modify the SNTP server's IP address. **Please consult your IT department for details concerning these settings.**



The SNTP request options activates the minutes field and allows you to scroll through 0 to 60 minutes to set the frequency at which the system will perform SNTP server synchronizations.

System Programming

Bacnet Menu

The next main menu screen is the Date and Time screen. This screen lets you define your system's time zone (if there is a difference between your system and universal time) and whether or not your area observes daylight savings time.

If you select the Time Zone field, you can use the keypad arrows to scroll through the available times (from 0:00 to +13:00 and -12:00 to 0:00)

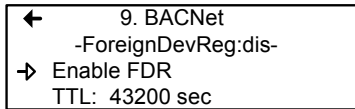
```
←      9. BACNet
      -Time Zone-
→ Time Zone :   0:00
      DST: OFF
```

The Device Name screen lets you assign a specific name to the BACNet device.

```
←      9. BACNet
      -Device Name-
→ edit      (20 char.max)
      301C:1
```

The next screens allow users to configure BACNet communication between different systems on a network (subnets), specifically with Foreign Device Registration and BBMD.

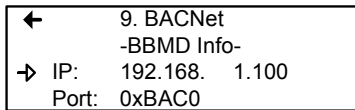
The Foreign Device Registration (FDR) allows users to enable the FDR and to set a specific Time To Live (in seconds).



A Foreign Device is a BACNet device that has an IP subnet address different from those on the BACNet/IP network it seeks to join.

The TTL (Time-To-Live) parameter is the registration duration supplied to the BBMD at the time of registration. Devices must re-register within this specified interval to remain connected.

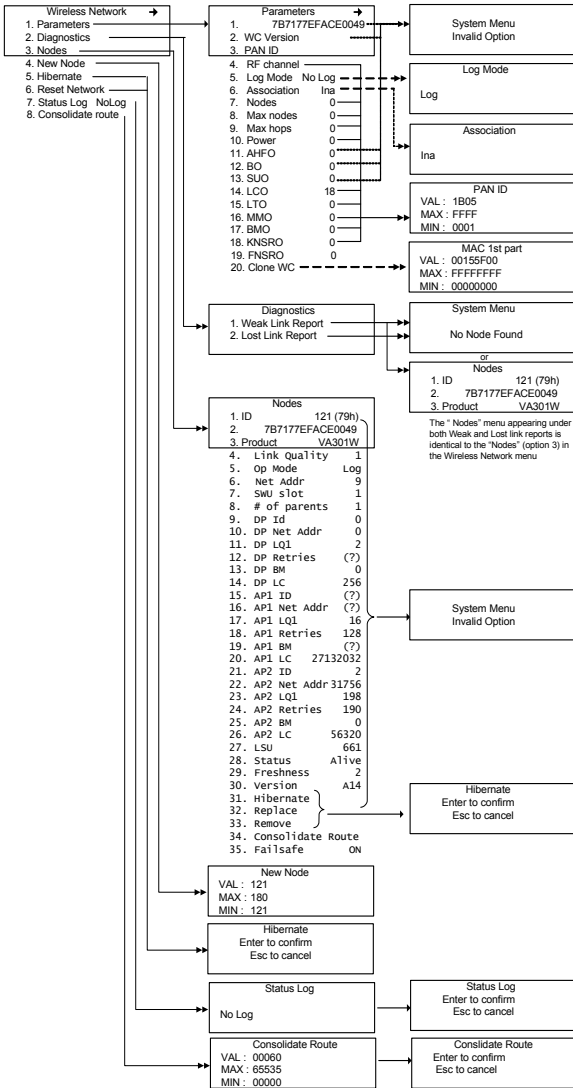
The BBMD Info screen lets users specify the address for the BBMD to which the device will try to connect (or register).



For more information on this subject, please consult the ASHRAE standard number 135-2001, Annex J, section J5.

