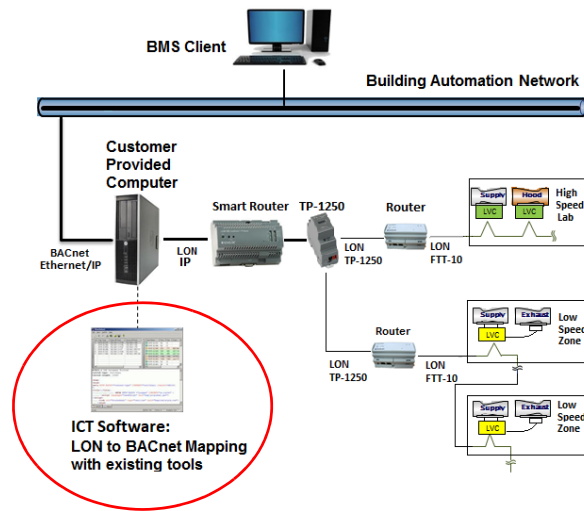


The Phoenix Controls Integration Client Tool (ICT) software facilitates communication between the Celeris®, Theris®, and Traccel® LONWORKS® systems and BACnet® capable Building Management Systems (BMSs). This software is installed on a customer owned and maintained computer or virtual machine with at least one LAN port. ICT software is typically ordered with a high speed Echelon smart router and either a TP-1250 or FT-10 interface module.

The ICT performs bi-directional translations between LonTalk and BACnet Ethernet or BACnet IP to manage read requests and write commands between the BMS and the room-level devices, ensuring safe and reliable communications. The ICT includes Echelon IzoT software that hosts the LNS database, along with a configuration plug-in and several diagnostic utilities. The ICT functions as a data concentrator, collecting thousands of points from room-level devices and making these available to the BMS through a single Ethernet/IP connection.



ICT100 Layout

Included components are ICT software, smart router, and TP-1250 interface module.

FEATURES

- Integration flexibility with most BMS vendors offering BACnet
- Network support for:
 - TP-1250: Up to 1500 devices or 6000 points
 - FT-10: Up to 50 devices or 500 points per channel
- Point Viewer Client
- Point Group Manager
- COV Viewer
- Support for Virtual Machine Installation
- Maintains existing wiring and BMS graphic structure when replacing a Phoenix Controls MacroServer

SPECIFICATIONS

Power

- Smart Router: 10.5-30 Vdc, 10 W or isolated 12-30 Vac, 12VA, 50/60 Hz
- Interface Modules:
 - Input Voltage: 5 Vdc USB power
 - Input Current: 110 mA maximum USB power

Temperature

-40 °F to 158 °F (-40 °C to +70 °C)

Humidity

10-90% non-condensing RH

Dimensions

Refer to drawings in *Installation* section

Mounting

- Smart Router: DIN 43880 8TE
- Interface Modules: DIN 43880 2TE

USB

Each Interface Module comes with a Micro-B USB to Type A USB cable to connect the interface to the smart router.

- TP-1250 cable length: 4 ¾-inch
- FT-10 cable length: 12-inch

Smart Router Ports

- Gigabit Ethernet: Two RJ-45 jacks for WAN and LAN, including IP-852
- Type A USB 2.0: Four ports for interface module connections; limited to one TP-1250 and up to four FT-10
- Micro-B USB: One console port

Software Platform

- Smart Router: Linux
- Interface Modules
 - TP-1250 model: LON/IP TP-1250 and LON TP-1250
 - FT-10 model: LON/IP-FT and LON-FT (TP/FT-10)

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Computer / Operating System Requirements

The following specifications are for the customer provided computer on which the ICT100 software will be installed.

DIRECT INSTALLATION

Windows 10 Computer

Hardware

- 4 GB of RAM
- Minimum of 50 GB hard drive
- Internal or External Drive to install IzoT CT
- Minimum of one USB port to install Integration Client Tools
- One 10/100 Mb RJ-45 ethernet adapter
- UPS (an uninterruptible power supply system capable of sustaining 300/345 watts of power over the duration of normal to emergency power changeover)
- Microsoft Visio 2016 x86 (32 bit) is required for IzoT CT. If 64 bit version is installed then uninstall it and install Visio 2016 x32 bit version supplied with IzoT CT CD

