



BACNET GATEWAY APPLICATION GUIDE (ECCN02-CT0)

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NOTE:

The power supply to the BACnet Gateway and terminals (or series of BACnet Gateways and terminals) must be separated from the power supply to the other electrical devices (contactors and other electromechanical components) inside the switch board. A 250 V 800 mA fuse must be installed in the power supply line. The power supply is functionally isolated from the rest of the I/O circuit, including the serial connections.

NOTE:

For technical specifications of the BACnet Gateway, please refer to the technical specifications document by scanning the product QR code, or go to the following website:

http://go2se.com/web/quest/landing/services/ref=TM172PDG28S?redirect=false



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1 Terminals Information

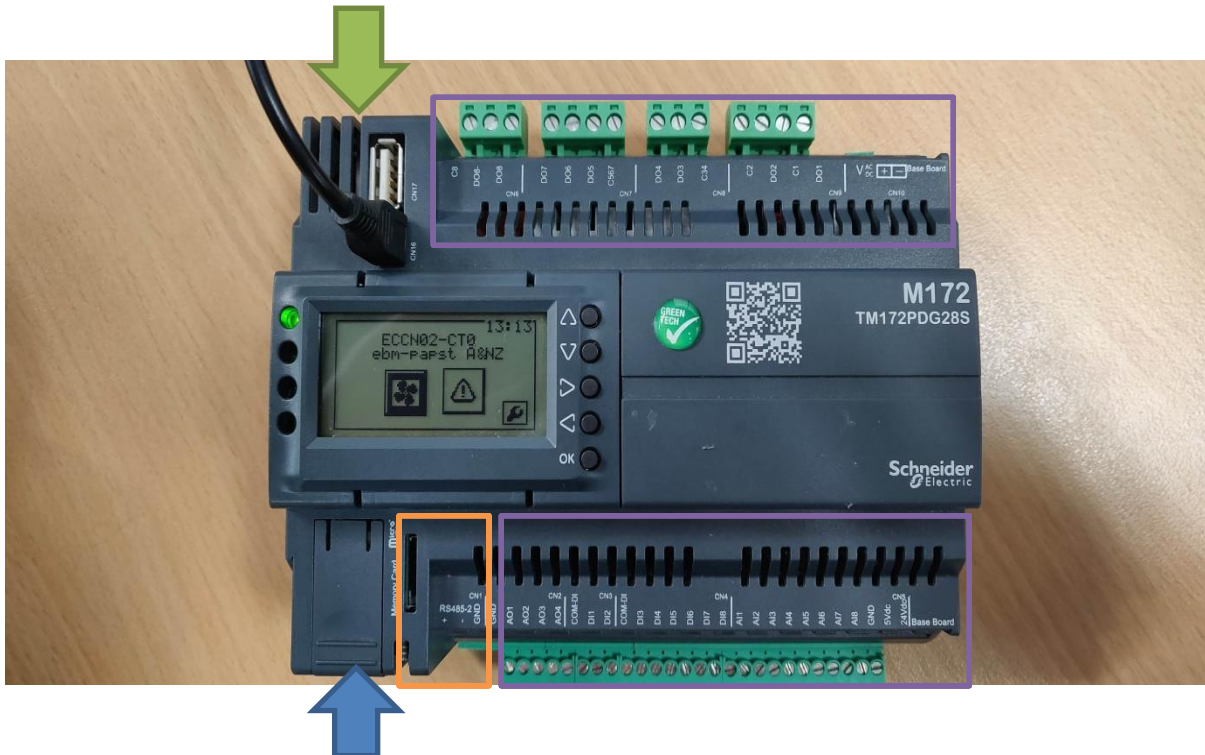


Figure 1: Connection information for BACnet Gateway

Terminal	Specification
DO5	Digital output alarm for fan error
DO6	Digital output alarm for fan warning
RS485 +	To be connected to fan's RSA
RS485 -	To be connected to fan's RSB
Ethernet TCP/IP	Connection to BMS for Ethernet TCP/IP
MS/TP RS485	Connection to BMS for MS/TP RS485

NOTE:

Ensure the GROUND (GND) terminal for all equipment in the system is interlinked!

