

Design Envelope

Integrated Tower Controller

Data points

File No: 82.21

Date: JULY 17, 2018

Supersedes: NEW

Date: NEW

—

—

—

—

CONTENTS

BAS data points - Modbus RTU	4
BAS data points - BACnet	10

BUILDING AUTOMATION SYSTEM

DESIGN ENVELOPE ITC - MODBUS COMMUNICATION INTERFACE REV 17.111

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE	DATA TYPE
00001	W	Remote Start	Stop	Start	Toggle	Boolean
00002	W	Alarm Reset	N/A	Reset	Positive Edge	Boolean
01001	R/W	CT 1 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01002	R/W	CT 2 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01003	R/W	CT 3 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01004	R/W	CT 4 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01005	R/W	CT 5 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01006	R/W	CT 1 Inlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01007	R/W	CT 2 Inlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01008	R/W	CT 3 Inlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01009	R/W	CT 4 Inlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01010	R/W	CT 5 Inlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01011	R/W	CT 1 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01012	R/W	CT 2 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01013	R/W	CT 3 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01014	R/W	CT 4 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01015	R/W	CT 5 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01016	R/W	CT 1 Outlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01017	R/W	CT 2 Outlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01018	R/W	CT 3 Outlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01019	R/W	CT 4 Outlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01020	R/W	CT 5 Outlet Isol Valve Hand Command	Close	Open	Toggle	Boolean
01021	R/W	Tower Bypass Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
01022	R/W	Distribution Bypass Valve Hand/Auto Switch	Hand	Auto	Toggle	Boolean
10001	R	Plant Status	Off	On	Toggle	Boolean
10002	R	cw Pump 1 Run Feedback	Stopped	Running	Toggle	Boolean
10003	R	cw Pump 1 Alarm	Ok	Alarm	Toggle	Boolean
10004	R	cw Pump 2 Run Feedback	Stopped	Running	Toggle	Boolean
10005	R	cw Pump 2 Alarm	Ok	Alarm	Toggle	Boolean
10006	R	cw Pump 3 Run Feedback	Stopped	Running	Toggle	Boolean
10007	R	cw Pump 3 Alarm	Ok	Alarm	Toggle	Boolean
10008	R	cw Pump 4 Run Feedback	Stopped	Running	Toggle	Boolean
10009	R	cw Pump 4 Alarm	Ok	Alarm	Toggle	Boolean
10010	R	cw Pump 5 Run Feedback	Stopped	Running	Toggle	Boolean