VIRTUAL MACHINE INSTALLATION

Host: Windows 2016 Server

Hardware

- Current generation of 64-bit processors by Intel and AMD that support Second Level Address Translation
- Minimum of 8 GB of RAM
- Minimum of 100 GB hard drive
- Internal or External CD/DVD Drive to install IzoT CT on Guest Operating System
- Minimum of one USB port to install Integration Client Tools on Guest Operating System
- One 10/100 Mb RJ-45 ethernet adapter for each ICT 100
- Windows Server running Hyper-V must meet the minimum hardware requirements as defined by Microsoft. Refer to Microsoft's website for current requirements:
<https://docs.microsoft.com/en-us/windows-server/virtualization/hyper-v/system-requirements-for-hyper-v-on-windows>

Virtual Machine: Windows 10

Virtual Machine Configuration Requirements: Same as Windows 10 computer hardware requirements in Direct Installation scenario

Communication Protocols

BMS Network Protocol	
BMS protocol	BACnet over Ethernet BACnet over IP
BMS network connection	RJ-45
Implementation	Conformance Class 3 BIBBS—ASC (Application Specific Controller)
Data transfer rates (points per second)	Read requests/second: <ul style="list-style-type: none"> • 100 sustained • 300 peak Write commands/second: 30 maximum
Room-level Network Protocol	
Building network	ANSI 709.1—LonTalk protocol TP-1250 or FT-10 transceiver
LonWorks network connection	22 AWG, Level IV, twisted-pair cable (no shield)

Regulatory Compliance



WEEE Directive 2012/19/EC

Waste Electrical and Electronic Equipment directive

At the end of the product life dispose of the packaging and product in a corresponding recycling centre. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.

- RoHS
- FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

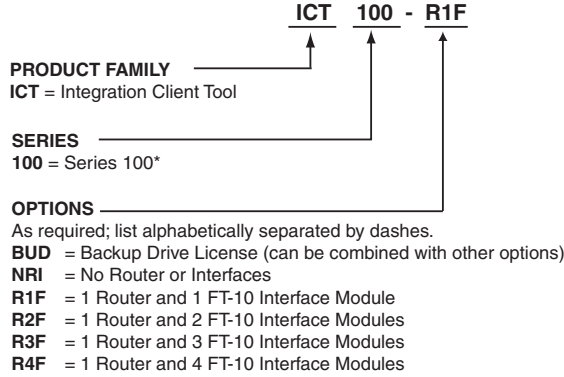
- EU Contact Address:

Honeywell GmbH
Boebling Str. 17
71101 Schoenaich, Germany

BACnet is a trademark of ASHRAE. Windows is a trademark of Microsoft Corporation.

LonWorks is a registered trademark of Echelon Corporation.

ORDERING GUIDE



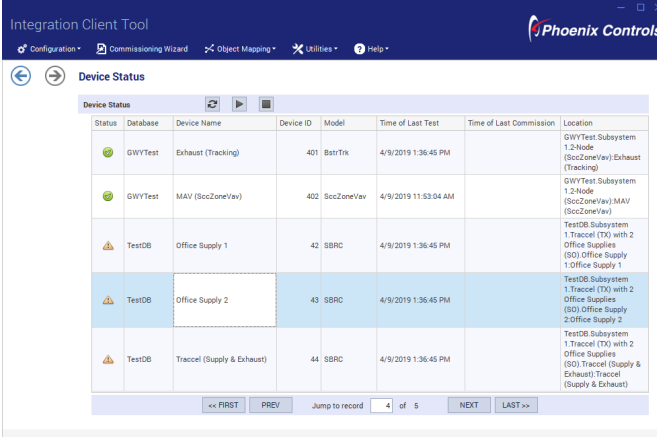
*ICT100 includes integration client software, one high speed smart router and one high speed (TP-1250) LON interface module to connect existing wiring from legacy MacroServers. If different configurations are desired, select the appropriate options. Use the following table for ordering guidance.

