

ACH580 drive with BACnet

Enabling BACnet MS/TP or IP communication

The ACH580 can be set-up to be controlled and/or monitored from an external system using standard BACnet MS/TP or BACnet IP communication protocols. Note that Technical Note 044 is specific for ACH580 drives and packages that do not have an E-Clipse bypass. This document outlines how to configure BACnet MS/TP using primary settings and parameters. This document then outlines how to configure BACnet IP using primary settings and parameters. ABB recommends new technicians use primary settings to configure BACnet, although this document also shows the parameter configurations for experienced users of the ACH580.

The ACH580 can be configured to:

- Be controlled and monitored over BACnet by the building automation system
- Be set-up for monitoring only over BACnet, while control is done via hardwire inputs to the drive

BACnet MS/TP quick start-up procedure using primary settings

The following steps summarize the process using primary settings for enabling and configuring BACnet MS/TP on the ACH580:

1. Verify wiring (X5:29-31) and correct Dip Switch (S4, S5) settings on the drive per Figure 1 below

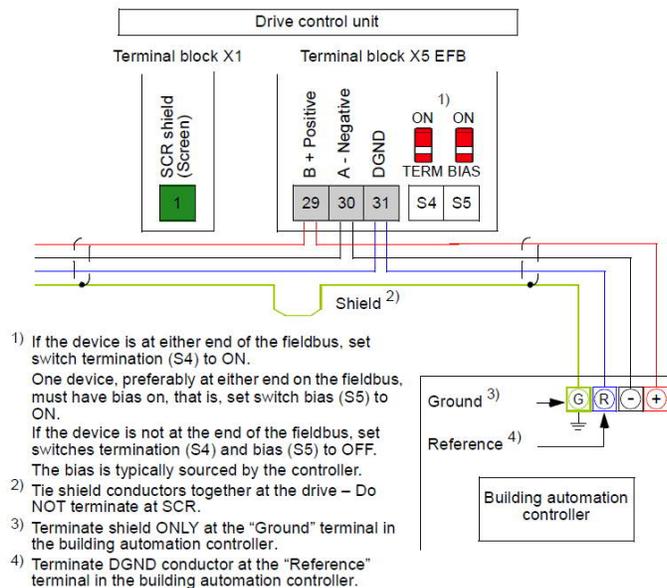
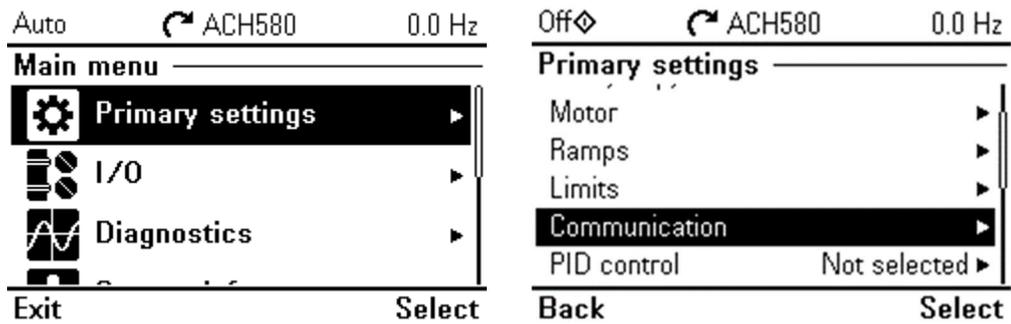


Figure 1

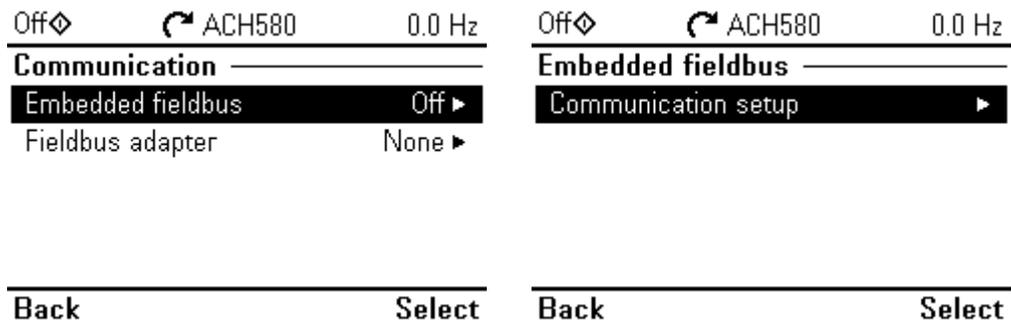
2. Apply power to the drive
3. The Primary settings menu enables easy programming of the most common settings for the drive including BACnet communication settings.