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE	DATA TYPE
10011	R	cw Pump 5 Alarm	Ok	Alarm	Toggle	Boolean
10012	R	Cooling Tower 1 Fan Run Feedback	Stopped	Running	Toggle	Boolean
10013	R	Cooling Tower 1 Fan Alarm	Ok	Alarm	Toggle	Boolean
10014	R	Cooling Tower 2 Fan Run Feedback	Stopped	Running	Toggle	Boolean
10015	R	Cooling Tower 2 Fan Alarm	Ok	Alarm	Toggle	Boolean
10016	R	Cooling Tower 3 Fan Run Feedback	Stopped	Running	Toggle	Boolean
10017	R	Cooling Tower 3 Fan Alarm	Ok	Alarm	Toggle	Boolean
10018	R	Cooling Tower 4 Fan Run Feedback	Stopped	Running	Toggle	Boolean
10019	R	Cooling Tower 4 Fan Alarm	Ok	Alarm	Toggle	Boolean
10020	R	Cooling Tower 5 Fan Run Feedback	Stopped	Running	Toggle	Boolean
10021	R	Cooling Tower 5 Fan Alarm	Ok	Alarm	Toggle	Boolean
10022	R	Cooling Tower 1 Inlet Isol Valve State	Close	Open	Toggle	Boolean
10023	R	Cooling Tower 2 Inlet Isol Valve State	Close	Open	Toggle	Boolean
10024	R	Cooling Tower 3 Inlet Isol Valve State	Close	Open	Toggle	Boolean
10025	R	Cooling Tower 4 Inlet Isol Valve State	Close	Open	Toggle	Boolean
10026	R	Cooling Tower 5 Inlet Isol Valve State	Close	Open	Toggle	Boolean
10027	R	Cooling Tower 1 Outlet Isol Valve State	Close	Open	Toggle	Boolean
10028	R	Cooling Tower 2 Outlet Isol Valve State	Close	Open	Toggle	Boolean
10029	R	Cooling Tower 3 Outlet Isol Valve State	Close	Open	Toggle	Boolean
10030	R	Cooling Tower 4 Outlet Isol Valve State	Close	Open	Toggle	Boolean
10031	R	Cooling Tower 5 Outlet Isol Valve State	Close	Open	Toggle	Boolean
10101	R	Leaving Tower Temp Transmitter Failed	Ok	Alarm	Toggle	Boolean
10102	R	Entering Tower Temp Transmitter Failed	Ok	Alarm	Toggle	Boolean
10103	R	OAT Transmitter Failed	Ok	Alarm	Toggle	Boolean
10104	R	Relative Humidity Transmitter Failed	Ok	Alarm	Toggle	Boolean
10105	R	Tower Bypass Valve Transmitter Failed	Ok	Alarm	Toggle	Boolean
10106	R	Distribution Bypass Vlv Transmitter Failed	Ok	Alarm	Toggle	Boolean
10107	R	CT 1 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10108	R	CT 2 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10109	R	CT 3 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10110	R	CT 4 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10111	R	CT 5 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10112	R	CT 1 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10113	R	CT 2 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10114	R	CT 3 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10115	R	CT 4 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10116	R	CT 5 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10117	R	CT 1 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE	DATA TYPE
10118	R	CT 2 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10119	R	CT 3 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10120	R	CT 4 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10121	R	CT 5 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle	Boolean
10122	R	CT 1 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10123	R	CT 2 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10124	R	CT 3 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10125	R	CT 4 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10126	R	CT 5 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle	Boolean
10127	R	Cooling Tower Water High Level Alarm	Ok	Alarm	Toggle	Boolean
10128	R	Cooling Tower Water Low Level Alarm	Ok	Alarm	Toggle	Boolean
10129	R	Water Treatment Run Feedback Alarm	Ok	Alarm	Toggle	Boolean
10130	R	Freeze Protection Operation Fbk Alarm	Ok	Alarm	Toggle	Boolean
10131	R	Tower 1 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle	Boolean
10132	R	Tower 2 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle	Boolean
10133	R	Tower 3 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle	Boolean
10134	R	Tower 4 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle	Boolean
10135	R	Tower 5 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle	Boolean
10136	R	Tower Bypass Valve Position Alarm	Ok	Alarm	Toggle	Boolean
10137	R	Distribution Bypass Valve Position Alarm	Ok	Alarm	Toggle	Boolean

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS	DATA TYPE
30001	R	Leaving Tower Water Temp	-9999 to 9999	-999.9 to 999.9	°F, °C	Integer
30002	R	Entering Tower Water Temp	-9999 to 9999	-999.9 to 999.9	°F, °C	Integer
30003	R	Condenser Flow	±1000000000	1 decimal	usgpm, lps, m³hr	Long
30005	R	Outside Air Temp (Dry Bulb)	-9999 to 9999	-999.9 to 999.9	°F, °C	Signed Int
30006	R	Relative Humidity	0 to 1000	0.0 to 100.0	%	Integer
30007	R	Tower Bypass Valve Position	0 to 1000	0.0 to 100.0	%	Integer
30008	R	Distribution Bypass Valve Position	0 to 1000	0.0 to 100.0	%	Integer
30009	R	cw Pumps Head	0 to 65535	0 to 6553.5	Ft, kPa, psi, m, bar	Integer
30050	R	cw Pump 1 Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30051	R	cw Pump 1 Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30052	R	cw Pump 1 Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30053	R	cw Pump 1 Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30054	R	cw Pump 1 Drive Speed Feedback				
30055	R	cw Pump 1 Sensorless Head	0 to 65535	0 to 6553.5	kW	Integer
30056	R	cw Pump 1 Sensorless Flow	±1000000000	1 decimal	gpm, lps, m³hr	Long