Catalog Number	Includes	Use Case
ICT100	1 Router and 1 TP-1250 Interface	Customer installs ICT100 on their new physical or virtual machine and retains existing RTR1xxs and wiring.
ICT100-BUD	1 Router and 1 TP-1250 Interface	Same as ICT100 but with an additional license that allows the software to be installed on a computer's backup drive in addition to its primary drive.
ICT100-NRI	No Router or TP-1250 Interface	Customer installs ICT100 on existing SRV100 machine using its PCI Express slot and retains existing RTR1xxs and wiring. Note: Unlike MacroServer Replacement Drives, the customer's IT department is responsible for maintaining Windows and other programs not provided with the ICT.
ICT100-R1F	1 Router and 1 FT-10 Interface	Customer installs ICT100 on their new physical or virtual machine on either a brand new job where PCI8xxs are not desired, or at an existing job to replace a SRV100 and remove the existing RTR1xxs and then run FT-10 wiring to a smart router via one FT-10 interface module.
ICT100-R2F	1 Router and 2 FT-10 Interfaces	Same as above, but where two FT-10 interface modules are required.
ICT100-R3F	1 Router and 3 FT-10 Interfaces	Same as above, but where three FT-10 interface modules are required.
ICT100-R4F	1 Router and 4 FT-10 Interfaces	Same as above, but where four FT-10 interface modules are required.

APPLICATIONS

The ICT100 functions as a server to the BACnet network and creates a virtual network of BACnet devices, maintaining two interfaces:

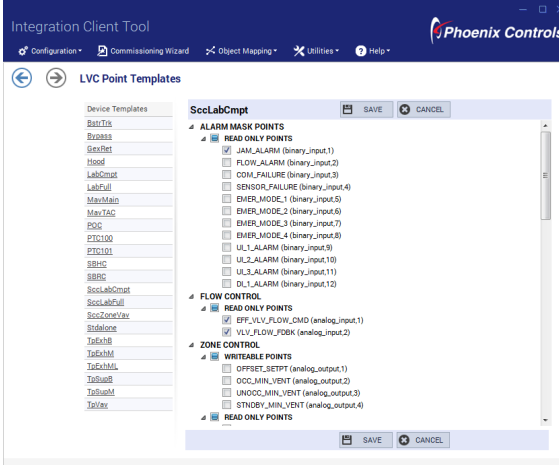
- One interface for all of the data available from the Celeris, Theris and Traccel network, which is constantly updated by each device on the network through a combination of Change of Value (COV) and heartbeat schemes.



Status	Database	Device Name	Device ID	Model	Time of Last Test	Time of Last Commission	Location
🟢	GWYTest	Exhaust (Tracking)	401	BrstTrk	4/9/2019 1:36:45 PM		GWYTest Subsystem 1.2-Node (SccZoneVav) Exhaust (Tracking)
🟢	GWYTest	MAV (SccZoneVav)	402	SccZoneVav	4/9/2019 11:53:04 AM		GWYTest Subsystem 1.2-Node (SccZoneVav) MAV (SccZoneVav)
🟡	TestDB	Office Supply 1	42	SBRC	4/9/2019 1:36:45 PM		TestDB Subsystem 1. Traccel (TX) with 2 Office Supplies (SO) Office Supply 1. Office Supply 1
🟡	TestDB	Office Supply 2	43	SBRC	4/9/2019 1:36:45 PM		TestDB Subsystem 1. Traccel (TX) with 2 Office Supplies (SO) Office Supply 2. Office Supply 2
🟡	TestDB	Traccel (Supply & Exhaust)	44	SBRC	4/9/2019 1:36:45 PM		TestDB Subsystem 1. Traccel (TX) with 2 Office Supplies (SO) Traccel (Supply & Exhaust) Traccel (Supply & Exhaust)

Device Status

- A second interface for the BACnet objects (*points*) and associated properties, all of which may be *read* or *written to* by BMS BACnet client devices.