Wireless Network Menu

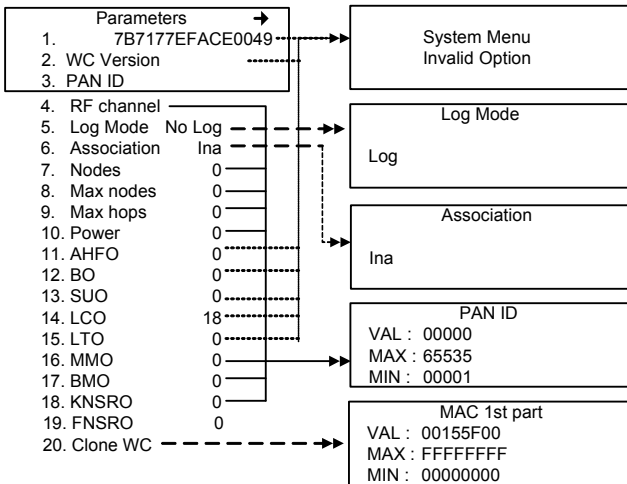
The wireless menu lets you set wireless communication parameters, consult wireless network diagnostics and work with the various aspects of the wireless nodes (sensors).



Parameters Menu

When you select Parameters from the Wireless Network main menu options, all the coordinator parameters are displayed in order.

The screen can only display three items at one time, so you will need to use the up or down arrows to scroll through the list of parameters.



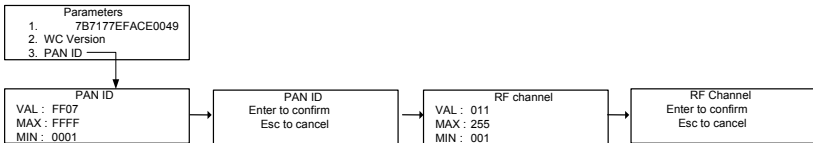
Note: When data is provided for information purposes only, it is not editable. When you select an item that is not editable, the screen will briefly display the “System Menu - Invalid Option” screen (as shown above).

Changing PAN ID or RF Channel

When you change the PAN ID or the RF channel, using the Parameters menu option within the Wireless Network menu, the system needs confirmation at more than one option, as described below:

To change the PAN ID:

- Select Parameters from the Wireless Network menu
- Scroll down (using the arrows) to highlight option 3, PAN ID
- Press Enter to select
- Change the PAN ID values, as desired and press Enter
- The next screen requests either confirmation or cancellation. Press Enter to confirm (If you press Esc, no changes will be made and the screen returns to the main Wireless Network menu)
- The system displays the RF channel screen; press Enter to proceed (or to record changed values)
- The next screen requests confirmation or cancellation. Press Enter to confirm. ***If you press Esc at this point, the changes to the PAN ID will not be made.***



Note: Whenever changes are made to the PAN ID or the RF channel, the network must rebuild itself. Losing the network (entire network in Fault mode) during this process is normal and should only last approximately 10 minutes.

The following table provides the list of parameters displayed for the coordinator (wireless communication module). Use the up or down keypad arrows to navigate the entire list.

#	Title	Value	Description
1.	7B177A7EFACE0049		Coordinator MAC address
2.	WC Version	A10	Wireless coordinator firmware version
3.	PAN ID	FF07	The hexadecimal ID number assigned to the coordinator
4.	RF channel	11	Radio frequency channel
5.	Log Mode	No Log	Displays whether debug mode is activated
6.	Association	Ina	Defines whether new nodes can join the network
7.	Nodes	0	Displays the number of nodes associated to the wireless coordinator.
8.	Max nodes	0	Defines the maximum nodes that can reside in the network (1-60)
9.	Max hops	0	Defines the maximum number of hops a node can make on a communication route to the wireless coordinator
10.	Power	0	Sets the transmission power amplifier value
11.	AHFO	0	Defines the time between wake-up cycles
12.	BO	0	Sets the time between transmission of two consecutive beacons by a node to establish and maintain synchronization
13.	SUO	0	Defines the status update period; time between 2 consecutive status update packets sent from node to coordinator
14.	LCO	18	Packet sent from the coordinator to the node, confirming to the node that it is registered on the network at the coordinator
15.	LTO	0	The number of status update packets that can be missed before a "leave indication" is triggered

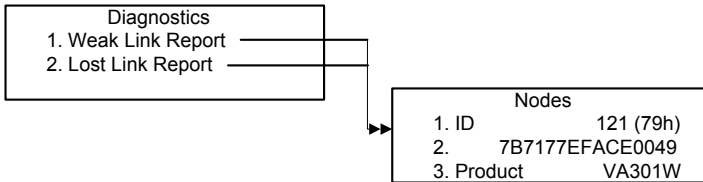
System Programming
Wireless Network Menu

#	Title	Value	Description
16.	MMO	0	Defines the bandwidth of the message retry measurement
17.	BMO	0	Defines the bandwidth of the missed beacons measurement
18.	KNSRO	0	Defines the frequency at which a node updates information from known neighbors
19.	FNSRO	0	Defines the frequency at which a node will scan for new neighbors
20.	Clone WC		Although accessible, this option is not available (will be used for future advanced use features).