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS	DATA TYPE
30058	R	cw Pump 2 Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30059	R	cw Pump 2 Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30060	R	cw Pump 2 Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30061	R	cw Pump 2 Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30062	R	cw Pump 2 Drive Speed Feedback				
30063	R	cw Pump 2 Sensorless Head	0 to 65535	0 to 6553.5	kW	Integer
30064	R	cw Pump 2 Sensorless Flow	±1000000000	1 decimal	gpm, lps, m³hr	Long
30066	R	cw Pump 3 Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30067	R	cw Pump 3 Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30068	R	cw Pump 3 Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30069	R	cw Pump 3 Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30070	R	cw Pump 3 Drive Speed Feedback				
30071	R	cw Pump 3 Sensorless Head	0 to 65535	0 to 6553.5	kW	Integer
30072	R	cw Pump 3 Sensorless Flow	±1000000000	1 decimal	gpm, lps, m³hr	Long
30074	R	cw Pump 4 Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30075	R	cw Pump 4 Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30076	R	cw Pump 4 Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30077	R	cw Pump 4 Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30078	R	cw Pump 4 Drive Speed Feedback				
30079	R	cw Pump 4 Sensorless Head	0 to 65535	0 to 6553.5	kW	Integer
30080	R	cw Pump 4 Sensorless Flow	±1000000000	1 decimal	gpm, lps, m³hr	Long
30082	R	cw Pump 5 Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30083	R	cw Pump 5 Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30084	R	cw Pump 5 Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30085	R	cw Pump 5 Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30086	R	cw Pump 5 Drive Speed Feedback				
30087	R	cw Pump 5 Sensorless Head	0 to 65535	0 to 6553.5	kW	Integer
30088	R	cw Pump 5 Sensorless Flow	±1000000000	1 decimal	gpm, lps, m³hr	Long
30090	R	CT 1 Fan Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30091	R	CT 1 Fan Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30092	R	CT 1 Fan Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30093	R	CT 1 Fan Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30094	R	CT 1 Fan Drive Speed Feedback				Integer
30095	R	CT 2 Fan Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30096	R	CT 2 Fan Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30097	R	CT 2 Fan Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30098	R	CT 2 Fan Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30099	R	CT 2 Fan Drive Speed Feedback				Integer
30100	R	CT 3 Fan Drive Power	0 to 65535	0 to 6553.5	kW	Integer

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS	DATA TYPE
30101	R	CT 3 Fan Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30102	R	CT 3 Fan Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30103	R	CT 3 Fan Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30104	R	CT 3 Fan Drive Speed Feedback				Integer
30105	R	CT 4 Fan Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30106	R	CT 4 Fan Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30107	R	CT 4 Fan Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30108	R	CT 4 Fan Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30109	R	CT 4 Fan Drive Speed Feedback				Integer
30110	R	CT 5 Fan Drive Power	0 to 65535	0 to 6553.5	kW	Integer
30111	R	CT 5 Fan Drive Volt AC	0 to 65535	0 to 6553.5	VAC	Integer
30112	R	CT 5 Fan Drive Amp	0 to 65535	0 to 6553.5	Amp	Integer
30113	R	CT 5 Fan Drive Speed Reference	0 to 1000	0.0 to 100.0	%	Integer
30114	R	CT 5 Fan Drive Speed Feedback				Integer
30115	R	cw Pump 1 Run Hours	±1000000000	1 decimal	hours	Long
30117	R	cw Pump 2 Run Hours	±1000000000	1 decimal	hours	Long
30119	R	cw Pump 3 Run Hours	±1000000000	1 decimal	hours	Long
30121	R	cw Pump 4 Run Hours	±1000000000	1 decimal	hours	Long
30123	R	cw Pump 5 Run Hours	±1000000000	1 decimal	hours	Long
30125	R	Cooling Tower 1 Fan Run Hours	±1000000000	1 decimal	hours	Long
30127	R	Cooling Tower 2 Fan Run Hours	±1000000000	1 decimal	hours	Long
30129	R	Cooling Tower 3 Fan Run Hours	±1000000000	1 decimal	hours	Long
30131	R	Cooling Tower 4 Fan Run Hours	±1000000000	1 decimal	hours	Long
30133	R	Cooling Tower 5 Fan Run Hours	±1000000000	1 decimal	hours	Long
30201	R	cw Pump 1 Duty/Standby Status		0 to 5 (Note 2)		Integer
30202	R	cw Pump 2 Duty/Standby Status		0 to 5 (Note 2)		Integer
30203	R	cw Pump 3 Duty/Standby Status		0 to 5 (Note 2)		Integer
30204	R	cw Pump 4 Duty/Standby Status		0 to 5 (Note 2)		Integer
30205	R	cw Pump 5 Duty/Standby Status		0 to 5 (Note 2)		Integer
30206	R	Cooling Tower 1 Duty Status		0 to 5 (Note 2)		Integer
30207	R	Cooling Tower 2 Duty Status		0 to 5 (Note 2)		Integer
30208	R	Cooling Tower 3 Duty Status		0 to 5 (Note 2)		Integer
30209	R	Cooling Tower 4 Duty Status		0 to 5 (Note 2)		Integer
30210	R	Cooling Tower 5 Duty Status		0 to 5 (Note 2)		Integer
30211	R	cw Pump 1 Running Status		0 to 2 (Note 3)		Integer
30212	R	cw Pump 2 Running Status		0 to 2 (Note 3)		Integer
30213	R	cw Pump 3 Running Status		0 to 2 (Note 3)		Integer
30214	R	cw Pump 4 Running Status		0 to 2 (Note 3)		Integer
30215	R	cw Pump 5 Running Status		0 to 2 (Note 3)		Integer

