EYFR03 User Manual

v1.6.1

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Quick Start

This quick start will guide you through the process of configuring the unit for first time use.

Plug the provided power cable into the unit and 100-240 VAC power and turn on the power switch. The beeper will sound a series of quick beeps and the display will show the loading progress.
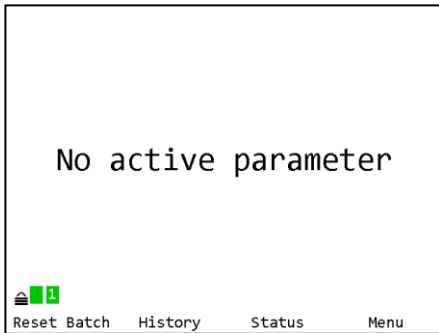
Once loading is completed, the unit should go to the Run screen. If the unit stays on the loading screen with an error, please contact support.

To use a tool with the Controller, you must first "learn" the tool to the Controller. To do so, press the button below **Menu**.

Enter the password (1011 by default) using the numeric keypad and press ENT when completed.
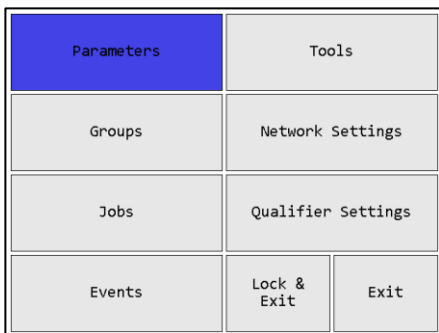
In the menu, press the right arrow to select Tools and press ENT.
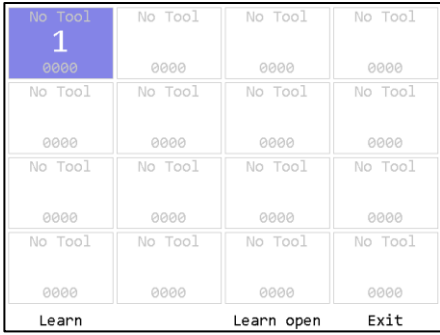
If the tool you are going to learn to the Controller has previously been used with another unit, make sure that unit is off before continuing. Press the button beneath **Learn** to begin the learn process.
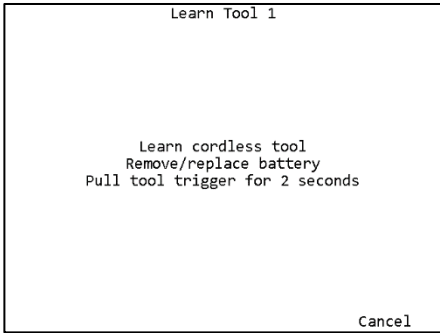
Follow the directions on screen to learn the tool.

If you get a message "Cannot replace with a tool with different type", it means you are learning a 1-way tool over top of a learned 2-way tool or vice-versa.

Once the tool is learned' the slot turns green to confirm successful, then it will turn blue.
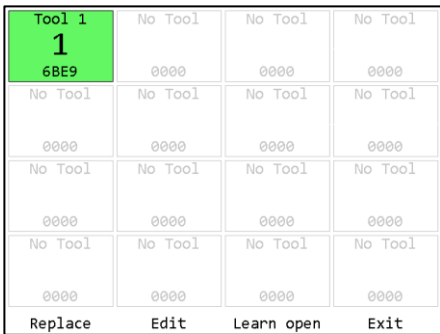
The unit will return to the Tools screen with the just learned tool now with a tool name of "Tool 1" instead of "No Tool".

Return to the menu by pressing ESC or the button below **Exit**. Then press ENT to go to the Parameters screen.

To run a tool, you must activate a parameter that uses the tool. When learned, a tool is automatically associated with the parameter of the same number. If you are following this guide with a new unit, you should have just learned Tool 1, which can be run by Parameter 1.
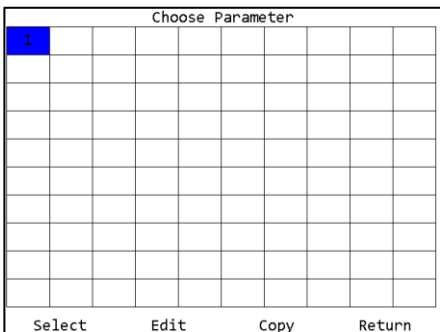
Press the button below **Select** to select Parameter 1.

```
   Parameter 1
     Tool 1


   0/1


 ■
 ≙ ■ 1
Reset Batch  History   Status   Menu
```
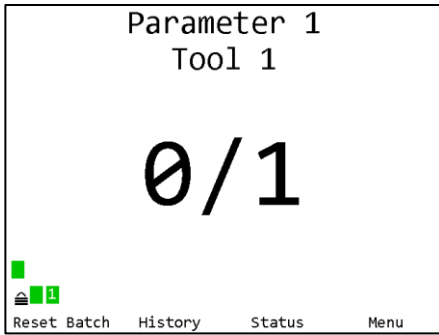
You will be returned to the Run screen, now with Parameter 1 selected. You can now perform tightenings with Tool 1 that will be monitored, stored, and reported by the Controller.

AccuPulse

AccuPulse tools work both in one-way communication (Default) or two-way communication. You will have to use the remote control to switch the tool from one-way to two-way mode.

To set the tool from default "90" (one-way) to '91" (two-way)
  1. Put the tool into program mode.
  2. Press "C" button on the remote 4 times
  3. "90" is default (one-way), Press the + up to "91" (two-way)
  4. Press the Ok button to accept the changes.

AccuPulse Tools in two-way mode "91" will flash Orange on the rear LED when the parameter is selected.   If the tool is in "sleep mode" (timed out from no operation and no display) the tool will not communicate or flash orange. Pulling the tool trigger will "wake" the tool and initiate communication then flash orange. Tool sleep time can be changed in the Controller settings under Controller setting then "Tool on time". Default is 90 min. Sleep time range is 20 -720 min.

In the event the Controller is powered down or loses power while the tool is in sleep mode, you must power up the Controller first before waking the tool from sleep to initiate two-way communication. Otherwise you will need to pull and reinstall the battery on the tool

Chapter 1: Overview

Warnings

Do not disassemble the unit for repair or modifications. There is a high electrical voltage inside the unit that could cause electric shock.

Do not allow any type of liquid to come into contact with any part of the unit.

Insert all fittings fully into their mating receptacles. Failure to do so could result in injury.

Do not fold, bend, or apply excessive force to any cable or fitting.

Cautions

Please use caution when handling this or any other electrical appliance.

- This unit accepts an AC input voltage from 100-240 VAC. Trying to operate this unit with a voltage outside that range may cause damage to the unit.
- Avoid placing or storing this unit in a location where it may become wet or dust covered.
- Do not place or mount this unit in an unstable area.
- Dropping this unit may result in personal injury or damage to the unit.
- Before performing any maintenance on the unit, make sure to turn it off and remove the power cable.
- There are no user serviceable parts inside the main enclosure of the unit.

Unit Overview

The EYFR03 is equipped with a color LCD display, four soft keys immediately below the LCD, a numeric keypad with decimal point, navigation keys, and enter and escape buttons. The current function of the soft keys is indicated at the bottom of the LCD above the button.

The left side of the EYFR03 has two RJ-45 Ethernet ports to allow it to be used in a chain network configuration.

The USB-A connector is used to provide firmware updates via a standard USB drive. This can also be used with a USB barcode reader on the EYFR03

The RS232 DSUB9 connector can be used with a serial bar code reader.

The beeper provides an audio indication for any combination of accepts, rejects, and batch completions. The beeper volume can be adjusted through the user interface. (See the *Controller Settings* section in the next chapter.)

The power plug accepts 100-240 VAC at 50-60 Hz.

The right side of the EYFR03-A has a 24-pin discrete I/O connector. This connector is not available on the EYFR03-B model.

Both models have a 5-pin remote connector that connects to other devices that provide additional I/O capabilities.

Compatible Tools

2-way compatible models
- EYFLA7AR, EYFLA8AR, EYFLA8CR, EYFLA8PR, EYFLA9CR, EYFLA9PR, EYFMA2PR, EYFNA1PRT, EYFNA1CRT, EYFNA1JRT, EYFPA1JRT

1-way compatible models
- EYFLA4AR, EYFLA5AR, EYFLA5PR, EYFLA5QR, EYFLA6JR, EYFLA6PR, EYFMA1JR, EYFMA1PR, EYFNA1CR, EYFNA1JR, EYFNA1PR, EYFPA1JR, EYGA1NR, EYFGA2NR, EYGA3NR, EYFNA1PRT, EYFNA1CRT, EYFNA1JRT, EYFPA1JRT

Chapter 2: Using the unit

Concepts

Tools

The EYFR03 works with up to 16 Panasonic battery tools at a time. To use a tool with the Controller, you must first "learn" the tool to the Controller. The process to do this is described in the Quick Start.

Tools are not activated directly by the unit. Instead, they are activated when a parameter that uses the tool is running. Tools are automatically used by the parameter of the same number (Parameter 1 always uses Tool 1, Parameter 2 always uses Tool 2, etc.). A tool may additionally be used by any number of Parameters 17-100 but may not be assigned to any Parameter 1-16 other than the matching parameter to which it is automatically assigned.

The EYFR03 can store some information about when calibration or preventative maintenance should occur. These are set up in the Tool Configuration screen, which is described in the next chapter.

For tools with the appropriate firmware and setup, the unit will use the enable/disable or anti-theft feature to only allow the tool to run when a parameter that uses it is active.

Parameters

Parameters are the basic unit of operation for the EYFR03. A parameter contains a tool to run and some settings to use with it, such as the batch size. The EYFR03 supports 100 parameters. Each parameter must be associated with one of the tools learned to the unit before it can be run. Parameters 1-16 will always be associated with the tool of the same number, and the other parameters may be used to operate a tool with different settings.

Groups

Groups are multiple parameters that must all run together and can run simultaneously in any order. The EYFR03 supports 100 groups with up to 16 parameters each. A group cannot contain more than one parameter that uses a given tool, as it would not be able to determine which parameter a result should be assigned to. When defining a group, you may override the

batch count for parameters in the group while the group is running. This does not change the batch size defined in the parameter.

Groups may be run in free or standard (synchronized) mode. In standard mode, all parameters must complete a full batch before any parameter can begin running a second batch. In free mode, each parameter in the group can proceed independently of the others and does not require all parameters to complete their batch before any parameters can run again. This makes free groups useful in situations where you have limited need to control tool operation but want to report rundowns from the tools.

Jobs

Jobs are the top level of operation in the EYFR03, made up of multiple parameters or groups that must all run together in a sequence. The EYFR03 supports 100 jobs with up to 30 steps each. Unlike groups, a job may have multiple parameters that use the same tool or even the same parameter or group multiple times. As with groups, you may override the batch count for parameter steps in the job. You cannot change the batch sizes for groups when run in a job.

A free group cannot be used as a job step, since they do not ever complete.

Run Screen

The Run screen shows which parameters the unit is currently running. Depending on the number of active parameters, the Run screen will be in one of several modes.

Figure 1: No active parameter
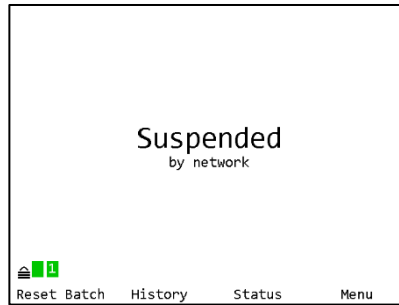
Figure 2: Suspended
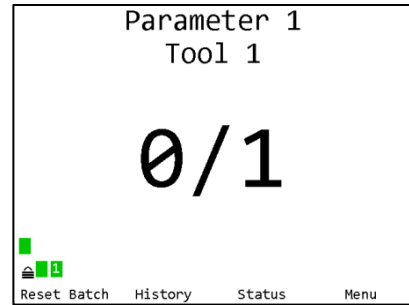
Figure 3: 1 active parameter
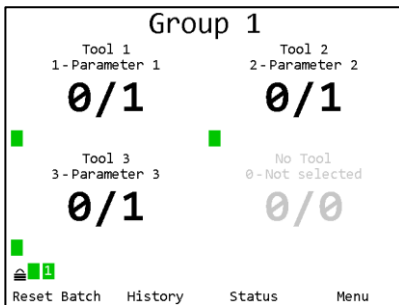
Figure 4: 2-4 active parameters
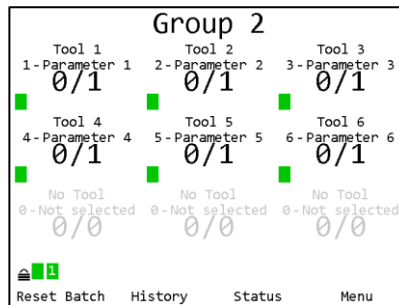
Figure 5: 5-9 active parameters
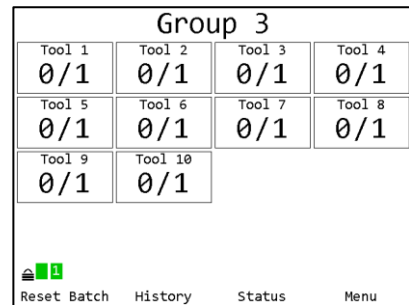
Figure 6: 10-16 active parameters

Tightening Notifications

Every time a tightening is received from a running tool, the background of the area of the screen showing the current parameter and batch count for the tool will be shaded with a color indicating the status of the tightening.

- Red – A rejected tightening occurred.
- Green – An accepted tightening occurred that did not complete a batch.
- Blue – An accepted tightening occurred that completed a batch. If the Controller NOKs setting is set to Count, this further indicates that no rejected tightenings were counted towards this batch.
- Yellow – An accepted or rejected tightening occurred that completed a batch. This color will only occur when the Controller NOKs setting is set to Count and one or more rejected tightenings were counted towards the current batch.

1 Active Parameter
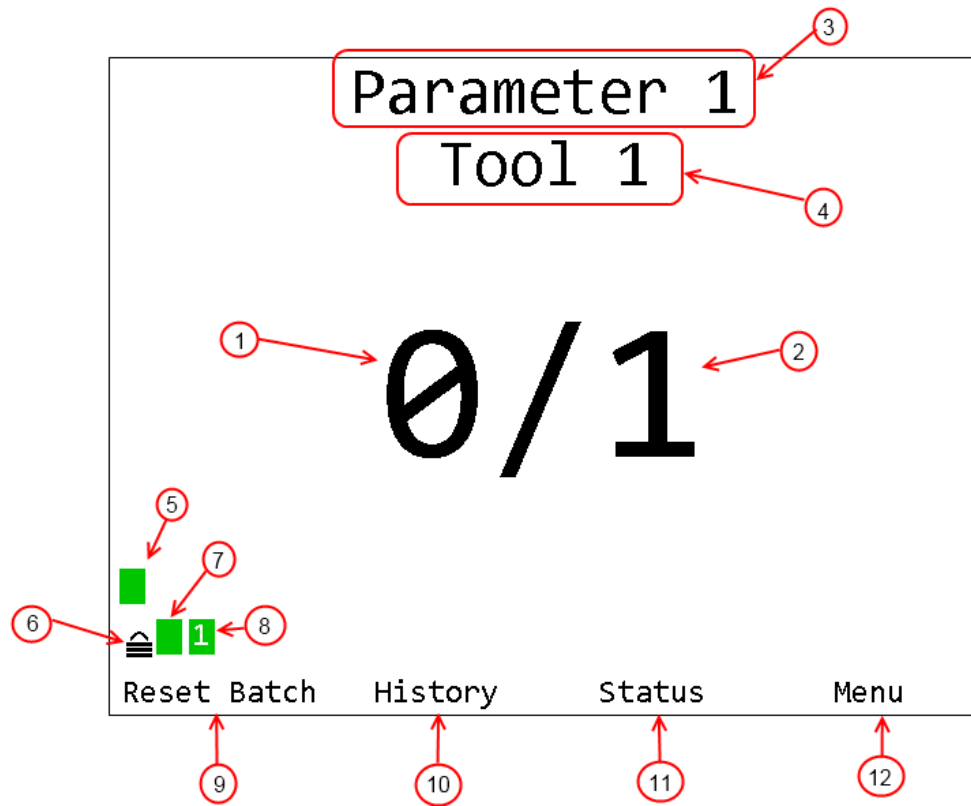
1. Count – The number of tightenings completed in the current batch
2. Batch – The number of tightenings required for the current batch
3. Parameter Name – Name of the currently running parameter
4. Tool Name – Name of the tool for the currently running parameter
5. Tool Status Indicator – Shows the status of the tool for the parameter
6. Unit lock – Indicates if the unit is locked and requires a password to access menu functions
7. Unit Radio Status – Shows the status of the unit radio
8. Network Status – Shows the status of the Ethernet and current number of connections.
9. Soft Key 1 Function – Shows the current function of soft key 1.
10. Soft Key 2 Function – Shows the current function of soft key 2.
11. Soft Key 3 Function – Shows the current function of soft key 3.
12. Soft Key 4 Function – Shows the current function of soft key 4.