Diagnostics Menu

The diagnostics menu allows you to consult both Weak Link and Lost Link reports. These reports consist of the multiple-item node information list (as it appears in the Nodes menu). If there are no weak or lost links, the system will return the message “System Menu No Node Found”.

If more than one node appears in this section, use the left or right keypad arrows to scroll through nodes.



Nodes Menu

The Nodes menu displays a multiple-item node information list. Use the left and right keypad arrows to scroll between nodes and then use the up or down keypad arrows to scroll through the information list for each node.

Nodes	
1. ID	121 (79h)
2.	7B7177EFACE0049
3. Product	VA301W

Each line represents specific information, as shown in the screen (above):

- Line 1 displays the device's network identification (the last two digits of a hexadecimal ID, example 79) and controller reference number (121) for the specific transmitter.
- Line 2 displays the device's MAC address
- Line 3 displays the type of product (VA301W).

The screen can only display three items at one time, so you will need to use the up or down arrows to scroll through the list

The following table provides the list of data displayed for each node. Use the right or left keypad arrows to navigate the possible nodes, then use the up or down keypad arrows to navigate the entire list of data for the selected node.

#	Title	Value	Description
4.	Link Quality	1	Percentage of signal strength (0-100%) for a node, relative to parent signal quality
5.	Log Mod	Log	Indicates whether the node is in debug mode
6.	Net Addr	0009	Displays the node's (hexadecimal) <i>network</i> address (seen in 1st screen)
7.	SWU slot	1	Displays the SWU slot used to transmit beacon
8.	# of Parents	1	Displays the number of current parents for a given node, from 0 - 3.
9.	DP Id	0	Displays the ID associated to the default parent
10.	DP Net Addr	0	Displays the default parent network address
11.	DP LQI	2	Displays the link quality with the default parent: 0 = no useful link/1 = weak link/2 = strong link
12.	DP Retries	(?)	Displays the number of default parent retries
13.	DP BM	0	Displays the number of parent beacons missed over last beacon period
14.	DP LC	256	Displays the time since last communication to default parent (in milliseconds)
15.	AP1 ID	(?)	Displays the ID associated to the alternative parent 1
16.	AP1 Net Addr	(?)	Displays the alternative parent 1 network address
17.	AP1 LQI	16	Displays the link quality with alternative parent 1: 0 = no useful link/1 = weak link/2 = strong link

System Programming
Wireless Network Menu

#	Title	Value	Description
18.	AP1 Retries	128	Displays the number of alternative parent 1 retries
19.	AP1 BM	(?)	Displays the number of alternative parent 1 beacons missed over last beacon period
20.	AP1 LC	27132 032	Displays the time since last communication to alternative parent 1 (in milliseconds)
21.	AP2 ID	2	Displays the ID associated to alternative parent 2
22.	AP2 Net Addr	31756	Displays the alternative parent 2 network address
23.	AP2 LQI	198	Displays the link quality with alternative parent 2: 0 = no useful link/1 = weak link/2 = strong link
24.	AP2 Retries	190	Displays the number of alternative parent 2 retries
25.	AP2 BM	0	Displays the number of alternative parent 2 beacons missed over last beacon period
26.	AP2 LC	56320	Displays the time since last communication to alternative parent 2 (in milliseconds)
27.	LSU	661	Displays the time at which the system was last updated
28.	Status	Alive	Displays whether the node is activated or off
29.	Freshness	2	Displays the number of status updates that can be missed before a "leave indication" is triggered
30.	Version	A14	Node (device) firmware version
31.	Hibernate		Selecting these options displays a confirmation screen. If confirmed, the selected function will be executed (see descriptions below).
32.	Replace		
33.	Remove		
34.	Consolidate Route		Enabling this option forces the node to take the best route to the controller using an alternate parent.
35.	Failsafe	ON	This option is only available only when there is a relay module in the network. It allows users to specify relay failsafe settings for a wireless relay module.

Options 1 through 29 are for information purposes only and cannot be modified.

Options 16 through 21 are only displayed if the selected node has a second parent (a parent is any other node to which a node may connect to create a link to the controller).

Option 22 through 27 are only displayed if the node has a third parent.