MODBUS ADDRESS	READ/ WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS	DATA TYPE
30216	R	Cooling Tower 1 Fan Running Status		0 to 2 (Note 3)		Integer
30217	R	Cooling Tower 2 Fan Running Status		0 to 2 (Note 3)		Integer
30218	R	Cooling Tower 3 Fan Running Status		0 to 2 (Note 3)		Integer
30219	R	Cooling Tower 4 Fan Running Status		0 to 2 (Note 3)		Integer
30220	R	Cooling Tower 5 Fan Running Status		0 to 2 (Note 3)		Integer
40001	R/W	cw Pump 1 Mode/Selector		0 to 3 (Note 1)		Integer
40002	R/W	cw Pump 2 Mode/Selector		0 to 3 (Note 1)		Integer
40003	R/W	cw Pump 3 Mode/Selector		0 to 3 (Note 1)		Integer
40004	R/W	cw Pump 4 Mode/Selector		0 to 3 (Note 1)		Integer
40005	R/W	cw Pump 5 Mode/Selector		0 to 3 (Note 1)		Integer
40006	R/W	Cooling Tower 1 Fan Mode/Selector		0 to 3 (Note 1)		Integer
40007	R/W	Cooling Tower 2 Fan Mode/Selector		0 to 3 (Note 1)		Integer
40008	R/W	Cooling Tower 3 Fan Mode/Selector		0 to 3 (Note 1)		Integer
40009	R/W	Cooling Tower 4 Fan Mode/Selector		0 to 3 (Note 1)		Integer
40010	R/W	Cooling Tower 5 Fan Mode/Selector		0 to 3 (Note 1)		Integer
40011	W	cw Pump 1 Hand Speed	0 to 1000	0.0 to 100.0	%	Integer
40012	W	cw Pump 2 Hand Speed				Integer
40013	W	cw Pump 3 Hand Speed				Integer
40014	W	cw Pump 4 Hand Speed				Integer
40015	W	cw Pump 5 Hand Speed				Integer
40016	W	Cooling Tower 1 Fan Hand Speed				Integer
40017	W	Cooling Tower 2 Fan Hand Speed				Integer
40018	W	Cooling Tower 3 Fan Hand Speed				Integer
40019	W	Cooling Tower 4 Fan Hand Speed				Integer
40020	W	Cooling Tower 5 Fan Hand Speed				Integer

NOTE : Multistate Data Explanation

1 cw Pump/CT Fan Mode

(Writing is limited to range 1 to 3)

- 0 = Not Used
- 1 = Hand
- 2 = Off
- 3 = Auto

2 cw Pump/Cooling Tower Duty Standby

- 0 = Not Used
- 1 = Duty 1
- 2 = Duty 2
- 3 = Duty 3
- 4 = Duty 4
- 5 = Duty 5
- 6 = Standby