4. To start-up the fieldbus communication

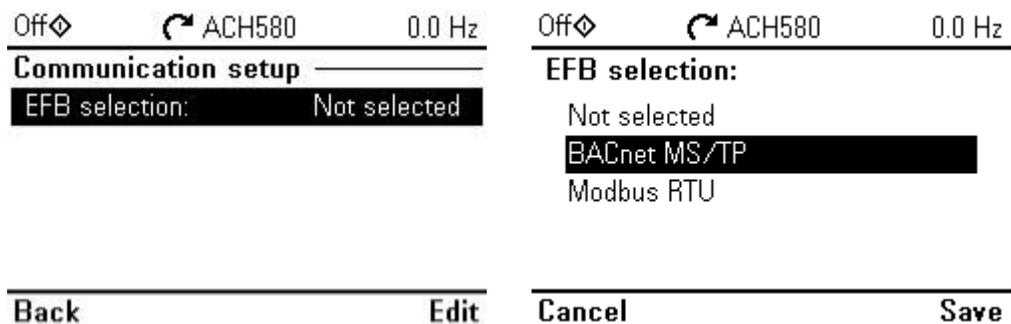
- a. Select Menu > Primary settings > Communication



- b. Select Embedded fieldbus > Communication setup



- c. Select EFB Selection > BACnet MS/TP > Save



- d. Scroll down and proceed to setup BACnet settings as required, such as Station (MAC) ID and Device object ID

```

Off◊      ↻ ACH580      0.0 Hz
-----
Communication setup
Efb selection: BACnet MS/TP
Station ID:      254
Baud rate:      Auto
Device object ID: 4194303
Max master:     127
-----
Back                               Edit

```

- e. After setting all the necessary parameters, select Apply settings to embedded fieldbus

```

Off◊      ↻ ACH580      0.0 Hz
-----
Communication setup
Max APDU retries: 3
If communication fails: Fault
Communication unde...: CW / Ref1 ...
Ignore failures shorter than: 30.0 s
↻ Apply settings to embedded fieldb...
-----
Back                               Select

```

Alternate BACnet MS/TP quick start-up procedure using parameters

The following steps summarize the process for enabling and configuring BACnet MS/TP on the ACH580:

1. Verify wiring (X5:29-31) and correct Dip Switch (S4, S5) settings on the drive per Figure 1
2. Apply power to the drive
3. 58.01 – Enables the embedded fieldbus interface and selects the protocol. Select *BACnet MS/TP (2)*
4. 58.03 - Defines the node address (MAC ID) of the drive on the BACnet MS/TP trunk. Note, two address with the same number are not allowed on the same wire. Possible values range from 1 – 247. Select a node address.
5. 58.04 - Select the baud rate of the BACnet MS/TP trunk. Choose *Autodetect* if the baud rate is unknown.
6. 58.40 For BACnet MS/TP, the Device object ID must be unique across all BACnet devices in the building network. Possible values range from 0 to 4194303. Select a Device object ID.
7. 58.06 This function saves the communication settings in the drive. A power cycle is not required. Select *Refresh settings (1)* and then the parameter will automatically revert to *Enabled*.
8. Reference the Table 1 below for a summary of the key parameters

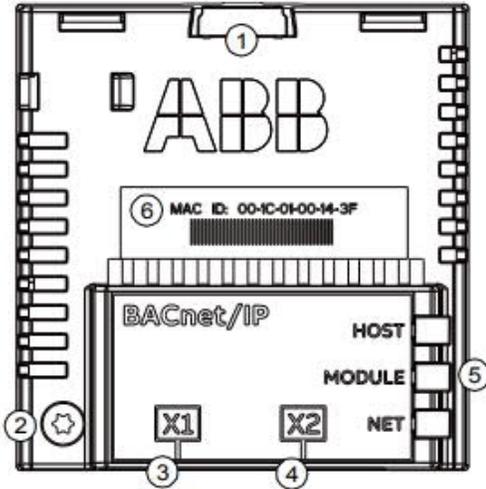
Table 1

ACH580 Parameter	Name	Setting
58.01	Protocol enable	2 (BACnet MS/TP)
58.03	Node address	0-255
58.04	Baud rate	Autodetect
58.40	Device object ID	0-4194303
58.06	Communication control	1 (Refresh settings)

BACnet IP quick start-up procedure using primary settings

The following steps summarize the process using primary settings for enabling and configuring BACnet IP on the ACH580:

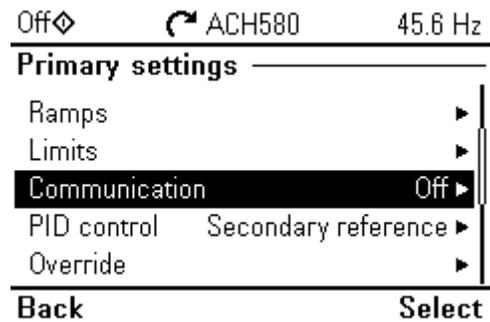
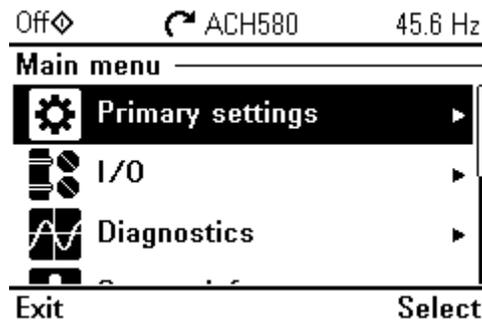
1. Install BACnet IP Adapter module onto drive (see Figure 2 for module information)