2-9 Active Parameters
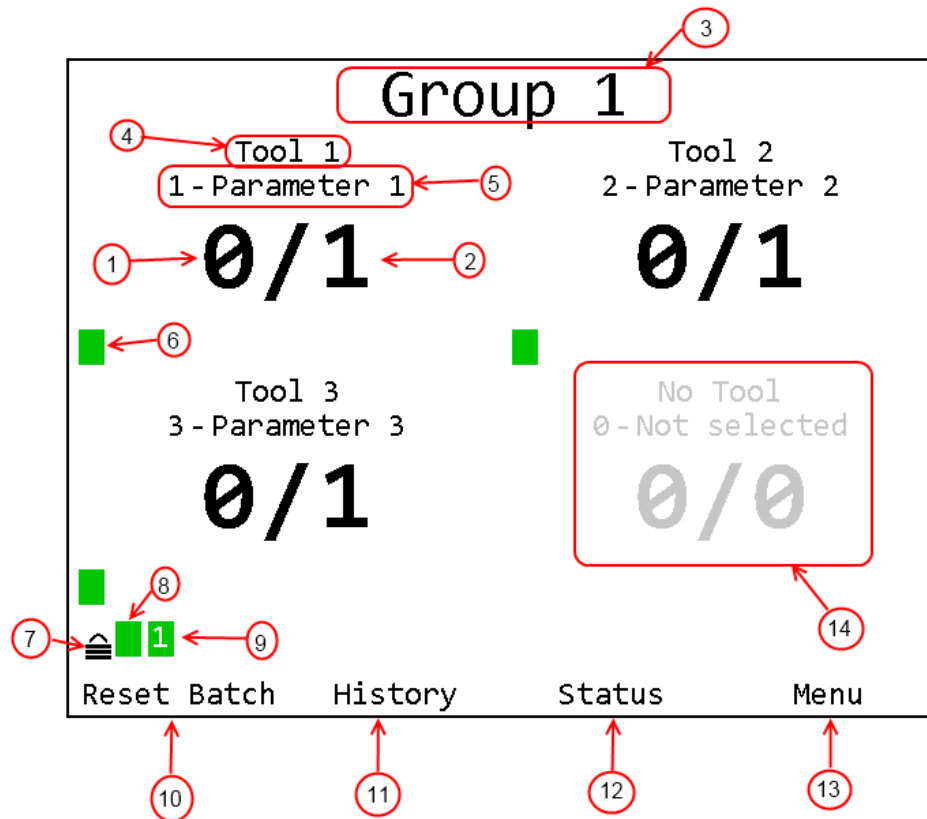
1. Count – The number of tightenings completed in the current batch of the parameter. Repeated for each active parameter.
2. Batch – The number of tightenings required for the current batch of the parameter. Repeated for each active parameter.
3. Group Name – Name of the currently running group.
4. Tool Name – Name of the tool for the parameter. Repeated for each active parameter
5. Parameter Name – Name of the parameter. Repeated for each active parameter.
6. Tool Status Indicator – Shows the status of the tool for the parameter. Repeated for each parameter
7. Unit lock – Indicates if the unit is locked and requires a password to access menu functions
8. Unit Radio Status – Shows the status of the unit radio
9. Network Status – Shows the status of the Ethernet and current number of connections.
10. Soft Key 1 Function – Shows the current function of soft key 1.
11. Soft Key 2 Function – Shows the current function of soft key 2.
12. Soft Key 3 Function – Shows the current function of soft key 3.
13. Soft Key 4 Function – Shows the current function of soft key 4.
14. Inactive parameter – When not all the parameter slots on a screen are needed (4 or 9) to show all the active parameters, the rest of the slots will be grayed out.

The 5-9 active parameter screen has the same pieces as the 2-4 active parameter screen shown above, only with 9 parameter slots in a 3x3 grid instead of 4 parameter slots in a 2x2 grid.

10-16 Active Parameters
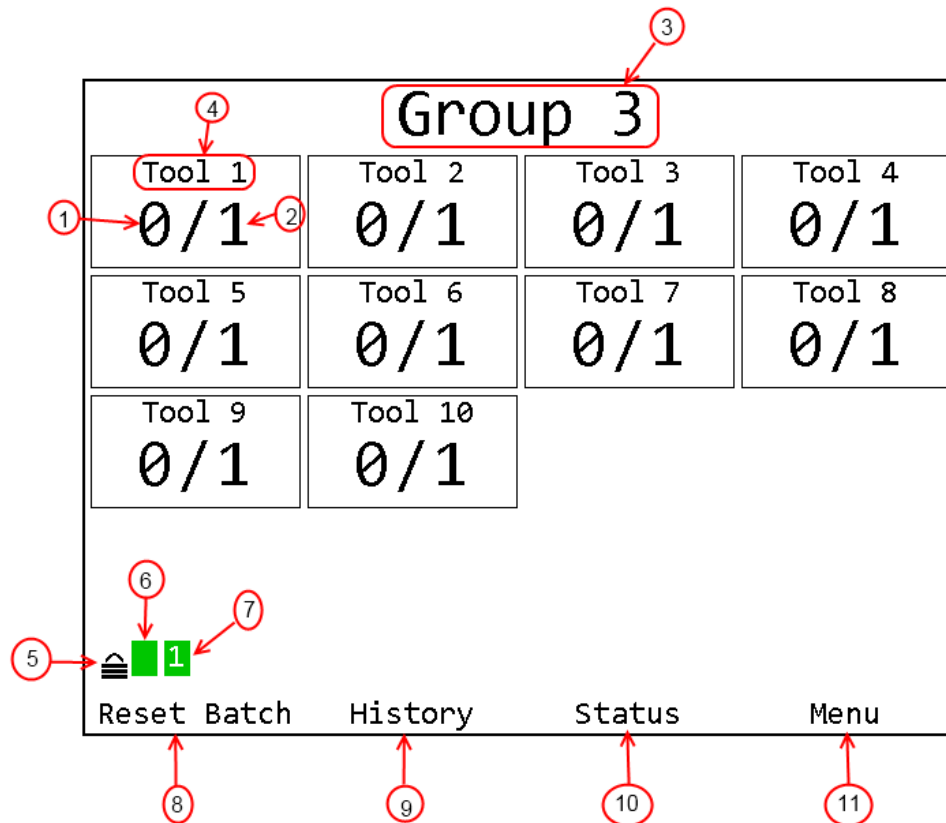
1. Count – The number of tightenings completed in the current batch of the parameter. Repeated for each active parameter.
2. Batch – The number of tightenings required for the current batch of the parameter. Repeated for each active parameter.
3. Group Name – Name of the currently running group.
4. Tool Name – Name of the tool for the parameter. Repeated for each active parameter
5. Unit lock – Indicates if the unit is locked and requires a password to access menu functions
6. Unit Radio Status – Shows the status of the unit radio
7. Network Status – Shows the status of the Ethernet and current number of connections.
8. Soft Key 1 Function – Shows the current function of soft key 1.
9. Soft Key 2 Function – Shows the current function of soft key 2.
10. Soft Key 3 Function – Shows the current function of soft key 3.
11. Soft Key 4 Function – Shows the current function of soft key 4.

In 10-16 Active Parameter mode, the Run screen does not show parameter names or tool status indicators.

Tool Status Codes

The tool status indicator for each active parameter shows the status of the tool for the parameter. When the tool is ready to run, the indicator should be green with no number. If the tool is not ready to run or a warning or error condition occurs, the indicator will change to yellow for a warning or red for an error and display a code to indicate the tool condition. The possible codes are:

Code	Color	Meaning
	Green	Tool is ready
1	Red	Tool has not communicated with the unit since power-up
2	Yellow	Enabling or disabling tool
2	Red	Tool enable or disable failed
3	Yellow	Tool is disabled
5	Yellow	Radio signal strength is below recommended level for best performance
5	Red	Radio signal strength is below recommended minimum level for use
6	Yellow	Tool requires calibration
7	Yellow	Tool requires preventative maintenance

Unit Radio Status Indicator

The unit radio status indicator shows the status of the radio in the unit. In normal use, the indicator should be green with no number. If the radio is not working correctly, the indicator will be red with an error code.

Network Status Indicator

The network status indicator shows the status of the Ethernet ports on the unit. When the Ethernet is used, the indicator will be green and show the number of currently active network connections. If no Ethernet cable is plugged into either port, the indicator will be yellow. If the network initialization fails, the indicator will be red and show an error code. The Network Status screen shows more detailed information.

History

Figure 7: History screen

Soft keys

1. No function
2. Previous – Go to the previous page of more recent tightenings. When on the first page, this key will be blank.
3. Next [ENT] – Go to the next page of older tightenings. When on the last page, this key will be blank.

4. Exit [ESC] – Returns to the Run screen.

The History screen shows some information about the tightenings stored in unit memory. More information about the tightenings is not shown but is available via the network protocols. This screen shows:

- Time – The time the tightening occurred. The date is indicated at the top of the table and each time it changes in a white row. The current time is shown at the bottom of the screen for comparison.
- T# – The tool number that produced the tightening
- Param – The number and name of the parameter that produced the tightening
- Count – The current batch count and batch size for the tightening
- Id – The tightening id number. This screen shows only the last 4 digits of the id number; additional digits may be present in the network commands.

Unit Status


```
Firmware version:       1.4.0
XBEE Address:           8078
XBEE channel:           1
Average signal strength:-0 dBm
Time:                   2017-05-02 13:39:07

Last barcode: No barcode scanned
VIN:
ID 2:
ID 3:
ID 4:
Selector:



    I/O        Network        Tool        Exit
```

Figure 8: Unit Status screen

Soft keys

1. I/O – Go to the I/O Status screen (see *Chapter 5: Discrete I/O*).
2. Network – Go to the Network Status screen.
3. Tool – Go to the Tool Status screen.
4. Exit [ESC] – Returns to the Run screen.

The Unit Status screen shows some basic information about the current unit configuration that may be useful for diagnostics purposes.

The average signal strength is for all tools learned to the unit and should be from 0 to -70 dBm. If the signal strength is weaker, the unit may have frequent slow or failed communication. To improve the signal strength, try bringing the unit and tools closer together, changing the XBEE channel, or reducing sources of interference from the environment.

Last barcode shows the command number of the last bar code scanned (see *Chapter 4:*) or an error if the last attempt bar code could not be processed. *VIN* and *ID 2-4* show what will be included with tightenings in the associated result data fields. The *Selector* field is used with the VIN Selections field described in *Chapter 4: Serial Communications.*

Network Status

```
MAC Address:60:FF:DD:00:00:02
IP Address: 192.168.3.5
Subnet Mask:255.255.248.0
Gateway:    192.168.1.113
Ethernet 1: 100 Mb Full
Ethernet 2: Not connected

            Active Connections
    Source      Last Pkt  Info
192.168.4.134   15:07:52  MID=0000
192.168.4.134   15:07:42  Cmd=D0




        Press any key to return
```
Figure 9: Network Status screen

The network status screen shows the current Ethernet status of the unit. The MAC address is assigned by the factory and cannot be changed. The IP address, subnet mask, and gateway may be edited from the Network Settings - General screen or assigned via DHCP.

The Ethernet 1 and 2 lines indicate if a physical cable connection is detected on the corresponding Ethernet ports of the unit. If no connection on a port is detected, the unit will show "Not connected". If a connection is detected, the baud rate and duplex of the connection will be listed.

Tool Status

Figure 10: Tool Status - Good Signal

Figure 11: Tool Status – Low Signal

Figure 12: Tool Status - Bad Signal

Figure 13: Tool Status - Last Signal Good

Soft keys

1. Signal – Show the signal strength of each tool.
2. Address – Show the address of each tool
3. No function
4. Exit [ESC] – Returns to the Unit Status screen.

The Tool Status screen shows the status of the tools learned into the unit. This screen shows the signal strength of the last packet from the tool but can also show the radio address of the tools.

For signal strength, a less negative number indicates a better signal (-50 dBm is better than -60 dBM). The screen shows a color based on the quality of the signal. If the tool has not communicated with the box recently, box for the tool will have a white background with the text colored to match the color of the last signal strength received.

- Green – The signal from this radio is strong and will work at best performance.
- Yellow – The signal from the radio is weaker than recommended for best performance. The radio should work but may have slower or occasionally interrupted communication with the unit.
- Red – The signal from the radio is weaker than recommended for any use. The radio may successfully transmit some results but will frequently have slow or failed communication with the unit. If only one tool is red, bring it and unit closer together. If multiple tools are red, consider using a different radio channel (changed from the Controller Settings screen).

Chapter 3: Configuring the unit

Introduction

All the features of the EYFR03 can be configured directly on the unit, except the I/O and remote device configuration. The configuration, along with parameter, group, and job selection is available from the unit menu. The menu is available from the Run screen by pressing soft key 4 or ENT.

The navigation keys are used primarily to move from entry to entry on a screen. The numeric keypad is used for any data entry and occasionally to assist in navigation. When describing the soft keys for a screen, [ENT] or [ESC] will be listed next to the key if the ENT or ESC buttons perform the same operation. The ESC key is generally used to cancel changes or exit a screen without performing an action.

Saving Configuration Changes

Configuration editing screens will always have **Save** as soft key 3 and **Cancel** as soft key 4. You may also press ESC for Cancel. If you enter a screen and have not made any changes or do not want to save the changes you have made, press **Cancel**. To commit changes, press **Save**. Even if you have not made any changes, saving will update the last modified time for the item.

Entering letters

Figure 14: Letter Entry screen
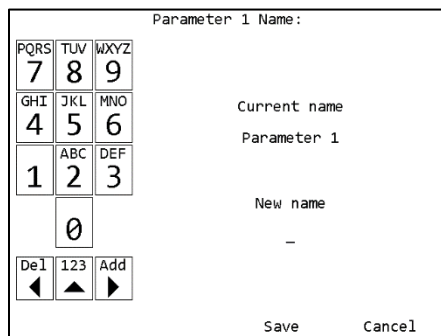
The unit has a special screen that allows using the numeric keypad to enter letters for fields that allow them, such as a parameter name. To get to this screen, press [ENT] when the cursor is on a row with such a field. Lowercase letters cannot be entered from the unit but can be entered through the PC software application.

The left side of this screen shows the letters associated with each number. Pressing a number repeatedly will cycle through the letters associated with the number followed by the number itself. Pressing a different number will commit the character to the new value and add the first letter associated with the new number pressed. Pressing the left arrow will remove the last entered character**.** Pressing the up arrow will toggle between entering letters and numbers or just numbers**.**

Pressing the right arrow will commit the current character and move to the next position. You do not have to use the right arrow for every letter. However, there are two situations when you must use the right arrow. The first is to enter a blank space, which is accomplished by pressing the right arrow twice in a row. The second is to enter a name with two letters in a row associated with the same number. For example, to enter "Tool 1", you would need to press the following sequence of keys:

Key	New name
8	T
6	TM
6	TN
6	TO
right arrow	TO_
6	TOM

6	TON
6	TOO
5	TOOJ
5	TOOK
5	TOOL
right arrow	TOOL_
right arrow	TOOL _
1	TOOL 1

(Since neither 1 nor 0 have associated letters, pressing them will only enter the number.)