3 cw Pump/CT Fan Run Status

- 0 = Stopped
- 1 = Running
- 2 = Alarm

4 CT Isolation Valve Position Status

- 0 = Closed
- 1 = Opened
- 2 = Alarm

BUILDING AUTOMATION SYSTEM

DESIGN ENVELOPE ITC - BACNET COMMUNICATION INTERFACE REV 17.111

BACNET ADDRESS	READ/ WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
BO 0001	W	Remote Start	Stop	Start	Toggle
BO 0002	W	Alarm Reset	N/A	Reset	Positive Edge
BV 1001	R/W	CT 1 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1002	R/W	CT 2 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1003	R/W	CT 3 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1004	R/W	CT 4 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1005	R/W	CT 5 Inlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1006	R/W	CT 1 Inlet Isol Valve Hand Command	Close	Open	Toggle
BV 1007	R/W	CT 2 Inlet Isol Valve Hand Command	Close	Open	Toggle
BV 1008	R/W	CT 3 Inlet Isol Valve Hand Command	Close	Open	Toggle
BV 1009	R/W	CT 4 Inlet Isol Valve Hand Command	Close	Open	Toggle
BV 1010	R/W	CT 5 Inlet Isol Valve Hand Command	Close	Open	Toggle
BV 1011	R/W	CT 1 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1012	R/W	CT 2 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1013	R/W	CT 3 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1014	R/W	CT 4 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1015	R/W	CT 5 Outlet Isol Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1016	R/W	CT 1 Outlet Isol Valve Hand Command	Close	Open	Toggle
BV 1017	R/W	CT 2 Outlet Isol Valve Hand Command	Close	Open	Toggle
BV 1018	R/W	CT 3 Outlet Isol Valve Hand Command	Close	Open	Toggle
BV 1019	R/W	CT 4 Outlet Isol Valve Hand Command	Close	Open	Toggle
BV 1020	R/W	CT 5 Outlet Isol Valve Hand Command	Close	Open	Toggle
BV 1021	R/W	Tower Bypass Valve Hand/Auto Switch	Hand	Auto	Toggle
BV 1022	R/W	Distribution Bypass Valve Hand/Auto Switch	Hand	Auto	Toggle
BI 0001	R	Plant Status	Off	On	Toggle
BI 0002	R	cw Pump 1 Run Feedback	Stopped	Running	Toggle
BI 0003	R	cw Pump 1 Alarm	Ok	Alarm	Toggle
BI 0004	R	cw Pump 2 Run Feedback	Stopped	Running	Toggle
BI 0005	R	cw Pump 2 Alarm	Ok	Alarm	Toggle
BI 0006	R	cw Pump 3 Run Feedback	Stopped	Running	Toggle
BI 0007	R	cw Pump 3 Alarm	Ok	Alarm	Toggle
BI 0008	R	cw Pump 4 Run Feedback	Stopped	Running	Toggle
BI 0009	R	cw Pump 4 Alarm	Ok	Alarm	Toggle
BI 0010	R	cw Pump 5 Run Feedback	Stopped	Running	Toggle
BI 0011	R	cw Pump 5 Alarm	Ok	Alarm	Toggle
BI 0012	R	Cooling Tower 1 Fan Run Feedback	Stopped	Running	Toggle

BACNET ADDRESS	READ/ WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
BI 0013	R	Cooling Tower 1 Fan Alarm	Ok	Alarm	Toggle
BI 0014	R	Cooling Tower 2 Fan Run Feedback	Stopped	Running	Toggle
BI 0015	R	Cooling Tower 2 Fan Alarm	Ok	Alarm	Toggle
BI 0016	R	Cooling Tower 3 Fan Run Feedback	Stopped	Running	Toggle
BI 0017	R	Cooling Tower 3 Fan Alarm	Ok	Alarm	Toggle
BI 0018	R	Cooling Tower 4 Fan Run Feedback	Stopped	Running	Toggle
BI 0019	R	Cooling Tower 4 Fan Alarm	Ok	Alarm	Toggle
BI 0020	R	Cooling Tower 5 Fan Run Feedback	Stopped	Running	Toggle
BI 0021	R	Cooling Tower 5 Fan Alarm	Ok	Alarm	Toggle
BI 0022	R	Cooling Tower 1 Inlet Isol Valve State	Close	Open	Toggle
BI 0023	R	Cooling Tower 2 Inlet Isol Valve State	Close	Open	Toggle
BI 0024	R	Cooling Tower 3 Inlet Isol Valve State	Close	Open	Toggle
BI 0025	R	Cooling Tower 4 Inlet Isol Valve State	Close	Open	Toggle
BI 0026	R	Cooling Tower 5 Inlet Isol Valve State	Close	Open	Toggle
BI 0027	R	Cooling Tower 1 Outlet Isol Valve State	Close	Open	Toggle
BI 0028	R	Cooling Tower 2 Outlet Isol Valve State	Close	Open	Toggle
BI 0029	R	Cooling Tower 3 Outlet Isol Valve State	Close	Open	Toggle
BI 0030	R	Cooling Tower 4 Outlet Isol Valve State	Close	Open	Toggle
BI 0031	R	Cooling Tower 5 Outlet Isol Valve State	Close	Open	Toggle
BI 0101	R	Leaving Tower Temp Transmitter Failed	Ok	Alarm	Toggle
BI 0102	R	Entering Tower Temp Transmitter Failed	Ok	Alarm	Toggle
BI 0103	R	OAT Transmitter Failed	Ok	Alarm	Toggle
BI 0104	R	Relative Humidity Transmitter Failed	Ok	Alarm	Toggle
BI 0105	R	Tower Bypass Valve Transmitter Failed	Ok	Alarm	Toggle
BI 0106	R	Distribution Bypass Vlv Transmitter Failed	Ok	Alarm	Toggle
BI 0107	R	CT 1 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0108	R	CT 2 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0109	R	CT 3 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0110	R	CT 4 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0111	R	CT 5 Inlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0112	R	CT 1 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0113	R	CT 2 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0114	R	CT 3 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0115	R	CT 4 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0116	R	CT 5 Inlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0117	R	CT 1 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0118	R	CT 2 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0119	R	CT 3 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0120	R	CT 4 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle

BACNET ADDRESS	READ/ WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
BI 0121	R	CT 5 Outlet Isol Vlv Open Fbk Alarm	Ok	Alarm	Toggle
BI 0122	R	CT 1 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0123	R	CT 2 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0124	R	CT 3 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0125	R	CT 4 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0126	R	CT 5 Outlet Isol Vlv Close Fbk Alarm	Ok	Alarm	Toggle
BI 0127	R	Cooling Tower Water High Level Alarm	Ok	Alarm	Toggle
BI 0128	R	Cooling Tower Water Low Level Alarm	Ok	Alarm	Toggle
BI 0129	R	Water Treatment Run Feedback Alarm	Ok	Alarm	Toggle
BI 0130	R	Freeze Protection Operation Fbk Alarm	Ok	Alarm	Toggle
BI 0131	R	Tower 1 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle
BI 0132	R	Tower 2 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle
BI 0133	R	Tower 3 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle
BI 0134	R	Tower 4 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle
BI 0135	R	Tower 5 Circulator Pump Run Fbk Alarm	Ok	Alarm	Toggle
BI 0136	R	Tower Bypass Valve Position Alarm	Ok	Alarm	Toggle
BI 0137	R	Distribution Bypass Valve Position Alarm	Ok	Alarm	Toggle

BACNET ADDRESS	READ/WRITE	DESCRIPTION	RANGE	UNITS
AI 0001	R	Leaving Tower Water Temp		°F, °C
AI 0002	R	Entering Tower Water Temp		°F, °C
AI 0003	R	Condenser Flow		usgpm, lps, m ³ hr
AI 0004	R	Outside Air Temp (Dry Bulb)		°F, °C
AI 0005	R	Relative Humidity		%
AI 0006	R	Tower Bypass Valve Position		%
AI 0007	R	Distribution Bypass Valve Position		%
AI 0008	R	cw Pumps Head		Ft, kPa, psi, m, bar
AI 0050	R	cw Pump 1 Drive Power		kW
AI 0051	R	cw Pump 1 Drive Volt AC		VAC
AI 0052	R	cw Pump 1 Drive Amp		Amp
AI 0053	R	cw Pump 1 Drive Speed Reference	0 to 100.0	%
AI 0054	R	cw Pump 1 Drive Speed Feedback		
AI 0055	R	cw Pump 1 Sensorless Head		kW
AI 0056	R	cw Pump 1 Sensorless Flow		gpm, lps, m ³ hr
AI 0057	R	cw Pump 2 Drive Power		kW
AI 0058	R	cw Pump 2 Drive Volt AC		VAC
AI 0059	R	cw Pump 2 Drive Amp		Amp

BACNET ADDRESS	READ/WRITE	DESCRIPTION	RANGE	UNITS
AI 0060	R	cw Pump 2 Drive Speed Reference	0 to 100.0	%
AI 0061	R	cw Pump 2 Drive Speed Feedback		
AI 0062	R	cw Pump 2 Sensorless Head		kW
AI 0063	R	cw Pump 2 Sensorless Flow		gpm, lps, m ³ hr
AI 0064	R	cw Pump 3 Drive Power		kW
AI 0065	R	cw Pump 3 Drive Volt AC		VAC
AI 0066	R	cw Pump 3 Drive Amp		Amp
AI 0067	R	cw Pump 3 Drive Speed Reference	0 to 100.0	%
AI 0068	R	cw Pump 3 Drive Speed Feedback		
AI 0069	R	cw Pump 3 Sensorless Head		kW
AI 0070	R	cw Pump 3 Sensorless Flow		gpm, lps, m ³ hr
AI 0071	R	cw Pump 4 Drive Power		kW
AI 0072	R	cw Pump 4 Drive Volt AC		VAC
AI 0073	R	cw Pump 4 Drive Amp		Amp
AI 0074	R	cw Pump 4 Drive Speed Reference	0 to 100.0	%
AI 0075	R	cw Pump 4 Drive Speed Feedback		
AI 0076	R	cw Pump 4 Sensorless Head		kW
AI 0077	R	cw Pump 4 Sensorless Flow		gpm, lps, m ³ hr
AI 0078	R	cw Pump 5 Drive Power		kW
AI 0079	R	cw Pump 5 Drive Volt AC		VAC
AI 0080	R	cw Pump 5 Drive Amp		Amp
AI 0081	R	cw Pump 5 Drive Speed Reference	0 to 100.0	%
AI 0082	R	cw Pump 5 Drive Speed Feedback		
AI 0083	R	cw Pump 5 Sensorless Head		kW
AI 0084	R	cw Pump 5 Sensorless Flow		gpm, lps, m ³ hr
AI 0085	R	CT 1 Fan Drive Power		kW
AI 0086	R	CT 1 Fan Drive Volt AC		VAC
AI 0087	R	CT 1 Fan Drive Amp		Amp
AI 0088	R	CT 1 Fan Drive Speed Reference	0 to 100.0	%
AI 0089	R	CT 1 Fan Drive Speed Feedback		
AI 0090	R	CT 2 Fan Drive Power		kW
AI 0091	R	CT 2 Fan Drive Volt AC		VAC
AI 0092	R	CT 2 Fan Drive Amp		Amp
AI 0093	R	CT 2 Fan Drive Speed Reference	0 to 100.0	%
AI 0094	R	CT 2 Fan Drive Speed Feedback		
AI 0095	R	CT 3 Fan Drive Power		kW
AI 0096	R	CT 3 Fan Drive Volt AC		VAC
AI 0097	R	CT 3 Fan Drive Amp		Amp