Options 31 through 33 allow you to put the node in Hibernate, Replace or Remove mode:

Hibernate Places the node in hibernation (power down). This mode is used for maintenance or to change the battery.

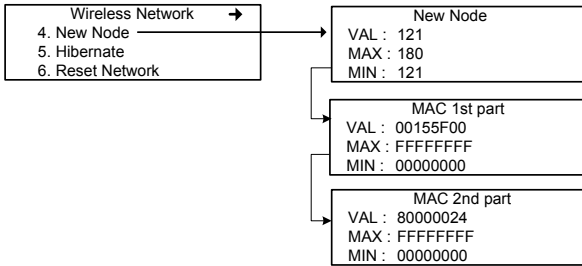
Replace Allows a node to be replaced by another without changing the MAC address or node ID (enables a free node with a different [or same] MAC address to be mapped to the current node ID).

Remove Removes the node from the network and erases the node data from the coordinator memory and from the 301C database.

Option 34, Consolidate Route, allows the user to force the node to find the best route to the controller using an alternate parent.

New Node Menu

The New Node menu allows users to add new nodes to the existing network, assigning a specific ID number to its MAC address.



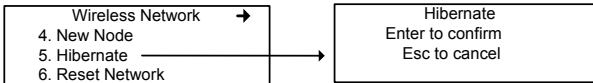
- Scroll to highlight New Node and press Enter to select
- In the New Node window, enter the desired ID value in the VAL field and press Enter
- Press Enter to confirm
- When the MAC 1st part screen appears, enter the first 8 digits of the new node's MAC address* and press Enter
- Press Enter to confirm
- When the MAC 2nd part screen appears, enter the last 8 digits of the new node's MAC address and press Enter
- Press Enter to confirm

*The node's MAC address is printed on the node's housing.

Note: If you assign an ID number that already exists, this function will not be completed.

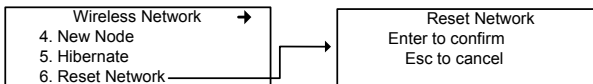
Hibernate Menu

The hibernate menu allows users to shut down the entire network of wireless nodes, to prevent any damage when maintenance is needed.



Reset Network Menu

This function, ***which should only be used by authorized, fully qualified technicians***, resets the wireless network parameters to zero, enabling nodes to look for a new controller in Association mode.

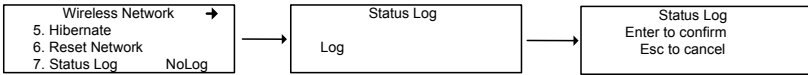


CAUTION

This function resets the nodes; once reset, nodes may change IDs, and thus render controller Events and Groups inoperable.

Status Log Menu

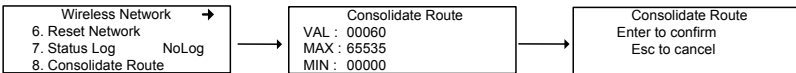
The Status Log file, named **wyymmddq.log**, that will be recorded on the SD card contains 27 columns of information (as in the sample above) that correspond to each of the first 27 fields in the Nodes Menu.



The resulting file can then be copied to a computer and consulted or printed, as needed.

Consolidate Route Menu

Although nodes will always look for the best route to the controller, this command forces all nodes to search for the shortest communication route, with the least hops, to the controller using an alternate parent.



BACnet/IP MODULE

(BIP option)

Specifications

Ethernet Port : 10/100-compatible with 10 Base-T interface, RJ-45

Visual Indicators : Green LED LINK
Yellow LED ACT

Network Configuration: See 301C BACnet menu section.

BACnet/IP protocol

UDP Port: 47808. This value is not modifiable using the 301C.

The module has been developed as per ANSI/ASHRAE Standard 135-2001 : BACnet®— A Data Communication Protocol for Building Automation and Control Networks. The Data Link Layer option is per BACnet/IP (Annex J).

<http://www.ashrae.org/>

BACnet Objects

BACnet objects represent any information available through the 301C sub network. Each available value is represented by one object of a specific type. There are currently 6 object types supported :

Analog Input	represented by 'AI'
Analog Value	represented by 'AV'
Binary Input	represented by 'BI'
Binary Output	represented by 'BO'
Binary Value	represented by 'BV'
Device	represented by 'DEV'

Analog Input

The Analog Input object type defines a standardized object whose properties represent the externally visible characteristics of an analog input, such as a gas sensor.