Once you have entered the desired name, press **Save** or ENT. This does not permanently save the value just entered. You must also save from the screen that sent you to the letter screen. If you no longer want to change the value, press **Cancel** or ESC. At this point, the unit will return to the previous screen without changing the value.

Main Menu

Figure 15: Main Menu

The EYFR03 menu provides the entry point to configure and control the unit. You must enter the box password before entering the menu from the Run screen. If you cannot remember the password, you may reset it to the factory default (1011) by entering the sequence "6853.48" on the Run screen. Use the arrow keys to navigate to the desired entry and press ENT to go to the entry's screen. To exit the menu, press ESC or navigate to **Lock & Exit** or **Exit** and press ENT. Pressing ESC or **Lock & Exit** will "lock" the menu and return to the Run screen, requiring the password to be reentered before the menu can be accessed again. Pressing **Exit** will return to the Run screen without locking the unit, allowing the menu to be reentered without entering the password.

Tools

Figure 16: Main menu - Tools

Figure 17: Tools Menu

Figure 18: Learned tool selected

Figure 19: Empty slot selected

On this screen, AccuPulse tools will show their model number in two-way mode "90". AccuPulse in one-way mode "90" and other tools do not report their model number and will be listed as "OK/NOK". When the Controller features differ between the tool type, they will be noted.

Soft keys

Tools may be highlighted by using the arrow keys to move the highlight to the desired tool or typing the number of the desired tool.

When a learned tool is highlighted, the soft keys are:

1. Replace – Learn a new tool in place of the current tool in this slot. If you cancel out of the learn sequence, the current tool will remain in the slot.
2. Edit [ENT] – Go to the Tool Configuration screen for the selected tool.
3. Learn open – Starts the learn sequence for the empty tool slot with the lowest number.
4. Exit [ESC] – Returns to the Main Menu screen.

When an empty tool slot is highlighted, the soft keys are:

1. Learn [ENT] – Starts the learn sequence for the highlighted tool slot.
2. No function
3. Learn open – Starts the learn sequence for the empty tool slot with the lowest number.
4. Exit [ESC] – Returns to the Main Menu screen.

Tool Configuration

```
          Tool 1                              Tool 17
Name:              Tool 1            Name:              Tool 17
Radio Info:        CD2D v4.32        Serial number:
Serial number:                      Last calibration: 0001-01-01 00:00:00   Set Now
Last calibration:  0001-01-01 00:00:00 Set Now   Next calibration: 0001-01-01 00:00:00   Set Now
Next calibration:  0001-01-01 00:00:00 Set Now   Cycles:           125
Cycles:            1                Last PM at:       0                      Set Now
Last PM at:        0            Set Now   Cycles before PM: 250000
Cycles before PM:  250000           Accept Input:     Board 1 Input 1
Maint Interval (hr): 0              Reject Input:     Board 1 Input 2




  Forget           Save     Cancel                        Save     Cancel
```

Figure 20: Tool Configuration screen | **Figure 21: Tool Configuration screen – Input tools**

Soft keys

1. Forget – Removes the tool from the unit.
2. No function
3. Save – Saves changes made to the tool configuration.
4. Cancel [ESC] – Cancels changes made to the tool configuration.

Name

The tool name can be up to 25 numbers, letters, or decimal points.

The tool name is shown on screen when running a parameter that uses the tool but is not reported to the network.

Radio Info

The radio info shows the radio address and the firmware version used by the radio to communicate with the Controller. The device has additional firmware to run the tool, but no information about this firmware is reported. Some features require a minimum radio version and tool firmware version.

Radio Version	Features new in the version
4.33	• Two-way functions
3.19	• Improved result buffering
3.17	• Tool enable/disable/antitheft.

This field cannot be edited.

Serial Number

The tool serial number can be up to 14 numbers, letters, or decimal points.

The tool serial number is reported to the network with tightenings performed by the tool but is not shown anywhere on screen besides this menu.

Last Calibration

This field is used to store the date when the tool was last calibrated. The display order of this field is:

<div align="center">year-month-day   hour:minute:second</div>

This field must be updated manually when the tool is calibrated and is for informational purposes only. The date can be set to the current time in the Controller by selecting **Set Now** at the end of the Last Calibration row and pressing the ENT key.

Next Calibration

This field is used to store the date at which the tool should be recalibrated. The display order of this field is:

<div align="center">year-month-day hour:minute:second</div>

This field must be updated manually when the tool is calibrated. The date can be set to the current time in the Controller by selecting **Set Now** at the end of the Next Calibration row and pressing the ENT key. This can be helpful when the recalibration period is a full month or year because you will only need to update the year or month.

Cycles

This field tracks the total number of cycles performed by the tool since it was learned to the box. This cycle count is incremented for both accepted and rejected cycles.

This field cannot be edited. If the tool is forgotten and relearned, the cycle count will restart at 0.

Last PM at

This field stores the cycle count at which the tool last received preventative maintenance. This field must be updated manually when the tool is serviced. The count can be set to the current cycle count by selecting **Set Now** at the end of the row and pressing the ENT key.

Cycles before PM

Range: 0 to 4,294,967,295

This field indicates the number of cycles between preventative maintenance for the tool. If this field is set to 0, no tracking of cycle counts for preventative maintenance is performed.

Maint Interval

Range: 0 to 99

This field indicates the maintenance interval in hours of run time for AccuPulse tools. Setting this field to 0 disables the maintenance interval setting in the tool.

This field is not available for OK/NOK tools.

Accept Input/Reject Input

These fields indicate which inputs were defined as the inputs for the tool. An input tool must have an Accept Input to be used but may be used without a Reject Input. See the chapter on Discrete I/O for more information about how these are configured.

These fields are only listed for input tools and cannot be edited.

Forgetting Tools

Each tool can only be associated with a single Controller at a time but learning a tool to another Controller does not automatically remove it from the previous Controller. If you have moved or are planning to move a tool from one EYFR03 to another, you should have the Controller "forget" the tool. To do so, press **Forget** on the Tool Configuration screen to remove the tool from the Controller. This will cause the Controller to no longer respond to the tool and will make any parameters using the tool and any groups or jobs using those parameters invalid. **If you learn AccuPulse in one-way mode** "90" **and want to relearn it in two-way mode** "91", **you must "forget" the tool first. You cannot just "relearn".**

Parameters

Selecting Parameters
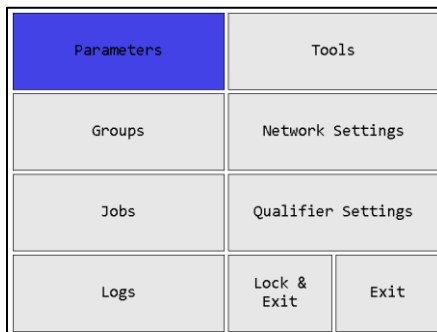
Figure 22: Main Menu - Parameters
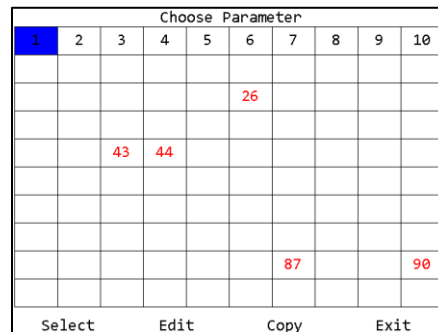
Figure 23: Choose Parameter screen

Soft keys

1. Select – Select the currently highlighted parameter to run and return to the Run screen. Only available for selectable parameters.
2. Edit – Edit the currently highlighted parameter.
3. Copy – Selects the currently highlighted parameter to be copied to another location.
4. Exit [ESC] – Returns to the Main Menu screen.

The Choose Parameter screen shows all the parameters in the unit in a 10x10 grid. Parameters may be highlighted by using the arrow keys to move the highlight to the desired parameter or typing the number of the desired parameter. Only the parameters with tools assigned will show their numbers on the grid. A selectable parameter will have a black number. A defined but not selectable parameter will be shown in red. A parameter is defined when a tool number is assigned to it. If the assigned tool number is an empty tool slot, because either no tool was ever learned or the previous tool was forgotten, the parameter will become unselectable.

Because parameters 1-16 are locked to tools 1-16 respectively, they will be blank if the associated tool slot is empty.

Configuration Options

| Parameter 3 | Parameter 1 | Parameter 21 |

Figure 24: Parameter Edit screen – OK/NOK **Figure 25: Parameter Edit screen – AccuPulse** **Figure 26: Parameter Edit screen - Input**

Soft keys

1. Delete – Deletes all information in the parameter and returns to the Choose Parameter screen. This button is not available for parameters 1-16.
2. No function
3. Save – Saves changes to the parameter and returns to the Choose Parameter screen
4. Cancel [ESC] – Discards changes to the parameter and returns to the Choose Parameter screen

Common Fields

Name

The parameter name can be up to 25 numbers, letters, or decimal points.

The parameter name is shown on screen when running the parameter and reported to the network with tightenings performed in the parameter.

Tool

This setting controls which tool is used by this parameter. You must select a learned tool before a parameter can be used. Parameters 1-16 always use the tool of the same number. (Parameter 1 uses tool 1, parameter 2 uses tool 2, etc.). Parameters 17-100 may be assigned to use any desired tool. Multiple parameters may use the same tool.

If the tool used by a parameter is forgotten, the parameter will become invalid.

Batch

Default: 1

Range: 1 to 255

This setting determines how many good tightenings must be performed in the parameter to complete a batch.

Lock on batch

Default: No

This setting determines if the unit will lock or restart the parameter when a batch is completed. When set to Yes, the Controller will not restart the parameter when a batch is completed and will require a batch reset or parameter selection command to restart the parameter. When set to No, the Controller will restart the parameter when a batch is completed.

This setting is ignored when running the parameter as part of a group or job.

OK/NOK Fields

Time between cycles

Default: 0

Range: 0 to 9999 seconds

This setting controls the minimum amount of time after an accepted tightening before another tightening should be accepted. Any additional tightenings performed within this time after an accepted tightening will be automatically considered a reject.

Time between batches

Default: 0

Range: 0 to 9999 seconds

This setting controls the minimum amount of time after a batch completion before another tightening should be accepted. Any additional tightenings performed within this time after a batch completion will be automatically considered a reject.

AccuPulse Fields

Torque setting

Default: 1

Range: 1 to 40

This setting controls the torque setting of the tool.

Flush detection mode

Default: 1

Range: 1 to 7

Set to 1 for applications with light load before snug point. Set to 7 for applications with heavy loads or varying joint rate before snug point.

Buzzer setting

Default: Off

Range: Off, OK, NOK

This setting controls the when the buzzer in the tool sounds.

Flush detection delay

Default: 0

Range: 0 to 30 seconds

Delays Flush Torque Detection mode and ignores loads for a selected time period

LED light

Default: LED button

Values: LED button, Trigger switch

This setting controls how the LED on the tool is activated.

Crossthread/Rehit detection

Default: 0

Range: 0 to 3.0 seconds

If the clutch is activated before the minimum runtime set by this setting, the tool alerts the operator to a NOK fastening.

Variable speed control

Default: Variable

Values: Variable, Single

This setting controls if the tool run speed can be controlled by use of the trigger.

Cross thread reduction

Default: Off

Range: Off, On >360° Reverse

This setting controls if the tool uses its cross-thread reduction behavior.

Retightening prevention

Default: 0

Range: 0 to 3.0 seconds

This setting controls the amount of time the tool is prevented from operating after shut-off.

Socket extension mode

Default: None

Range: None, 150mm, 250mm

This feature adjusts tool's RPM during pulsing to improve accuracy when using an extension.

Input Fields

Time between cycles

Default: 0

Range: 0 to 9999 seconds

This setting controls the minimum amount of time after an accepted tightening before another tightening should be accepted. Any additional tightenings performed within this time after an accepted tightening will be automatically considered a reject.

Time between batches

Default: 0

Range: 0 to 9999 seconds

This setting controls the minimum amount of time after a batch completion before another tightening should be accepted. Any additional tightenings performed within this time after a batch completion will be automatically considered a reject.

Groups

Selecting Groups

Figure 27: Main Menu - Groups

Figure 28: Choose Group screen

Soft keys

1. Select – Select the currently highlighted group to run and return to the Run screen. Only available for selectable groups.
2. Edit – Edit the currently highlighted group.
3. Copy – Selects the currently highlighted group to be copied to another location.
4. Exit [ESC] – Returns to the Main Menu screen.

The Choose Group screen shows all the groups in the unit in a 10x10 grid. Groups may be highlighted by using the arrow keys to move the highlight to the desired group or typing the number of the desired group. Only the groups with parameters assigned will show their numbers on the grid. A selectable group will have a black number. A defined but not selectable group will be shown in red. A group is defined when one or more parameters are assigned to it. A group will become unselectable if an assigned parameter is unselectable or multiple parameters in the group use the same tool.

Configuration Options

```
                   Group 1
Name:            Group 1
Lock on done:  ◀No▶
Batch beep on: ◀Group▶
Free run mode: ◀No▶




    Delete    Parameters    Save    Cancel
```

Figure 29: Group Edit screen

Soft keys

1. Delete – Deletes all information in the group and returns to the Choose Group screen.
2. Parameters – Goes to the Group Parameter Select screen
3. Save – Saves changes to the group and returns to the Choose Group screen
4. Cancel [ESC] – Discards changes to the group and returns to the Choose Group screen

Name

The group name can be up to 25 numbers, letters, or decimal points.

The group name is shown on screen when running the group but is not sent to the network.

Lock on done

Default: No

This setting determines if the unit will lock or restart the group when the group is completed. When set to Yes, the Controller will not restart the group when all parameter batches are completed and will require a batch reset or parameter selection command to restart the group. When set to No, the Controller will restart the group when it completes.

This setting is ignored when running the group as part of a job.

Batch beep on

Default: Group

Values: Group, Parameter

This setting determines if the unit will sound the batch beep for each parameter in the group or only when the entire group is completed. The UI will show the batch color for each individual parameter when it completes regardless of this setting.

Free run mode

Default: No

This setting determines if the group runs in standard or free run mode. When set to No, the group will run in standard mode. When set to Yes, the group will run in free run mode.

In standard mode, all parameters in the group must complete their batches before any parameter can start a second batch. When a parameter completes, the tool used by that parameter will be disabled. When the whole group is completed and *Lock on done* is set to No, all tools used by parameters in the group will be enabled to run the group again.

Standard mode is intended for applications where multiple parameters must all be run the same number of times. For example, a standard group could be used at a station with two operators that need to attach the left and right brakes to a vehicle. In this case, each vehicle must have both brakes attached, but there is no reason one must be attached before the other. However, each vehicle should have both brakes attached before the next vehicle is started.

In free run mode, parameters in the group can run independently. When a parameter completes, it restarts immediately and may perform additional tightenings. In this mode, the *Lock on done* and *Batch beep on* settings are ignored.

Free run mode is intended for applications where the Controller simply needs to report the tightenings from multiple tools but does not need to synchronize how much one tool runs compared to another.

Group Parameter Selection

```
                          Group 1
                        Parameter                   Batch
   1 │1-Parameter 1                         │         1
   2  2-Parameter 2                                   1
   3  3-Parameter 3                                   1
   4  0-Choose parameter number                       0
   5  0-Choose parameter number                       0
   6  0-Choose parameter number                       0
   7  0-Choose parameter number                       0
   8  0-Choose parameter number                       0




       1-8        9-16                      Exit
```
Figure 30: Group Parameter Select screen

Soft keys

1. 1-8 – Shows parameters slots 1-8 of the group
2. 9-16 – Shows parameter slots 9-16 of the group
3. No function
4. Exit [ESC] –Returns to the Group Edit screen

Changes made on this screen are saved or discarded when exiting the Group Edit screen.