BACNET ADDRESS	READ/WRITE	DESCRIPTION	RANGE	UNITS
AI 0098	R	CT 3 Fan Drive Speed Reference	0 to 100.0	%
AI 0099	R	CT 3 Fan Drive Speed Feedback		
AI 0100	R	CT 4 Fan Drive Power		kW
AI 0101	R	CT 4 Fan Drive Volt AC		VAC
AI 0102	R	CT 4 Fan Drive Amp		Amp
AI 0103	R	CT 4 Fan Drive Speed Reference	0 to 100.0	%
AI 0104	R	CT 4 Fan Drive Speed Feedback		
AI 0105	R	CT 5 Fan Drive Power		kW
AI 0106	R	CT 5 Fan Drive Volt AC		VAC
AI 0107	R	CT 5 Fan Drive Amp		Amp
AI 0108	R	CT 5 Fan Drive Speed Reference	0 to 100.0	%
AI 0109	R	CT 5 Fan Drive Speed Feedback		
AI 0110	R	cw Pump 1 Run Hours		hours
AI 0111	R	cw Pump 2 Run Hours		hours
AI 0112	R	cw Pump 3 Run Hours		hours
AI 0113	R	cw Pump 4 Run Hours		hours
AI 0114	R	cw Pump 5 Run Hours		hours
AI 0115	R	Cooling Tower 1 Fan Run Hours		hours
AI 0116	R	Cooling Tower 2 Fan Run Hours		hours
AI 0117	R	Cooling Tower 3 Fan Run Hours		hours
AI 0118	R	Cooling Tower 4 Fan Run Hours		hours
AI 0119	R	Cooling Tower 5 Fan Run Hours		hours
AI 0201	R	cw Pump 1 Duty/Standby Status	0 to 5 (Note 2)	
AI 0202	R	cw Pump 2 Duty/Standby Status	0 to 5 (Note 2)	
AI 0203	R	cw Pump 3 Duty/Standby Status	0 to 5 (Note 2)	
AI 0204	R	cw Pump 4 Duty/Standby Status	0 to 5 (Note 2)	
AI 0205	R	cw Pump 5 Duty/Standby Status	0 to 5 (Note 2)	
AI 0206	R	Cooling Tower 1 Duty Status	0 to 5 (Note 2)	
AI 0207	R	Cooling Tower 2 Duty Status	0 to 5 (Note 2)	
AI 0208	R	Cooling Tower 3 Duty Status	0 to 5 (Note 2)	
AI 0209	R	Cooling Tower 4 Duty Status	0 to 5 (Note 2)	
AI 0210	R	Cooling Tower 5 Duty Status	0 to 5 (Note 2)	
AI 0211	R	cw Pump 1 Running Status	0 to 2 (Note 3)	
AI 0212	R	cw Pump 2 Running Status	0 to 2 (Note 3)	
AI 0213	R	cw Pump 3 Running Status	0 to 2 (Note 3)	
AI 0214	R	cw Pump 4 Running Status	0 to 2 (Note 3)	
AI 0215	R	cw Pump 5 Running Status	0 to 2 (Note 3)	
AI 0216	R	Cooling Tower 1 Fan Running Status	0 to 2 (Note 3)	
AI 0217	R	Cooling Tower 2 Fan Running Status	0 to 2 (Note 3)	