Table 1: Terminal information for the BACnet Gateway



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2 General Settings and Monitoring

2.1 Addressing Fans

The BACnet Gateway will not automatically assign addresses to the fans. Therefore, before setting up the BACnet Gateway, the addresses of all ebm-papst fans must be pre-programmed via EC-Control. Assigning multiple fans to the same address must be avoided. Failure to do this will result in the BACnet Gateway operating incorrectly. ebm-papst recommends to program the first fan to address 2, and subsequent fans as “n+1”. This recommendation aims to avoid any confusion when a new fan unit is added to the network, as ebm-papst fans are addressed 1 by factory default settings.

2.2 Buttons and Symbols Indication

Button	Action	Function
	Short press	Previous field / Up
	Short press	Next field / Down
	Short press Long press	Previous field / Left Exit
	Short press	Next field / Right
	Short press	Enter / Edit field

Table 2: Buttons functionality on BACnet Gateway



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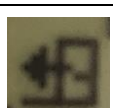



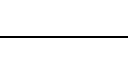
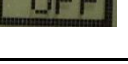
Symbols	Name	Symbol indicates:
	Fan Status	Fan Status page not selected
	Fan Status	Fan Status page selected
	Alarms	Alarms page not selected
	Alarms	Alarms page selected
	Settings	Settings page not selected
	Settings	Settings page selected
	Exit	Exit
	Selection	Selection arrow not selected
	Selection	Selection arrow selected. Pressing OK will lead to further information on the fan
	Number edit	Edit field for numbers. It can be RO (Read only) or RW (Read or Write) Press OK to start editing, you can see a flashing line when it is editable. Select the column using Left / Right button. Adjust number using Up / Down button
	ON / OFF edit	Edit field for ON / OFF. It can be RO (Read only) or RW (Read or Write) Press OK to start editing, after editing press OK again to save change.
	YES / NO edit	Edit field for YES / NO. Press OK to start editing, after editing press OK again to save change

Table 3: Symbols description on BACnet Gateway



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2.3 Start-up Settings

2.3.1 Date / Time Settings

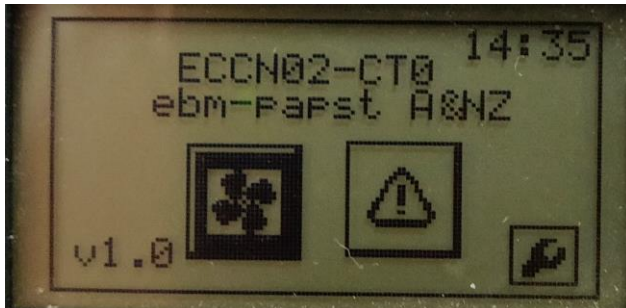


Figure 2

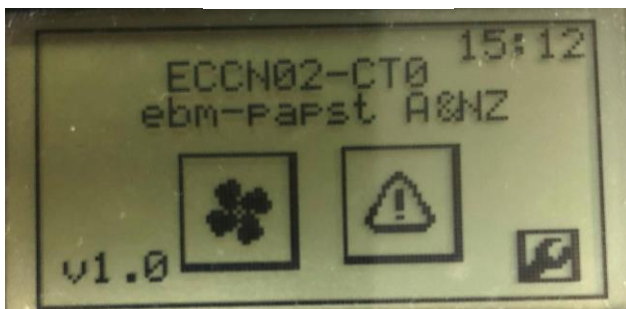


Figure3



Figure 4



Figure 5

1. Connect fans RSA RSB to terminals of BACnet Gateway as shown in Chapter 1.
2. Power up BACnet Gateway. Wait until the below screen appears.

3. Navigate to Settings button and press OK

4. Navigate to "DATE / TIME" and press OK

5. Edit the time and date. Each number field must be edited separately. After editing, navigate to "UPDATE" and press OK. It will close the page automatically bringing you to the previous page.