Supported properties for the Analog Input object type are :
Object_Identifier, Object_Name, Object_Type, Status_Flags,
Event_State, Reliability, Present_Value, Out_of_Service and Units.

Analog Value

The Analog Value object type defines a standardized object whose properties represent the externally visible characteristics of an analog value. An "analog value" is a control system parameter residing in the memory of the BACnet Device, such as a gas alarm level.

Supported properties for the Analog Value object type are :
Object_Identifier, Object_Name, Object_Type, Status_Flags,
Event_State, Reliability, Present_Value and Units.

Binary Input

The Binary Input object type defines a standardized object whose properties represent the externally visible characteristics of a binary input. A "binary input" is a physical device or hardware input that can be in only one of two distinct states, such as the 301ADI digital inputs.

Supported properties for the Binary Input object type are :
Object_Identifier, Object_Name, Object_Type, Status_Flags,
Event_State, Reliability, Present_Value, Polarity, Inactive_Text and
Active_Text and Out_of_Service.

Binary Output

The Binary Output object type defines a standardized object whose properties represent the externally visible characteristics of a binary output. A "binary output" is a physical device or hardware output that can be in only one of two distinct states, such as a relay or a switchable power output.

Supported properties for the Binary Output object type are :
Object_Identifier, Object_Name, Object_Type, Status_Flags,
Event_State, Reliability, Present_Value, Polarity, Inactive_Text,
Active_Text, Priority_Array, Relinquish_Default and Out_of_Service.

Binary Value

The Binary Value object type defines a standardized object whose properties represent the externally visible characteristics of a binary value. A "binary value" is a control system parameter residing in the memory of the BACnet Device.

Supported properties for the Binary Value object type are :
Object_Identifier, Object_Name, Object_Type, Status_Flags,
Event_State, Reliability, Present_Value, Inactive_Text, Active_Text,
Priority_Array, and Relinquish_Default.

Device

The Device object type defines a standardized object whose properties represent the externally visible characteristics of a BACnet Device. There is only one Device object to represent the BACnet Module.

Supported properties for the Device object are : Object_Identifier,
Object_Name, Object_Type, System_Status, Vendor_Name,
Vendor_Identifier, Model_Name, Firmware_Revision,
Application_Software_Version, Protocol_Version, Protocol_Revision,
Protocol_Services_Supported, Protocol_Object_Types_Supported,
Object_List, Max_APDU_Length_Accepted, Segmentation_Supported,
APDU_Timeout, Number_Of_APDU_Retries,
Device_Address_Binding, Database_Revision, Local_Time,
Local_Date, UTC_Offset, Daylight_Savings_Status and
Out_of_Service.

Honeywell Products and BACnet Objects

Object Names

Object names are constructed in two parts, as follows:

Part one: The device display label (product name) for the network in which the object resides. This value is editable only when using the 301C controller.

Part two: Unique tag label among all the objects for the same device.

Ex : "301D2 CO2 AD:14.CO2" where '301D2 CO2 AD:14' is the device display label and 'CO2' is the unique tag label that identifies the object as a CO2 sensor.

*Vulcain Object Tag Labels***Table 1:**

Tag Labels	Description	Object Type
'Gas label'	Gas sensor	AI
.Alrm	Simple alarm level	AV
Amin /Amax	Alarm level A and hysteresis	AV
Bmin /Bmax	Alarm level B and hysteresis	AV
Cmin /Cmax	Alarm level C and hysteresis	AV
relx	Relay output X (1 to 8)	BO
buzz	Buzzer output	BO
.outx	Output X (1 to 3)	BO or BV
.Alx	Analog input X (1 to 16)	AI
.Blx	Binary Input X (1 to 12)	BI
.RH	Relative Humidity sensor	AI
.Temp	Temperature sensor	AI

Object Table For Honeywell Network Devices

Objects residing in Honeywell network devices

Device	GP2	301IRF	301EM	201T2/vulbus	90DM3R
Objects	.GAZ	.GAZ	.GAZ	.GAZ	.GAZ
	.Amin	.Amin	.Amin	.Amin	.Alrm
	.Amax	.Amax	.Amax	.Amax	
	.Bmin	.Bmin	.Bmin	.Bmin	
	.Bmax	.Bmax	.Bmax	.Bmax	
	.Cmin	.Cmin	.Cmin	.Cmin	
	.Cmax	.Cmax	.Cmax	.Cmax	
	.rel1	.rel1	.rel1 (snsr1)	.rel1	
	.rel2	.rel2	.rel2 (snsr1)		
		.rel3	.rel3 (snsr1)		
			.rel4 (snsr1)		
			.out1 (snsr1)		
			.out2 (snsr1)		
		.out3 (snsr1)			

