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Connect Touch Control LXLW chillers

BACNET OPTION User Guide

For Software Release	ECG-SR-20M4709x
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REVISIONS HISTORY

REV	DATE	DESCRIPTION	DONE BY
Original	16 March 2017	Original from ECG-UG-14-002 Rev G	Damien BUATHIER
Rev A	February 2021	Update "Equipment status (STATUS):" table Add height parameter, Power Protection alarms. Add RECLAIM_RECL_SEL_wr parameter	Sylvain Douzet

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ABOUT THIS DOCUMENT

PURPOSE

This document aims to provide an overview on the BACnet option for LX/LW chillers with the Connect Touch control.

Document Name	Document ID	Publication Date
LX/LW Connect Touch Control: BACnet User Guide	ECG-UG-16-010	December 2016

REFERENCES

The following list includes all documents that may be the source of reference for material discussed in this publication.

No.	Reference
1.	LX/LW IOM Control
2.	LX/LW IOM Machine
3.	LX/LW Service Guide
4.	ASHRAE standard: BACnet; <i>ANSI/ASHRAE Standard 135-2008</i>

CONVENTIONS

The following symbols are used to highlight important information in this document.

Symbol	Description
	ADVICE This symbol is used to provide useful information.
	CAUTION This symbol is used to indicate potentially hazardous situations and conditions.
	IMPORTANT This symbol is used to present information relevant to the topic.

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1 INTRODUCTION

1.1 Purpose

This guide describes the BACnet option for LX/LW chillers. It is intended for Building Management System (BMS) engineers inside or outside the Carrier Corporation.



IMPORTANT

Some parameters can be configured only by CIAT service.

1.2 BACnet

BACnet is a data communication protocol for building automation and control networks. It is an ISO global standard recognised in more than 30 countries across the world. BACnet makes it possible to expand and upgrade controls using technology from different vendors.

BACnet is based on a client-server model and BACnet messages are referred to as "service requests". The client machine ("user interface") sends the request to the server machine ("field device") that reports the result. For example, when the "ReadProperty" service request is sent, the server machine locates the requested property of the requested object and sends its reading back to the client.

1.3 Definitions, Abbreviations and Acronyms

Acronym/ Abbreviation	Definition
BMS	Building Management System It is a computer-based control system installed in buildings. BMS controls and monitors the building's mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems and security systems. BMS consists of software and hardware.
BACnet/IP	Building Automation and Controls Network Open Protocol for the controlled exchange of data between two or more intelligent control devices or BMS. BACnet is used over IP.
BBMD	BACnet Broadcast Management Device Broadcast management is accomplished by defining the capabilities of the new device.
BIBBS	BACnet Interoperability Building Blocks BIBBS are combined to build the BACnet functional requirements for a specific device.
COV	Change Of Value A COV notification is sent any time the object's value changes by an amount specified as a default parameter, or in the subscription request. Devices wishing to receive the notice of change need to "subscribe" to the COV by sending a subscription request to the device from which a COV notification is desired.

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Additional information: BACnet/IP

BACnet/IP network is a collection of one or more IP subnetworks (IP domains) that are assigned to a single BACnet network number.

BACnet devices are defined on the network as a collection of objects, each of which has a set of properties defined. Two types of BACnet objects can be distinguished, i.e. analogue and binary objects.

The most frequently referenced property for ANALOGUE / BINARY OBJECT is PRESENT VALUE, which typically means data derived from a sensor or physical device. Other properties associated with an object may include fault status, reliability, object name, minimum and maximum limits, etc.

BACnet stack is an application layer that may function both as a server and a client.

The stack is the transport layer providing the following capabilities:

- The generation of limited alarm and event notifications and the ability to direct them to recipients.
- The tracking acknowledgments of alarms from human operators.
- The adjustment of alarm parameters.
- The read/write property multiple services.
- Optional properties as COV, Intrinsic Reporting properties, Commandable properties on some objects.

Term	Definition
Device	Controller/user interface or PC. The BACnet device contains a collection of information about the device, i.e. objects and properties.
Network type	Physical communication method, e.g. BACnet/IP.
Objects	Information point (i.e. temperature reading, flow setpoint or equipment schedule). The BACnet object defines certain device information such as the device object identifier or instance number. Every object has a collection of properties that define the object. <i>Note: The BACnet device object instance number must be unique across the entire BACnet network.</i>
Properties	Information point. Properties convey information about a BACnet object. Properties may be defined as read-only or read/write properties.
Service	Request for information or modifications (read a temperature, change a flow setpoint, edit an equipment schedule, send an alarm). Services defined in the BACnet network are used to take an action on objects or properties (read-only or read/write).

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2 HOW TO TRANSFORM A NON-BACNET CHILLER TO A BACNET CHILLER

2.1 Prerequisites

The BACnet option requires the installation of the BACnet dongle. The BACnet dongle can be mounted during manufacturing or on site.

It is strongly recommended to disconnect the main power supply before any work. Disconnect the power supply to the chiller Connect Touch control.



CAUTION

The power supply must be switched off before any work is begun.

Only personnel qualified in accordance with IEC 60364 recommendations (International Electrotechnical Commission) and trained to install the BACnet option may have access to electrical components.

The chiller controller includes electronic components that may generate or be damaged by electromagnetic interference, e.g. Electrostatic Discharge (ESD).



ADVICE

Use an antistatic wrist strap (ESD wrist strap) when handling electrical components. The ESD wrist strap prevents the build-up of static electricity which may result in electrostatic discharge.

If you do not have access to an ESD wrist strap on site, please take into consideration the following recommendations in order to reduce the risk of ESD:

Zero Potential	Make sure you are at Zero Potential by touching an unpainted metal surface of the electrical box.
Clothes	Do not to wear any clothes that conduct a lot of Electrical Charge, e.g. a wool sweater.
Accessories	Remove all jewellery to reduce the risk of ESD.
Weather	Electrical storms can increase the ESD risk; unless absolutely necessary, do not to work on the chiller controller during an electrical storm.

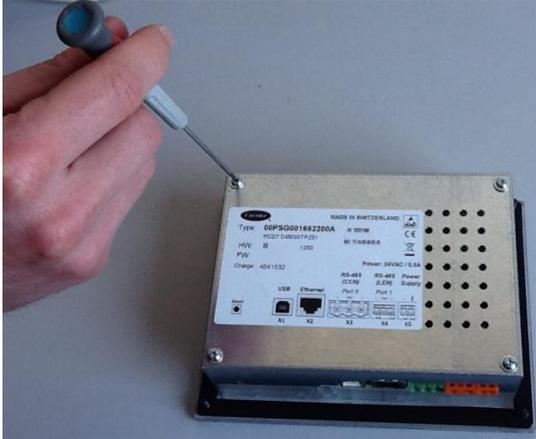
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2.2 How to mount the BACnet dongle

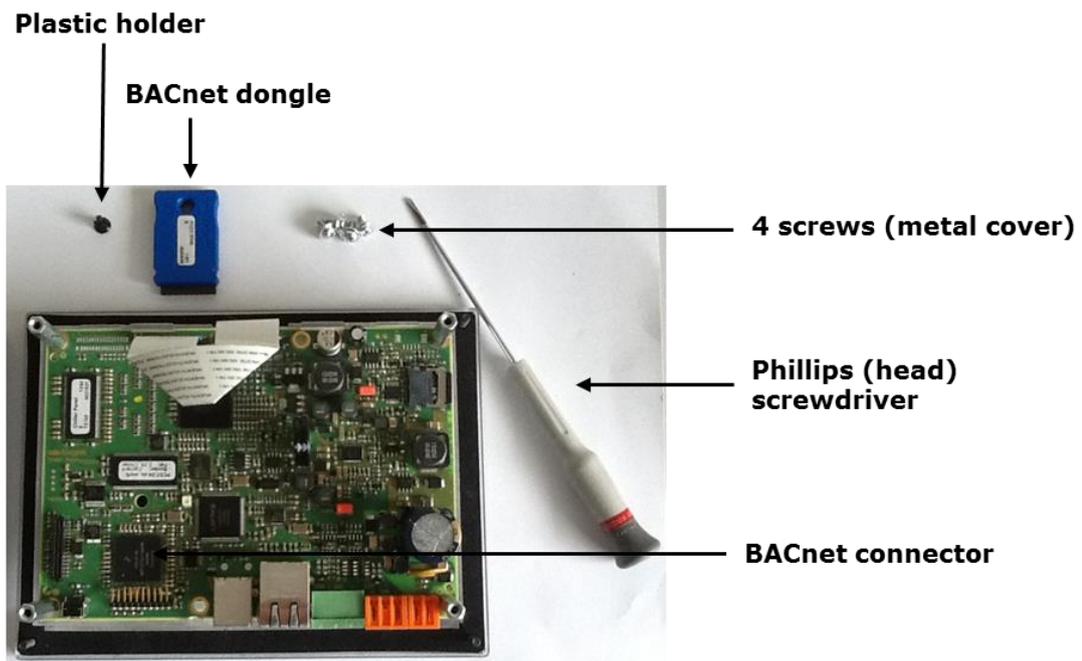
In order to mount the BACnet dongle, perform the following steps:

Step Action

1. Disconnect the chiller Connect Touch control power supply.
2. Open its metal cover with a Torx T10 screwdriver.

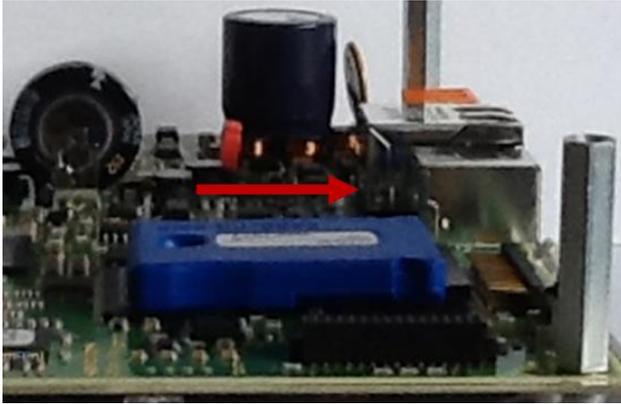


3. Remove the metal cover.



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4. Insert the BACnet dongle into the connector.



5. Mount the plastic holder to attach the dongle to the board.



6. Close the box and power up the Connect Touch.

2.3 How to test the dongle connection

To verify that the dongle is correctly inserted and detected by the equipment, perform the following steps:

Step Action

1. Power up the controller.
2. Check **Inputs Status** in the Main menu.
The BACnet dongle status must be set to Yes.



ADVICE

If the BACnet dongle status is NO, check again if the dongle is correctly inserted.

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3 BACNET FOR LXLW CHILLER

The LXLW chiller supports the BACnet protocol as BACnet B-AAC equipment (BACnet Advanced Application Controller).

3.1 BACnet stack

The BACnet stack includes the following options:

- COV (Change of Value), Intrinsic Reporting and Commandable properties.
- The generation of alarm notifications sent to a set of predefined recipients.
- Tracking acknowledgments of alarms raised by human operators.
- The adjustment of alarm parameters.
- Read Property Multiple services.
- Write Property Multiple services.



IMPORTANT

This option can be installed during manufacturing or on site.

3.2 BACnet settings

The BACnet option can be enabled/disabled on the Connect Touch user interface. In order to modify BACnet parameters, the user must be logged in at service access level.



IMPORTANT

BACnet settings can be modified only by CIAT service.

In order to enable/disable the BACnet option, navigate to the Configuration menu and select **BACnet Parameters**.

BACNET - BACnet Parameters	
BACnet Enable	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Metric Unit	<input type="radio"/> No <input checked="" type="radio"/> Yes
Network	<input type="text" value="1601"/>
Identifier	<input type="text" value="1600001"/>

After a power up, if the BACnet dongle is detected and BACnet is enabled (BACNET ENABLE), the chiller objects will be created (see also section 4).

Metric and imperial units are supported. By default, BACnet data is given in metric units (METRIC UNIT = YES).

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The BACnet Parameters menu allows the user to modify the BACnet network (NETWORK) or the device object instance (IDENTIFIER).

The default instance has been chosen to let users easily recognize the chiller on a BACnet network. By default, the device object instance is 1600001, where the first two digits identify the BACnet CIAT vendor (16).



CAUTION

Identifier must be unique on the BACnet network. If more than one CIAT chiller is connected to the BACnet network, the parameter must be modified.



BACnet Parameters

Name	Status	Default	Displayed text
bacena	dsable/enable	enable	BACnet Enable
bacunit	no/yes	yes	Metric Unit
network	1 to 9999	1601	Network
ident	0 to 9999999	1600001	Identifier
bbmd	0-2*	0	BACnet device management

NOTE: Changing any of these parameters will trigger a reboot of the board (after about 1 min).

- * 0 = No BBMD
- 1 = FD (Foreign Device)
- 2 = BBMD



IMPORTANT

Changing IP address from the SETUP menu will require a manual reboot or power cycle of the Connect Touch controller in order to re-build the BACnet stack (see also section 6).

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4 BACNET OBJECTS

4.1 BACnet chiller objects

The LXLW chiller contains up to 700 BACnet objects. These objects are of ANALOG_VALUE (AV) or BINARY_VALUE (BV) type.

There is one Notification Class object for alarm reporting and one Device object.

Some AV and BV objects support options such as COV, Intrinsic Reporting, Commandable properties (e.g. the Present_Value of an analog-output object). These objects are predefined and cannot be deleted. At the same time, new objects cannot be added.

Objects names consist of the menu name (table name) and the point name.

For example:

Menu name (table name)	Point name	Object name
GENCONF	off_on_d	GENCONF_off_on_d
<i>General Configuration</i>	<i>Unit Off to On Delay</i>	<i>Unit Off to On Delay</i>

4.2 Optional properties



Change of Value is an event that occurs when a measured or calculated analogue value changes by a predefined amount.

For the CHANGE OF VALUE option (COV) the increment value can be configured.

Intrinsic reporting is the detection and reporting of an alarm or event, based on algorithm defined as part of the object type specification.

For the INTRINSIC REPORTING option (IR) the alarm configuration and the configuration of the equipment to be notified are required. Otherwise, the option will not be active.

The **Commandable** option reflects the state of the output.

Objects with the COMMANDABLE option are named with the `_wr` suffix.