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2.3.2 Fan Enabling



Figure 6

6. Navigate to “ENABLE FAN” and press OK.

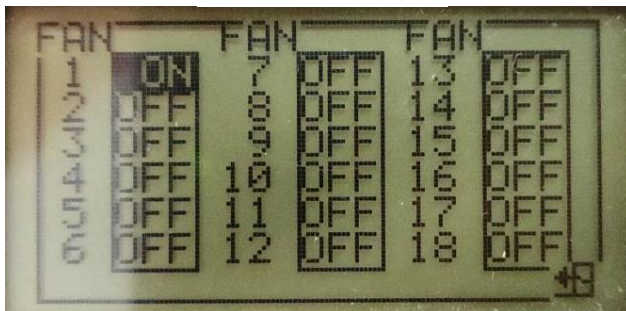


Figure 7

7. Edit the ON / OFF fields by pressing the previous / next field. Turn on only fans according to the fan address assigned at Chapter 2.1 Exit the screen when completed.

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2.4 Monitoring On Screen

2.4.1 Fan Status

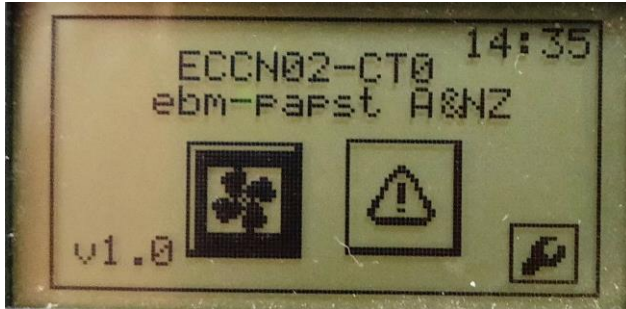


Figure 8

1. On the main screen, navigate to Fan Status and press OK

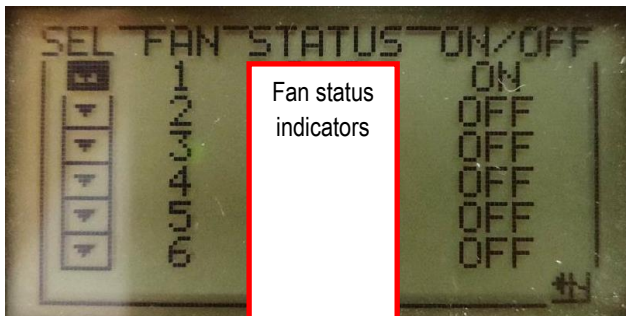


Figure 9

2. Using the selection symbol, an individual fan can be monitored by pressing OK. To navigate to fan addresses greater than 6, press Next Field until the next page shows.

Fan Status Indicators	What it means
N/A	Not connected. The fan is not enabled in BACnet Gateway .
FAN OK	Connected. The fan is connected to the BACnet Gateway and is running at the observed RPM.
D/C	Disconnected. An enabled fan is disconnected from BACnet Gateway .
WARN	Warning. Fan warning is active
ERROR	Error. Fan error is active
ON/OFF	Indicates if the fan has been enabled (ON) or not (OFF)

Table 4: Fan status indicators explanation



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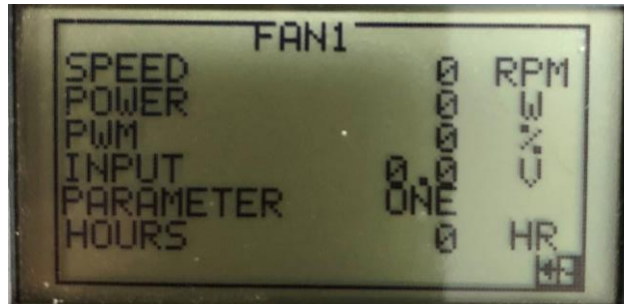


Figure 10

Fan Information	What it means:
Speed	Fan's current speed in rotational per minute (RPM)
Power	Fan's current power consumption in Watts (W)
PWM	Fan's current pulse width modulation in percentage (%)
Input	Analogue input to the fan in Volts (V)
Parameter	Fan's current parameter set
Hours	Fan's current operation hours (HR)