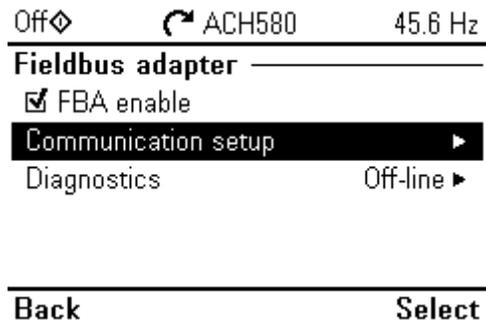
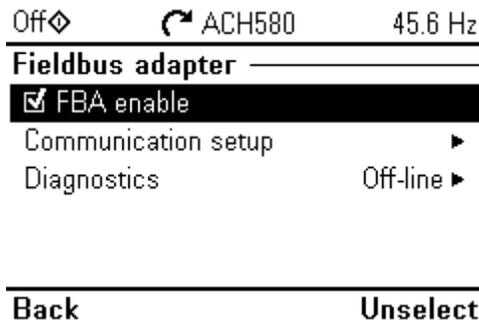
- (1) Lock
- (2) Mounting Screw
- (3) [X1] RJ-45 Connector
- (4) [X2] RJ-45 Connector for daisy chaining another adapter module
- (5) Diagnostic LED's
- (6) MAC ID

Figure 2

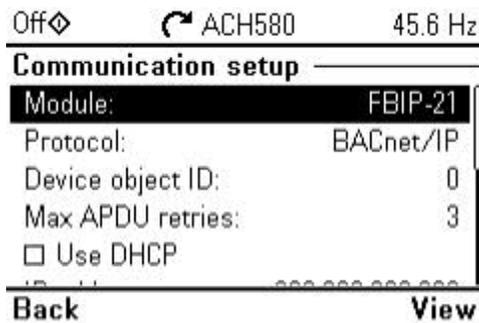
2. Connect the network cable to the RJ-45 connector (X1) on the adapter module.
 - a. Apply power to the Drive
3. To start-up the fieldbus adapter communication
 - a. Select Menu > Primary settings > Communication



- b. Select Fieldbus adapter > Communication setup



- c. Scroll down and proceed to setup BACnet parameters as required



- d. After setting all the necessary parameters, select Apply settings to fieldbus adapter



Alternate BACnet IP quick start-up procedure using parameters

The following steps summarize the process for enabling and configuring BACnet IP on the ACH580:

1. Install BACnet IP Adapter module onto drive (see Figure 2 for module information)
2. Connect the network cable to the RJ-45 connector (X1) on the adapter module
3. Apply power to the Drive
4. 50.01 – Enables the external fieldbus adapter interface and specifies the slot. Select *Enable (1)*
5. 51.01 – Shows Fieldbus Adapter detected by the Drive. 47808 = BACnet/IP (Read-Only)
6. 51.03 – Select the baud rate of the BACnet IP. Choose *Autodetect* if the baud rate is unknown.
7. 51.04 – Typically set to *Static* with IP address configuration obtained through parameters 51.05 – 51.08

8. 51.05 – First part of the IP address – Ex: *192*
9. 51.06 – Second part of the IP address – Ex: *168*
10. 51.07 – Third part of the IP address – Ex: *0*
11. 51.08 – Last part of the IP address – Ex: *16*
12. 51.09 - Sets the network mask. This network mask of 255.255.255.0 is most common, allowing access only to the last subnet. Enter *24* if a network mask of 255.255.255.0 is desired. Reference the FBIP-21 manual if a different subnet is desired.
13. 51.14 & 51.15 – The combination sets the device object ID number. 51.14 directly sets the device object ID number for values between 0 – 9999. 51.15 is also used when device object ID values are greater than 9999.
Device object ID = 51.14 + (51.15 * 10,000)
 - a. Ex: A device object ID number of 23,456 requires 51.14 setting of *3456* and 51.15 setting of *2*
14. 51.27 – This function saves the communication settings in the drive. A power cycle is not required. Select *Configure (1)* and then the parameter will automatically revert to *Enabled*.
15. Reference the Table 2 below for a summary of the key parameters

Table 2

ACH580 Parameter	Name	Setting
50.01	FBA Enable	1 (Enable)
51.01	Fieldbus Adapter	47808 – BACnet (Read only)
51.03	Baud rate	Autodetect
51.04	IP Configuration	1 (Static)
51.05	First Part of IP Addr.	Ex. 192
51.06	Second Part of IP Addr	Ex. 168
51.07	Third Part of IP Addr	Ex. 0
51.08	Last Part of IP Addr	Ex. 16
51.09	Network mask	24 (255.255.255.0)
51.14	Device object ID low	0 - 9999
51.15	Device object ID high	0 - 419
51.27	Communication Control	Configure (1)

This document is intended as a guide and supplement to the following firmware manuals:

- 3AXD50000027537 – ACH580 drives
- 3AXD50000028468 – FBIP-21 BACnet/IP adapter module