For example: GENUNIT_CTRL_PNT_wr (GENUNIT – General Parameters, Control Point).

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4.3 Priority assignment

Commanding entities have their priority level assigned. The BACnet priority level corresponds to the CCN override level.

If the Local Operating Type is set to Network, then it is possible to control the unit from the BACnet writing these objects:

- The highest priority value of the commandable object will be copied to the present value of the object using the same name with the `_rd` suffix (e.g., `GENUNIT_CTRL_PNT_wr` highest priority value copied to `GENUNIT_CTRL_PNT_rd` present value).

If the Local Operating Type is set to Local or Remote, then the Priority value won't be applied and the value determined by the controller will be applied:

- The present value of the object name with the `_rd` suffix will still reflect the current software value (e.g., `GENUNIT_CTRL_PNT_rd`).
- ✓ The BACnet priority level corresponds to the CCN override level (1:1). If this BACnet priority level is removed, the first non-NULL value in `Priority_array` property will be applied to the corresponding CCN point (CCN "Auto" command will be applied first). *
- ✓ When the CCN override level is applied from the CCN, the CCN override level will be the BACnet priority level.
- ✓ BACnet priority level 16 (the lowest) has no CCN equivalent and does not correspond to the CCN override. This priority level should not be used.

*The `Priority_Array` consists of an array of commanded values in order of decreasing priority. The first value in the array corresponds to priority 1 (highest priority), the second value corresponds to priority 2, etc. The sixteenth value corresponds to priority 16 (lowest priority).

4.4 Present Value property access

Writing AV and BV "Present Value" is authorized by the BACnet protocol for all objects. However, the Present value regarding the access object parameters (read-only or read/write) may or may not be authorised by the chiller application.

If the "present value" property with an access parameter equal to RO is written, then the present value will be overwritten by the chiller application with the previous value.

Objects with "present value" in read-only access are all objects used for chiller configuration and status.

Objects with "present value" in read/write access are objects used for setpoint configuration, i.e. objects with names with the `SETPOINT_` prefix (e.g., `SETPOINT_csp1`) and Commandable objects with the `_wr` suffix (e.g., `GENUNIT_CTRL_PNT_wr`).

4.5 Notification class object

The notification class object can notify up to 5 BACnet devices. These devices are listed in the Recipient List property.



IMPORTANT

You must enter the IP address of the device to notify (see also section 6).
Device Name and instance are not yet supported.

4.6 Savings

COV increment property, Intrinsic Reporting properties, Priority values, Notification class and Trend log properties are saved in files and restored automatically on power-up.

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4.7 Objects list

The BACnet objects list includes the list of all objects names with respect to the following parameters:

AV Analogue Value	IR Intrinsic Reporting (Alarming)
BV Binary Value	CMD Commandable
TL TREND_LOG	RO Read-Only Present Value (PV)
COV Change Of Value	RW Read/Write Present Value (PV)

For BMS, the more often used objects are objects with names starting with GENUNIT, TEMP, PRESSURES, RUNTIMES and SETPOINT prefixes.

Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
GENCONF_lead_cir	AV	1		0	RO	Cir Priority Sequence
GENCONF_seq_typ	BV	1		0	RO	Staged Loading Sequence
GENCONF_ramp_sel	BV	2		0	RO	Ramp Loading Select
GENCONF_off_on_d	AV	2		0	RO	Unit Off to On Delay
GENCONF_nh_start	AV	3		0	RO	Night Mode Start Hour
GENCONF_nh_end	AV	4		0	RO	Night Mode End Hour
GENCONF_nh_limit	AV	5		0	RO	Night Capacity Limit
GENCONF_bas_menu	AV	6		0	RO	Basic Menu Configuration
GENCONF_lim_sel	AV	7		0	RO	Demand Limit Type Select
GENCONF_lim_mx	AV	8		0	RO	mA For 100% Demand Limit
GENCONF_lim_ze	AV	9		0	RO	mA For 0% Demand Limit
GENCONF_curr_sel	BV	3		0	RO	Current Limit Select
GENCONF_curr_ful	AV	10		0	RO	CurrentLimit at 100%
GENCONF_free_dt	AV	11		0	RO	Free Cooling Delta T Th
GENCONF_fc_tmout	AV	12		0	RO	Full Load Timeout
GENCONF_ice_cnfg	BV	4		0	RO	Ice Mode Enable
GENCONF_al_rever	BV	5		0	RO	Reverse Alarms Relay
PUMPCONF_hpumpseq	AV	13		0	RO	Condenser Pumps Sequence
PUMPCONF_cpumpseq	AV	14		0	RO	Cooler Pumps Sequence
PUMPCONF_pump_del	AV	15		0	RO	Pump Auto Rotation Delay
PUMPCONF_pump_per	BV	6		0	RO	Pump Sticking Protection
PUMPCONF_pump_sby	BV	7		0	RO	Stop Pump During Standby
PUMPCONF_pump_loc	BV	8		0	RO	Flow Checked If Pump Off
PUMPCONF_stopheat	BV	9		0	RO	Cooler Pump Off In Heat
PUMPCONF_stopcool	BV	10		0	RO	Cond Pump Off In Cool

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Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
RESETCFG_cr_sel	AV	16		0	RO	Cooling Reset Select
RESETCFG_hr_sel	AV	17		0	RO	Heating Reset Select
RESETCFG_oat_crno	AV	18		0	RO	OAT No Reset Value
RESETCFG_oat_crfu	AV	19		0	RO	OAT Full Reset Value
RESETCFG_dt_cr_no	AV	20		0	RO	Delta T No Reset Value
RESETCFG_dt_cr_fu	AV	21		0	RO	Delta T Full Reset Value
RESETCFG_v_cr_no	AV	22		0	RO	Current No Reset Value
RESETCFG_v_cr_fu	AV	23		0	RO	Current Full Reset Value
RESETCFG_spacr_no	AV	24		0	RO	Space T No Reset Value
RESETCFG_spacr_fu	AV	25		0	RO	Space T Full Reset Value
RESETCFG_cr_deg	AV	26		0	RO	Cooling Reset Deg. Value
RESETCFG_oat_hrno	AV	27		0	RO	OAT No Reset Value
RESETCFG_oat_hrfu	AV	28		0	RO	OAT Full Reset Value
RESETCFG_dt_hr_no	AV	29		0	RO	Delta T No Reset Value
RESETCFG_dt_hr_fu	AV	30		0	RO	Delta T Full Reset Value
RESETCFG_v_hr_no	AV	31		0	RO	Current No Reset Value
RESETCFG_v_hr_fu	AV	32		0	RO	Current Full Reset Value
RESETCFG_spahr_no	AV	33		0	RO	Space T No Reset Value
RESETCFG_spahr_fu	AV	34		0	RO	Space T Full Reset Value
RESETCFG_hr_deg	AV	35		0	RO	Heating Reset Deg. Value
RESETCFG_heat_th	AV	36		0	RO	Heating OAT threshold
RESETCFG_both_sel	BV	11		0	RO	HSM Both Command Select
RESETCFG_auto_sel	BV	12		0	RO	Auto Changeover Select
GENUNIT_CTRL_TYP	AV	37	COV	1	RO	Local=0 Net.=1 Remote=2
GENUNIT_STATUS	AV	38		0	RO	Run Status
GENUNIT_CHIL_S_S_rd	BV	13	COV	1	RO	Net.: Cmd Start/Stop
GENUNIT_CHIL_OCC_rd	BV	14	COV	1	RO	Net.: Cmd Occupied
GENUNIT_min_left	AV	39		0	RO	Minutes Left for Start
GENUNIT_HEATCOOL	AV	40		0	RO	Heat/Cool status
GENUNIT_HC_SEL_rd	AV	41	COV	1	RO	Heat/Cool Select
GENUNIT_SP_SEL_rd	AV	42	COV	1	RO	Setpoint Select
GENUNIT_SP_OCC_rd	BV	15	COV	1	RO	Setpoint Occupied?
GENUNIT_CAP_T	AV	43	COV	100	RO	Percent Total Capacity
GENUNIT_TOT_CURR	AV	44		0	RO	Actual Chiller Current
GENUNIT_CURR_LIM_rd	AV	45		0	RO	Chiller Current Limit



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
GENUNIT_sp	AV	46	COV	100	RO	Current Setpoint
GENUNIT_CTRL_PNT_rd	AV	47	COV	100	RO	Control Point
GENUNIT_EMSTOP_rd	BV	16		0	RO	Emergency Stop
GENUNIT_DEM_LIM_rd	AV	48	COV	100	RO	Active Demand Limit Val
TEMP_COOL_EWT	AV	49	COV	36	RO	Cooler Entering Fluid
TEMP_COOL_LWT	AV	50	COV	36	RO	Cooler Leaving Fluid
TEMP_COND_EWT	AV	51	COV	36	RO	Condenser Entering Fluid
TEMP_COND_LWT	AV	52	COV	36	RO	Condenser Leaving Fluid
TEMP_SCT_A	AV	53	COV	36	RO	Saturated Cond Tmp cir A
TEMP_SST_A	AV	54	COV	36	RO	Saturated Suction Temp A
TEMP_SUCTION_A	AV	55	COV	36	RO	Compressor Suction Tmp A
TEMP_DGT_A	AV	56	COV	36	RO	Discharge Gas Temp cir A
TEMP_CP_TMP_A	AV	57	COV	36	RO	Motor Temperature cir A
TEMP_SCT_B	AV	58	COV	36	RO	Saturated Cond Tmp cir B
TEMP_SST_B	AV	59	COV	36	RO	Saturated Suction Temp B
TEMP_SUCTION_B	AV	60	COV	36	RO	Compressor Suction Tmp B
TEMP_DGT_B	AV	61	COV	36	RO	Discharge Gas Temp cir B
TEMP_CP_TMP_B	AV	62	COV	36	RO	Motor Temperature cir B
TEMP_SCT_C	AV	63	COV	36	RO	Saturated Cond Tmp cir C
TEMP_SST_C	AV	64	COV	36	RO	Saturated Suction Temp C
TEMP_SUCTION_C	AV	65	COV	36	RO	Compressor Suction Tmp C
TEMP_DGT_C	AV	66	COV	36	RO	Discharge Gas Temp cir C
TEMP_CP_TMP_C	AV	67	COV	36	RO	Motor Temperature cir C
TEMP_SPACETMP	AV	68		0	RO	Optional Space Temp
TEMP_CHWSTEMP	AV	69		0	RO	CHWS Temperature
TEMP_CHWSHEAT	AV	70		0	RO	CHWS Heat Temp
TEMP_OAT	AV	71	COV	36	RO	External Temperature
TEMP_T_HEATER	AV	72		0	RO	Cooler Heater Temp
TEMP_T_HEAT_C	AV	73		0	RO	Circuit C Heater Temp
TEMP_ECO_TP_A	AV	74		0	RO	Economizer Gas Temp A
TEMP_ECO_TP_B	AV	75		0	RO	Economizer Gas Temp B
TEMP_ECO_TP_C	AV	76		0	RO	Economizer Gas Temp C
PRESSURE_DP_A	AV	77		0	RO	Discharge Pressure A
PRESSURE_SP_A	AV	78		0	RO	Main Suction Pressure A
PRESSURE_OP_A	AV	79	COV	145	RO	Oil Pressure A



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
PRESSURE_DOP_A	AV	80		0	RO	Oil Pressure DifferenceA
PRESSURE_ECON_P_A	AV	81	COV	145	RO	Economizer Pressure A
PRESSURE_DP_B	AV	82		0	RO	Discharge Pressure B
PRESSURE_SP_B	AV	83		0	RO	Main Suction Pressure B
PRESSURE_OP_B	AV	84	COV	145	RO	Oil Pressure B
PRESSURE_DOP_B	AV	85		0	RO	Oil Pressure DifferenceB
PRESSURE_ECON_P_B	AV	86	COV	145	RO	Economizer Pressure B
PRESSURE_DP_C	AV	87		0	RO	Discharge Pressure C
PRESSURE_SP_C	AV	88		0	RO	Main Suction Pressure C
PRESSURE_OP_C	AV	89	COV	145	RO	Oil Pressure C
PRESSURE_DOP_C	AV	90		0	RO	Oil Pressure DifferenceC
PRESSURE_ECON_P_C	AV	91	COV	145	RO	Economizer Pressure C
INPUTS_ONOFF_SW	BV	17		0	RO	Remote On/Off Switch
INPUTS_HC_SW	BV	18		0	RO	Remote HeatCool Switch
INPUTS_RECL_SW	BV	19		0	RO	Remote Reclaim Switch
INPUTS_FC_SW	BV	20		0	RO	Free Cooling Disable Sw
INPUTS_SETP_SW	BV	21		0	RO	Remote Setpoint Switch
INPUTS_LIM_SW1	BV	22		0	RO	Limit Switch 1
INPUTS_LIM_SW2	BV	23		0	RO	Limit Switch 2
INPUTS_OIL_L_A	BV	24		0	RO	Oil Level Input A
INPUTS_OIL_L_B	BV	25		0	RO	Oil Level Input B
INPUTS_OIL_L_C	BV	26		0	RO	Oil Level Input C
INPUTS_CURREN_A	AV	92		0	RO	Motor Current A
INPUTS_CURREN_B	AV	93		0	RO	Motor Current B
INPUTS_CURREN_C	AV	94		0	RO	Motor Current C
INPUTS_SP_RESET	AV	95		0	RO	Reset/Setpnt4-20mA Sgnl
INPUTS_REM_LOCK	BV	27		0	RO	Customer Interlock
INPUTS_ICE_SW	BV	28		0	RO	Ice Done Storage Switch
INPUTS_OCC_OVSW	BV	29		0	RO	Occupied Override Switch
INPUTS_LIM_ANAL	AV	96		0	RO	Limit 4-20mA Signal
INPUTS_ELEC_BOX	BV	30		0	RO	Electrical Box Interlock
INPUTS_HEATR_SW	BV	31		0	RO	Cooler Heater Feedback
INPUTS_leak_v	AV	97		0	RO	Leakage detector 1 val
INPUTS_leak_2_v	AV	98		0	RO	Leakage detector 2 val
OUTPUTS_COMP_A	BV	32		0	RO	Compressor A