Table 5: Fan information and its meaning



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2.4.2 Fan Alarms

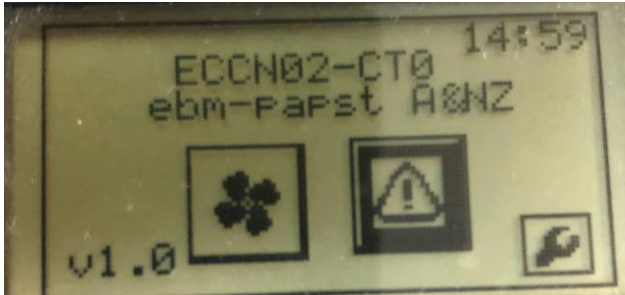


Figure 11

1. On the main screen, navigate to Alarms and press OK

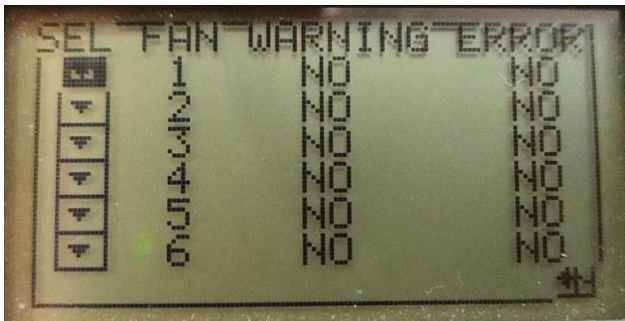


Figure 12

2. Using the selection symbol, individual fan alarm can be monitored by pressing OK.



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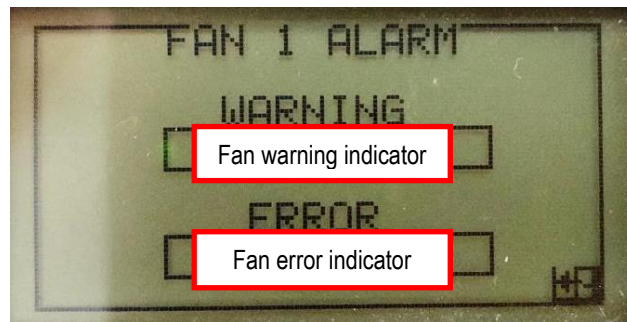


Figure 13

WARNING INDICATOR	The WARNING status can refer to any of the following occurrences: <ul style="list-style-type: none">▪ TE_high: Output stage temperature high▪ TM_high: Motor temperature high▪ TEI_high: Electronics interior temperature high▪ Cable break: Cable break at set value analogue input
ERROR INDICATOR	The ERROR status can refer to any of the following occurrences: <ul style="list-style-type: none">▪ UzLow: DC-link under voltage▪ BLK: Locked motor▪ HLL: Hall sensor error▪ FB: Fan bad error▪ TFE: Power modulation overheated▪ PHA: Mains under voltage(1-phase devices) or phase failure (3-phase devices)▪ SKF: Communication error between master controller and slave controller▪ TFM: Motor overheated