Device Templates	SccLabCmpt
BrstTrk	ALARM MASK POINTS
Bvab33	<input checked="" type="checkbox"/> JAM_ALARM (binary_input.1)
StatTest	<input type="checkbox"/> FLOW_ALARM (binary_input.2)
Hood	<input type="checkbox"/> COM_FAILURE (binary_input.3)
LabCmpt	<input type="checkbox"/> SENSOR_FAILURE (binary_input.4)
LabFull	<input type="checkbox"/> EMER_MODE_1 (binary_input.5)
MaxMain	<input type="checkbox"/> EMER_MODE_2 (binary_input.6)
MaxToc	<input type="checkbox"/> EMER_MODE_3 (binary_input.7)
POD	<input type="checkbox"/> EMER_MODE_4 (binary_input.8)
PTC100	<input type="checkbox"/> UL_1_ALARM (binary_input.9)
PTC101	<input type="checkbox"/> UL_2_ALARM (binary_input.10)
SBRC	<input type="checkbox"/> UL_3_ALARM (binary_input.11)
SBRC	<input type="checkbox"/> DL_1_ALARM (binary_input.12)
SccLabCmpt	FLOW CONTROL
SccLabFull	<input checked="" type="checkbox"/> EFF_VLV_FLOW_CMD (analog_input.1)
SccZoneVav	<input checked="" type="checkbox"/> VLV_FLOW_FDOK (analog_input.2)
StatTest	ZONE CONTROL
TabExM	<input type="checkbox"/> OFFSET_SETPNT (analog_output.1)
TabExMIL	<input type="checkbox"/> OCC_MIN_VENT (analog_output.2)
TabExM	<input type="checkbox"/> UNOCC_MIN_VENT (analog_output.3)
TabExM	<input type="checkbox"/> SHODBY_MIN_VENT (analog_output.4)
TabExM	READ ONLY POINTS

Point Template

Based on the level of functionality of the BMS, the ICT100 will use one or more BACnet Data Sharing Services to exchange data - refer to the BACnet Interoperability Building Blocks (BIBBs) in the *BACnet Functionality* section of this document. The ICT100 includes tools to *filter* the data that is made available to the BMS, assign BACnet addresses, edit device and object properties, and validate proper integration using a Windows application.

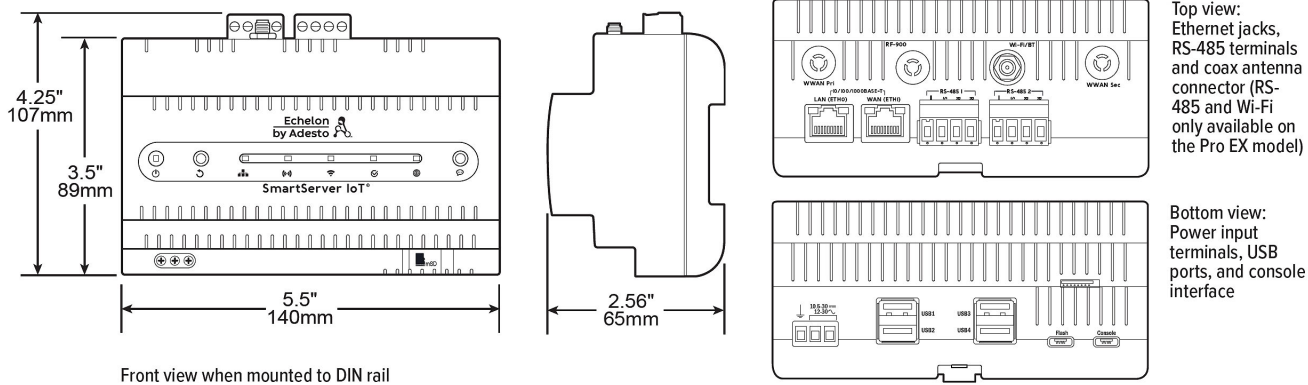
INSTALLATION

ICT Software

Follow the instructions provided in the *ICT Software Installation Guide* file with the software.

Smart Router

Designed for DIN-rail mounting.

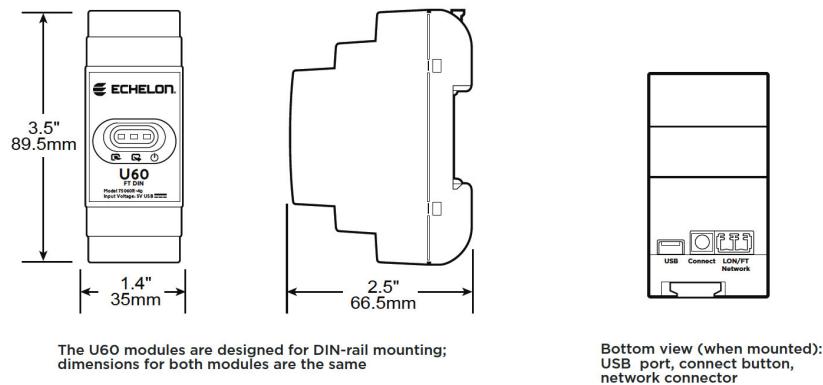


TP-1250 Interface Module

- If practical, locate the interface module and its smart router as close to the middle of the TP-1250 channel as possible.
- Designed for DIN-rail mounting.
- Has the same dimensions as the FT-10 module below.