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
OUTPUTS_OIL_SL_A	BV	33		0	RO	Oil Solenoid Output A
OUTPUTS_SLID_1_A	BV	34		0	RO	Slide Valve 1 Output A
OUTPUTS_SLID_2_A	BV	35		0	RO	Slide Valve 2 Output A
OUTPUTS_CAPT010A	AV	99		0	RO	Capacity Signal Cir A
OUTPUTS_COMP_B	BV	36		0	RO	Compressor B
OUTPUTS_OIL_SL_B	BV	37		0	RO	Oil Solenoid Output B
OUTPUTS_SLID_1_B	BV	38		0	RO	Slide Valve 1 Output B
OUTPUTS_SLID_2_B	BV	39		0	RO	Slide Valve 2 Output B
OUTPUTS_CAPT010B	AV	100		0	RO	Capacity Signal Cir B
OUTPUTS_COMP_C	BV	40		0	RO	Compressor C
OUTPUTS_OIL_SL_C	BV	41		0	RO	Oil Solenoid Output C
OUTPUTS_SLID_1_C	BV	42		0	RO	Slide Valve 1 Output C
OUTPUTS_SLID_2_C	BV	43		0	RO	Slide Valve 2 Output C
OUTPUTS_CAPT010C	AV	101		0	RO	Capacity Signal Cir C
OUTPUTS_CAPT_010	AV	102		0	RO	Chiller Capacity signal
OUTPUTS_ALARM	BV	44		0	RO	Alarm Relay Status
OUTPUTS_RUNNING	BV	45		0	RO	Running Relay Status
OUTPUTS_ALERT	BV	46		0	RO	Alert Relay State
OUTPUTS_SHUTDOWN	BV	47		0	RO	Shutdown Indicator State
OUTPUTS_pos_3wv	AV	103		0	RO	Cond 3 Way Valve Pos
OUTPUTS_COOLHEAT	BV	48		0	RO	Cooler Heater Command
OUTPUTS_READY	BV	49		0	RO	Ready or Running Status
OUTPUTS_cond_htr	BV	50		0	RO	Reclaim Condenser Heater
OUTPUTS_iso_cl_a	BV	51		0	RO	Ball Valve Close Out A
OUTPUTS_iso_op_a	BV	52		0	RO	Ball Valve Open Out A
OUTPUTS_iso_cl_b	BV	53		0	RO	Ball Valve Close Out B
OUTPUTS_iso_op_b	BV	54		0	RO	Ball Valve Open Out B
OUTPUTS_iso_cl_c	BV	55		0	RO	Ball Valve Close Out C
OUTPUTS_iso_op_c	BV	56		0	RO	Ball Valve Open Out C
OUTPUTS_FAN_ST_A	AV	104		0	RO	Fan Staging Number A
OUTPUTS_FAN_ST_B	AV	105		0	RO	Fan Staging Number B
OUTPUTS_FAN_ST_C	AV	106		0	RO	Fan Staging Number C
OUTPUTS_hd_pos_a	AV	107		0	RO	Head Press Act Pos A
OUTPUTS_hd_pos_b	AV	108		0	RO	Head Press Act Pos B
OUTPUTS_hd_pos_c	AV	109		0	RO	Head Press Act Pos C



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
OUTPUTS_OIL_HT_A	BV	57		0	RO	Oil Heater Output A
OUTPUTS_OIL_HT_B	BV	58		0	RO	Oil Heater Output B
OUTPUTS_OIL_HT_C	BV	59		0	RO	Oil Heater Output C
OUTPUTS_RV_A	BV	60		0	RO	4 Way Refrig Valve A
OUTPUTS_RV_B	BV	61		0	RO	4 Way Refrig Valve B
OUTPUTS_iso_refa	BV	62		0	RO	Ball Valve Position A
OUTPUTS_iso_refb	BV	63		0	RO	Ball Valve Position B
OUTPUTS_iso_refc	BV	64		0	RO	Ball Valve Position C
OUTPUTS_ALARMOUT	BV	65		0	RO	Alarm Relay Status
PUMPSTAT_SET_FLOW	BV	66		0	RO	Cooler Flow Setpoint Out
PUMPSTAT_CPUMP_1_rd	BV	67		0	RO	Cooler Pump #1 Command
PUMPSTAT_CPUMP_2_rd	BV	68		0	RO	Cooler Pump #2 Command
PUMPSTAT_ROTCPUMP_rd	BV	69		0	RO	Rotate Cooler Pumps ?
PUMPSTAT_FLOW_SW	BV	70		0	RO	Cooler Flow Switch
PUMPSTAT_HPUMP_1_rd	BV	71		0	RO	Condenser Pump Command1
PUMPSTAT_HPUMP_2_rd	BV	72		0	RO	Condenser Pump Command2
PUMPSTAT_ROTHPUMP_rd	BV	73		0	RO	Rotate Condenser Pumps ?
PUMPSTAT_watpres1	AV	110		0	RO	Water pres before cooler
PUMPSTAT_watpres2	AV	111		0	RO	Water pres after cooler
PUMPSTAT_watpres3	AV	112		0	RO	Water pres before filter
PUMPSTAT_watpres4	AV	113		0	RO	Water pres after filter
PUMPSTAT_wat_flow	AV	114		0	RO	Water flow
PUMPSTAT_cool_pwr	AV	115		0	RO	Cooling power
PUMPSTAT_CONDFLOW	BV	74		0	RO	Condenser Flow Status
RUNTIME_HR_MACH	AV	116		0	RO	Machine Operating Hours
RUNTIME_st_mach	AV	117		0	RO	Machine Starts Number
RUNTIME_hr_cp_a	AV	118		0	RO	Compressor A Hours
RUNTIME_st_cp_a	AV	119		0	RO	Compressor A Starts
RUNTIME_hr_cp_b	AV	120		0	RO	Compressor B Hours
RUNTIME_st_cp_b	AV	121		0	RO	Compressor B Starts
RUNTIME_hr_cp_c	AV	122		0	RO	Compressor C Hours
RUNTIME_st_cp_c	AV	123		0	RO	Compressor C Starts
RUNTIME_hr_cpum1	AV	124		0	RO	Cooler Pump #1 Hours
RUNTIME_hr_cpum2	AV	125		0	RO	Cooler Pump #2 Hours
RUNTIME_hr_hpum1	AV	126		0	RO	Condenser Pump #1 Hours



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
RUNTIME_hr_hpum2	AV	127		0	RO	Condenser Pump #2 Hours
RUNTIME_hr_fcm_a	AV	128		0	RO	Free Cool A Pump Hours
RUNTIME_hr_fcm_b	AV	129		0	RO	Free Cool B Pump Hours
MODES_m_delay	BV	75		0	RO	Start Up Delay In Effect
MODES_m_2stpt	BV	76		0	RO	Second Setpoint In Use
MODES_m_reset	BV	77		0	RO	Reset In Effect
MODES_m_demlim	BV	78		0	RO	Demand limit Active
MODES_m_ramp	BV	79		0	RO	Ramp Loading Active
MODES_m_cheat	BV	80		0	RO	Cooler Heater Active
MODES_m_pmprot	BV	81		0	RO	Cooler Pump Rotation
MODES_m_pmpper	BV	82		0	RO	Pump Periodic Start
MODES_m_night	BV	83		0	RO	Night Low Noise Active
MODES_m_slave	BV	84		0	RO	Master Slave Active
MODES_m_autoc	BV	85		0	RO	Auto Changeover Active
MODES_m_lowEwt	BV	86		0	RO	Heating Low EWT Lockout
MODES_m_cpmpro	BV	87		0	RO	Condenser Pump Rotation
MODES_m_cpmprr	BV	88		0	RO	Cond Pump Periodic Start
MODES_m_ice	BV	89		0	RO	Ice Mode In Effect
MODES_m_defA	BV	90		0	RO	Defrost Active On Cir A
MODES_m_defB	BV	91		0	RO	Defrost Active On Cir B
MODES_m_freec	BV	92		0	RO	Free Cooling Active
MODES_m_recla	BV	93		0	RO	Reclaim Active
MODES_m_sst_a	BV	94		0	RO	Low Suction Circuit A
MODES_m_sst_b	BV	95		0	RO	Low Suction Circuit B
MODES_m_sst_c	BV	96		0	RO	Low Suction Circuit C
MODES_m_map_a	BV	97		0	RO	Map compressor Circuit A
MODES_m_map_b	BV	98		0	RO	Map compressor Circuit B
MODES_m_map_c	BV	99		0	RO	Map compressor Circuit C
MODES_m_hp_a	BV	100		0	RO	High Pres Override Cir A
MODES_m_hp_b	BV	101		0	RO	High Pres Override Cir B
MODES_m_hp_c	BV	102		0	RO	High Pres Override Cir C
RECLAIM_RECL_SEL_rd	BV	103		0	RO	Heat Reclaim Select
RECLAIM_HR_EWT	AV	130		0	RO	Reclaim Entering Fluid
RECLAIM_HR_LWT	AV	131		0	RO	Reclaim Leaving Fluid
RECLAIM_hr_v_pos	AV	132		0	RO	Reclaim Valve Position



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
RECLAIM_hrstat_a	AV	133		0	RO	Reclaim Status Circuit A
RECLAIM_PD_P_A	AV	134		0	RO	Pumpdown Pressure Cir A
RECLAIM_hr_subta	AV	135		0	RO	Sub Condenser Temp Cir A
RECLAIM_hr_sat_a	AV	136		0	RO	Pumpdown Saturated Tmp A
RECLAIM_hr_subca	AV	137		0	RO	Subcooling Temperature A
RECLAIM_hr_ea_a	BV	104		0	RO	Air Cond Entering Valv A
RECLAIM_hr_ew_a	BV	105		0	RO	Water Cond Enter Valve A
RECLAIM_hr_la_a	BV	106		0	RO	Air Cond Leaving Valve A
RECLAIM_hr_lw_a	BV	107		0	RO	Water Cond Leaving Val A
RECLAIM_hrstat_b	AV	138		0	RO	Reclaim Status Circuit B
RECLAIM_PD_P_B	AV	139		0	RO	Pumpdown Pressure Cir B
RECLAIM_hr_subtb	AV	140		0	RO	Sub Condenser Temp Cir B
RECLAIM_hr_sat_b	AV	141		0	RO	Pumpdown Saturated Tmp B
RECLAIM_hr_subcb	AV	142		0	RO	Subcooling Temperature B
RECLAIM_hr_ea_b	BV	108		0	RO	Air Cond Entering Valv B
RECLAIM_hr_ew_b	BV	109		0	RO	Water Cond Enter Valve B
RECLAIM_hr_la_b	BV	110		0	RO	Air Cond Leaving Valve B
RECLAIM_hr_lw_b	BV	111		0	RO	Water Cond Leaving Val B
FREECOOL_FC_DSBLE_rd	BV	112		0	RO	Free Cooling Disable?
FREECOOL_fc_delta	AV	143		0	RO	LWT-OAT Delta
FREECOOL_mc_pwr_a	AV	144		0	RO	Mechanical Cooling Power
FREECOOL_fc_pwr_a	AV	145		0	RO	Free Cooling Maxi Power
FREECOOL_fc_nxt_a	AV	146		0	RO	Next session allowed in
FREECOOL_fc_tmr_a	AV	147		0	RO	Cooling/FreeCool Timeout
FREECOOL_fc_ok_a	BV	113		0	RO	Free Cool Conditions OK?
FREECOOL_fc_req_a	BV	114		0	RO	Free Cool Request ?
FREECOOL_fc_heata	BV	115		0	RO	Free Cooling Heaters ?
FREECOOL_fc_on_a	BV	116		0	RO	Free Cooling Active
FREECOOL_fan_st_a	BV	117		0	RO	Fan Staging Number
FREECOOL_FcDsCl_A	BV	118		0	RO	Dischrge valve Close out
FREECOOL_FcDsOp_A	BV	119		0	RO	Discharge valve Open out
FREECOOL_FcByCl_A	BV	120		0	RO	Bypass valve Close out
FREECOOL_FcByOp_A	BV	121		0	RO	Bypass valve Open out
FREECOOL_fc_pmp_a	BV	122		0	RO	Refrigerant Pump Out
FREECOOL_fc_inp_a	AV	148		0	RO	Pump Inlet Pressure



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
FREECOOL_fc_oup_a	AV	149		0	RO	Pump Outlet Pressure
FREECOOL_fc_dp_a	AV	150		0	RO	Pump Differential Press.
FREECOOL_FC_EXV_A	AV	151		0	RO	EXV position
FREECOOL_FC_LT_A	AV	152		0	RO	Free cooling Liquid Tmp
FREECOOL_fc_sc_a	AV	153		0	RO	Free cooling Subcool Tmp
FREECOOL_fc_scs_a	AV	154		0	RO	Free cooling Subcool Spt
FREECOOL_mc_pwr_b	AV	155		0	RO	Mechanical Cooling Power
FREECOOL_fc_pwr_b	AV	156		0	RO	Free Cooling Maxi Power
FREECOOL_fc_nxt_b	AV	157		0	RO	Next session allowed in
FREECOOL_fc_tmr_b	AV	158		0	RO	Cooling/FreeCool Timeout
FREECOOL_fc_ok_b	BV	123		0	RO	Free Cool Conditions OK?
FREECOOL_fc_req_b	BV	124		0	RO	Free Cool Request ?
FREECOOL_fc_heatb	BV	125		0	RO	Free Cooling Heaters ?
FREECOOL_fc_on_b	BV	126		0	RO	Free Cooling Active
FREECOOL_fan_st_b	BV	127		0	RO	Fan Staging Number
FREECOOL_FcDsCl_B	BV	128		0	RO	Dischrge valve Close out
FREECOOL_FcDsOp_B	BV	129		0	RO	Discharge valve Open out
FREECOOL_FcByCl_B	BV	130		0	RO	Bypass valve Close out
FREECOOL_FcByOp_B	BV	131		0	RO	Bypass valve Open out
FREECOOL_fc_pmp_b	BV	132		0	RO	Refrigerant Pump Out
FREECOOL_fc_inp_b	AV	159		0	RO	Pump Inlet Pressure
FREECOOL_fc_oup_b	AV	160		0	RO	Pump Outlet Pressure
FREECOOL_fc_dp_b	AV	161		0	RO	Pump Differential Press.
FREECOOL_FC_EXV_B	AV	162		0	RO	EXV position
FREECOOL_FC_LT_B	AV	163		0	RO	Free cooling Liquid Tmp
FREECOOL_fc_sc_b	AV	164		0	RO	Free cooling Subcool Tmp
FREECOOL_fc_scs_b	AV	165		0	RO	Free cooling Subcool Spt
ALARMRST_ALM	BV	133		0	RO	Alarm State
ALARMRST_alarm_1c	AV	166		0	RO	Current Alarm 1
ALARMRST_alarm_2c	AV	167		0	RO	Current Alarm 2
ALARMRST_alarm_3c	AV	168		0	RO	Current Alarm 3
ALARMRST_alarm_4c	AV	169		0	RO	Current Alarm 4
ALARMRST_alarm_5c	AV	170		0	RO	Current Alarm 5
ALARMRST_alarm_1	AV	171		0	RO	Jbus Current Alarm 1
ALARMRST_alarm_2	AV	172		0	RO	Jbus Current Alarm 2