Object Table For Honeywell Network Devices

Objects residing in Honeywell network devices

Device	301AP	301C	301R	301ADI	901T
Objects	.rel1	.rel1	.rel1	.AI1 to .AI16	.GAZ
	.rel2	.rel2	.rel2	.BI1 to .BI12	.Amin
	.rel3	.rel3	.rel3		.Amax
	.buzz	.rel4	.rel4		.Bmin
		.buzz	.rel5		.Bmax
			.rel6		.Cmin
			.rel7		.Cmax
			.rel8		

Object Table For Honeywell Network Devices

Objects residing in Honeywell network devices

Device	ECF9	S301RLC	301W	301RW	Std.Device*
Objects	.GAZ	.GAZ	.GAZ	.rel1	.GAZ
	.Amin	.Amin	.Amin	.rel2	.Amin
	.Amax	.Amax	.Amax	.rel3	.Amax
	.Bmin	.Bmin	.Bmin	.rel4	.Bmin
	.Bmax	.Bmax	.Bmax	.rel5	.Bmax
	.Cmin	.Cmin	.Cmin	.rel6	.Cmin**
	.Cmax	.Cmax	.Cmax	.rel7	.Cmax**
				.rel8	

* Std.Device refers to the following products: S301M, 420MDBS and 90DM4

** The values .Cmin and .Cmax apply only to the 90DM4.

Object Examples

In the first example, we see the CO₂ gas sensor input for a 301D₂ Vulcain network device:

Name : "301D2 CO2 AD:14.CO2"
Value : 600
Units : PPM
Object : 1.AI2*
Description : Analog Input

* 1 is the 301C unique device instance, AI is the object type and 2 is the unique instance of the object in this device. We identify this object as "Analog Input 2 of BACnet device 1".

In this example, we can see the output status for relay 2 of the same Vulcain network device, but with a different device display label:

Name : "Floor 01 Sensor 02 .rel2"
Value : OFF
Units :
Object : 1.BO4*
Description : Binary Output

*We identify this object as "Binary Output 4 of BACnet device 1".

Example 3 where we can see the first 24V output status of a 301EM Vulcain network device.

Name : "301EM CO AD:25.out1"
Value : OFF
Units :
Object : 1.BV1
Description : Binary Value*

**We identify this object as "Binary Value 1 of BACnet device 1".*

Protocol Implementation Conformance Statement

(Normative)

BACnet Protocol Implementation Conformance Statement

Date : August 1, 2005

Vendor Name : Honeywell Analytics

Product Name : 301C -BIP

Product Model Number: N/A

Applications Software Version : 1.0

Firmware Revision : 1.0

BACnet Protocol Revision : 1.0

Product Description:

The 301C -BIP has a module that uses BACnet communication. As such, the components of a Vulcain network can be connected to a BACnet network via the 301C controller.

BACnet Standardized Device Profile (Annex L)

- BACnet Operator Workstation (B-OWS)_
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)_
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K)

Data Sharing

- Data Sharing-ReadProperty-A (DS-RP-A)
- Data Sharing-ReadProperty-B (DS-RP-B)
- Data Sharing-ReadPropertyMultiple-A (DS-RPM-A)
- Data Sharing-ReadPropertyMultiple-B (DS-RPM-B)
- Data Sharing-ReadPropertyConditional-A (DS-RPC-A)
- Data Sharing-ReadPropertyConditional-B (DS-RPC-B)
- Data Sharing-WriteProperty-A (DS-WP-A)
- Data Sharing-WriteProperty-B (DS-WP-B)
- Data Sharing-WritePropertyMultiple-A (DS-WPM-A)
- Data Sharing-WritePropertyMultiple-B (DS-WPM-B)
- Data Sharing-COV-A (DS-COV-A)
- Data Sharing-COV-B (DS-COV-B)
- Data Sharing-COVP-A (DS-COVP-A)
- Data Sharing-COVP-B (DS-COVP-B)
- Data Sharing-COV-Unsolicited-A (DS-COVU-A)
- Data Sharing-COV-Unsolicited-B (DS-COVU-B)