FT-10 Interface Module

Designed for DIN rail mounting.



WIRING

Refer to the *Phoenix Controls Router Modules* product data sheet (MKT-0084), *Application and Wiring* sections, for details about how these topics apply to the ICT100.

POINTS LIST

Recommended for Integration	Point Name	Description	Data Type	Property	Notes
Alarm Points (available on any node)					
	COM_FAILURE	Neuron chip has lost communications	Binary	Read Only	
	SENSOR_FAILURE	Controller has detected a sensor failure on an input	Binary	Read Only	
x	JAM_ALARM	The valve is unable to reach the commanded set point	Binary	Read Only	
x	FLOW_ALARM	The pressure switch detected low static pressure	Binary	Read Only	
	UI_1_ALARM	UI 1 is configured as an alarm input	Binary	Read Only	
	UI_2_ALARM	UI 2 is configured as an alarm input	Binary	Read Only	
	UI_3_ALARM	UI 3 is configured as an alarm input	Binary	Read Only	
	DI_1_ALARM	DI 1 is configured as an alarm input	Binary	Read Only	
Flow Points (available on any node)					
x	EFF_VLV_CMD	Effective valve flow command	Analog	Read Only	
x	EFF_VLV_FLOW_FDBK	Effective flow feedback from valve	Analog	Read Only	
Points Associated with a Hood Valve					
x	BROKEN_SASH_CABLE	Alarm indicating sash sensor cable is broken	Binary	Read Only	
x	HOOD_OVERRIDE	Alarm indicating emergency override function on the fume hood monitor is active	Binary	Read Only	
x	SASH_HEIGHT_ALARM	Alarm indicating sash input signal exceeds maximum sash height set point	Binary	Read Only	
	AUXILIARY_AIR_SETPT	Tracking supply valve (MAV) flow set point	Analog	Read/Write	
	INVERSE_GEX_SETPT	Tracking inverse general exhaust valve (GEX) set point	Analog	Read/Write	
x	FACE_VELOCITY	Calculated face velocity	Analog	Read Only	
x	SASH_OPEN_PERCENT	Calculated Sash Opening (0-100%)	Analog	Read Only	
	SASH_SWITCH_STATE	Sash switch status (hood open or closed)	Binary	Read Only	
x	USER_STATUS_STATE	Fume hood normal or standby (setback) mode	Binary	Read Only	
Points Associated with Occupancy Control					
x	OCCUPANCY_CMD	Commanded occupancy state (occupied/unoccupied/standby)	Multi-state	Read/Write	
x	EFF_OCC_MODE	Present occupancy state (occupied/unoccupied/standby/bypass)	Multi-state	Read Only	
Points Associated with Emergency Mode Control					
	EMER_MODE_1	Alarm indicating emergency mode 1 is available	Binary	Read Only	
	EMER_MODE_2	Alarm indicating emergency mode 2 is available	Binary	Read Only	
	EMER_MODE_3	Alarm indicating emergency mode 3 is available	Binary	Read Only	
	EMER_MODE_4	Alarm indicating emergency mode 4 is available	Binary	Read Only	
x	EFF_EMER_MODE	Present emergency mode state (none, 1, 2, 3 or 4 active)	Multi-state	Read Only	
x	EMER_MODE_CMD	Commanded emergency mode state (1, 2, 3 or 4)	Multi-state	Read/Write	
Points Associated with Humidity Control					
x	EFF_HUMIDITY_SETPT	Effective humidity set point	Analog	Read Only	
	HUMIDITY_DEMAND	Relative humidity command	Analog	Read Only	
	HUMIDITY_SETPT	Humidity control set point	Analog	Read/Write	
x	SPACE_HUMIDITY	Relative humidity present value	Analog	Read Only	
Points Associated with Temperature Control					
x	OCC_COOL_SETPT	Cooling set point in the occupied mode	Analog	Read/Write	
x	OCC_HEAT_SETPT	Heating set point in the occupied mode	Analog	Read/Write	
x	UNOCC_COOL_SETPT	Cooling set point in the unoccupied mode	Analog	Read/Write	
x	UNOCC_HEAT_SETPT	Heating set point in the unoccupied mode	Analog	Read/Write	
	STNDBY_COOL_SETPT	Cooling set point in the standby mode	Analog	Read/Write	
	STNDBY_HEAT_SETPT	Heating set point in the standby mode	Analog	Read/Write	
x	EFF_TEMP_SETPT	Average of the cooling and heating set points	Analog	Read Only	
x	OCC_TEMP_SETPT	Occupied temperature set point	Analog	Read/Write	
x	AVG_SPACE_TEMP	Average of temperature sensor inputs used for control	Analog	Read Only	
x	OFFSET_LVR_ENABLE	Enables or disables temperature offset lever	Binary	Read/Write	
	OFFSET_LVR_PERCENT_OF_RANGE	Scaling value (0 to 100%) of the configured offset lever set point range	Analog	Read/Write	
	AUX_TEMP_SETPT	Auxiliary temperature control set point	Analog	Read/Write	
	EFF_AUX_TEMP_SETPT	Effective auxiliary temperature control set point	Analog	Read Only	1, 2
	AUX_TEMP_CMD_STATE	Auxiliary temperature control demand output (on/off)	Analog	Read Only	
	AUX_TEMP_CMD_VALUE	Auxiliary temperature control demand output (0 to 100%)	Analog	Read Only	
	COOLING_DEMAND	Cooling demand output (-100% = cooling)	Analog	Read Only	