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALARMRST_alarm_3	AV	173		0	RO	Jbus Current Alarm 3
ALARMRST_alarm_4	AV	174		0	RO	Jbus Current Alarm 4
ALARMRST_alarm_5	AV	175		0	RO	Jbus Current Alarm 5
LAST_POR_date_on1	AV	176		0	RO	Power On 1 :day-mon-year
LAST_POR_time_on1	AV	177		0	RO	Power On 1 :hour-minute
LAST_POR_date_of1	AV	178		0	RO	PowerDown 1:day-mon-year
LAST_POR_time_of1	AV	179		0	RO	PowerDown 1:hour-minute
LAST_POR_date_on2	AV	180		0	RO	Power On 2 :day-mon-year
LAST_POR_time_on2	AV	181		0	RO	Power On 2 :hour-minute
LAST_POR_date_of2	AV	182		0	RO	PowerDown 2:day-mon-year
LAST_POR_time_of2	AV	183		0	RO	PowerDown 2:hour-minute
LAST_POR_date_on3	AV	184		0	RO	Power On 3 :day-mon-year
LAST_POR_time_on3	AV	185		0	RO	Power On 3 :hour-minute
LAST_POR_date_of3	AV	186		0	RO	PowerDown 3:day-mon-year
LAST_POR_time_of3	AV	187		0	RO	PowerDown 3:hour-minute
LAST_POR_date_on4	AV	188		0	RO	Power On 4 :day-mon-year
LAST_POR_time_on4	AV	189		0	RO	Power On 4 :hour-minute
LAST_POR_date_of4	AV	190		0	RO	PowerDown 4:day-mon-year
LAST_POR_time_of4	AV	191		0	RO	PowerDown 4:hour-minute
LAST_POR_date_on5	AV	192		0	RO	Power On 5 :day-mon-year
LAST_POR_time_on5	AV	193		0	RO	Power On 5 :hour-minute
LAST_POR_date_of5	AV	194		0	RO	PowerDown 5:day-mon-year
LAST_POR_time_of5	AV	195		0	RO	PowerDown 5:hour-minute
EXV_CTRL_EXV_A	AV	196		0	RO	EXV Position Circuit A
EXV_CTRL_DSH_A	AV	197		0	RO	Discharge Superheat A
EXV_CTRL_SH_A	AV	198		0	RO	Suction Superheat A
EXV_CTRL_sh_sp_a	AV	199		0	RO	Suction SH Control Pt A
EXV_CTRL_pinch_a	AV	200		0	RO	Cooler ExchangedT Cir A
EXV_CTRL_pinc_spa	AV	201		0	RO	Cooler Pinch Ctl Point A
EXV_CTRL_ov_exv_a	AV	202		0	RO	EXV Override Circuit A
EXV_CTRL_wc_sta_a	AV	203		0	RO	WC exv optimiz. status A
EXV_CTRL_EXV_B	AV	204		0	RO	EXV Position Circuit B
EXV_CTRL_DSH_B	AV	205		0	RO	Discharge Superheat B
EXV_CTRL_SH_B	AV	206		0	RO	Suction Superheat B
EXV_CTRL_sh_sp_b	AV	207		0	RO	Suction SH Control Pt B



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
EXV_CTRL_pinch_b	AV	208		0	RO	Cooler ExchangedT Cir B
EXV_CTRL_pinc_spb	AV	209		0	RO	Cooler Pinch Ctl Point B
EXV_CTRL_ov_exv_b	AV	210		0	RO	EXV Override Circuit B
EXV_CTRL_wc_sta_b	AV	211		0	RO	WC exv optimiz. status B
EXV_CTRL_EXV_C	AV	212		0	RO	EXV Position Circuit C
EXV_CTRL_DSH_C	AV	213		0	RO	Discharge Superheat C
EXV_CTRL_SH_C	AV	214		0	RO	Suction Superheat C
EXV_CTRL_sh_sp_c	AV	215		0	RO	Suction SH Control Pt C
EXV_CTRL_pinch_c	AV	216		0	RO	Cooler ExchangedT Cir C
EXV_CTRL_pinc_spc	AV	217		0	RO	Cooler Pinch Ctl Point C
EXV_CTRL_ov_exv_c	AV	218		0	RO	EXV Override Circuit C
EXV_CTRL_wc_sta_c	AV	219		0	RO	WC exv optimiz. status C
EXV_CTRL_EXV_EC_A	AV	220		0	RO	Economizer Position A
EXV_CTRL_eco_sha	AV	221		0	RO	Economizer Superheat A
EXV_CTRL_ecsh_spa	AV	222		0	RO	Economizer SH Setpoint A
EXV_CTRL_ov_eco_a	AV	223		0	RO	EXV Override Circuit A
EXV_CTRL_EXV_EC_B	AV	224		0	RO	Economizer Position B
EXV_CTRL_eco_shb	AV	225		0	RO	Economizer Superheat B
EXV_CTRL_ecsh_spb	AV	226		0	RO	Economizer SH Setpoint B
EXV_CTRL_ov_eco_b	AV	227		0	RO	EXV Override Circuit B
EXV_CTRL_EXV_EC_C	AV	228		0	RO	Economizer Position C
EXV_CTRL_eco_shc	AV	229		0	RO	Economizer Superheat C
EXV_CTRL_ecsh_spc	AV	230		0	RO	Economizer SH Setpoint C
EXV_CTRL_ov_eco_c	AV	231		0	RO	EXV Override Circuit C
M_MSTSLV_ms_activ	BV	134		0	RO	Master/Slave Ctrl Active
M_MSTSLV_lead_sel	BV	135		0	RO	Lead Unit is the:
M_MSTSLV_slv_stat	AV	232		0	RO	Slave Chiller State
M_MSTSLV_slv_capt	AV	233		0	RO	Slave Chiller Total Cap
M_MSTSLV_I_strt_d	AV	234		0	RO	Lag Start Delay
M_MSTSLV_II_hr_d	AV	235		0	RO	Lead/lag Hours Delta
M_MSTSLV_II_chang	BV	136		0	RO	Lead/lag Changeover?
M_MSTSLV_II_pull	BV	137		0	RO	Lead Pulldown ?
M_MSTSLV_ms_error	AV	236		0	RO	Master/Slave Error
M_MSTSLV_cap_max	BV	138		0	RO	Max Available Capacity ?
M_MSTSLV_lagstat	AV	237		0	RO	Slave lagstat



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
M_MSTSLV_slav_hr	AV	238		0	RO	Slave Operating Hours
M_MSTSLV_slav_ewt	AV	239		0	RO	Slave Cooler Ent. Fluid
M_MSTSLV_slav_lwt	AV	240		0	RO	Slave Cooler Leav. Fluid
LOADFACT_ctrl_avg	AV	241		0	RO	Average Ctrl Water Temp
LOADFACT_diff_wt	AV	242		0	RO	Differential Water Temp
LOADFACT_delta_t	AV	243		0	RO	Water Delta T
LOADFACT_CTRL_PNT	AV	244		0	RO	Control Point
LOADFACT_reset	AV	245		0	RO	Reset Amount
LOADFACT_tp_error	AV	246		0	RO	Controlled Temp Error
LOADFACT_cap_t	AV	247		0	RO	Actual Capacity
LOADFACT_cap_t_a	AV	248		0	RO	Actual Capacity cir A
LOADFACT_cap_t_b	AV	249		0	RO	Actual Capacity cir B
LOADFACT_cap_t_c	AV	250		0	RO	Actual Capacity cir C
LOADFACT_cap_lim	AV	251		0	RO	Actual Capacity Limit
LOADFACT_TOT_CURR	AV	252		0	RO	Actual Chiller Current
LOADFACT_CURR_LIM	AV	253		0	RO	Chiller Current Limit
LOADFACT_cur_30_a	AV	254		0	RO	Current At 30% Load A
LOADFACT_cur_30_b	AV	255		0	RO	Current At 30% Load B
LOADFACT_cur_30_c	AV	256		0	RO	Current At 30% Load C
LOADFACT_cur100_a	AV	257		0	RO	Current At 100% Load A
LOADFACT_cur100_b	AV	258		0	RO	Current At 100% Load B
LOADFACT_cur100_c	AV	259		0	RO	Current At 100% Load C
LOADFACT_zm	AV	260		0	RO	Current Z Multiplier Val
LOADFACT_smz	AV	261		0	RO	Load/Unload Factor
LOADFACT_over_cap	AV	262		0	RO	Active Capacity Override
FAN_CTRL_sct_sp_a	AV	263		0	RO	Cir A SCT Control Point
FAN_CTRL_sct_fu_a	AV	264		0	RO	Cir A SCT Candidate
FAN_CTRL_drva_pwr	AV	265		0	RO	Cir A Fan Power Drive
FAN_CTRL_drva_i	AV	266		0	RO	Cir A Fan Drive Amps
FAN_CTRL_sct_sp_b	AV	267		0	RO	Cir B SCT Control Point
FAN_CTRL_sct_fu_b	AV	268		0	RO	Cir B SCT Candidate
FAN_CTRL_drvb_pwr	AV	269		0	RO	Cir B Fan Power Drive
FAN_CTRL_drvb_i	AV	270		0	RO	Cir B Fan Drive Amps
FAN_CTRL_sct_sp_c	AV	271		0	RO	Cir C SCT Control Point
FAN_CTRL_sct_fu_c	AV	272		0	RO	Cir C SCT Candidate



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
FAN_CTRL_drvc_pwr	AV	273		0	RO	Cir C Fan Power Drive
FAN_CTRL_drvc_i	AV	274		0	RO	Cir C Fan Drive Amps
FAN_CTRL_SET_DRVA	AV	275		0	RO	Fan A Drive Attach
FAN_CTRL_SET_DRVB	AV	276		0	RO	Fan B Drive Attach
FAN_CTRL_SET_DRVC	AV	277		0	RO	Fan C Drive Attach
FACTORY_unit_typ	AV	278		0	RO	Unit Type (Heatpump = 2)
FACTORY_unitsize	AV	279		0	RO	Unit Capacity
FACTORY_freq_60H	BV	139		0	RO	Power Frequency 60Hz Sel
FACTORY_voltage	AV	280		0	RO	Power Supply Voltage
FACTORY_varfan_a	AV	281		0	RO	NB Fans on Varifan Cir A
FACTORY_varfan_b	AV	282		0	RO	NB Fans on Varifan Cir B
FACTORY_varfan_c	AV	283		0	RO	NB Fans on Varifan Cir C
FACTORY_softstar	BV	140		0	RO	Soft Starter Select
FACTORY_wye_delt	BV	141		0	RO	Wye Delta Start Select
FACTORY_recl_opt	AV	284		0	RO	Air Cooled Reclaim Sel
FACTORY_freecool	BV	142		0	RO	Free Cooling Select
FACTORY_heat_sel	AV	285		0	RO	Cooler Heater Select
FACTORY_cond_val	BV	143		0	RO	Condenser Water Val Sel
FACTORY_hgbp_sel	BV	144		0	RO	Hot Gas Bypass Select
FACTORY_mchx_sel	BV	145		0	RO	MCHX Exchanger Select
FACTORY_dxcooler	BV	146		0	RO	DX Cooler Select
FACTORY_emm_opt	BV	147		0	RO	Energy Management Module
FACTORY_lwt_72dc	BV	148		0	RO	lwt_72dc
FACTORY_kithydro	BV	149		0	RO	Hydraulic Transducer Kit
FACTORY_cpass_nb	AV	286		0	RO	Cooler pass number
FACTORY_vlt_sel	AV	287		0	RO	VLT Fan Drive Select
FACTORY_vlt_rpm	AV	288		0	RO	VLT Fan Drive RPM
FACTORY_highcond	BV	150		0	RO	High Condensing Select
FACTORY_max_clwt	BV	151		0	RO	Max condenser LWT=45degC
FACTORY_condprob	BV	152		0	RO	Condenser probe select
FACTORY_region	AV	289		0	RO	Machine using region
FACTORY_flui_typ	AV	290		0	RO	Cooler Fluid Type
FACTORY2_cpa_mtac	AV	291		0	RO	Must Trip Amps
FACTORY2_cp_s1_ca	AV	292		0	RO	S1 Config Switch (8->1)
FACTORY2_cpb_mtac	AV	293		0	RO	Must Trip Amps