Scheduling

- Scheduling-A (SCHED-A)
- Scheduling-Internal-B (SCHED-I-B)
- Scheduling-External-A (SCHED-E-B)

Trending

- Viewing and Modifying Trends-A (T-VMT-A)
- Trending-Viewing and Modifying Trends-Internal-B (T-VMT-I-B)
- Trending-Viewing and Modifying Trends-External-B (T-VMT-E-B)
- Trending-Automated Trend Retrieval-A (T-ATR-A)
- Trending-Automated Trend Retrieval-B (T-ATR-B)

Network Management

- Network Management-Connection Establishment-A (NM-CE-A)
- Network Management-Connection Establishment-B (NM-CE-B)
- Network Management-Router Configuration-A (NM-RC-A)
- Network Management-Router Configuration-B (NM-RC-B)

Alarm and Event Management

- Alarm and Event-Notification-A (AE-N-A)
- Alarm and Event-Notification Internal-B (AE-N-I-B)
- Alarm and Event-Notification External-A (AE-N-E-B)
- Alarm and Event-ACK-A (AE-ACK-A)
- Alarm and Event-ACK-B (AE-ACK-B)
- Alarm and Event-Alarm Summary-A (AE-ASUM-A)
- Alarm and Event-Alarm Summary-B (AE-ASUM-B)
- Alarm and Event-Enrollment Summary-A (AE-ESUM-A)
- Alarm and Event-Enrollment Summary-B (AE-ESUM-B)
- Alarm and Event-Information-A (AE-INFO-A)
- Alarm and Event-Information-B (AE-INFO-B)
- Alarm and Event-LifeSafety-A (AE-LS-A)
- Alarm and Event-LifeSafety-B (AE-LS-B)

Device Management

- Device Management-Dynamic Device Binding-A (DM-DDB-A)
- Device Management-Dynamic Device Binding-B (DM-DDB-B)
- Device Management-Dynamic Object Binding-A (DM-DOB-A)
- Device Management-Dynamic Object Binding-B (DM-DOB-B)
- Device Management-DeviceCommunicationControl-A (DM-DCC-A)
- Device Management-DeviceCommunicationControl-B (DM-DCC-B)
- Device Management-Private Transfer-A (DM-PT-A)
- Device Management-Private Transfer-B (DM-PT-B)
- Device Management-Text Message-A (DM-TM-A)
- Device Management-Text Message-B (DM-TM-B)
- Device Management-TimeSynchronization-A (DM-TS-A)
- Device Management-TimeSynchronization-B (DM-TS-B)
- Device Management-UTCTimeSynchronization-A (DM-UTC-A)
- Device Management-UTCTimeSynchronization-B (DM-UTC-B)

- Device Management-ReinitializeDevice-A (DM-RD-A)
- Device Management-ReinitializeDevice-B (DM-RD-B)
- Device Management-Backup and Restore-A (DM-BR-A)
- Device Management-Backup and Restore-B (DM-BR-B)
- Device Management-List Manipulation-A (DM-LM-A)
- Device Management-List Manipulation-B (DM-LM-B)
- Device Management-Object Creation and Deletion-A (DM-OCD-A)
- Device Management-Object Creation and Deletion-B (DM-OCD-B)
- Device Management-Virtual Terminal-A (DM-VT-A)
- Device Management-Virtual Terminal-B (DM-VT-B)

Segmentation Capability :

- Segmented requests supportedWindow Size _____
- Segmented responses supportedWindow Size : Take maximum Windows size supported by the other device

Standard Object Types Supported :

Analog Input	For all objects
Analog Output	1) cannot be dynamically createable using Create Object service
Analog Value	2) cannot be dynamically deletable using DeleteObject service
Binary Input	3) No additionnal writable properties exist
Binary Output	4) No proprietary properties exist
Binary Value	5) No range restriction
Device	

Data Link Layer Options

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s)
- MS/TP master (Clause 9), baud rate(s):

- MS/TP slave (Clause 9), baud rate(s):
- Point-To-Point, EIA 232 (Clause 10), baud rate(s):
- Point-To-Point, modem, (Clause 10), baud rate(s):
- LonTalk, (Clause 11), medium:
- Other:
Device Address Binding :

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)

- Yes No

Networking Options

- Router, BACnet / Modbus.
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)

Does the BBMD support registrations by Foreign Devices?