Parameter column

In the parameter column, you may select the parameters for the group by typing the number of the desired parameter in each row. The order on this screen determines the order they are shown on the Run screen but is otherwise not important.

Batch column

In the batch column, you may enter the batch size for the parameter when running it as part of the group. When a parameter is selected, this column will be filled with the batch currently defined in the parameter itself. Changing values in this column only affect the parameter while it

is running in the group but does not change it in any other group or job or when the parameter runs on its own.

Jobs
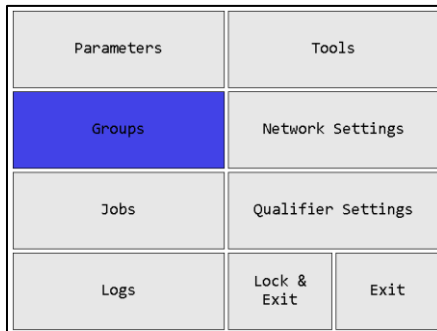
Selecting Jobs

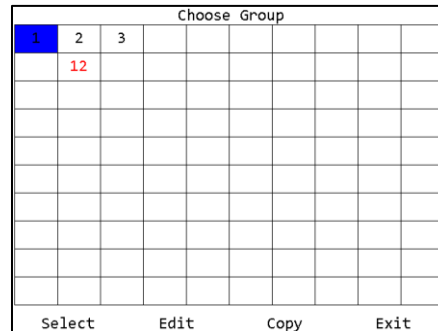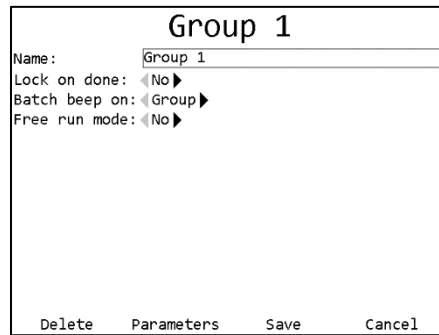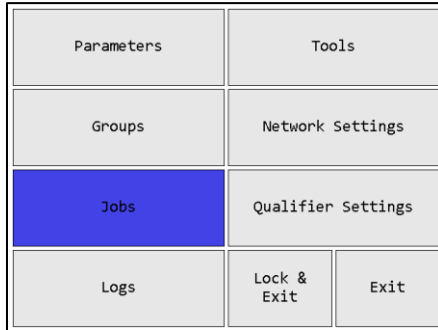**Figure 31: Main Menu - Jobs**
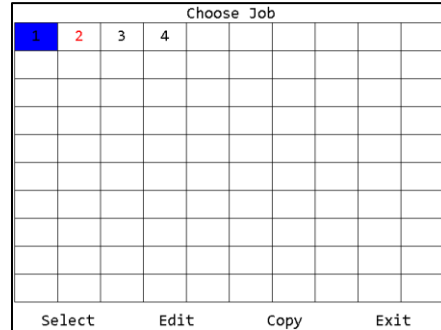
Figure 32: Choose Job screen

Soft keys

1. Select – Select the currently highlighted job to run and return to the Run screen. Only available for selectable jobs.
2. Edit – Edit the currently highlighted job.
3. Copy – Selects the currently highlighted job to be copied to another location.
4. Exit [ESC] – Returns to the Main Menu screen.

The Choose Job screen shows all the jobs in the unit in a 10x10 grid. Jobs may be highlighted by using the arrow keys to move the highlight to the desired job or typing the number of the desired job. Only the jobs with steps assigned will show their numbers on the grid. A selectable job will have a black number. A defined but not selectable job will be shown in red. A job is defined when one or more parameters or groups are assigned to it. If an assigned parameter or group is unselectable or an assigned group is in free mode, the job will become unselectable.

Configuration Options
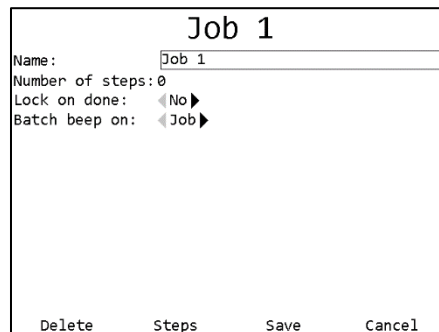
Figure 33: Job Edit screen

1. Delete – Deletes all information in the job and returns to the Choose Job screen.
2. Steps – Goes to the Job Step Select screen
3. Save – Saves changes to the job and returns to the Choose Job screen

4. Cancel [ESC] – Discards changes to the job and returns to the Choose Job screen

Name

The job name can be up to 25 numbers, letters, or decimal points.

The job name is shown on screen when running the job but is not sent to the network.

Number of Steps

Shows the number of steps currently defined in the job.

Lock on done

Default: No

This setting determines if the unit will lock or restart the job when the job is completed. When set to Yes, the Controller will not restart the job when the last step completes. When set to No, the Controller will restart the job when it completes.
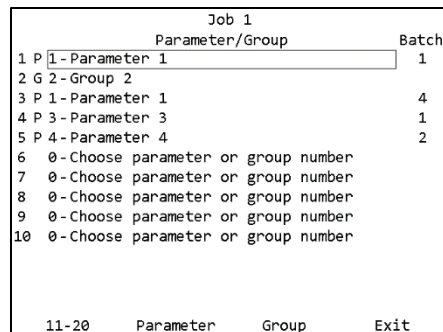
Batch beep on

Default: Job

Values: Job, Parameter

This setting determines if the unit will sound the batch beep for each step in the job or only when the entire job is completed. The UI will show the batch color for each individual parameter when it completes regardless of this setting.

Job Step Selection

```
                        Job 1
                Parameter/Group              Batch
 1 P 1-Parameter 1                             1
 2 G 2-Group 2
 3 P 1-Parameter 1                             4
 4 P 3-Parameter 3                             1
 5 P 4-Parameter 4                             2
 6   0-Choose parameter or group number
 7   0-Choose parameter or group number
 8   0-Choose parameter or group number
 9   0-Choose parameter or group number
10   0-Choose parameter or group number



    11-20      Parameter      Group      Exit
```
Figure 34: Job Step Select screen

Soft keys

1. 11-20 – Shows steps 11-20 of the group. When steps 11-20 are showing, this key changes to "21-30". When steps 21-30 are showing, this key changes to "1-10".
2. Parameter – Makes the selected step in the job a parameter step.
3. Group – Makes the selected step in the job a group step.
4. Exit [ESC] –Returns to the Job Edit screen.

Changes made on this screen are saved or discarded when exiting the Job Edit screen.

Parameter/Group column

In the Parameter/Group column, you may select the parameter or group to run at each step in the job by typing the number of the desired parameter in each row. The P or G to the left of this column indicates whether a parameter or group is currently selected. To switch between a parameter and a group, use the soft keys. The order on this screen determines the order they are run in the job.

Parameters and groups may be used multiple times within the same job. Groups in free run mode cannot be used in a job, since they would never complete and allow the job to continue.

Batch column

In the batch column, you may enter the batch size for the parameter steps when running it as part of the job. This column will be empty for group steps. When a parameter is selected, this column will be filled with the batch currently defined in the parameter itself. Changing values in this column only affect the parameter while it is running in the job but does not change it in any other group or job or when the parameter runs on its own.

<u>Network Settings</u>
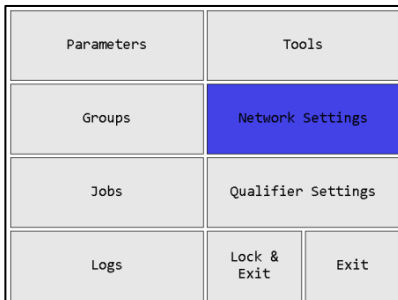
Figure 35: Main Menu - Network Settings
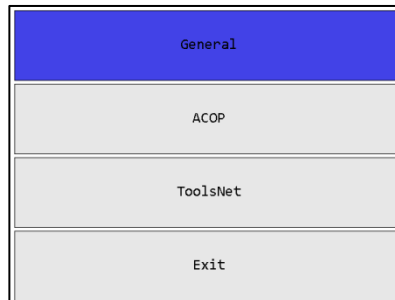
Figure 36: Network Settings Menu - General
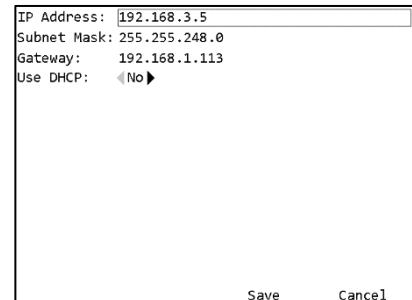
Figure 37: General Network Settings

Soft keys

1. No function
2. No function
3. Save – Saves changes to the general network settings and returns to the Network Settings menu
4. Cancel [ESC] – Discards changes to the general network settings and returns to the Network Settings menu

Changes to these settings only apply after the Controller is rebooted.

See the protocol specific chapters for information about the configuration options for each protocol.

Configuration Options

IP Address

<u>Default</u>: 192.168.1.68

This setting controls the IP address of the Controller for Ethernet networks.

Subnet Mask

Default: 255.255.255.0

This setting controls the subnet mask for Ethernet networks.

Gateway

Default: 192.168.1.13

This setting controls the default gateway setting for Ethernet networks.

Use DHCP

Default: no

This setting determines if the controller will attempt to automatically acquire a network address or if it will use the one entered manually. When set to yes, the IP Address, Subnet Mask, and Gateway settings are ignored.

Controller Settings

The Controller Settings screen contains the settings for the overall unit.
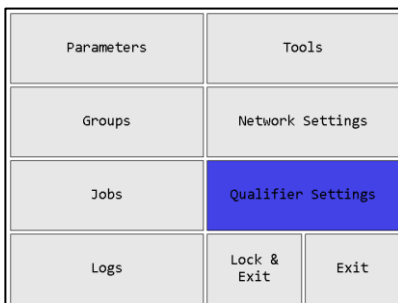
Figure 38: Main Menu – Controller Settings
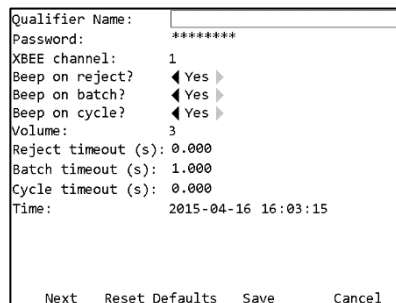
Figure 39: Controller Settings – Page 1
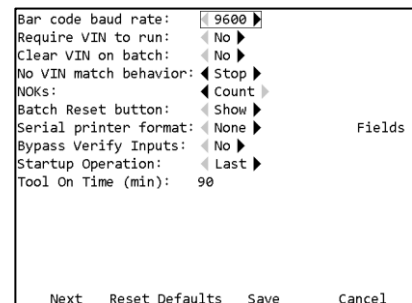
Figure 40: Controller Settings – Page 2

Soft keys

1. Next – Goes to the other page of the Controller Settings screen.
2. Reset Defaults – Goes to the Reset Defaults screen
3. Save – Saves changes made to the Controller configuration.
4. Cancel [ESC] – Cancels changes made to the Controller configuration.

Page 1

Controller Name

The Controller name can be up to 25 numbers, letters, or decimal points.

The Controller name is sent to the network in the Controller Name field of various commands.

Password

The password can be up to 10 numbers. The "password" shown on this screen is a placeholder and does not necessarily represent the length of the actual password. To change the unit password, select the password field and press ENT, which will take you to the Enter new Password screen. If there is no password, this field will be blank.

XBEE channel

Default: 1

Range: 1 to 12

This setting controls which channel is used by the Controller radio. All tools learned to the Controller will be set to this channel automatically as part of the learn process. In general, this setting does not have to be changed, but if tool communication is not working reliably, changing this setting may improve communication. When a change to this setting is saved, the unit will go to the Channel Change screen to guide you through updating all learned tools to use the new channel.

If you want the Controller to suggest a channel, you can press **Scan** to go to the XBEE Channel screen shown below.

The radio frequencies used by each channel can be found in *Chapter 13: Product Specifications*.

Beep on reject?

Default: Yes

This setting determines if the Controller will sound the beeper when a rejected tightening is received. The reject sound is one long beep.

Beep on batch?

Default: Yes

This setting determines if the Controller will sound the beeper when a batch is completed. The batch sound is four short beeps. When running a group or job, the beep controlled by this setting may be for each parameter batch or for the complete group or job. See the Groups and Jobs sections for more information about those settings.

Beep on cycle?

Default: Yes

This setting determines if the Controller will sound the beeper when an accepted tightening is received that would not trigger the batch sound. The cycle sound is two short beeps.

Volume

Default: 3

Range: 0 to 10

This setting controls the volume of the beeper. When set to 0, the beeper will not sound at all, regardless of the other *Beep on X* settings. A setting of 3 or below is recommended while using the Controller in an office or other environment without much background noise.

Reject timeout

Default: 2 seconds

Range: 0 to 10 seconds

This setting controls how long the on-screen indication of a rejected tightening will be shown. When set to 0, the indication will remain until another tightening is received for the parameter or the Controller changes or stops the currently running operation. Partial seconds may be entered for this setting.

Rejects are indicated by shading the screen red behind the parameter that received the reject.

Batch timeout

Default: 2 seconds

Range: 0 to 10 seconds

This setting controls how long the on-screen indication of a tightening that completes a batch will be shown. When set to 0, the indication will remain until another tightening is received for the parameter or the Controller changes or stops the currently running operation. Partial seconds may be entered for this setting.

Batch completions are indicated by shading the screen blue or yellow behind the parameter that received the result to complete a batch.

Cycle timeout

Default: 2 seconds

Range: 0 to 10 seconds

This setting controls how long the on-screen indication of an accepted tightening that was not the last in a batch will be shown. When set to 0, the indication will remain until another tightening is received for the parameter or the Controller changes or stops the currently running operation. Partial seconds may be entered for this setting.

Cycles are indicated by shading the screen green behind the parameter that received the cycle.

Time

This row allows you to set the current time used by the unit. The display order of this field is:

<div align="center">year-month-day hour:minute:second</div>

Each piece of the time may be edited by using the left and right arrows to select the various pieces of the time and the number keys to set the new value.

Page 2

Bar code baud rate

Default: 9600

Values: 9600, 19200, 38400, 57600, 115200

This setting should be set to match the baud rate used by a serial bar code reader, if one is used. If this setting is not configured correctly, bar codes will not be correctly processed.

Require VIN to run

Default: No

This setting determines if the Controller requires a VIN to be entered before tools will be allowed to run. When set to Yes, the Controller will be automatically suspended whenever there is no currently entered VIN. When set to No, the Controller will not check the VIN before allowing tools to run.

A VIN may be entered through either the bar code scanner or a network command. The VIN may be cleared by a network command, a discrete input, or the *Clear VIN on batch* setting. If the VIN is cleared while an operation is running and this setting is set to Yes, the Controller will immediately suspend until a new VIN is entered.

Clear VIN on batch

Default: No

This setting determines if the Controller automatically clears the VIN when a batch completes. When set to No, the Controller will never automatically clear the VIN. The VIN may still be cleared by other means, such as a network command or discrete input.

When set to Yes, the Controller will clear the VIN when an operation completes, regardless of if the operation is set to repeat. When directly running a parameter, the VIN will be cleared when a batch is completed. When running a standard group, the VIN will be cleared when all parameters in the group have completed. When running a free group, the VIN will never be cleared. When running a job, the VIN will be cleared when the last step in the job is completed.

No VIN match behavior

Default: No

Values: Continue, Stop, Ignore

This setting determines how the Controller behaves if a VIN if a selection scan that does not match one of the defined selectors is received. The behavior of this option is described in *Chapter 4: Serial Communications.*

NOK Options

Default: Report

Values: **Ignore, Display, Report, Count**

This setting determines how the unit will handle NOK results (or rejects). The following table summarizes the behavior for the different levels:

Level	Beep[1]	Show on Screen	Store in Flash	Report to Network	Overall bad[2]	Increment Count
Ignore	No	No	No	No	No	No
Display	Yes	Yes	No	No	No	No
Report	Yes	Yes	Yes	Yes	No	No
Count	Yes	Yes	Yes	Yes	Yes	Yes

1. Unit will only beep if Beep on reject is set to Yes and Volume is not 0.
2. Overall bad will be indicated by shading the operation name on the top row of the Run screen yellow and will show yellow instead of blue in the parameter area when the parameter batch is completed.