Recommended for Integration	Point Name	Description	Data Type	Property	Notes
	HEATING_DEMAND	Heating demand output (+100% = heating)	Analog	Read Only	
	DUCT_TEMP	Present value of duct sensor (not used for control)	Analog	Read Only	
	DSCHRG_AIR_TEMP	Present value of discharge air temperature sensor	Analog	Read Only	2
	DSCHRG_TEMP_SETPT	Discharge air temperature set point for thermal anticipatory control	Analog	Read Only	2
	HEAT_DELIVERED	Present value of thermal energy (BTU) delivered to the space	Analog	Read Only	2
x	TEMP_CTRL_MODE	Reports current temperature control state	Multi-state	Read Only	
	HVAC_MODE_OVERRIDE	Allows BMS to override temperature control to one of eight states	Multi-state	Read/Write	1
Points Associated with Zone Balance					
	DIVERSITY_ALARM	Total exhaust has exceeded diversity alarm threshold	Binary	Read Only	
	OFFSET_SETPT	Zone offset set point	Analog	Read/Write	
x	OFFSET	Calculated zone offset	Analog	Read Only	
	OCC_MIN_SETPT	Occupied minimum ventilation flow set point	Analog	Read/Write	
x	UNOCC_MIN_SETPT	Unoccupied minimum ventilation flow set point	Analog	Read/Write	
x	TOTAL_ZONE_SUPPLY	Total of all networked and non-networked supply devices	Analog	Read Only	
x	TOTAL_ZONE_EXHAUST	Total of all network and non-network exhaust devices	Analog	Read Only	
	TOTAL_CNST_VOL_EXH_FLOW	Entered value of constant volume exhaust devices	Analog	Read Only	4
	TOTAL_CNST_VOL_SUP_FLOW	Entered value of constant volume supply devices	Analog	Read Only	4
	TOTAL_ADD_EXH_FLOW	Total of all hard-wired (non-networked) exhaust devices	Analog	Read Only	1, 4
	TOTAL_ADD_SUP_FLOW	Total of all hard-wired (non-networked) supply devices	Analog	Read Only	1, 4
Points Associated with Pressure Control					
x	SENSOR_FAILURE	Alarm indicating the pressure sensor is functioning or has failed	Binary	Read Only	
x	ZONE_PRES_ALARM	Alarm indicating over or under pressure alarm condition	Binary	Read Only	
x	EFF_PRES_SETPT	The set point to which the pressure control system will control	Analog	Read Only	
x	ZONE_PRES_DIF	Present value of the measured zone differential pressure	Analog	Read Only	
	ZONE_PRES_ABS	Present value of the measured zone absolute pressure	Analog	Read Only	
	POC_STATE	Present state of progressive offset control function	Multi-state	Read Only	
x	PRES_WARN_SETPT	Set point value for the over or loss of pressure warning function	Analog	Read/Write	
x	PRES_ALARM_SETPT	Set point value for the over pressure alarm function	Analog	Read/Write	
	FRZ_TIME_SETPT	Set point for duration of freeze mode if door remains open	Analog	Read/Write	
	FRZ_TIME_REMAIN	Time remaining before freeze mode terminates	Analog	Read Only	
	FRZ_MODE_OFFSET_SETPT	Set point for an alternate offset when the freeze mode is active	Analog	Read/Write	
Network Inputs/Outputs (I/Os)					
	REMOTE_AO_0	User configurable analog output for non-network device	Analog	Read Only	
	REMOTE_AO_1	User configurable analog output for non-networked device	Analog	Read Only	
	REMOTE_AO_2	User configurable analog output for non-networked device	Analog	Read Only	
	REMOTE_DO_0	User configurable digital output for non-networked device	Binary	Read Only	6
	REMOTE_DO_1	User configurable digital output for non-networked device	Binary	Read Only	
	REMOTE_AI_0	User configurable analog input for non-networked device	Analog	Read/Write	3
	REMOTE_AI_1	User configurable analog input for non-networked device	Analog	Read/Write	
	REMOTE_AI_2	User configurable analog input for non-networked device	Analog	Read/Write	
	REMOTE_AI_3	User configurable analog input for non-networked device	Analog	Read/Write	
	REMOTE_AI_4	User configurable analog input for non-networked device	Analog	Read/Write	
	REMOTE_DI_0	User configurable digital input for non-networked device	Binary	Read/Write	5
	REMOTE_DI_1	User configurable digital input for non-networked device	Binary	Read/Write	
	REMOTE_DI_2	User configurable digital input for non-networked device	Binary	Read/Write	