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Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
FACTORY2_cp_s1_cb	AV	294		0	RO	S1 Config Switch (8->1)
FACTORY2_cpc_mtac	AV	295		0	RO	Must Trip Amps
FACTORY2_cp_s1_cc	AV	296		0	RO	S1 Config Switch (8->1)
FACTORY2_nb_fan_a	AV	297		0	RO	Circuit A Total Fans NB
FACTORY2_nb_fan_b	AV	298		0	RO	Circuit B Total Fans NB
FACTORY2_nb_fan_c	AV	299		0	RO	Circuit C Total Fans NB
FACTORY2_exva_max	AV	300		0	RO	EXV A Maximum Steps Numb
FACTORY2_exvb_max	AV	301		0	RO	EXV B Maximum Steps Numb
FACTORY2_exvc_max	AV	302		0	RO	EXV C Maximum Steps Numb
FACTORY2_eco_cnfa	AV	303		0	RO	Economizer A Steps Numb
FACTORY2_eco_cnf_b	AV	304		0	RO	Economizer B Steps Numb
FACTORY2_eco_cnf_c	AV	305		0	RO	Economizer C Steps Numb
SERVICE1_flow_sp	AV	306		0	RO	Flow Switch Sp
SERVICE1_cond_typ	AV	307		0	RO	Condenser Fluid Type
SERVICE1_ewt_opt	BV	153		0	RO	Entering Fluid Control
SERVICE1_freezesp	AV	308		0	RO	Brine Freeze Setpoint
SERVICE1_mini_lwt	AV	309		0	RO	Brine Minimum fluid temp
SERVICE1_hd_pg	AV	310		0	RO	Prop PID gain Varifan
SERVICE1_hd_ig	AV	311		0	RO	Int PID gain Varifan
SERVICE1_hd_dg	AV	312		0	RO	Deri PID gain Varifan
SERVICE1_fan_max	AV	313		0	RO	Maximum ducted fan speed
SERVICE1_sh_sp_a	AV	314		0	RO	EXV A Superheat Setpoint
SERVICE1_sh_sp_b	AV	315		0	RO	EXV B Superheat Setpoint
SERVICE1_sh_sp_c	AV	316		0	RO	EXV C Superheat Setpoint
SERVICE1_p_ofst_a	AV	317		0	RO	Pinch Offset circuit A
SERVICE1_p_ofst_b	AV	318		0	RO	Pinch Offset circuit B
SERVICE1_p_ofst_c	AV	319		0	RO	Pinch Offset circuit C
SERVICE1_mop_sp	AV	320		0	RO	EXV MOP Setpoint
SERVICE1_hp_th	AV	321		0	RO	High Pressure Threshold
SERVICE1_heatersp	AV	322		0	RO	Cooler Heater Delta Spt
SERVICE1_auto_sm	BV	154		0	RO	Auto Start When SM Lost
SERVICE1_min_3w	AV	323		0	RO	3way Valve Min Position
SERVICE1_max_3w	AV	324		0	RO	3way Valve Max Position
SERVICE1_esh_sp_a	AV	325		0	RO	Economizer SH Setpoint A
SERVICE1_esh_sp_b	AV	326		0	RO	Economizer SH Setpoint B

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Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
SERVICE1_esh_sp_c	AV	327		0	RO	Economizer SH Setpoint C
SERVICE1_fastload	AV	328		0	RO	Fast loading sequence
SERVICE1_ewt_cirA	BV	155		0	RO	EWT Probe on cir A side
SERVICE1_leak_thr	AV	329		0	RO	Leakage charge Threshold
SERVICE1_leak_tmr	AV	330		0	RO	Leakage charge Timer
SERVICE1_metric	BV	156		0	RO	metric
SERVICE1_cur_offA	AV	331		0	RO	Current offset cir A
SERVICE1_cur_offB	AV	332		0	RO	Current offset cir B
SERVICE1_cur_offC	AV	333		0	RO	Current offset cir C
CP_UNABL_un_cp_a	BV	157		0	RO	Compressor A Disable
CP_UNABL_un_cp_b	BV	158		0	RO	Compressor B Disable
CP_UNABL_un_cp_c	BV	159		0	RO	Compressor C Disable
MST_SLV_ms_sel	AV	334		0	RO	Master/Slave Select
MST_SLV_ms_ctrl	AV	335		0	RO	Master Control Type
MST_SLV_slv_addr	AV	336		0	RO	Slave Address
MST_SLV_lead_sel	AV	337		0	RO	Lead Lag Select
MST_SLV_ll_bal_d	AV	338		0	RO	Lead/Lag Balance Delta
MST_SLV_lstr_tim	AV	339		0	RO	Lead/Lag Start Timer
MST_SLV_lead_pul	AV	340		0	RO	Lead Pulldown Time
MST_SLV_start_dt	AV	341		0	RO	Lag Unit Pump Control
MST_SLV_lag_mini	AV	342		0	RO	Lag Minimum Running Time
MST_SLV_lag_pump	AV	343		0	RO	Lag Unit Pump Control
MST_SLV_ll_serie	BV	160		0	RO	Chiller In Series
BACNET_bacena	BV	161		0	RO	BACnet Enable
BACNET_bacunit	BV	162		0	RO	Metric Unit
BACNET_network	AV	344		0	RO	Network
BACNET_ident	AV	345		0	RO	Identifier
BACNET_bbmd	AV	346		0	RO	BACnet Management Device
SETPOINT_csp1	AV	347		0	RW	Cooling Setpoint 1
SETPOINT_csp2	AV	348		0	RW	Cooling Setpoint 2
SETPOINT_ice_sp	AV	349		0	RW	Cooling Ice Setpoint
SETPOINT_cramp_sp	AV	350		0	RW	Cooling Ramp Loading
SETPOINT_hsp1	AV	351		0	RW	Heating Setpoint 1
SETPOINT_hsp2	AV	352		0	RW	Heating Setpoint 2
SETPOINT_hramp_sp	AV	353		0	RW	Heating Ramp Loading



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
SETPOINT_cauto_sp	AV	354		0	RW	Cool Changeover Setpt
SETPOINT_hauto_sp	AV	355		0	RW	Heat Changeover Setpt
SETPOINT_w_sct_sp	AV	356		0	RW	Water Val Condensing Stp
SETPOINT_lim_sp1	AV	357		0	RW	Switch Limit Setpoint 1
SETPOINT_lim_sp2	AV	358		0	RW	Switch Limit Setpoint 2
SETPOINT_lim_sp3	AV	359		0	RW	Switch Limit Setpoint 3
SETPOINT_rsp	AV	360		0	RW	Reclaim Setpoint
SETPOINT_hr_deadb	AV	361		0	RW	Reclaim Deadband
GENUNIT_CHIL_S_S_wr	BV	163	CMD	0	RW	Chiller Start/Stop
PUMPSTAT_HPUMP_1_wr	BV	164	CMD	0	RW	Condenser pump 1
PUMPSTAT_HPUMP_2_wr	BV	165	CMD	0	RW	Condenser pump 2
PUMPSTAT_CPUMP_1_wr	BV	166	CMD	0	RW	Evaporator pump 1
PUMPSTAT_CPUMP_2_wr	BV	167	CMD	0	RW	Evaporator pump 2
GENUNIT_CTRL_PNT_wr	AV	362	CMD	0	RW	Control Point
GENUNIT_DEM_LIM_wr	AV	363	CMD	0	RW	Demand Limit
GENUNIT_EMSTOP_wr	BV	168	CMD	0	RW	Emergency Stop
GENUNIT_HC_SEL_wr	AV	364	CMD	0	RW	Heatcool Select
PUMPSTAT_ROTCPUMP_wr	BV	169	CMD	0	RW	Rotate Cooler Pumps ?
PUMPSTAT_ROTHPUMP_wr	BV	170	CMD	0	RW	Rotate Condenser Pumps ?
GENUNIT_SP_OCC_wr	BV	171	CMD	0	RW	Setpoint Occupied?
GENUNIT_CHIL_OCC_wr	BV	172	CMD	0	RW	Chiller occupied?
GENUNIT_SP_SEL_wr	AV	365	CMD	0	RW	Setpoint Select
ALM_COOL_EWT_F	BV	173	IR	0	RO	Cooler Entering Fluid Thermistor
ALM_COOL_LWT_F	BV	174	IR	0	RO	Cooler Leaving Fluid Thermistor
ALM_DEFROST_T_A_F	BV	175	IR	0	RO	Circuit A Defrost Thermistor
ALM_DEFROST_T_B_F	BV	176	IR	0	RO	Circuit B Defrost Thermistor
ALM_COND_EWT_F	BV	177	IR	0	RO	Condenser Entering Fluid Thermistor
ALM_COND_LWT_F	BV	178	IR	0	RO	Condenser Leaving Fluid Thermistor
ALM_HR_EWT_F	BV	179	IR	0	RO	Reclaim Condenser Entering Thermistor
ALM_HR_LWT_F	BV	180	IR	0	RO	Reclaim Condenser Leaving Thermistor
ALM_OAT_F	BV	181	IR	0	RO	OAT Thermistor
ALM_CHWSTEMP_F	BV	182	IR	0	RO	MASTER/Slave Common Fluid Thermistor



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALM_SUCTION_T_A_F	BV	183	IR	0	RO	Circuit A Suction Gas Thermistor
ALM_SUCTION_T_B_F	BV	184	IR	0	RO	Circuit B Suction Gas Thermistor
ALM_SUCTION_T_C_F	BV	185	IR	0	RO	Circuit C Suction Gas Thermistor
ALM_DGT_A_T_F	BV	186	IR	0	RO	Circuit A Discharge Gas Thermistor
ALM_DGT_B_T_F	BV	187	IR	0	RO	Circuit B Discharge Gas Thermistor
ALM_DGT_C_T_F	BV	188	IR	0	RO	Circuit C Discharge Gas Thermistor
ALM_SUBCOOL_T_A_F	BV	189	IR	0	RO	Circuit A Condenser Subcooling Liquid Thermistor
ALM_SUBCOOL_T_B_F	BV	190	IR	0	RO	Circuit B Condenser Subcooling Liquid Thermistor
ALM_SPACE_TEMP_F	BV	191	IR	0	RO	Space Temperature Thermistor
ALM_COOL_HEAT_T_F	BV	192	IR	0	RO	Cooler heater feedback thermistor
ALM_ECO_GAS_A_T_F	BV	193	IR	0	RO	Circuit A Economizer Gas thermistor
ALM_ECO_GAS_B_T_F	BV	194	IR	0	RO	Circuit B Economizer Gas thermistor
ALM_ECO_GAS_C_T_F	BV	195	IR	0	RO	Circuit C Economizer Gas thermistor
ALM_FC_LIQUID_A_T_F	BV	196	IR	0	RO	Circuit A Free Cooling Liquid Thermistor Failure
ALM_FC_LIQUID_B_T_F	BV	197	IR	0	RO	Circuit B Free Cooling Liquid Thermistor Failure
ALM_DP_A_F	BV	198	IR	0	RO	Circuit A Discharge Transducer
ALM_DP_B_F	BV	199	IR	0	RO	Circuit B Discharge Transducer
ALM_DP_C_F	BV	200	IR	0	RO	Circuit C Discharge Transducer
ALM_SP_A_F	BV	201	IR	0	RO	Circuit A Suction Transducer
ALM_SP_B_F	BV	202	IR	0	RO	Circuit B Suction Transducer
ALM_SP_C_F	BV	203	IR	0	RO	Circuit C Suction Transducer
ALM_PD_P_A_F	BV	204	IR	0	RO	Circuit A Reclaim Pumpdown Pressure Transducer
ALM_PD_P_B_F	BV	205	IR	0	RO	Circuit B Reclaim Pumpdown Pressure Transducer
ALM_OIL_P_A_F	BV	206	IR	0	RO	Circuit A Oil Pressure Transducer
ALM_OIL_P_B_F	BV	207	IR	0	RO	Circuit B Oil Pressure Transducer
ALM_OIL_P_C_F	BV	208	IR	0	RO	Circuit C Oil Pressure Transducer
ALM_ECO_P_A_F	BV	209	IR	0	RO	Circuit A Economizer Pressure Transducer
ALM_ECO_P_B_F	BV	210	IR	0	RO	Circuit B Economizer Pressure Transducer



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALM_ECO_P_C_F	BV	211	IR	0	RO	Circuit C Economizer Pressure Transducer
ALM_FC_IN_P_A_F	BV	212	IR	0	RO	Circuit A Free Cooling Pump Inlet Pressure Transducer
ALM_FC_IN_P_B_F	BV	213	IR	0	RO	Circuit B Free Cooling Pump Inlet Pressure Transducer
ALM_FC_OUT_P_A_F	BV	214	IR	0	RO	Circuit A Free Cooling Pump Outlet Pressure Transducer
ALM_FC_OUT_P_B_F	BV	215	IR	0	RO	Circuit B Free Cooling Pump Outlet Pressure Transducer
ALM_HP_APPROACH_P_A_F	BV	216	IR	0	RO	Circuit A Heatpump Approach Pressure Transducer
ALM_HP_APPROACH_P_B_F	BV	217	IR	0	RO	Circuit B Heatpump Approach Pressure Transducer
ALM_WATER_P_1_F	BV	218	IR	0	RO	Water Pressure before cooler Transducer
ALM_WATER_P_2_F	BV	219	IR	0	RO	Water Pressure after cooler Transducer
ALM_WATER_P_3_F	BV	220	IR	0	RO	Water Pressure before filter Transducer
ALM_WATER_P_4_F	BV	221	IR	0	RO	Water Pressure after filter Transducer
ALM_WATER_P_TOO_HIGH	BV	222	IR	0	RO	Water Pressure too high
ALM_WATER_P_TOO_LOW	BV	223	IR	0	RO	Water Pressure too low - pump cavitation risks
ALM_WATER_FILTER_DIRTY	BV	224	IR	0	RO	Water filter dirty
ALM_CPA_COM_F	BV	225	IR	0	RO	Loss of communication with Compressor Board A
ALM_CPB_COM_F	BV	226	IR	0	RO	Loss of communication with Compressor Board B
ALM_CPC_COM_F	BV	227	IR	0	RO	Loss of communication with Compressor Board C
ALM_SIOB_CIR_A_COM_F	BV	228	IR	0	RO	Loss of communication with SIOB Board Number A
ALM_SIOB_CIR_B_COM_F	BV	229	IR	0	RO	Loss of communication with SIOB Board Number B
ALM_SIOB_CIR_C_COM_F	BV	230	IR	0	RO	Loss of communication with SIOB Board Number C
ALM_SIOB_FC_COM_F	BV	231	IR	0	RO	Loss of communication with SIOB Board Free Cooling
ALM_SIOB_RECL_COM_F	BV	232	IR	0	RO	Loss of communication with SIOB Board Heat Reclaim