All results from tools that are not currently running are ignored, regardless of this setting.

Batch Reset button

Default: Show

Values: Show, Hide

This setting determines if the Batch Reset button is available on the Run screen.

Serial printer format

Default: None

Values: None, Line, CSV

This setting determines the format used for serial printing of tightenings.

Bypass Verify Inputs

Default: no

This setting determines if the Verify Tool and Verify Socket inputs are ignored. See the Discrete I/O section of the manual for more information about the inputs.

Startup Operation

Default: Last

Values: Last, None

This setting determines what operation will be run on unit startup. If set to Last, the last running operation when the unit turned off will be restarted at the beginning of the operation when the unit turns on. If set to None, the unit will be in the No active parameter state on startup.

Tool On Time

Default: 90 minutes

Values: 20 to 720 minutes

This setting determines how long an AccuPulse tool stays on without use before it sleeps. OK/NOK tools are not affected by this setting.

Enter new Password

```
          Enter new password



              123456




 Remove              Save     Cancel
```
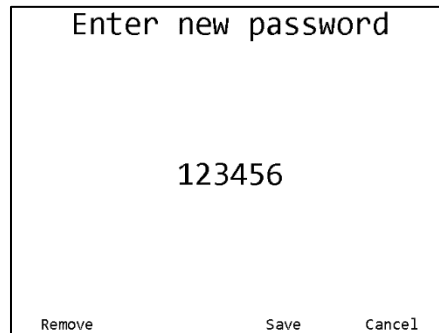
Figure 41: Enter new Password screen

Soft keys

1. Remove – Clears the unit password and returns to the Controller Settings screen.
2. No function
3. Save [ENT] – Keeps changes to the password and returns to the Controller Settings screen.
4. Cancel [ESC] – Cancels changes made to the password and returns to the Controller Settings screen.

The Enter new password screen allows you to change the password to a string of up to 10 digits. *Note that the password entered on this screen will be shown in clear text as it is typed.* Enter the new password by typing the desired series of digits and pressing **Save** or ENT. *The new password will not be saved to permanent memory until saving from the Controller settings screen*.

If you decide not to change the password, press **Cancel** or ESC.

You may completely remove the password from the unit by pressing **Remove**. Removing the password will allow unrestricted access to all functions of the unit until a new password is entered. If you only want to temporarily disable the password, use the **Exit** button on the Main Menu screen as described to return to the Run screen.

XBEE Channel Noise

The XBEE Channel Noise screen will test each of the available channels to determine how much noise is already on those channels. The channel with the lowest amount of noise will be indicated by a blue bar.

```
        XBEE Channel Noise
          (Smaller bar is better)




 1  2  3  4  5  6  7  8  9  10 11 12
              Set Ch 11      Exit
```
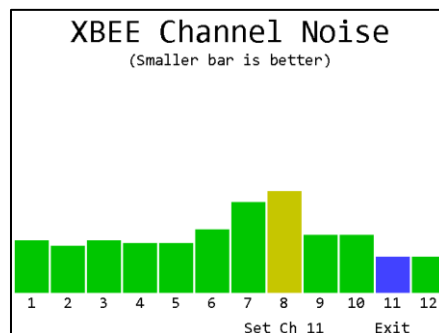
Figure 42: XBEE Channel Noise screen

Function keys

1. No function
2. No function
3. Set Ch X [ENT] – Selects the best channel and returns to the Controller Settings screen.
4. RETURN [ESC] – Returns to the Controller Settings screen without selecting a channel.

The new channel will not be saved to permanent memory until saving from the Controller Settings screen. When a channel change is saved, the unit will go to the Channel Change screen to guide you through updating all learned tools to use the new channel after saving from the Controller Settings screen.

Serial Printer Field Selection
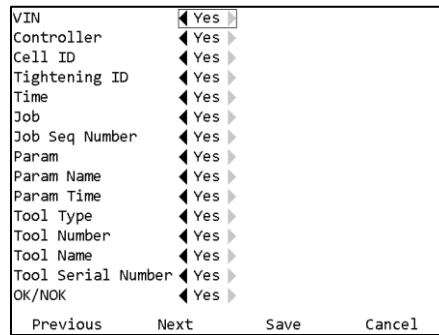
```
VIN                ◀ Yes ▶
Controller         ◀ Yes ▶
Cell ID            ◀ Yes ▶
Tightening ID      ◀ Yes ▶
Time               ◀ Yes ▶
Job                ◀ Yes ▶
Job Seq Number     ◀ Yes ▶
Param              ◀ Yes ▶
Param Name         ◀ Yes ▶
Param Time         ◀ Yes ▶
Tool Type          ◀ Yes ▶
Tool Number        ◀ Yes ▶
Tool Name          ◀ Yes ▶
Tool Serial Number ◀ Yes ▶
OK/NOK             ◀ Yes ▶

   Previous     Next      Save      Cancel
```
Figure 43: Serial Printer Field Selection screen

Function keys

1. PREVIOUS – Move to the previous set of serial printer fields
2. NEXT – Move to the next set of serial printer fields
3. SAVE – Accepts the field selections and returns to the Unit Setup screen.
4. CANCEL – Returns to the Unit Setup screen without changing the selected fields.

The new field selections will not be saved to permanent memory until saving from the Unit Setup screen.

Reset Defaults

```
        Select Items to Reset
Tools                ◀ No ▶
Parameters           ◀ No ▶
Groups               ◀ No ▶
Jobs                 ◀ No ▶
Qualifier Settings   ◀ No ▶
Network Settings     ◀ No ▶
Tightenings          ◀ No ▶
Events               ◀ No ▶
I/O Config           ◀ No ▶
VIN Selections:      ◀ No ▶




    Reset All           Reset    Cancel
```
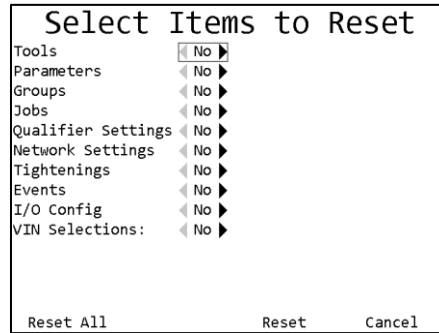
Figure 44: Reset Defaults screen

Soft keys

1. Reset All – Resets all configuration to factory defaults.
2. No function
3. Reset – Resets the selected parts of the configuration to factory defaults.
4. Cancel [ESC] – Returns to the Controller Settings screen without resetting any configuration.

The Reset Defaults screen allows you to restore the unit to the factory defaults. You may select some or all parts of the configuration to reset.

Resetting some parts of the configuration may invalidate other parts that are not being reset.

Resetting…	May invalidate…
Tools	Parameters, Groups, Jobs
Parameters	Groups, Jobs
Groups	Jobs
Jobs	none
Controller Settings	Tools[1]
Network Settings	none
Tightenings	none
Events	none
I/O Config	none
VIN Selections	none

---

[1] If the XBEE channel was changed from the default, the unit will go to the Channel Change screen to update the tools back to the default XBEE channel when resetting the default Controller settings.

Channel Change

When you change the XBEE channel from the Controller Settings screen, the unit will go to the Channel Change screen to update the learned tools with the new channel setting.

Figure 45: Channel Change screen
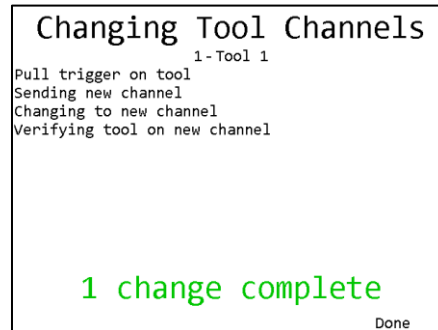
Figure 46: Channel Change, tool 1 complete

Tools will need to be cycled to perform the channel change. Once all tools have been updated, the unit will return to the main menu. If you cannot perform the update on all learned tools at this time, you may press **Skip** to skip the tool. This will allow the unit to finish the channel change, but will leave any skipped tools on the previous channel. When you want to use the tools that were not updated, they must be updated to the correct channel by pulling the battery and replacing it in the tool. Make sure no other units are in learn mode when you do this, or the tool may learn to the other unit instead. The tool should reconnect to the unit on the new channel and return to normal function.

Events
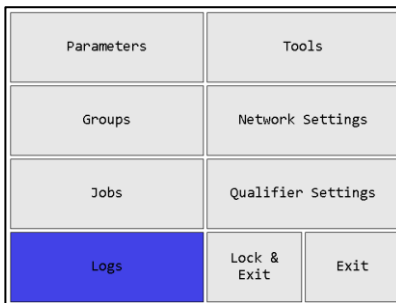
Figure 47: Main menu – Logs
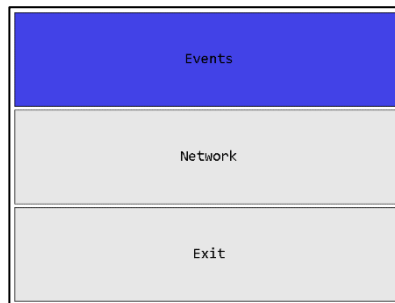
Figure 48: Logs Menu screen – Network

Figure 49: Network Log screen

Soft keys

1. No function
2. Previous – Go to the previous page of more recent events. When on the first page, this key will be blank.
3. Next [ENT] – Go to the next page of older events. When on the last page, this key will be blank.
4. Exit [ESC] – Returns to the Run screen.

The Events screen shows the log of non-tightening events that have occurred. More information is available via the PC software application. This screen shows:

- Time – The time the event occurred. The date is indicated at the top of the table and each time it changes. The current time is shown at the bottom of the screen for comparison.
- Code – The event code for this event.
- Event – The name of this event.
- Source – The source that caused the event.
- Status – The status of the event. 0 indicates success, non-zero indicates an error.

Network Log

Figure 50: Main menu – Logs

Figure 51: Logs Menu screen – Network

Figure 52: Network Log screen

Function keys

1. No function
2. Previous – Go to the previous page of more recent network events. When on the first page, this key will be blank.
3. Next [ENT] – Go to the next page of older network events. When on the last page, this key will be blank.
4. Return [ESC] – Returns to the Run Screen.

The Network Log screen shows the log of network events that have occurred since the Controller started up. This log is not maintained across reboots or power cycles. This screen shows:

- Time – The time the event occurred. The date is indicated at the top of the table and each time it changes. The current time is shown at the bottom of the screen for comparison.
- Source – The remote IP address for this event.
- Packet – Information about the packet sent or received or network connection start/stop.

Chapter 4: Serial Communications

Introduction

The EYFR03 has a DSUB-9 serial port that provides bar code reading and serial printing functionality. As the same connector is used for both functions, you will need a special Y-style cable if you want to attach both a barcode reader and a serial printer to the EYFR03 at the same time.
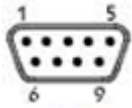
Pin	Usage
2	Receive
3	Transmit
5	Ground

Barcode

The bar code functionality of the EYFR03 was developed and tested against the Symbol LS2208 bar code reader, which uses CODE39 bar codes. This format starts and ends all bar codes with an asterisk "*".

The EYFR03 further specifies a format of data within the bar code. The data is grouped into sections, separated by a percent symbol "%". If the bar code data does not start and end with a percent symbol, it will be treated as a VIN number. The general structure for a command bar code is:

```
*%<command>%<data>%*
```

A VIN bar code is:

```
*<VIN number>*
```

The remainder of this chapter lists the bar code commands provided by the unit. Section headings are the command number followed by the command name.

1. Cell ID

This command sets the Cell ID number reported by the unit in ACOP result messages.

Data: number of up to 4 digits (0-9999)

Example:

```
*%01%4305%*
```

This bar code would set the Cell ID of the unit to 4305.

2. Channel ID

This command sets the Channel ID number reported by the unit in ACOP result messages.

Data: number of up to 2 digits (0-99)

Example:

```
*%02%19%*
```

This bar code would set the Channel ID of the unit to 19.

3. Controller Name

This command sets the Controller Name of the unit.

<u>Data:</u> up to 25 characters

<u>Example:</u>

```
*%03%air - bag%*
```

This bar code would set the Controller Name of the unit to "air - bag".

4. VIN

This command sets the VIN or Identifier part 1 (VIN characters 1-25) reported by the unit in tightening result messages, the ACOP MID 0052 Vehicle ID Number, and the ACOP MID 0152 Multiple identifier and result parts notifications.

<u>Data:</u> up to 25 characters

<u>Example:</u>

```
*%04%VIN1234567%*
```

As mentioned above, a bar code is assumed to be a VIN number if the data is not in the command format. As such, the same VIN could be provided as:

```
*VIN1234567*
```

5. Start Job

This command instructs the unit to select a job. Any other running parameter, group, or job will be stopped before starting the new job.

<u>Data:</u> number of up to 3 digits specifying the job number to run (1-100)

<u>Example:</u>

```
*%05%32%*
```

This bar code would instruct the unit to start job number 32.

6. Identifier part 2

This command sets the Identifier part 2 (VIN characters 26-50) reported by the unit in tightening result messages and the ACOP MID 0152 Multiple identifier and result parts notifications.

<u>Data:</u> up to 25 characters

<u>Example:</u>

```
*%06%B23FJ9S3%*
```

7. Identifier part 3

This command sets the Identifier part 3 (VIN characters 51-75) reported by the unit in tightening result messages and the ACOP MID 0152 Multiple identifier and result parts notifications.

<u>Data:</u> up to 25 characters

Example:

%07%GU49CN53%

8. Identifier part 4

This command sets the Identifier part 4 (VIN characters 76-100) reported by the unit in tightening result messages and the ACOP MID 0152 Multiple identifier and result parts notifications.

Data: up to 25 characters

Example:

%08%RU39CN53%

10. Reset batch count

This command resets the count of all currently running parameters on the unit.

Data: none

Example:

%10%%

To reset the batch count of a single parameter when running a group with multiple parameters, use command 30. Reset parameter batch count.

11. Start Parameter

This command instructs the unit to start a parameter. Any other running parameter, group, or job will be stopped before starting the new parameter.

Data: number of up to 3 digits specifying the parameter number to select (1-100)

Example:

%11%73%

This bar code would select parameter 73.

12. Start Group

This command instructs the unit to select a group. Any other running parameter, group, or job will be stopped before starting the new group.

Data: number of up to 3 digits specifying the group number to select (1-100)

Example:

%12%26%

This bar code would select group 26.

13. Stop

This command instructs the unit to stop any running parameter, group, or job.

Data: none

Example:

<p align="center">*%13%%*</p>

30. Reset parameter batch count

This command resets the count of the specified parameter. If the specified parameter is not running, this bar code is ignored.

Data: number of up to 3 digits specifying the parameter number to reset the batch (1-100)

Example:

<p align="center">*%30%35%*</p>

This bar code would reset the current batch count of parameter 35.

To reset all batch counts at once, use command 10. Reset batch count.

Serial Printer

The EYFR03 provides serial printer output in two formats, line and CSV. The EYFR03 will print tightenings based on the format selected on the second page of the Unit Setup menu. Additionally, rejects may not be printed based on the Report to Network column of the NOKs setting table. Both line and CSV formats contain the following fields in the same order:

- VIN
- Controller Name
- Cell ID
- Tightening ID
- Time
- Job Number
- Job Sequence Number
- Parameter Number
- Parameter Name
- Last Parameter Write Time
- Tool Number
- Tool Name
- Tool Serial Number
- OK/NOK
- Result
- Count
- Batch
- Batch Status

VIN Selections

Starting with version 1.2.5, you may configure the EYFR03 to use VIN barcode scans to select a parameter, group, or job. The selections must be configured via the Assembly Manager program.