Notes:

1. These variables are only available from SBRC (Traccel Room Controller).
2. These variables are only available from a supply valve (MAV_ATC) with advanced temperature control.
3. SccLabCmpt, SccLabFull, and SccZoneVav support a total of three remote AI's.
4. Available on Progressive Offset Control (POC) systems.
5. SccLabCmpt, SccLabFull, SccZoneVav, and Hoods (FHC) support a total of one remote DI.
6. SccLabCmpt, SccLabFull, SccZoneVav, and Hoods (FHC) support a total of one remote DO.

BACNET FUNCTIONALITY

Data Sharing				
BIBBS Acronym	Description	BACnet Service	Initiate	Execute
DS-RP-B	ReadProperty-B	ReadProperty		x
DS-RPM-B	ReadPropertyMultiple-B	ReadPropertyMultiple		x
DS-WP-B	WriteProperty-B	WriteProperty		x
DS-WPM-B	WritePropertyMultiple-B	WritePropertyMultiple		x
DS-COV-B	Data Sharing-COV-B	SubscribeCOV		x
		ConfirmedCOVNotification	x	
		UnconfirmedCOVNotification	x	

Alarm and Event-Notification				
BIBBS Acronym	Description	BACnet Service	Initiate	Execute
AE-N-I-B	Alarm and Event-Notification Internal-B	ConfirmedEventNotification	x	
		UnconfirmedEventNotification	x	
AE-ACK-B	Alarm and Event-ACK-B	AcknowledgeAlarm		x
AE-ASUM-B	Alarm and Event-Alarm Summary-B	GetAlarmSummary		x
AE-INFO-B	Alarm and Event-Information-B			x

Device Management				
BIBBS Acronym	Description	BACnet Service	Initiate	Execute
DM-DDB-A	Dynamic Device Binding-A	Who-Is	x	
		I-Am		x
DM-DDB-B	Dynamic Device Binding-B	Who-Is		x
		I-Am	x	
DM-DOB-B	Dynamic Object Binding-B	Who-Has		x
		I-Have	x	
DM-TS-B	TimeSynchronization-B	TimeSynchronization		x
DM-UTC-B	UTCTimeSynchronization			x
DM-LM-B	List Manipulation-B	AddListElement		x
		RemoveListElement		x
DM-DCC-B	Device Communications Control-B	DeviceCommunicationControl		x

Network Management				
BIBBS Acronym	Description	BACnet Network Layer Message	Initiate	Execute
NM-RC-B	Router Configuration-B	Who-Is-Router-To-Network	x	x
		I-Am-Router-To-Network	x	x
		I-Could-Be-Router-To-Network		
		Initialize-Routing-Table		x
		Initialize-Routing-Table-Ack	x	