Table 6: Fan warning and error indicator

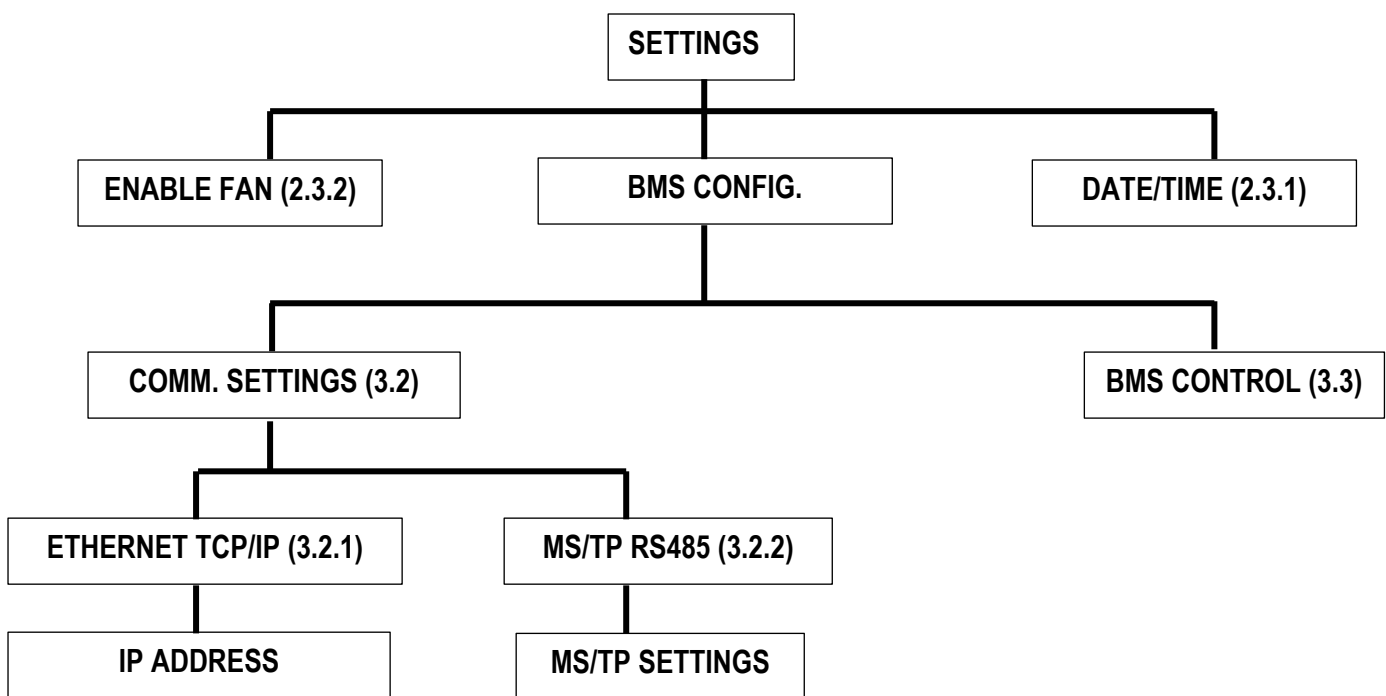
NOTE: Only the last error or warning will be displayed. For full list, connect fan to EC Control.



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3 Gateway Settings

3.1 Overview of Gateway Settings





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3.2 Communication Portal Settings

3.2.1 Ethernet TCP/IP

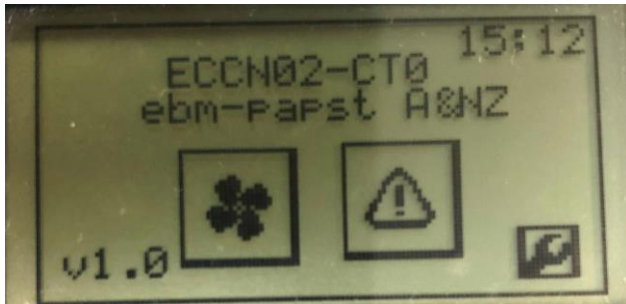


Figure 14

1. On the main screen, navigate to Settings and press OK



Figure 15

2. Navigate to "BMS CONFIG." and press OK



Figure 16

3. Navigate to "COMM. SETTINGS" and press OK

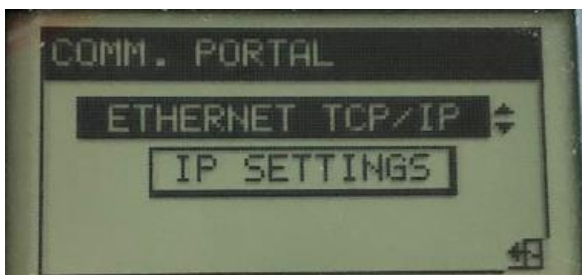


Figure 17

4. Ethernet TCP/IP port is activated by default.



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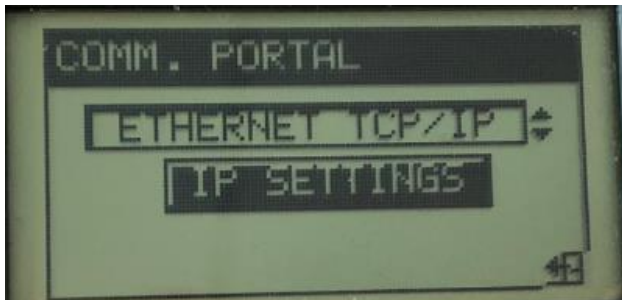