BACNET ADDRESS	READ/WRITE	DESCRIPTION	RANGE	UNITS
AI 0218	R	Cooling Tower 3 Fan Running Status	0 to 2 (Note 3)	
AI 0219	R	Cooling Tower 4 Fan Running Status	0 to 2 (Note 3)	
AI 0220	R	Cooling Tower 5 Fan Running Status	0 to 2 (Note 3)	
AV 0001	R/W	cw Pump 1 Mode/Selector	0 to 3 (Note 1)	
AV 0002	R/W	cw Pump 2 Mode/Selector	0 to 3 (Note 1)	
AV 0003	R/W	cw Pump 3 Mode/Selector	0 to 3 (Note 1)	
AV 0004	R/W	cw Pump 4 Mode/Selector	0 to 3 (Note 1)	
AV 0005	R/W	cw Pump 5 Mode/Selector	0 to 3 (Note 1)	
AV 0006	R/W	Cooling Tower 1 Fan Mode/Selector	0 to 3 (Note 1)	
AV 0007	R/W	Cooling Tower 2 Fan Mode/Selector	0 to 3 (Note 1)	
AV 0008	R/W	Cooling Tower 3 Fan Mode/Selector	0 to 3 (Note 1)	
AV 0009	R/W	Cooling Tower 4 Fan Mode/Selector	0 to 3 (Note 1)	
AV 00010	R/W	Cooling Tower 5 Fan Mode/Selector	0 to 3 (Note 1)	
AO 0001	W	cw Pump 1 Hand Speed	0.0 to 100.0	%
AO 0002	W	cw Pump 2 Hand Speed		
AO 0003	W	cw Pump 3 Hand Speed		
AO 0004	W	cw Pump 4 Hand Speed		
AO 0005	W	cw Pump 5 Hand Speed		
AO 0006	W	Cooling Tower 1 Fan Hand Speed		
AO 0007	W	Cooling Tower 2 Fan Hand Speed		
AO 0008	W	Cooling Tower 3 Fan Hand Speed		
AO 0009	W	Cooling Tower 4 Fan Hand Speed		
AO 0010	W	Cooling Tower 5 Fan Hand Speed		

NOTE : Multistate Data Explanation

1 cw Pump/ct Fan Mode

(Writing is limited to range 1 to 3)

- 0 = Not Used
- 1 = Hand
- 2 = Off
- 3 = Auto

2 cw Pump/Cooling Tower Duty Standby

- 0 = Not Used
- 1 = Duty 1
- 2 = Duty 2
- 3 = Duty 3
- 4 = Duty 4
- 5 = Duty 5
- 6 = Standby

3 cw Pump/ct Fan Run Status

- 0 = Stopped
- 1 = Running
- 2 = Alarm

4 ct Isolation Valve Position Status

- 0 = Closed
- 1 = Opened
- 2 = Alarm

TORONTO

23 BERTRAND AVENUE
TORONTO, ONTARIO
CANADA
M1L 2P3
+1 416 755 2291

BUFFALO

93 EAST AVENUE
NORTH TONAWANDA, NEW YORK
U.S.A.
14120-6594
+1 716 693 8813

BIRMINGHAM

HEYWOOD WHARF, MUCKLOW HILL
HALESOWEN, WEST MIDLANDS
UNITED KINGDOM
B62 8DJ
+44 (0) 8444 145 145

MANCHESTER

WOLVERTON STREET
MANCHESTER
UNITED KINGDOM
M11 2ET
+44 (0) 8444 145 145

BANGALORE

#59, FIRST FLOOR, 3RD MAIN
MARGOSA ROAD, MALLESWARAM
BANGALORE, INDIA
560 003
+91 (0) 80 4906 3555

SHANGHAI

UNIT 903, 888 NORTH SICHUAN RD.
HONGKOU DISTRICT, SHANGHAI
CHINA
200085
+86 (0) 21 5237 0909

SÃO PAULO

RUA JOSÉ SEMIÃO RODRIGUES AGOSTINHO,
1370 GALPÃO 6
EMBU DAS ARTES
SAO PAULO, BRAZIL
+55 11 4785 1330

ARMSTRONG FLUID TECHNOLOGY
ESTABLISHED 1934

ARMSTRONGFLUIDTECHNOLOGY.COM

**MAKING
ENERGY
MAKE
SENSE™**