- Yes No

Character Sets Supported

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4 IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2) ISO 10646 (UCS-4)
- JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports :

Specifications

Power requirements 301C	17-27 Vac, 50/60 Hz, 8.64 VA 18-36 Vdc, 350mA @ 24 Vdc (8.4 VA)
Operating temperature range	-20°C to 50°C (-4°F to 122°F)
Operating humidity range	0 to 95% RH (non-condensing)
Operating altitude	Up to 3000 m (9843 ft)
Network capacity	Up to 96 transmitters, 32 per channel Channels 1, 2 = Modbus and Vulbus Channel 3 = Modbus only Channel 4 = slave communication (i.e. BACNet use)
Communication (length of lines)	Up to 609m (2,000 ft) per channel T-tap maximum = 20m (65 ft) per t-tap, overall total of 40m (130 feet)
Wireless communication range:	30m (98.5 ft)
Wireless communication	ISM worldwide, range 30 m indoor
User interface	Graphic 122 x 32 dot matrix backlit display User friendly keypad
Visual indicators	Power Green LED Alarm A, B, C Red LED Fault Amber LED Tx Amber LED Rx Green LED
Outputs	4 DPDT relays
Output rating	5A, 30Vdc or 250 Vac (resistive load)
Audible alarm	65dBA at 1 m (3 ft)
Time delays	Programmable Before and After delays
Battery	3 volt lithium battery
Enclosure	NEMA 4X, ABS-polycarbonate - indoor use
Dimensions (HxWxD)	28 x 20.3 x 7cm (7.99" x 11.02" x 2.76")
Certifications	ANSI/UL 61010-1 CAN/CSA C22.2 No. 61010-1 ETL 116662

Limited Warranty

Limited Warranty

Honeywell Analytics, Inc. warrants to the original purchaser and/or ultimate customer ("Purchaser") of Vulcain products ("Product") that if any part thereof proves to be defective in material or workmanship within twelve (12) months, such defective part will be repaired or replaced, free of charge, at Honeywell Analytics' discretion if shipped prepaid to Honeywell Analytics at 4005 Matte Blvd., Unit G, Brossard, Quebec, J4Y 2P4, in a package equal to or in the original container. The Product will be returned freight prepaid and repaired or replaced if it is determined by Honeywell Analytics that the part failed due to defective materials or workmanship. The repair or replacement of any such defective part shall be Honeywell Analytics' sole and exclusive responsibility and liability under this limited warranty.

Re-Stocking Policy

The following restocking fees will apply when customers return products for credit:

- 15% restocking fee will be applied if the product is returned within **1 month** following the shipping date
- 30% restocking fee will be applied if the product is returned within **3 months** following the shipping date

A full credit (less restocking fee) will only be issued if the product is in perfect working condition. If repairs are required on the returned product, the cost of these repairs will be deducted from the credit to be issued.

No credits will be issued beyond the three month period.

Exclusions

A. If Gas sensors are part of the Product, the gas sensor is covered by a twelve (12) month limited warranty of the manufacturer.

B. If gas sensors are covered by this limited warranty, the gas sensor is subject to inspection by Honeywell Analytics for extended exposure to excessive gas concentrations if a claim by the Purchaser is made under this limited warranty. Should such inspection indicate that the gas sensor has been expended rather than failed prematurely, this limited warranty shall not apply to the Product.

C. This limited warranty does not cover consumable items, such as batteries, or items subject to wear or periodic replacement, including lamps, fuses, valves, vanes, sensor elements, cartridges, or filter elements.

Warranty Limitation and Exclusion

Honeywell Analytics will have no further obligation under this limited warranty. All warranty obligations of Honeywell Analytics are extinguishable if the Product has been subject to abuse, misuse, negligence, or accident or if the Purchaser fails to perform any of the duties set forth in this limited warranty or if the Product has not been operated in accordance with instructions, or if the Product serial number has been removed or altered.

Disclaimer of Unstated Warranties

The warranty printed above is the only warranty applicable to this purchase. All other warranties, express or implied, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose are hereby disclaimed.

Limitation of Liability

It is understood and agreed that Honeywell Analytics' liability, whether in contract, in tort, under any warranty, in negligence or otherwise shall not exceed the amount of the purchase price paid by the purchaser for the product and under no circumstances shall Honeywell Analytics be liable for special, indirect, or consequential damages. The price stated for the product is a consideration limiting Honeywell Analytics' liability. No action, regardless of form, arising out of the transactions under this warranty may be brought by the purchaser more than one year after the cause of actions has occurred.