Figure 18

5. Navigate to "IP SETTINGS" and press OK

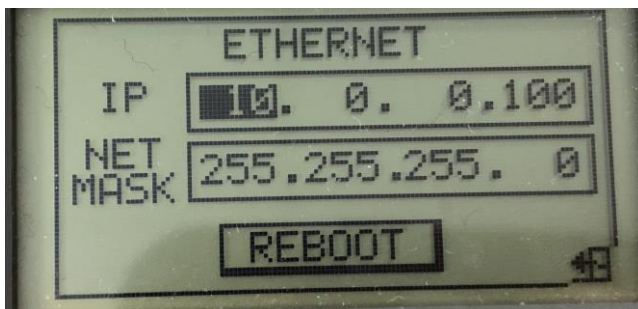


Figure 19

6. Adjust Ethernet communication settings in the Numbers field. Each number field must be edited separately. After editing, navigate to "REBOOT" and press OK.
Default IP address: 10.0.0.100
Default Net Mask: 255.255.255.0
UDP port: hex 0xBAC0 = decimal 47808

NOTE: Reboot is necessary for the new IP address to be written into BACnet Gateway. Failed to do so will result in miscommunication with BMS!



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3.2.2 MS/TP RS485

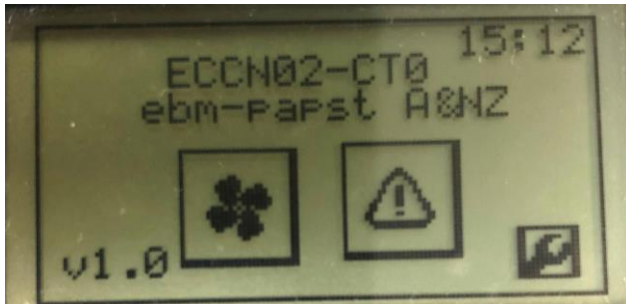


Figure 20

1. On the main screen, navigate to Settings and press OK



Figure 21

2. Navigate to "BMS CONFIG." and press OK



Figure 22

3. Navigate to "COMM. SETTINGS" and press OK



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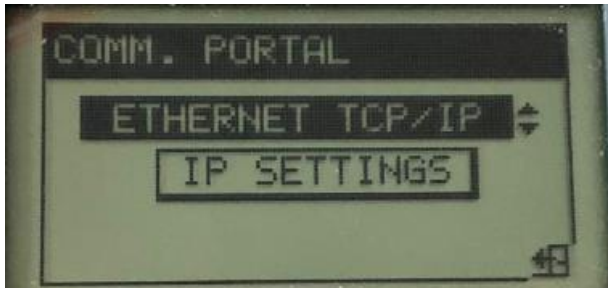


Figure 23

- 4. Ethernet TCP/IP port is activated by default.



Figure 24

- 5. To change, press OK to start editing. Navigate to "MS/TP" and press OK



Figure 25

- 6. The "MSTP SETTINGS" button will appear.



Figure 26

- 7. Navigate to the "MSTP SETTINGS" and press OK



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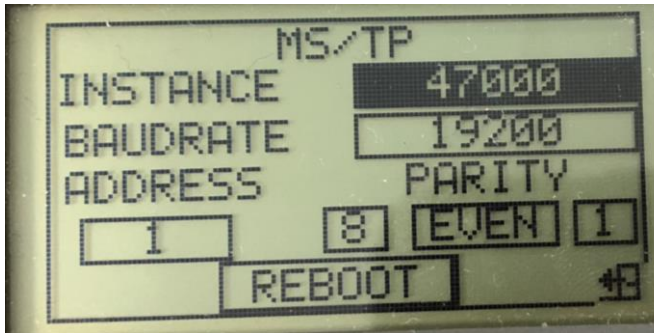


Figure 27

- Adjust MS/TP communication settings using the Numbers fields. Default values as shown in Figure 27. Each number field must be edited separately. After editing, navigate to “Reboot” and press OK. The device instance will be updated automatically after GATEWAY performs a reboot.