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALM_SIOB_EMM_COM_F	BV	233	IR	0	RO	Loss of communication with SIOB Board Energy Management
ALM_FAN1_COM_F	BV	234	IR	0	RO	Loss of communication with Fan Board Number 1
ALM_FAN2_COM_F	BV	235	IR	0	RO	Loss of communication with Fan Board Number 2
ALM_FAN3_COM_F	BV	236	IR	0	RO	Loss of communication with Fan Board Number 3
ALM_VLT_DRIVE1_COM_F	BV	237	IR	0	RO	Loss of communication with VLT board 1
ALM_VLT_DRIVE2_COM_F	BV	238	IR	0	RO	Loss of communication with VLT board 2
ALM_VLT_DRIVE3_COM_F	BV	239	IR	0	RO	Loss of communication with VLT board 3
ALM_COOLER_FREEZE_F	BV	240	IR	0	RO	Cooler Freeze Protection
ALM_COND_FREEZE_A_F	BV	241	IR	0	RO	Circuit A Condenser Freeze Protection
ALM_COND_FREEZE_B_F	BV	242	IR	0	RO	Circuit B Condenser Freeze Protection
ALM_COND_FREEZE_C_F	BV	243	IR	0	RO	Circuit C Condenser Freeze Protection
ALM_LOW_SUCTION_A_F	BV	244	IR	0	RO	Circuit A Low Suction Temperature
ALM_LOW_SUCTION_B_F	BV	245	IR	0	RO	Circuit B Low Suction Temperature
ALM_LOW_SUCTION_C_F	BV	246	IR	0	RO	Circuit C Low Suction Temperature
ALM_HIGH_SH_A_F	BV	247	IR	0	RO	Circuit A High Superheat
ALM_HIGH_SH_B_F	BV	248	IR	0	RO	Circuit B High Superheat
ALM_HIGH_SH_C_F	BV	249	IR	0	RO	Circuit C High Superheat
ALM_LOW_SH_A_F	BV	250	IR	0	RO	Circuit A Low Superheat
ALM_LOW_SH_B_F	BV	251	IR	0	RO	Circuit B Low Superheat
ALM_LOW_SH_C_F	BV	252	IR	0	RO	Circuit C Low Superheat
ALM_LOCK_F	BV	253	IR	0	RO	Customer Interlock Failure
ALM_ELEC_BOX_F	BV	254	IR	0	RO	Electrical Box Thermostat or Electrical Interlock failure
ALM_LOSS_COM_SM_F	BV	255	IR	0	RO	Loss of communication with System Manager
ALM_LOSS_COM_MS_F	BV	256	IR	0	RO	Master/Slave communication Failure
ALM_LOW_OIL_A_P_F	BV	257	IR	0	RO	Circuit A Low Oil Pressure
ALM_LOW_OIL_B_P_F	BV	258	IR	0	RO	Circuit B Low Oil Pressure
ALM_LOW_OIL_C_P_F	BV	259	IR	0	RO	Circuit C Low Oil Pressure



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALM_OIL_FILT_A_P_F	BV	260	IR	0	RO	Circuit A Max Oil Filter Differential Pressure
ALM_OIL_FILT_B_P_F	BV	261	IR	0	RO	Circuit B Max Oil Filter Differential Pressure
ALM_OIL_FILT_C_P_F	BV	262	IR	0	RO	Circuit C Max Oil Filter Differential Pressure
ALM_OIL_DROP_A_P_F	BV	263	IR	0	RO	Circuit A High Oil Filter Drop Pressure
ALM_OIL_DROP_B_P_F	BV	264	IR	0	RO	Circuit B High Oil Filter Drop Pressure
ALM_OIL_DROP_C_P_F	BV	265	IR	0	RO	Circuit C High Oil Filter Drop Pressure
ALM_LOW_OIL_LEVEL_A_F	BV	266	IR	0	RO	Circuit A Low Oil level
ALM_LOW_OIL_LEVEL_B_F	BV	267	IR	0	RO	Circuit B Low Oil level
ALM_LOW_OIL_LEVEL_C_F	BV	268	IR	0	RO	Circuit C Low Oil level
ALM_M_S_CONFIG_F	BV	269	IR	0	RO	Master chiller configuration error Number #1 to nn
ALM_INI_FACT_CONF_F	BV	270	IR	0	RO	No factory configuration
ALM_ILL_FACT_CONF_F	BV	271	IR	0	RO	Illegal factory configuration Number #1 to nn
ALM_NETWORK_EMSTOP_F	BV	272	IR	0	RO	Unit is in Network emergency stop
ALM_COOL_PUMP1_F	BV	273	IR	0	RO	Cooler pump #1 default
ALM_COOL_PUMP2_F	BV	274	IR	0	RO	Cooler pump #2 default
ALM_COND_FLOW_F	BV	275	IR	0	RO	Condenser Flow Switch Failure
ALM_HR_HIGH_SCT_A_F	BV	276	IR	0	RO	Circuit A Reclaim Operation Failure
ALM_HR_HIGH_SCT_B_F	BV	277	IR	0	RO	Circuit B Reclaim Operation Failure
ALM_SCT_OUT_OF_CP_M_A_F	BV	278	IR	0	RO	Circ A - High condensing temperature out of map compressor
ALM_SCT_OUT_OF_CP_M_B_F	BV	279	IR	0	RO	Circ B - High condensing temperature out of map compressor
ALM_SCT_OUT_OF_CP_M_C_F	BV	280	IR	0	RO	Circ C - High condensing temperature out of map compressor
ALM_REPEATED_LO_SST_A_F	BV	281	IR	0	RO	Circuit A - Repeated low suction temp overrides
ALM_REPEATED_LO_SST_B_F	BV	282	IR	0	RO	Circuit B - Repeated low suction temp overrides
ALM_REPEATED_LO_SST_C_F	BV	283	IR	0	RO	Circuit C - Repeated low suction temp overrides



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALM_HEAT_LOW_EWT_F	BV	284	IR	0	RO	Low entering water temperature in heating
ALM_COND_PMP1_F	BV	285	IR	0	RO	Condenser pump #1 default
ALM_COND_PMP2_F	BV	286	IR	0	RO	Condenser pump #2 default
ALM_HIGH_DGT_A_F	BV	287	IR	0	RO	Circuit A High Discharge Gas Temperature
ALM_HIGH_DGT_B_F	BV	288	IR	0	RO	Circuit B High Discharge Gas Temperature
ALM_HIGH_DGT_C_F	BV	289	IR	0	RO	Circuit C High Discharge Gas Temperature
ALM_LOW_ECON_PRESS_A_F	BV	290	IR	0	RO	Circuit A Low economizer pressure or Suction valve closed
ALM_LOW_ECON_PRESS_B_F	BV	291	IR	0	RO	Circuit B Low economizer pressure or Suction valve closed
ALM_LOW_ECON_PRESS_C_F	BV	292	IR	0	RO	Circuit C Low economizer pressure or Suction valve closed
ALM_SLIDE_A_F	BV	293	IR	0	RO	Circuit A Slive Valve Control Unverifiable
ALM_SLIDE_B_F	BV	294	IR	0	RO	Circuit B Slive Valve Control Unverifiable
ALM_SLIDE_C_F	BV	295	IR	0	RO	Circuit C Slive Valve Control Unverifiable
ALM_FLOW_CONFIG_F	BV	296	IR	0	RO	Cooler Flow Switch Setpoint Configuration Failure
ALM_COOLER_FLOW_F	BV	297	IR	0	RO	Cooler Flow Switch Failure
ALM_FC_OP_A_F	BV	298	IR	0	RO	Circuit A Free Cooling Operation Failure
ALM_FC_OP_B_F	BV	299	IR	0	RO	Circuit B Free Cooling Operation Failure
ALM_SENSORS_SWAP_F	BV	300	IR	0	RO	Water Exchanger Temperature Sensors Swapped
ALM_SERVICE_MAINT_ALRT	BV	301	IR	0	RO	Service maintenance alert Number # nn
ALM_FAN_VLT_DRIVE_A_F	BV	302	IR	0	RO	Circuit A VLT Fan Drive Failure
ALM_FAN_VLT_DRIVE_B_F	BV	303	IR	0	RO	Circuit B VLT Fan Drive Failure
ALM_FAN_VLT_DRIVE_C_F	BV	304	IR	0	RO	Circuit C VLT Fan Drive Failure
ALM_FAN_VLT_DRIVE_A_ALT	BV	305	IR	0	RO	Circuit A VLT Fan Drive Warning
ALM_FAN_VLT_DRIVE_B_ALT	BV	306	IR	0	RO	Circuit B VLT Fan Drive Warning
ALM_FAN_VLT_DRIVE_C_ALT	BV	307	IR	0	RO	Circuit C VLT Fan Drive Warning
ALM_DATABASE_F	BV	308	IR	0	RO	Database module Failure
ALM_LENSCAN_F	BV	309	IR	0	RO	Lenscan module Failure

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Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
ALM_STEPPER_EXV_A_F	BV	310	IR	0	RO	Main EXV stepper motor Failure - cir A
ALM_STEPPER_EXV_B_F	BV	311	IR	0	RO	Main EXV stepper motor Failure - cir B
ALM_STEPPER_EXV_C_F	BV	312	IR	0	RO	Main EXV stepper motor Failure - cir C
ALM_STEPPER_ECO_A_F	BV	313	IR	0	RO	EXV eco stepper motor Failure - cir A
ALM_STEPPER_ECO_B_F	BV	314	IR	0	RO	EXV eco stepper motor Failure - cir B
ALM_STEPPER_ECO_C_F	BV	315	IR	0	RO	EXV eco stepper motor Failure - cir C
ALM_REFRIGERANT_F	BV	316	IR	0	RO	Refrigerant Leakage Detection
ALM_A_TCPM_F	BV	317	IR	0	RO	Compressor A Failure
ALM_B_TCPM_F	BV	318	IR	0	RO	Compressor B Failure
ALM_C_TCPM_F	BV	319	IR	0	RO	Compressor C Failure
ALM_ELEC_BOX_FAN_F	BV	320	IR	0	RO	Electrical Box Fan Failure
DRYC_CFG_dc_lwtsp	AV	366		0	RW	Leaving Water Temp spt
DRYC_CFG_dc_lwtll	AV	367		0	RW	Lwt Threshold: -1 Fan
DRYC_CFG_dc_nh_sp	AV	368		0	RW	Night Mode LWT Setpt
DRYC_CFG_dc_nh_ll	AV	369		0	RW	Night Mode Lwt Th -1 Fan
TEMP_dc_lwt	AV	370		0	RO	Dry Cool Leav Water Tmp
OUTPUTS_dcvfan1	AV	371		0	RO	Dry Cool Vfan1 Output
OUTPUTS_dcvfan2	AV	372		0	RO	Dry Cool Vfan2 Output
OUTPUTS_dcfan1	BV	321		0	RO	Dry Cool fan stage 1
OUTPUTS_dcfan2	BV	322		0	RO	Dry Cool fan stage 2
OUTPUTS_dcfan3	BV	323		0	RO	Dry Cool fan stage 3
OUTPUTS_dcfan4	BV	324		0	RO	Dry Cool fan stage 4
OUTPUTS_dcfan5	BV	325		0	RO	Dry Cool fan stage 5
OUTPUTS_dcfan6	BV	326		0	RO	Dry Cool fan stage 6
OUTPUTS_dcfan7	BV	327		0	RO	Dry Cool fan stage 7
OUTPUTS_dcfan8	BV	328		0	RO	Dry Cool fan stage 8
FAN_CTRL_dc_sp	AV	373		0	RO	Dry Cooler LWT Setpt
FAN_CTRL_dc_ll	AV	374		0	RO	Dry Cool Lwt Th -1 Fan
ALM_DRYCOOL_LWT_T_F	BV	329	IR	0	RO	Dry Cooler Leaving thermistor Failure
HR_PARTIAL_DOWNTIME	AV	375		0	RO	Cumulated Downtime when alarm state is partial



Object Name	Type	Inst.	Option	COV Inc	PV Access	Description
HR_TOTAL_DOWNTIME	AV	376		0	RO	Cumulated Downtime when alarm state is tripout
ALM_FCDC_PROCESS_F	BV	330	IR	0	RO	Free Cooling Dry Cooler Process Failure
ALM_FCDC_WLOOP_F	BV	331	IR	0	RO	FC Dry Cooler Water Loop Thermistor Failure
ALM_FCDC_LWT_F	BV	332	IR	0	RO	FC Dry Cooler Leaving Water Thermistor Failure
ALM_FCDC_OAT_F	BV	333	IR	0	RO	FC Dry Cooler OAT Thermistor Failure
ALM_FCDC_AUX1_COM_F	BV	334	IR	0	RO	Loss of communication with FC Dry Cooler Board
ALM_DC_AUX1_COM_F	BV	335	IR	0	RO	Loss of communication with Dry Cooler Board
ALM_FGAS_NEEDED	BV	336	IR	0	RO	Fgas check needed, call your maintenance company
FACTORY_HiEffic	AV	377		0	RO	High Efficiency Type
SERVICE1_unit_alt	AV	378		0	RO	Unit Altitude (in meter)
ALM_PwrCond1TempFail	AV	379		0	NA	Power Condenser 1 Temperature Failure
ALM_PwrCond2TempFail	AV	380		0	NA	Power Condenser 2 Temperature Failure
ALM_UndVoltPwr1Fail	AV	381		0	NA	Under Voltage Power 1 Failure
ALM_UndVoltPwr2Fail	AV	382		0	NA	Under Voltage Power 2 Failure
RECLAIM_RECL_SEL_wr	BV	336	CMD	0	RW	Heat Reclaim Select

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BACNet TrendLog Objects List