Both the Atlas Copco Open Protocol and EtherNet/IP^{TM} can provide a VIN to the EYFR03. VINs received from these protocols will still be placed in the VIN field, but they are ignored by the VIN selection feature. If a network is able to provide VINs, it is expected that the network will also control the selection of operations through one of the mechanisms provided in that protocol.

Settings

No match behavior

Default: Continue

Values: Continue, Stop, Ignore

This setting determines what happens when a selector scan does not match one of the VIN selections.

When set to Continue, the EYFR03 will store the scan in its Selector field, but will not stop or change the running operation for a non-matching scan.

When set to Stop, the EYFR03 will discard the scan and blank both the Selector and VIN fields and will stop the running operation for a non-matching scan.

When set to Ignore, the EYFR03 will ignore any selector scans that do not match one of the VIN selections and act as if the scan never occurred.

Selection mode

Default: Single Scan

Values: None, Single Scan, Dual Scan, VIN then Selector, Selector then VIN

This setting determines the mode the EYFR03 uses for the VIN Selection feature. The modes will be described in more detail in the next section.

Second scan timeout

Default: 5

Range: 0-99 seconds

This setting determines how long the EYFR03 will wait for a second scan when using one of the selection modes requiring two scans. If a valid second scan is not received during the timeout, the EYFR03 will discard the first scan, and if No match behavior is Stop, will also stop the running operation.

VIN length

Default: Variable

Values: Variable, Fixed (1-25 characters)

This setting determines how long a scan must be to be considered a valid VIN. When set to Variable, any scan length up to 25 characters is allowed. When running in None mode, this setting allows you to specify the length of a VIN scan without using the rest of the VIN Selections features.

Selector length

Default: Variable

Values: Variable, Fixed (1-25 characters)

This setting determines how long a scan must be to be considered a valid selector. When set to Variable, any scan length up to 25 characters is allowed. When running in None or Single Scan modes, this setting is ignored.

Characters to match

This setting is used to specify which characters in a scan the EYFR03 should look at when comparing against the selection list. You may select some or all the characters and are allowed to have gaps between matched characters if needed.

VIN Selection Matches

Each entry in the VIN Selection Match list has a few values that you can set.

Match – The string of characters that must be found in the scan.

Type – The type of item to be selected for a matching selector. One of Parameter, Group, or Job.

Number – The item number to be selected for a matching selector. 1-100.

Batch – If selecting a batch, the batch size to use for a matching selector. 0 to use the batch size defined in the parameter, or 1-255 to override the batch size defined in the parameter.

Match Examples

Consider the following selectors:

1**FV**6HL**B**AXP

1**FV**PP3**B**X5M

J**H2**RC4**4**1X2

To have the EYFR03 look at the marked (bold/underline) characters in the scans for its match, you would select characters 2, 3, and 7 as the Characters to match. To match the first two scans, you would enter "FVB" for the Match field in the selection list. To match the third scan, you would enter "H24" for the Match field in the selection list.

Selection Modes

The EYFR03 will use one of several modes to determine how it uses the VIN to make selections:

None

No selections are made based on barcode scans. The VIN length setting will still be used to validate VIN scans, but the EYFR03 will not select an operation based on the scan. If you want to keep the defined list of selections, but temporarily not use them, put the EYFR03 in this mode.

Single Scan

All scans are treated as both VINs and selectors. The selector length setting is not used in this mode, and only scans matching the VIN length will be processed. The EYFR03 will check each scan against its selection list for a match and start the appropriate operation if a match is found.

Dual Scan

Scans are treated as either VINs or selectors based on their length. The VIN and selector lengths must be different to use this mode. The VIN length or selector length may be variable, but not both. Any scan that matches the VIN length (or does not match the selector length, if the VIN is variable length) will be put in the VIN field but will not cause the EYFR03 to select an operation. The EYFR03 will check any scan that matches the selector length (or does not match the VIN length, if the selector is variable length) against its selection list for a match and start the appropriate operation if a match is found.

Selector then VIN

The EYFR03 will require a selector scan first followed by a VIN scan. In this mode, the VIN and selector lengths may be the same or different. While the EYFR03 is waiting for the first scan, it will ignore any scans that do not match the selector length. Once a valid length scan is found, the EYFR03 will process it as a selector, checking it against the selection list for a match but not immediately starting the matching operation. If the scan is a match or the No match behavior is Continue, the EYFR03 will start waiting for a VIN scan. Once a valid length scan is found, the EYFR03 will start the matching operation from the selector scan.

VIN then Selector

The EYFR03 will require a VIN scan first followed by a selector scan. In this mode, the VIN and selector lengths may be the same or different. While the EYFR03 is waiting for the first scan, it will ignore any scans that do not match the VIN length. Once a valid length scan is found, the EYFR03 will store it as the VIN and start waiting for a selector scan. Once a valid length selector scan is found, the EYFR03 will process it as a selector, checking it against the selection list for a match and starting the matching operation if a match is found.

Chapter 5: Discrete I/O

Introduction

The EYFR03 provides assignable I/O connections. Most of the I/O will be provided by additional devices. These devices will be connected via the 5-pin remote connector and can be chained to provide as much or as little I/O as is needed. The EYFR03-A includes some I/O in the unit (8 inputs, 12 outputs). A matching cable for this connector is also available.

Discrete I/O Specifications

Electrical Specifications

Opto-Isolated Inputs

Item	Value			Unit
	min	typ	max	
Voltage	3.3	24	24	V DC
Current		20	60	mA
Impedance		1.5		KΩ

Relay Outputs

Item		Value	Unit
Dry contact	Voltage	24	V DC
	Current (each)	2	A
Wet contact	Voltage	24	V DC (fixed)
	Current (each)	2	A
	Current (total)	2	A (fused)

Pinout
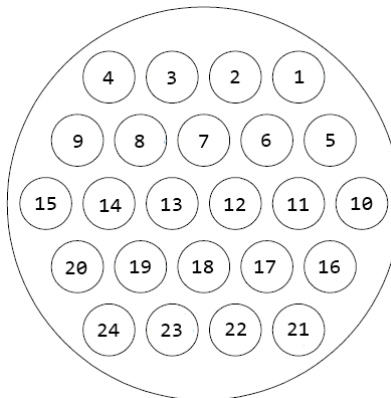
Figure 53: I/O Connector Pinout

Number	Type	Wire color	Function
1	Output	White	Relay 1
2	Output	White/Yellow	Relay 2
3	Output	White/Green	Relay 3
4	Output	White/Red	Relay 4
5	Output	White/Blue	Relay 5
6	Output	White/Orange	Relay 6
7	Output	White/Grey	Relay 7
8	Output	White/Purple	Relay 8
9	Output	Red	Relay 9
10	Output	Red/Black	Relay 10

11	Output	Red/Yellow	Relay 11
12	Output	Red/Green	Relay 12
13	Input	Blue	Opto 1
14	Input	Black	Opto 2
15	Input	Pink	Opto 3
16	Input	Green	Opto 4
17	Input	Orange	Opto 5
18	Input	Yellow	Opto 6
19	Input	Grey	Opto 7
20	Input	Purple	Opto 8
21	Power	White/Black	+24 VDC
22	Power	White/Black/Red	Relay common
23	Power	Dark Brown	Opto common
24	Power	Light Brown	Ground

Because the opto inputs and relay outputs may be assigned to a variety of functions, as detailed in the following sections, this table can only show the location of the relays and optos.

Common Points

All inputs share a single common. To use the box ground as the common, connect Ground (pin 24) to Opto common (pin 23) on the I/O connector.

All relays share a common point. By default, the relays are configured in a dry contact configuration. To convert the unit to wet contacts, connect +24 VDC (pin 21) to Relay common (pin 22) on the I/O connector. This makes all outputs wet contacts; the unit does not support configurations with some wet and some dry contacts.

Equivalent Circuit

RELAY 1 | 1 | 2A Relay
RELAY 2 | 2 | 2A Relay
RELAY 3 | 3 | 2A Relay
RELAY 4 | 4 | 2A Relay
RELAY 5 | 5 | 2A Relay
RELAY 6 | 6 | 2A Relay
RELAY 7 | 7 | 2A Relay
RELAY 8 | 8 | 2A Relay
RELAY 9 | 9 | 2A Relay
RELAY 10 | 10 | 2A Relay
RELAY 11 | 11 | 2A Relay
RELAY 12 | 12 | 2A Relay
OPTO 1 | 13 | 1.5 kO
OPTO 2 | 14 | 1.5 kO
OPTO 3 | 15 | 1.5 kO
OPTO 4 | 16 | 1.5 kO
OPTO 5 | 17 | 1.5 kO
OPTO 6 | 18 | 1.5 kO
OPTO 7 | 19 | 1.5 kO
OPTO 8 | 20 | 1.5 kO

+24 VDC

FUSE

+24 VDC | 21
RELAY COMMON | 22
OPTO COMMON | 23
GROUND | 24

Assigning I/O Functions

The inputs and outputs must be configured before use. By default, the unit does not ship with any relay configuration. To configure the inputs and outputs, you will need to use the PC software application.

I/O Status
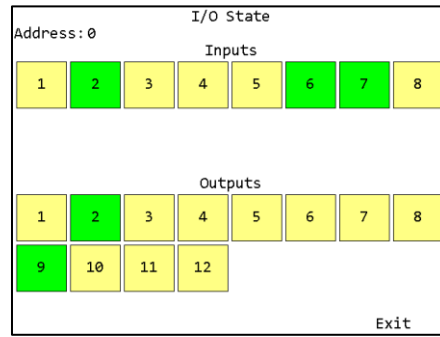
Figure 54: I/O Status screen

The I/O Status screen shows the current state of the physical inputs and outputs to the EYFR03. If you have not configured the I/O, this screen will just say "I/O not configured" instead of showing the inputs and outputs as pictured above. If you have configured the I/O and this screen shows another message, please contact product support.

Once the I/O is configured, the screen will show the state of each input. A high input or output will be filled in with green. A low input or output will be filled with yellow.

Inputs

The inputs of the EYFR03 Controller take 3.3-24VDC and have low current drain. The discrete I/O has a single common pin for all inputs and a signal pin for each input. The inputs can be used to select an item to run or control the Controller.

The selection inputs should not be used when the unit is being controlled by a network protocol, as this will generally result in unexpected behavior. Some control inputs, notably the suspend input, may also cause unexpected behavior when used along with a network.

<u>Selection inputs</u>

Select Parameter #X

Inputs used: 1 per parameter

This input selects a parameter when activated. One version of this input exists for each of the 100 available parameters (Select Parameter 1, Select Parameter 2, etc.). If the parameter is not configured with a valid tool, activating an assigned input will do nothing. Deactivating the input does not stop the parameter. The parameter will remain selected until the parameter is stopped, or another parameter, group, or job is selected.

Select Group #X

Inputs used: 1 per group

This input selects a group when activated. One version of this input exists for each of the 100 available groups (Select Group 1, Select Group 2, etc.). If the group is not configured with one or more valid parameters, activating an assigned input will do nothing. Deactivating the input does not stop the group. The group will remain selected until the group is stopped, or another parameter, group, or job is selected.

Select Job #X

Inputs used: 1 per job

This input selects a job when activated. One version of this input exists for each of the 100 available jobs (Select Job 1, Select Job 2, etc.). If the job is not configured, activating an assigned input will do nothing. Deactivating the input does not stop the job. The parameter will remain selected until the job is stopped, or another parameter, group, or job is selected.

Select Parameter (binary)

Inputs used: up to 7

This group of inputs is used together to select a parameter. The inputs are read together as a binary number to determine which parameter to activate. The current parameter will remain selected until the inputs correspond to another configured parameter, the parameter is stopped, or another parameter, group, or job is selected.

The number of required inputs depends on the maximum parameter that will be selected. See the *Binary selection of operations* section below for more details about how to assign this field.

Select Group (binary)

Inputs used: up to 7

This group of inputs is used together to select a group. The inputs are read together as a binary number to determine which group to activate. The current group will remain selected until the inputs correspond to another configured group, the group is stopped, or another parameter, group, or job is selected.

The number of required inputs depends on the maximum group that will be selected. See the *Binary selection of operations* section below for more details about how to assign this field.

Select Job (binary)

Inputs used: up to 7

This group of inputs is used together to select a job. The inputs are read together as a binary number to determine which job to activate. The current job will remain selected until the inputs correspond to another configured job, the job is stopped, or another parameter, group, or job is selected.

The number of required inputs depends on the maximum parameter that will be selected. See the *Binary selection of operations* section below for more details about how to assign this field.

Stop Operation

Inputs used: 1

This input is used to stop the currently running operation when activated and put the unit into a No Active Parameter state.

Control Inputs

Suspend Controller

Inputs used: 1

This input is used to suspend the Controller. When this input is activated, all tools will be disabled and no results will be accepted. While this input remains active, parameters, groups, or jobs can be started, but the associated tools will not be enabled until this input is deactivated.

Suspend Tool #X

Inputs used: 1 per tool

This input is used to suspend an individual tool. When this input is activated, the associated tool will be disabled and no results will be accepted.

This input is most useful when running a group in free run mode. Suspending individual tools within a free run group allows running multiple tools simultaneously and independently while still retaining the ability to disable a single tool.

Batch Reset

Inputs used: 1

This input is used to reset the batch of the running operation. If the current operation is a group, the batch count for all parameters in the group will be reset. If the current operation is a job, the batch count for the current step in the job will be reset. If the job was completed but not automatically restarted, the whole job will be restarted.

Operation Reset

Inputs used: 1

This input is used to reset the running operation. This input is the same as Batch Reset, except when running a job. When a job is running, activating this input will restart the entire job at the first step, regardless of where the Controller was in the job.

Clear VIN

Inputs used: 1

This input is used to clear the VIN from the Controller. This input will clear the VIN regardless of the source that initially provided it (bar code or Ethernet).

Clear ID Part 2

Inputs used: 1

This input is used to clear the ID Part 2 field from the Controller. This input will clear the ID Part 2 regardless of the source that initially provided it (bar code or Ethernet).

Clear ID Part 3

Inputs used: 1

This input is used to clear the ID Part 3 field from the Controller. This input will clear the ID Part 3 regardless of the source that initially provided it (bar code or Ethernet).

Clear ID Part 4

Inputs used: 1

This input is used to clear the ID Part 4 field from the Controller. This input will clear the ID Part 4 regardless of the source that initially provided it (bar code or Ethernet).

Clear All Identifiers

Inputs used: 1

This input is used to clear the VIN and ID Parts 2-4 fields from the Controller. This input will clear the identifiers regardless of the source(s) that initially provided them (bar code or Ethernet).

Bypass VIN

Inputs used: 1

This input is used to bypass the requirement to have a VIN entered to perform an operation. While this input is active, the "Require VIN to run" Controller setting is ignored. If this input is deactivated during an operation while the Require VIN setting is set to Yes and no VIN is entered, the unit will be suspended.

Verify Tool #X

Inputs used: 1 per tool

This input is used to verify an individual tool. When this input is activated, the associated tool will be assumed to be pulled from its tray.

When a verify tool input is defined, a parameter will be suspended until only the correct tool is pulled from its tray. If a group is running, all tools active in the group must be pulled.

Verify Socket #X

Inputs used: 1 per socket

This input is used to verify a socket. When this input is activated, the associated socket will be assumed to be pulled from its tray.

When a verify socket input is defined, any parameters with a socket specified will be suspended until only the correct socket is pulled from its tray. If a group is running, all sockets associated with the parameters in the group must be pulled.

Tool Inputs

Tool #X Accept

Inputs used: 1 per tool

This input is used to define an input tool within the EYFR03, which can be inserted into a parameter to allow the EYFR03 to monitor the operation of an external device.

Tool #X Reject

Inputs used: 1 per tool

This input is used along with a Tool X Accept input to define an input tool within the EYFR03. The reject input is not required, but can be used if the external device reports reject conditions that should be monitored.