Note: Reboot is necessary for the new Device Instance to be written into BACnet Gateway. Failed to do so will result in miscommunication with BMS!



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3.3 BMS Control Settings

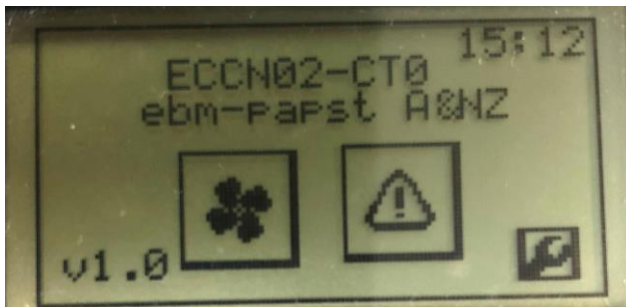


Figure 28

1. On the main screen, navigate to Settings and press OK



Figure 29

2. Navigate to "BMS CONFIG." and press OK



Figure 30

3. Navigate to "BMS CONTROL" and press OK



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Figure 31

4. Change "BMS MASTER" using the ON / OFF edit



Figure 32

5. Write the setting into BACnet Gateway using YES / NO edit at "WRITE VALUES".

Note: The value will return to NO after it has written the value into the fan memory

NOTE:

When BMS control is turned on:

- Fan control will be changed to MODBUS/RS485 and no longer using input from Analogue input. BMS will be able to write %PWM to the fans.
- EEPROM for set value will be deactivated.



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3.3.1 BACnet Variable For PWM Input

BACnet Analogue Value	Description	Object Name
Analogue value 180	FAN 1 BMS PWM (0-100%)	BAV0_FAN_1_BMS_PWM
Analogue value 181	FAN 2 BMS PWM (0-100%)	BAV0_FAN_1_BMS_PWM
Analogue value 182	FAN 3 BMS PWM (0-100%)	BAV0_FAN_2_BMS_PWM
Analogue value 183	FAN 4 BMS PWM (0-100%)	BAV0_FAN_3_BMS_PWM
Analogue value 184	FAN 5 BMS PWM (0-100%)	BAV0_FAN_4_BMS_PWM
Analogue value 185	FAN 6 BMS PWM (0-100%)	BAV0_FAN_5_BMS_PWM
Analogue value 186	FAN 7 BMS PWM (0-100%)	BAV0_FAN_6_BMS_PWM
Analogue value 187	FAN 8 BMS PWM (0-100%)	BAV0_FAN_7_BMS_PWM
Analogue value 188	FAN 9 BMS PWM (0-100%)	BAV0_FAN_8_BMS_PWM
Analogue value 189	FAN 10 BMS PWM (0-100%)	BAV0_FAN_9_BMS_PWM
Analogue value 190	FAN 11 BMS PWM (0-100%)	BAV0_FAN_10_BMS_PWM
Analogue value 191	FAN 12 BMS PWM (0-100%)	BAV0_FAN_12_BMS_PWM
Analogue value 192	FAN 13 BMS PWM (0-100%)	BAV0_FAN_13_BMS_PWM
Analogue value 193	FAN 14 BMS PWM (0-100%)	BAV0_FAN_14_BMS_PWM
Analogue value 194	FAN 15 BMS PWM (0-100%)	BAV0_FAN_15_BMS_PWM
Analogue value 195	FAN 16 BMS PWM (0-100%)	BAV0_FAN_16_BMS_PWM
Analogue value 196	FAN 17 BMS PWM (0-100%)	BAV0_FAN_17_BMS_PWM
Analogue value 197	FAN 18 BMS PWM (0-100%)	BAV0_FAN_18_BMS_PWM

Table 7: BACnet variable for PWM input

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