BACNet Object	Log Enabled	Buffer Size	Log Interval	Notification Threshold	Stop When Full	Notify Type	Intrinsic Reporting
GENUNIT_STATUS	YES	250	30000	48	NO	Alarms	Event Disable
GENUNIT_HEATCOOL	YES	250	30000	48	NO	Alarms	Event Disable
GENUNIT_CTRL_PNT	YES	250	30000	48	NO	Alarms	Event Enable
TEMP_COOL_EWT	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_COOL_LWT	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_COND_EWT	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_COND_LWT	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_SCT_A	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_SST_A	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_DGT_A	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_CP_TMP_A	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_SCT_B	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_SST_B	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_DGT_B	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_CP_TMP_B	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_SCT_C	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_SST_C	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_DGT_C	YES	250	30000	48	NO	Alarms	Event Disable
TEMP_OAT	YES	250	30000	48	NO	Alarms	Event Disable
INPUTS_OIL_L_A	YES	250	30000	48	NO	Alarms	Event Disable
INPUTS_OIL_L_B	YES	250	30000	48	NO	Alarms	Event Disable
INPUTS_OIL_L_C	YES	250	30000	48	NO	Alarms	Event Disable
OUTPUTS_FAN_ST_A	YES	250	30000	48	NO	Alarms	Event Disable
OUTPUTS_FAN_ST_B	YES	250	30000	48	NO	Alarms	Event Disable
OUTPUTS_FAN_ST_C	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_HR_MACH	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_st_mach	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_hr_cp_a	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_st_cp_a	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_hr_cp_b	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_st_cp_b	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_hr_cp_c	YES	250	30000	48	NO	Alarms	Event Disable
RUNTIME_st_cp_c	YES	250	30000	48	NO	Alarms	Event Disable
EXV_CTRL_EXV_A	YES	250	30000	48	NO	Alarms	Event Disable
EXV_CTRL_EXV_B	YES	250	30000	48	NO	Alarms	Event Disable

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BACNet Object	Log Enabled	Buffer Size	Log Interval	Notification Threshold	Stop When Full	Notify Type	Intrinsic Reporting
EXV_CTRL_EXV_C	YES	250	30000	48	NO	Alarms	Event Disable
EXV_CTRL_EXV_EC_A	YES	250	30000	48	NO	Alarms	Event Disable
EXV_CTRL_EXV_EC_B	YES	250	30000	48	NO	Alarms	Event Disable
EXV_CTRL_EXV_EC_C	YES	250	30000	48	NO	Alarms	Event Disable
LOADFACT_ctrl_avg	YES	250	30000	48	NO	Alarms	Event Disable
LOADFACT_cap_t	YES	250	30000	48	NO	Alarms	Event Enable
LOADFACT_cap_t_a	YES	250	30000	48	NO	Alarms	Event Disable
LOADFACT_cap_t_b	YES	250	30000	48	NO	Alarms	Event Disable
LOADFACT_cap_t_c	YES	250	30000	48	NO	Alarms	Event Disable
LOADFACT_smz	YES	250	30000	48	NO	Alarms	Event Disable
LOADFACT_over_cap	YES	250	30000	48	NO	Alarms	Event Disable
HR_PARTIAL_DOWNTIME	YES	250	30000	48	NO	Alarms	Event Disable
HR_TOTAL_DOWNTIME	YES	250	30000	48	NO	Alarms	Event Disable

The configuration parameters of the equipment are available as read-only. Setpoint parameters can be edited.

1. The ALARMRST_alarm_X present values are the « JBus » alarm code of the equipment (see also IOM documentation).
2. The equipment STATUS and ALM parameter are ASCII coded. In order to get them from the BACnet, the « GENUNIT_STATUS » and « GENUNIT_ALM » present value are filled with a BACnet code (see below).

Equipment status (STATUS):

BACnet code	Text
0	Off
1	Running
2	Stopping
3	Delay
4	Tripout
5	Ready
6	Override
7	Defrost
8	Run Test

9	Test
10	Local
11	Network
12	Remote
13	Auto
14	Setp 1
15	Setp 2
16	4-20 mA
17	Setp Sw
18	Ice_sp

19	Heat
20	Cool
21	Standby
22	Both
23	L-off
24	L-on
25	L-sched
26	Network
27	Remote
28	Master

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Alarm state (ALM):

Code BACnet	Code CCN
0	Normal
1	Partial
2	Shutdown



IMPORTANT

Trend log object name with "Trend Log XX" syntax means that Log_DeviceObjectProperty Bacnet property does not refer to specific BACnet object in the whole list and in addition to this the Log_Enable property is FALSE and Events notifications are disabled.

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4.8 BBMD configuration

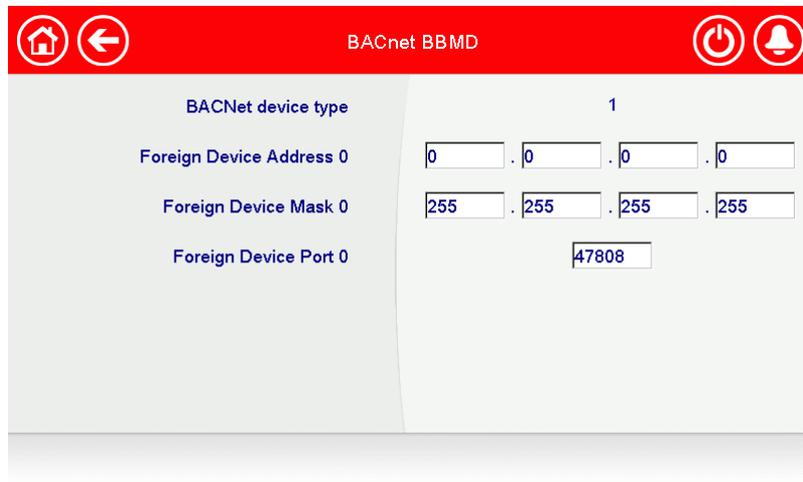
The BACnet BBMD screens allow the user to configure the BACnet BBMD function. BACnet BBMD gives the user the possibility of choosing BACnet device type.

BACnet BBMD device types are as follows:

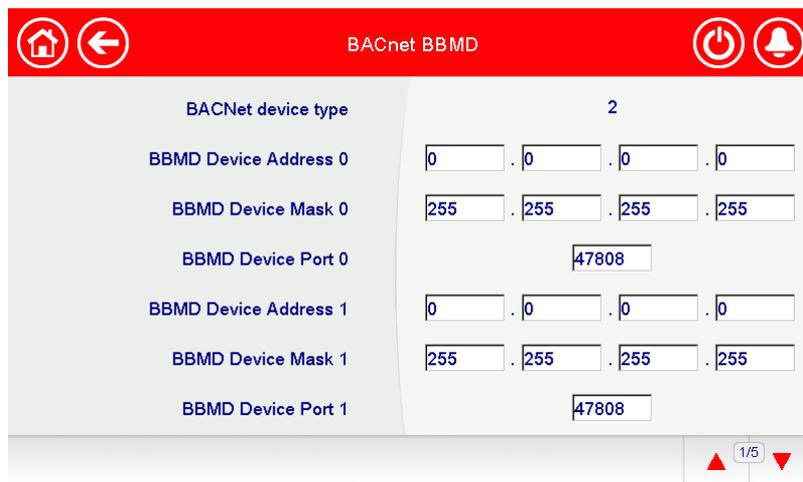
- **Single device:** No particular BACnet BBMD configuration.
- **Foreign device:** BACnet device that is alone on a network (Foreign device) and that is linked to a BACnet BBMD device located on another network.
- **BBMD device:** BACnet device on a network (containing many other BACnet devices) and that is configured as BBMD device. It is linked to another BACnet BMD device located on another network.

After choosing the correct BACnet BBMD device type, the user can configure this device via BBMD configuration screens:

- Single device: No IP address/mask/port configuration.
- Foreign device: IP address/mask/port of the BACnet BBMD device linked to the current foreign device.



- BBMD device: 10 IP address/mask/port configurations corresponding to 10 possible BBMD devices



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5 BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS)

Date:	12.04.2016
Vendor Name:	CIAT (Vendor ID = 16)
Product Names:	BACnet for Web panels CIAT Chiller
Product Model Number:	LXLW
Applications Software Version:	ECG-SR-20M47050
Firmware Revision:	3.4
BACnet Protocol Revision:	1.4 (BACnet ANSI/ASHRAE 135-2010)

5.1 Product Description:

This control system is intended for all types of water to water cooled chillers using screw compressors (06T) with variable speed. It shall operate as either a stand-alone control system or as a part of the Network (CCN or BACnet/IP).

IMPORTANT: The BACnet stack is not yet certified by BTL.

5.2 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)
- BACnet Gateway (B-GW)

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5.3 BACnet Interoperability Building Blocks Supported (Annex K):

5.3.1 Data Sharing BIBBs

Data Sharing Read-Property-A	DS-RP-A
Data Sharing Read-Property-B	DS-RP-B
Data Sharing Read-Property-Multiple-A	DS-RPM-A
Data Sharing Read-Property-Multiple-B	DS-RPM-B
Data Sharing Write-Property-A	DS-WP-A
Data Sharing Write-Property-B	DS-WP-B
Data Sharing Write-Property-Multiple-B	DS-WPM-B
Data Sharing COV-A	DS-COV-A
Data Sharing COV-B	DS-COV-B
Data Sharing COV-Unsolicited-A	DS-COVU-A
Data Sharing COV-Unsolicited-B	DS-COVU-B
Data Sharing COV-Property-B	DS-COVP-B

5.3.2 Alarm / Event BIBBs

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

5.3.3 Scheduling BIBBs

Scheduling-Internal-B	SCHED-I-B
Scheduling-External-B	SCHED-E-B
Scheduling-Read Only-B	SCHED-R-B

5.3.4 Trending BIBBs

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-B	T-ATR-B

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5.3.5 Device Management BIBBs

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-B	DM-DCC-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-B	DM-RD-B
Device Management-Backup and Restore-B	DM-BR-B
Device Management-Restart-B	DM-R-B
Device Management-List Manipulation-B	DM-LM-B
Device Management-Object Creation and Deletion-B	DM-OCD-B

5.3.6 Network Management BIBBs

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

5.4 Segmentation Capability:

- Segmented requests supported Window Size 16
- Segmented responses supported Window Size 16

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5.5 Standard Object Types Supported:

5.5.1 Standard Object Types Supported: Accumulator-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device Type Reliability Prescale Value_Change_Time Value_Before_Change Value_Set Pulse_Rate High_Limit Low_Limit Limit_Monitoring_Interval Notification_Class Time_Delay Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Description Device Type Prescale Value_Set Pulse_Rate High_Limit Low_Limit Limit_Monitoring_Interval Time_Delay Limit_Enable Event_Enable	-

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5.5.2 **Standard Object Types Supported: Analog-Input-Object**

Dynamically Creatable	Dynamically Deleteable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device Type Reliability Update_Interval Min_Pres_Value Max_Pres_Value Resolution COV_Increment Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value COV_Increment Time_Delay High_Limit Low_Limit Deadband Limit_Enable Event_Enable	-

5.5.3 **Standard Object Types Supported: Analog-Output-Object**

Dynamically Creatable	Dynamically Deleteable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device Type Reliability Min_Pres_Value Max_Pres_Value Resolution COV_Increment Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value COV_Increment Time_Delay High_Limit Low_Limit Deadband Limit_Enable Event_Enable	-

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5.5.4 Standard Object Types Supported: Analog-Value-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description Reliability Priority_Array Relinquish_Default COV_Increment Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value COV_Increment Time_Delay High_Limit Low_Limit Deadband Limit_Enable Event_Enable	-

5.5.5 Standard Object Types Supported: Averaging Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Minimum_Value_Timestamp Variance_Value Maximum_Value_Timestamp Description	Attempted_Samples Window_Interval Window_Samples	-

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5.5.6 **Standard Object Types Supported: Binary-Input-Object**

Dynamically Creatable	Dynamically Deleteable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device_Type Reliability Inactive_Text Active_Text Change_Of_State_Time Change_Of_State_Count Time_Of_State_Count_Res et Elapsed_Active_Time Time_Of_Active_Time_Res et Time_Delay Notification_Class Alarm_Value Event_Enable Acked_Transitions Notify_Type	Present_Value Time_Delay Event_Enable	-

5.5.7 **Standard Object Types Supported: Binary-Output-Object**

Dynamically Creatable	Dynamically Deleteable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device_Type Reliability Inactive_Text Active_Text Change_Of_State_Time Change_Of_State_Count Time_Of_State_Count_Res et Elapsed_Active_Time Time_Of_Active_Time_Res et Minimum_Off_Time Minimum_On_Time Time_Delay Notification_Class Feedback_Value Event_Enable Acked_Transitions Notify_Type	Present_Value Time_Delay Event_Enable	-

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5.5.8 Standard Object Types Supported: Binary-Value-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description Reliability Inactive_Text Active_Text Change_Of_State_Time Change_Of_State_Count Time_Of_State_Count_Reset Elapsed_Active_Time Time_Of_Active_Time_Reset Minimum_Off_Time Minimum_On_Time Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Value Event_Enable Acked_Transitions Notify_Type	Present_Value Time_Delay Event_Enable	-

5.5.9 Standard Object Types Supported: Calendar-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description	Date_List	-

5.5.10 Standard Object Types Supported: Command

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Action_Text	Present_Value Action Action_Text	-

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5.5.11 Standard Object Types Supported: Device-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
N/A	N/A	Location Description Max_Segments_Accepted Local_Time Local_Date UTC_Offset Daylight_Savings_Status APDU_Segment_Timeout Time_Synchronization_Recipients Configuration_Files Last_Restore_Time Backup_Failure_Timeout Active_COV_Subscriptions		-

5.5.12 Standard Object Types Supported: Event Enrollment Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description		-

5.5.13 Standard Object Types Supported: File

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description	File_Size Archive	-

5.5.14 Standard Object Types Supported: Group

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description		-

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5.5.15 **Standard Object Types Supported: Loop**

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability Update_Interval Proportional_Constant Proportional_Constant_Units Integral_Constant Integral_Constant_Units Derivative_Constant Derivative_Constant_Units Bias Maximum_Output Minimum_Output COV_Increment Time_Delay Notification_Class Error_Limit Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Proportional_Constant Integral_Constant Derivative_Constant Bias Maximum_Output Minimum_Output	-

5.5.16 **Standard Object Types Supported: Multistate-Input-Object**

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device_Type Reliability State_Text Time_Delay Notification_Class Alarm_Values Fault_Values Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value Time_Delay Alarm_Values Fault_Values Event_Enable	-

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5.5.17 Standard Object Types Supported: Multistate-Output-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Device_Type Reliability State_Text Time_Delay Notification_Class Feedback_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value Time_Delay Event_Enable	-

5.5.18 Standard Object Types Supported: Multistate-Value-Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description Reliability State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Values Fault_Values Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value Time_Delay Alarm_Values Fault_Values Event_Enable	-

5.5.19 Standard Object Types Supported: Notification Class Object

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description		-

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5.5.20 **Standard Object Types Supported: Program**