Binary selection of operations

The binary selection inputs, Select Parameter (binary), Select Group (binary), Select Job (binary), and Select Item, allow you to select the number of inputs to use. The more inputs that are used, the more items you can select.

Number of Inputs	Number of Selectable Items
1	1
2	3
3	7
4	15
5	31
6	63
7	100

The number of selectable items is also the maximum item number selectable for the number of inputs. For example, with 3 inputs, you can only select parameters 1-7, not any combination of 7 parameters.

Outputs

The outputs of the EYFR03 Controller are 24VDC relays that can provide a total of 2A across all outputs. The discrete I/O has a single common pin for the high side of all relays and a signal pin for each output. The outputs can be used to report the status of the Controller.

Parameter #X Active

Inputs used: 1 per parameter

This output indicates when a parameter is active, either because it was selected directly or as part of a group or job. One copy of this field exists for each of the 100 available parameters. The output will remain active while the unit is suspended if the associated parameter is selected.

Group #X Active

Inputs used: 1 per group

This output indicates when a group is active, either because it was selected directly or as part of a job. One copy of this field exists for each of the 100 available groups. The output will remain active while the unit is suspended if the associated group is selected.

Job #X Active

Inputs used: 1 per job

This output indicates when a job is active. One copy of this field exists for each of the 100 available jobs. The output will remain active while the unit is suspended if the associated job is selected.

Parameter Active (binary)

Inputs used: up to 7

This group of outputs is used together to indicate the number of the currently selected parameter. The outputs are read together as a binary number to determine which parameter, if selected, is active. This field will only have a value if a parameter was selected directly and will not indicate parameters activated as part of a group or job. When a parameter is not selected directly, this output group will read as 0. The value of this field will not be cleared during suspend.

The number of required outputs depends on the maximum parameter that will be indicated. See the "Binary representation of active operations" section below for more details about how to assign this field.

Group Active (binary)

Inputs used: up to 7

This group of outputs is used together to indicate the number of the currently selected group. The outputs are read together as a binary number to determine which group, if any, is selected. This field will only have a value if a group was selected directly and will not indicate groups activated as part of a job. When a group is not selected directly, this group of outputs will read as 0. The value of this field will not be cleared during suspend.

The number of required outputs depends on the maximum group that will be indicated. See the "Binary representation of active operations" section below for more details about how to assign this field.

Job Active (binary)

Inputs used: up to 7

This group of outputs is used together to indicate the number of the currently selected job. The outputs are read together as a binary number to determine which job, if any, is selected. When a job is not selected, this group of outputs will read as 0. The value of this field will not be cleared during suspend.

The number of required outputs depends on the maximum job that will be indicated. See the "Binary representation of active operations" section below for more details about how to assign this field.

Tool #X Active

Inputs used: 1 per tool

This output indicates when a tool is active. A tool is active whenever a parameter that uses it is active, either because the parameter was selected directly or as part of a group or job. One copy of this output exists for each of the 16 available tools. The output will remain active while the unit is suspended if the associated tool was in use at the time of suspend.

Controller Suspended

Inputs used: 1

This output indicates if the Controller is currently suspended.

Tool #X Cycle Accept

Inputs used: 1 per tool

This output will be activated every time the tool performs an accepted tightening. This output will also trigger for the last cycle in a batch.

This output is a momentary output. The duration this output will be active is determined by the Cycle Timeout Controller setting. If the Cycle Timeout is set to 0, this output will behave as a latching output and will remain active until another tightening is performed by the tool or the parameter using the tool is stopped.

Tool #X Cycle Reject

Inputs used: 1 per tool

This output will be activated every time the tool performs a rejected tightening.

This output is a momentary output. The duration this output will be active is determined by the Reject Timeout Controller setting. If the Reject Timeout is set to 0, this output will behave as a latching output and will remain active until another tightening is performed by the tool or the parameter using the tool is stopped.

Tool #X Batch

Inputs used: 1 per tool

This output will be activated every time the tool completes a batch.

This output is a momentary output. The duration this output will be active is determined by the Batch Timeout Controller setting. If the Batch Timeout is set to 0, this output will behave as a latching output and will remain active until another tightening is performed by the tool or the parameter using the tool is stopped.

Operation Complete

Inputs used: 1

This output will be activated every time an operation completes.

If a single parameter is running outside a group or job, this output will match the Tool #X Batch output of the tool in the parameter. When running a group, this output will be triggered when all parameters in the group are completed. If a group is in free run mode, this output will never be triggered as the group is never considered completed. When running a job, this output will be triggered when the last step in the job is completed.

This output is a momentary output. The duration this output will be active is determined by the Batch Timeout Controller setting. If the Batch Timeout is set to 0, this output will behave as a latching output and will remain active until another tightening is performed or another operation is started.

Binary representation of active operations

The binary outputs, Parameter Active (binary), Group Active (binary), and Job Active (binary), allow you to select the number of outputs to use. The more outputs that are used, the more items you can represent.

Number of Outputs	Number of Items
1	1
2	3
3	7
4	15
5	31
6	63
7	100

The number of representable items is also the maximum item number representable for the number of outputs. For example, with 3 outputs, you can only represent parameters 1-7, not any combination of 7 parameters. If an item past the maximum number of items is active, the outputs will show the low bits of the active item number's binary representation.

Chapter 6: Atlas Copco Open Protocol

Introduction

This chapter describes the support for the Atlas Copco Open Protocol in the EYFR03. Command MIDs and revisions referred to in this document are from the Atlas Copco Open Protocol Specification release 1.3 revision 1.

Using Groups with Atlas Copco Open Protocol

The group features of the EYFR03 are not defined directly in the protocol specification. Instead, they are represented as jobs when using this protocol. To reference a group instead of a job in one of the job commands, add 300 to the group number. To represent groups, you must use a revision that uses 4 characters for the job number.

For example, sending MID 0038 Select Job with a job number of 7 will select Job 7 in the unit. Sending MID 0038 with "job number" of 306 will select Group 6 in the unit. If groups 1, 2, and 3 and jobs 10, 11, and 12 are defined in the unit, MID 0030 Job ID Upload request would return "jobs" 10, 11, 12, 301, 302, and 303 in the reply. Similarly, the MID 0034 Job Info subscription will give a message with "job number" 305 when group 5 is selected in the unit.

Configuration Options

Figure 55	Figure 56	Figure 57
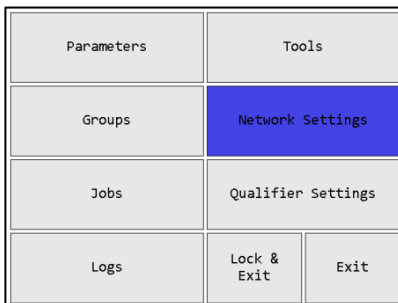
Figure 55: Main Menu - Network Settings | **Figure 56: Network Settings Menu - ACOP** | **Figure 57: ACOP Settings**
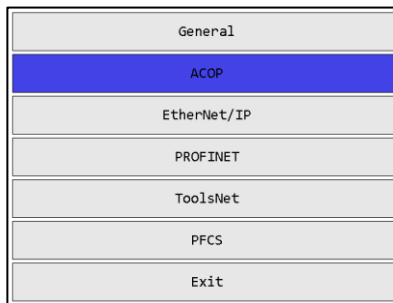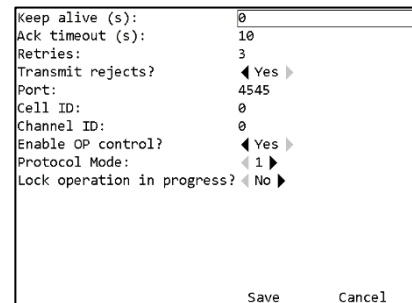
Keep Alive

Range: 0 to 3600 seconds

Default: 30 seconds

This setting controls how long in seconds the unit will keep a connection open without any commands. This value is recommended to be more than twice the rate at which the client will send keep alive packets to ensure the connection is not closed due to a single missed keep alive packet. For example, if the client is configured to send keep alive packets at a 20 second interval, the keep alive setting on the unit should be more than 40 seconds.

The keep alive function can be disabled by setting the keep alive to 0. When set keep alive is set to 0, the unit will not close an ACOP connection due to inactivity.

Ack Timeout

Range: 0 to 3600 seconds

Default: 10 seconds

This setting controls how long the Controller will wait for a response from the client when sending a subscription notification packet, such as MID 0015 or MID 0061. If no response is received within the specified ack timeout, the Controller will try again, up to the specified number of retries. If no response is received after all retries, the ACOP connection is considered broken and will have to be re-established. This will terminate all subscriptions that were established on that connection, regardless of which one did not receive a response.

Retries

Range: 0 to 10

Default: 3

This setting controls how many times the Controller will resend a subscription notification packet, such as MID 0015 or MID 0061, to the client. If no response is received within the specified ack timeout, the Controller will try again, up to the specified number of retries. If no response is received after all retries, the ACOP connection is considered broken and will have to be re-established. This will terminate all subscriptions that were established on that connection, regardless of which one did not receive a response.

Transmit Rejects

Default: Yes

This setting determines if reject tightenings are sent to the ACOP network. If set to Yes, all tightenings will be sent to the network. If set to No, only accepts will be sent to the network, both cycles and batch completes. This setting does not affect if rejects are logged to the unit storage and has no effect if the Controller NOKs setting is not set to Report or Count.

Port

Range: 0 to 65535

Default: 4545

This setting controls the Ethernet port on which the unit listens for ACOP connections.

Cell ID

Range: 0 to 9999

Default: 0

This setting controls the value put in the Cell ID field of ACOP commands such as MID 0001 and 0061.

Channel ID

Range: 0 to 99

Default: 0

This setting controls the value put in the Channel ID field of ACOP commands such as MID 0001 and 0061.

Enable OP Control

Default: Yes

This setting determines if the unit will respond to "Open Protocol control" commands. These commands are generally the ones that control unit operation or modify configuration. When this setting is set to Yes, all supported commands listed below are handled. When set to No, the following MID commands will return an error:

- 0018 Parameter Select
- 0019 Parameter Batch Size
- 0020 Parameter Reset Batch
- 0038 Job Select
- 0039 Job Restart
- 0042 Tool Disable
- 0043 Tool Enable
- 0050 VIN Download
- 0082 Write Time
- 0127 Job Abort
- 0130 Job Off
- 0150 Multi ID Download
- 0156 Reset Latest Identifier
- 0157 Reset All Identifiers

Protocol Mode

Default: 1

This setting determines the mode used by the Controller for Open Protocol connections. This setting should be left on the default unless specifically advised otherwise by the factory.

Lock operation in progress

Default: no

This setting determines if a new operation can be selected while one is partially completed. If set to no, any parameter or job selection command will cause the new operation to be started immediately. If set to yes, a parameter or job selection command will be ignored if one or more results have been performed in the current operation. To select a new operation while this setting is set to yes, you must first ensure the count is 0 (and if running a job, in the first step of a job) by either selecting the command after the batch or job is completed or by issuing a batch reset command to clear the count of a running parameter.

Supported Commands

Revision lists with a '*' indicate that one or more revisions of the MID is not supported. Otherwise, the listed supported revisions are all revisions in the specification version mentioned above.

MID	Revisions	Command
0001,0002	1-4	Communication start (acknowledge)
0003	1	Communication stop
0004	1	Command error
0005	1	Command accepted
0006	1	Application data message request
0010,0011	1	Parameter set ID upload request/reply
0012,0013	1-2*	Parameter set data upload request/reply
0014-0017	1	Parameter set selected (subscribe/acknowledge/unsubscribe)
0018	1	Select Parameter set
0019	1	Set Parameter set batch size
0020	1	Reset Parameter set batch counter
0030,0031	1-2	Job ID upload request/reply
0032,0033	1-3	Job data upload request/reply
0034-0037	1-4	Job info (subscribe/acknowledge/unsubscribe)
0038	1-2	Select Job
0039	1-2	Job restart
0040,0041	1-4	Tool data upload request/reply
0042	1	Disable tool
0043	1	Enable tool
0050	1	Vehicle ID Number download request
0051-0054	1-2	Vehicle ID Number (subscribe/acknowledge/unsubscribe)
0060-0063	1-4*	Last tightening result data (subscribe/acknowledge/unsubscribe)
0064,0065	1-4*	Old tightening result upload request/reply
0070-0073	1	Alarm (subscribe/acknowledge/unsubscribe)
0080,0081	1	Read time upload request/reply
0082	1	Set Time
0127	1	Abort Job
0130	1	Job off
0150	1	Identifier download request
0151-0154	1	Multiple identifier and result parts (subscribe/acknowledge/unsubscribe)
0156	1	Reset latest Identifier
0157	1	Reset all Identifiers
0270	1	Controller reboot request
0420-0423	1	Open Protocol commands disabled (subscribe/acknowledge/unsubscribe)
2500	1	Tightening Program Message download
2501	1	Tightening Program Message upload
9999	1	Keep alive message

Unsupported Commands

If revisions are listed for a MID, there are other revisions for that MID that are supported.
Otherwise, the entire command is unsupported.

MID	Revisions	Command
0012,0013	3	Parameter set data upload request/reply
0021-0024		Lock at batch done (subscribe/acknowledge/unsubscribe)
0025		Parameter user set download request
0044		Disconnect tool request
0045		Set calibration value request
0046		Set primary tool request
0060-0063	5-6,998,999	Last tightening result data (subscribe/acknowledge/unsubscribe)
0064,0065	5-6	Old tightening result upload request/reply
0074,0075		Alarm acknowledged on controller (acknowledge)
0076,0077		Alarm status (acknowledge)
0078		Acknowledge alarm remotely on controller
0090-0093		Multi-spindle status (subscribe/acknowledge/unsubscribe)
0100-0103		Multi-spindle result (subscribe/acknowledge/unsubscribe)
0105		Last PowerMACS tightening result data subscribe
0106		Last PowerMACS tightening result Station data
0107		Last PowerMACS tightening result Bold data
0108		Last PowerMACS tightening result data acknowledge
0109		Last PowerMACS tightening result data unsubscribe
0110		Display user text on compact
0111		Display user text on graph
0113		Flash green light on tool
0120		Job line control info subscribe
0121		Job line control started
0122		Job line control alert 1
0123		Job line control alert 2
0124		Job line control done
0125		Job line control info acknowledge
0126		Job line control info unsubscribe
0128		Job batch increment
0129		Job batch decrement
0131		Set Job line control start
0132		Set Job line alert 1
0133		Set Job line alert 2
0140		Execute dynamic Job request
0155		Bypass Identifier
0200		Set externally controlled relays
0210-0213		Status externally monitored inputs (subscribe/acknowledge/unsubscribe)
0214,0215		IO device status request/reply
0216-0219		Relay function (subscribe/acknowledge/unsubscribe)
0220-0223		Digital input function (subscribe/acknowledge/unsubscribe)
0224		Set digital input function
0225		Reset digital input function
0240		User data download
0241-0244		User data (subscribe/acknowledge/unsubscribe)
0250-0253		Selector socket info (subscribe/acknowledge/unsubscribe)
0254		Selector control green lights
0255		Selector control red lights
0260		Tool tag ID request

MID	Revisions	Command
0300,0301		Histogram upload request/reply
0261-0264		Tool tag ID (subscribe/acknowledge/unsubscribe)
0400-0403		Automatic/Manual mode (subscribe/acknowledge/unsubscribe)
0410,0411		AutoDisable settings request/reply

Chapter 7: EtherNet/IP™

This chapter describes the assembly object connection points and vendor-specific objects provided by the EYFR03. Implementation was done against EtherNet/IP^{TM} specification edition 1.16 (April 2014) and the associated CIP specification edition 3.16 (April 2014)

Configuration Options
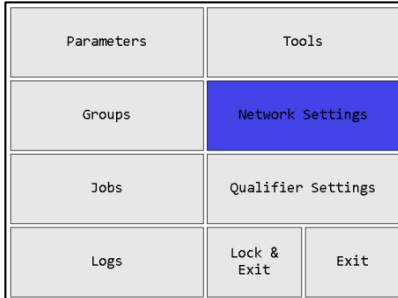
Figure 58: Main menu - Network Setup
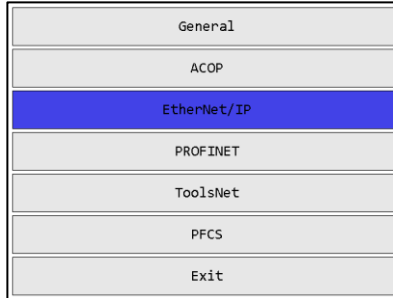
Figure 59: Network Setup Menu – EtherNet/IP
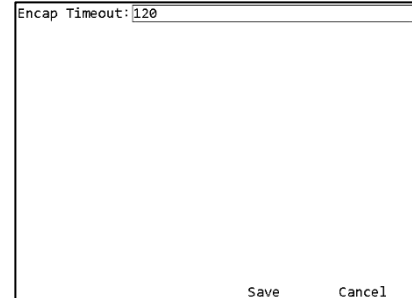
Figure 60: EtherNet/IP Settings

Encap Timeout

Default: 120 seconds

Range: 0 to 3600 seconds

This setting controls the EtherNet/IP Encapsulation Inactivity Timeout in seconds used by the Controller. This should be left at the default value unless you are having problems staying connected to the Controller via EtherNet/IP.