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Reason_For_Halt Description_Of_Halt Program_Location Description Instance_Of Reliability	Program_Change	-

5.5.21 **Standard Object Types Supported: Pulse Converter**

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input type="checkbox"/>	<input type="checkbox"/>	Description Input_Reference Reliability COV_Increment COV_Period Notification_Class Time_Delay High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	Present_Value Adjust_Value Count_Before_Change	-

5.5.22 **Standard Object Types Supported: Schedule Object**

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description Weekly_Schedule Exception_Schedule	Weekly_Schedule Exception_Schedule	-

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5.5.23 Standard Object Types Supported: Trendlog Object

Dynamically Creatable	Dynamically Deleteable	Optional Properties Supported	Writable Properties	Proprietary Properties
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description Start_Time Stop_Time Log_DeviceObjectProperty Log_Interval COV_Resubscription_Interval Client_COV_Increment Notification_Threshold Records_Since_Notification Last_Notify_Record Notification_Class Event_Enable Acked_Transitions Notify_Type Event Time Stamps	Enable Start_Time Stop_Time Log_Interval Record_Count	-

5.6 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

5.7 Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ASTM 878.1, 2.5 Mb. ARCNET (Clause 8)
- ASTM 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): max. EIA 232
- Point-To-Point, modem, (Clause 10), baud rate(s): 115200 baud / max. modem
- LonTalk, (Clause 11), medium: _____
- Other: _____

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5.8 Networking Options:

- Router, Clause 6 - BACnet/IP-PTP.
- Annex H, BACnet Tunneling Router over IP
- BACnet Broadcast Management Device (BBMD)

Does the BBMD support registrations by Foreign Devices? Yes No

5.9 Character Sets Supported:

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

- ANSI X3.4 / UTF8
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (ICS-4)
- JIS C 6226

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6 IP ADDRESS SETTINGS

6.1 Setup settings on Connect Touch user interface

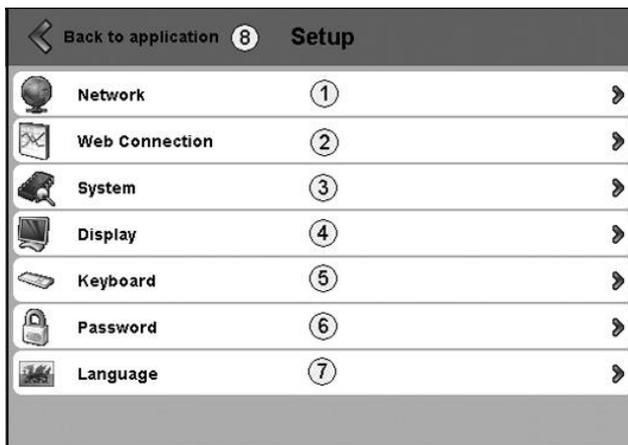
The Connect Touch user interface allows the user to customise the touch screen to meet specific user needs. At the same time, it is used for unit configuration. The Setup menu allows users to modify settings such as network, web connection, display, etc.

By default, the Setup menu is not password-protected.

The main configuration screen provides access to the following unit parameters:

- Network
- Web connection

To access the Setup menu, press anywhere on the screen (excluding buttons or text fields) and hold for about 4 seconds.



1. Network properties
2. Start-up connection settings
3. System settings: Software version, buzzer
4. Display: Contrast, backlight timeout, rotation
5. Keyboard: Not applicable
6. Password for the Setup menu access
7. Languages: Setup menu only
8. Back to application



ADVICE

For more information about touch screen settings, please refer to the 30XAV Control Service Guide.

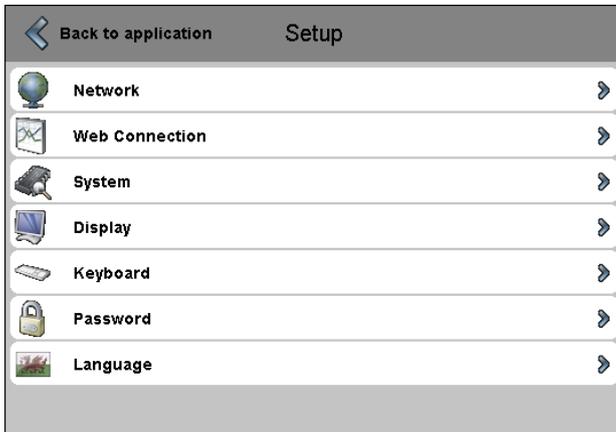
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6.2 How to modify the unit IP address

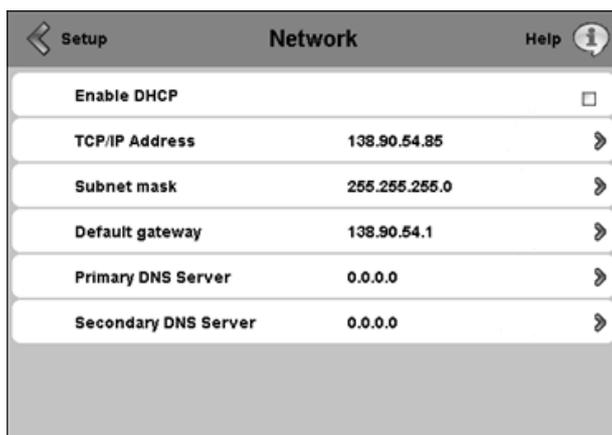
In order to modify the unit IP address, please perform the following steps:

Step Action

1. Press on the screen and hold for about 4 seconds to access the **Setup** menu.



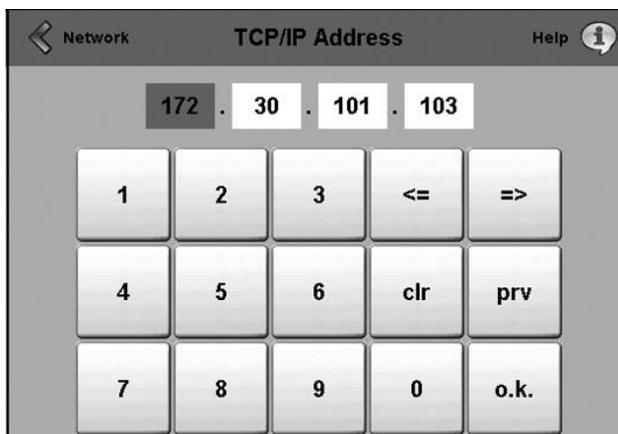
2. Press the **Network** field to display the menu presented below.



IMPORTANT:

You must request an IP address, subnet mask and default gateway from the system administrator before connecting the unit to the local Ethernet network.

3. Press the **TCP/IP Address** field. Enter the new IP address.

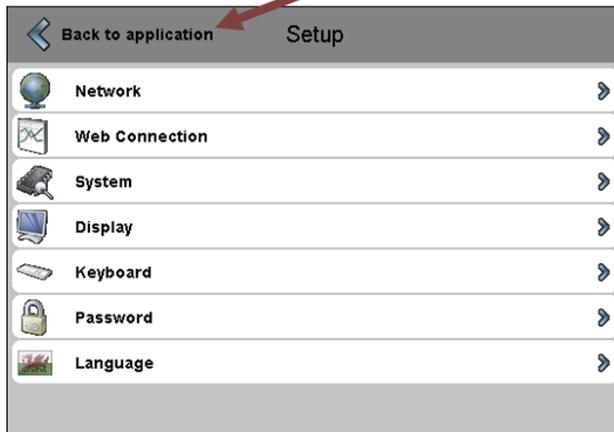


4. Press the **OK** button to confirm the new IP address.

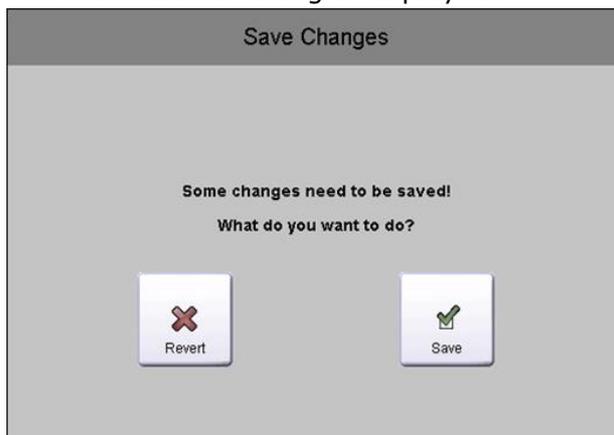
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5. Proceed in the same way with other network parameters.
5. To go back to the **Setup** menu, press the **Setup** field in the upper-left corner of the menu.
6. Return to the application by pressing the Back to application field.



7. The confirmation dialog is displayed.



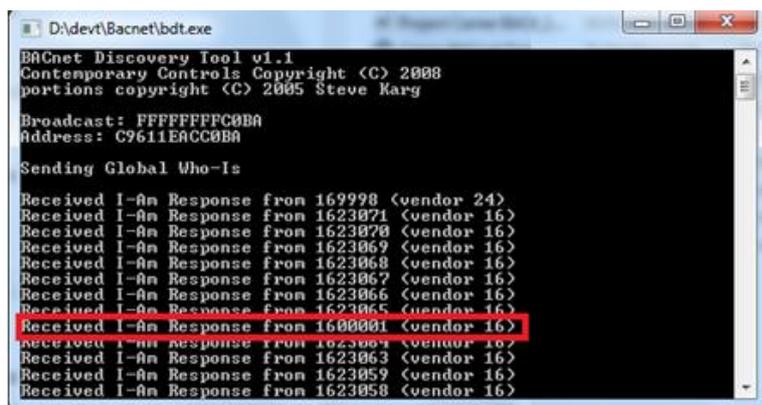
8. Press the **Save** button to confirm or the **Revert** button to cancel changes.

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7 BACNET IP COMMUNICATION TROUBLESHOOTING

In the case of BACnet IP communication problem, i.e. the unit is not responding to the *Building Manager System*, please read the following section to learn more about the possible causes.

Possible cause	Solution
1. The BACnet activation dongle is not detected by the chiller application	Open the metal casing of the Connect Touch controller and verify that the blue BACnet dongle is correctly connected (see also section 2).
2. The Ethernet cable is not correctly connected	On the Ethernet connector, verify that the green LED is ON and the orange LED is blinking (see also IOM Control).
3. Network parameters are invalid	<p>Open a command prompt under Windows (Start > Run > type "cmd" > OK).</p> <p>Type the command "ping" followed by the unit IP address, e.g. ping 169.254.0.10). The equipment must respond.</p> <p>Go to the Setup menu on the Connect Touch user interface and verify all network parameters (see also section 6).</p>
4. There is an IP router between the equipment and the BMS	<p>To verify the connection, you need to have any BDT software (BACnet Discovery Tool) installed. This software will allow you to display the list of devices connected to the BACnet network, including the physical names and instance numbers.</p> <p>To discover devices connected to the BACnet network:</p> <ol style="list-style-type: none"> 1. Run the BDT software and execute the "Who Is" command. 2. A list of devices connected to the BACnet network will be displayed. 3. Find the required device according to the BACnet device instance configured, i.e. 1600001.



```

D:\devt\Bacnet\bdt.exe
BACnet Discovery Tool v1.1
Contemporary Controls Copyright (C) 2008
portions copyright (C) 2005 Steve Kary

Broadcast: FFFFFFFC0BA
Address: C9611EACC0BA

Sending Global Who-Is

Received I-Am Response from 169998 (vendor 24)
Received I-Am Response from 1623071 (vendor 16)
Received I-Am Response from 1623070 (vendor 16)
Received I-Am Response from 1623069 (vendor 16)
Received I-Am Response from 1623068 (vendor 16)
Received I-Am Response from 1623067 (vendor 16)
Received I-Am Response from 1623066 (vendor 16)
Received I-Am Response from 1623065 (vendor 16)
Received I-Am Response from 1600001 (vendor 16)
Received I-Am Response from 1623064 (vendor 16)
Received I-Am Response from 1623063 (vendor 16)
Received I-Am Response from 1623059 (vendor 16)
Received I-Am Response from 1623058 (vendor 16)

```

Free download is available at:
www.ccontrols.com/sd/bdt.htm

5. BACnet Enable in the BACnet Parameters menu is set to NO.	Navigate to the Configuration menu and check BACnet parameters (see also section 3.2). <i>Note: Only CIAT service can access BACnet Parameters.</i>
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8 BACNET OPC-SERVER TROUBLESHOOTING

8.1 BACstac installation error

The following BACstac installation error may occur at BACstac installation and/or at BACnet OPC server start-up.



CAUSE: BACnet stac Router may be missing in the installation package.

SOLUTION: To fix the BACstac installation problem, check whether the BACstac Router is visible in the list of applications in Control Panel.

To verify whether the BACstac OPC-Server application is installed:

1. In Control Panel, click "Programs and Features".
2. The list of all programs installed on the computer is displayed.
3. Find "BACstac Router".
4. If the BACnet stac router is missing, (re)install BACnet OPC-Server application from MBS CD or use the 7.1.0.3 release version (16.4 MB).

	Adobe Shockwave Player 11.5	Adobe Systems, Inc	19/09/2012	30.0 Mo	11.5.10.620
	BACstac Router 6.2	Cimetrics Inc.	22/08/2013	436 Ko	6.2.0.0
	BCAC_Tuner.UTC	BMC Software	18/07/2013	159 Mo	8.2.02
	Beyond Compare Version 3.1.11	Scooter Software	18/03/2013		
	Calendar Printing Assistant for Microsoft Office O...	Microsoft Corporation	16/09/2011	65.4 Mo	12.0.6520.3001
	Carrier S-Service	Carrier	19/10/2012		2.2.0.1

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8.2 USB dongle not recognised

The following HW protection key error may be displayed when the USB dongle is not recognised.



CAUSE: USB dongle is not recognised.

SOLUTION: Install the latest version of SafeNet Inc.

Hardlock key drivers available at:

<http://www3.safenet-inc.com/support/hardlock/index.aspx>

8.3 Incompatibilities

Please bear in mind that BACnet OPC-Server and Wago Configurator tools should not be installed on the same PC at the same time!

8.4 BDT cannot see BACnet device

CAUSE: Incorrect parameters configuration.

SOLUTION: Make sure network prefix and subnet number parameters are the same between Connect Touch and PC.