Vendor-Specific Objects

The objects described in this section are vendor-specific objects created by C.E. Electronics (vendor ID: 1321) to manage the configuration of the EYFR03 that does not map to existing open objects.

Tool Object

Class Code: 64 Hex

The Tool Object represents a tool learned into an EYFR03 device. A tool may be associated with one or more C.E. Parameter objects.

Class Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object	1
2	Get	Max Instance	UINT	Maximum instance number of a tool object in the device.	The maximum number of tools as specified for the product.

Instance Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Set	Name	SHORT_STRING	Name of the tool displayed on screen	Maximum length is 25 characters
2	Get	Last Modified	DT	Last time the tool attributes were modified	
3	Get	Type	USINT	Type of tool	0 = none 1-3 = reserved 4 = battery
4	Set	Last Calibration Date	DT	Date of last calibration reported by tool	
5	Set	Next Calibration Date	DT	Recommended date of next calibration	
7	Set	Serial Number	SHORT_STRING	Serial number of the tool	Maximum length is 14 characters.
8	Get	Cycle Count	UDINT	Total number of cycles performed by the tool.	
9	Set	Cycles between Preventative Maintenance	UDINT	Number of cycles permitted between preventative maintenance.	
10	Set	Last PM Cycle Count	UDINT	Cycle count at time of last preventative maintenance	
11	Get	Maintenance Reject Options	BYTE	Causes all results from a tool to be rejected when one or more of the specified maintenance operations are required.	Bit 0 – Calibration Bit 1 – Cycles
12	Get	Required Maintenance	BYTE	Indicates what maintenance is currently required.	Bit 0 – Calibration Bit 1 – Cycles

Services

Service Code	Available in		Service Name	Description of Service
	Class	Instance		

0x05	No	Yes	Reset	Resets the tool slot to factory defaults. (No actual action is taken with the tool. The tool is only forgotten by the Controller.)
0x0E	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute
0x10	No	Yes	Set_Attribute_Single	Modifies a single attribute

C.E. Parameter Object

Class Code: 65 Hex

The C.E. Parameter Object refers to a parameter that describes the required operation for a batch of tightenings. This should not be confused with the Parameter Object (class code 10 hex) defined in the open portion of the Ethernet/IP^{TM} protocol, which has a different use and is not implemented in this product line.

Class Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object	1
2	Get	Max Instance	UINT	Maximum instance number of a parameter set object in the device.	The maximum number of parameters as specified for the product.

Instance Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Set	Name	SHORT_STRING	Name of the parameter displayed on screen and reported in results	Maximum length is 25 characters
2	Get	Last Modified	DT	Last time the parameter attributes were modified	
3	Set	Tools	UINT	Instance numbers of tool used for this parameter	
5	Set	Batch	USINT	Batch size	
6	Get	Number of Batches	UINT	Number of batches run in this parameter	This value resets on powerup.

Services

Service Code	Available in Class	Instance	Service Name	Description of Service
0x05	No	Yes	Reset	Resets the parameter to factory defaults.
0x0E	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute.
0x10	No	Yes	Set_Attribute_Single	Modifies a single attribute.

C.E. Group Object

Class Code: 66 Hex

The C.E. Group Object refers to a group of parameters that may be run simultaneously, but must all run to complete an operation. This should not be confused with the Group Object (class code 12 hex) defined in the open portion of the EtherNet/IP^{TM} protocol, which has a different use and is not implemented in this product line.

Class Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object	1
2	Get	Max Instance	UINT	Maximum instance number of a parameter set object in the device.	The maximum number of groups as specified for the product.

Instance Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Set	Name	SHORT_STRING	Name of the group.	Maximum length is 25 characters
2	Get	Last Modified	DT	Last time the group attributes were modified	
3	Get	Number of Parameters	USINT	Number of parameters in Parameters array	Maximum 16
4	Set	Parameters	ARRAY of STRUCT of:	Parameters in group.	
			UINT	Instance number of the parameter	
			USINT	Batch size	Temporarily overrides, but does not modify, batch size in parameter

Services

Service Code	Available in Class	Available in Instance	Service Name	Description of Service
0x05	No	Yes	Reset	Resets the group to factory defaults.
0x0E	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute.
0x10	No	Yes	Set_Attribute_Single	Modifies a single attribute.

Job Object

Class Code: 67 Hex

The Job Object represents a set of one or more parameter sets that must be performed as a group. Depending on the device configuration, the parameter sets may or may not be required to run in sequence.

Class Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object	1
2	Get	Max Instance	UINT	Maximum instance number of a job object in the device.	The maximum number of jobs as specified for the product.

Instance Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Set	Name	SHORT_STRING	Name of the tool displayed on screen	Maximum length is 25 characters
2	Get	Last Modified	DT	Last time the job attributes were modified	
3	Get	Number of Steps	USINT	Number of parameters in Parameters array	
4	Set	Steps	ARRAY of STRUCT of:	Structure list containing the parameters to run for the job	Maximum length is 30.
		Item number	UINT	Instance number of the item in the step	Parameter or group number.
		Item type	USINT	Item type	0 – Parameter 1 – Group
		Batch	USINT	Batch size	Temporarily overrides, but does not modify, batch size in parameter. Ignored for Group steps.

Services

Service Code	Available in		Service Name	Description of Service
	Class	Instance		
0x05	No	Yes	Reset	Resets the job to factory defaults.
0x0E	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute
0x10	No	Yes	Set_Attribute_Single	Modifies a single attribute

Controller Settings Object

Class Code: 68 Hex

The Controller Settings Object represents the Controller level settings for the EYFR03.

Class Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object	1

Instance Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Radio Address	UINT	The radio address of the device	
2	Set	Radio Channel	USINT	The radio channel on which the device is operating.	Range: 1-12 Changing this value will require all tools to be reassociated.
3	Set	Beeper Setting	BYTE	Controls when the unit will sound the beeper	Bit 0 – Beep on batch Bit 1 – Beep on reject Bit 2 – Beep on cycle
4	Set	Beeper Volume	USINT	Volume level of the beeper	Range: 0-10 0 disables the beeper
5	Set	Batch Timeout	ITIME	Duration to show the batch indicator on screen.	If 0, the indicator does not clear timeout. Cannot be negative
6	Set	Cycle Timeout	ITIME	Duration to show the cycle indicator on screen.	If 0, the indicator does not clear timeout. Cannot be negative
7	Set	Reject Timeout	ITIME	Duration to show the reject indicator on screen.	If 0, the indicator does not clear timeout. Cannot be negative
8	Set	NOKs	USINT	How the system handles NOK results or rejects.	0 – Ignore 1 – Display 2 – Report 3 – Count
9	Set	Time	DT	The current system time of the device.	
10	Set	Name	SHORT_STRING	The name of the device	Maximum length: 25

Services

Service Code	Available in		Service Name	Description of Service
	Class	Instance		
0x0E	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute
0x10	No	Yes	Set_Attribute_Single	Modifies a single attribute

VIN Object

Class Code: 69 Hex

The VIN Object manages the current VIN and VIN-related settings.

Class Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object	1

Instance Attributes

ID	Access	Name	Data Type	Description of Attribute	Semantics of Value
1	Set	Require to start	BOOL	Indicates if a VIN is required to run an operation.	
2	Set	Clear on complete	BOOL	Indicates if the VIN is automatically cleared when an operation completes.	
3	Set	VIN	SHORT_STRING		Max Length: 100

Services

Service Code	Available in Class	Available in Instance	Service Name	Description of Service
0x0E	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute
0x10	No	Yes	Set_Attribute_Single	Modifies a single attribute

Assembly Object Connection Points

This section defines the assembly object connection points provided by the EYFR03 product line. As per the EtherNet/IP^{TM} specification for the Assembly Object, instance number and connection point are equivalent. This document will refer to them as connection point throughout.

Output (O->T) Connection Points

The following connection points are used by the EYFR03 to take input data from the network. These connection points allow you to control the running operation of the Controller. Other setting parameters may be configured through the vendor-specific objects.

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Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group 2 – Job Ignored if Item Number is 0.
Batch Reset	USINT	When this value changes, the batch counts of the currently running parameter or group is reset.
Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.
VIN	SHORT_STRING	Max length 100

Total size: 6-106 bytes

161

Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group 2 – Job Ignored if Item Number is 0.
Batch Reset	USINT	When this value changes, the batch counts of the currently running parameter or group is reset.
Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.
Reserved	USINT	Padding byte for devices requiring even connection point sizes.

Total size: 5-6 bytes

162

Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group

Name	Data Type	Description
		2 – Job
		Ignored if Item Number is 0.
Batch Reset	USINT	When this value changes, the batch counts of the currently running parameter or group is reset.
Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.
Batch	USINT	Sets the batch size for the selected parameter. If Item Type is not 0 (Parameter), this value is ignored. If this value is 0, the parameter size stored in the EYFR03 will be used.
VIN	SHORT_STRING	Max length 100

Total size: 7-107 bytes

163

Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group 2 – Job Ignored if Item Number is 0.
Batch Reset	USINT	When this value changes, the batch counts of the currently running parameter or group is reset.
Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.
Batch	USINT	Sets the batch size for the selected parameter. If Item Type is not 0 (Parameter), this value is ignored. If this value is 0, the parameter size stored in the EYFR03 will be used.

Total size: 6 bytes

170

Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group 2 – Job Ignored if Item Number is 0.
Batch Reset	USINT	When this value changes, the batch counts of the currently running parameter or group is reset.
Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.
VIN	USINT[100]	
Reserved	USINT	Padding byte for devices requiring even connection point sizes.

Total size: 106 bytes

172

Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group 2 – Job Ignored if Item Number is 0.
Batch Reset	USINT	When this value changes, the batch counts of the currently running parameter or group is reset.
Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.
Batch	USINT	Sets the batch size for the selected parameter. If Item Type is not 0 (Parameter), this value is ignored. If this value is 0, the parameter size stored in the EYFR03 will be used.
VIN	USINT[100]	

Total size: 106 bytes

181

Name	Data Type	Description
Item Number	UINT	Instance number of items to run. Deactivate any running parameter, job, or group if 0.
Item Type	USINT	Type of item to run: 0 - Parameter 1 – Group 2 – Job Ignored if Item Number is 0.
Batch Sizes	USINT[16]	A temporary batch size to use for each tool or 0 to make no modification.
Batch Reset	WORD	16-bit word with each bit used to reset the batch of a tool when set (bit 0 resets tool 1, bit 1 resets tool 2, etc.)
Tool Suspend	WORD	16-bit word with each bit used to suspend a tool (bit 0 set suspends tool 1, bit 1 set suspends tool 2, etc.)
Controller Suspend	BOOL	When set, suspends the unit without stopping a running parameter, group, or job.

Total size: 24 bytes

Note that the values in this point refer to tools, but the EYFR03 runs parameters. This means that you must select a parameter, group, or job using the tools you want to control with this connection point. If a tool is not active in the selected parameter, group, or job, attempts to control them will be ignored.

Input (T->O) Connection Points

This section defines the connection points are used by EYFR03 to send output data to the network. The connection points are in the range 100-129 and are grouped by their content.

- 10x: Connection points provided for backwards compatibility with the EYFR01. (Detailed in the *Input Connection Points for Backwards Compatibility* section later in this chapter)
- 11x: Last tightening data
- 12x: Current Controller status

- 13x: Last tightening data with fixed length string fields

Input Connection Points for Last Tightening Data

The connection points in this group will contain data about the last tightening. As such, they are not updated after a parameter, group, or job selection until a tightening occurs.

110

Name	Data Type	Description
Tightening ID	UDINT	ID number of the last tightening
Time	DT	Timestamp of the last tightening
Multi Sequence Number	UINT	Sequence number of the running multi-parameter operation.
Multi Number	UINT	Instance number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group 2 – Job Ignored if Multi-Number is 0.
Parameter	UINT	Instance number of the parameter that produced the tightening
Parameter Name	SHORT_STRING	Name of the parameter. Max length 25
Parameter Timestamp	DT	Timestamp of the last change to the parameter
Tool Serial Number	SHORT_STRING	Serial number of the tool that produced the tightening. Max length 14
Tightening Status	BOOL	Indicates if the last tightening was accepted as valid.
Count	USINT	Number of results performed in the current batch for the parameter.
Batch	USINT	Number of results required for a batch in the parameter.
Torque Unit	ENGUNIT	Unit used for torque fields
Torque	REAL	Torque of the tightening just performed.
Min Torque	REAL	Minimum torque required for a tightening in the parameter.
Max Torque	REAL	Maximum torque required for a tightening in the parameter.
Angle	UDINT	Angle of the tightening just performed.
Min Angle	UDINT	Minimum angle required for a tightening in the parameter.
Max Angle	UDINT	Maximum angle required for a tightening in the parameter.
VIN	SHORT_STRING	Max length 100

Total size: 55-194 bytes

111

Name	Data Type	Description
Tightening ID	UDINT	ID number of the last tightening
Time	DT	Timestamp of the last tightening
Multi Sequence Number	UINT	Sequence number of the running multi-parameter operation.
Multi Number	UINT	Instance number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group 2 – Job Ignored if Multi-Number is 0.
Parameter	UINT	Number of the parameter that produced the tightening
Tightening Status	BOOL	Indicates if the last tightening was accepted as valid.
Count	USINT	Number of results performed in the current batch for the parameter.

Batch	USINT	Number of results required for a batch in the parameter.
Torque Unit	ENGUNIT	Unit used for torque fields
Torque	REAL	Torque of the tightening just performed.
Angle	UDINT	Angle of the tightening just performed.
VIN	SHORT_STRING	Max length 100
Reserved	USINT	Padding byte for devices requiring even connection point sizes and max VIN length.

Total size: 31-132 bytes

112

Name	Data Type	Description
Tightening ID	UDINT	ID number of the last tightening
Time	DT	Timestamp of the last tightening
Multi Sequence Number	UINT	Sequence number of the running multi-parameter operation.
Multi Number	UINT	Instance number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group 2 – Job Ignored if Multi-Number is 0.
Parameter	UINT	Number of the parameter that produced the tightening
Tightening Status	BOOL	Indicates if the last tightening was accepted as valid.
Count	USINT	Number of results performed in the current batch for the parameter.
Batch	USINT	Number of results required for a batch in the parameter.

Total size: 20 bytes

113

Name	Data Type	Description
Tightening ID	UDINT	ID number of the last tightening
Time	DT	Timestamp of the last tightening
Tightening Status	BOOL	Indicates if the last tightening was accepted as valid.
Reserved	USINT	Padding byte for devices requiring even connection point sizes.

Total size: 11-12 bytes

Input Connection Points for Current Controller Status

The connection points in this group provide a view of the current Controller status and do not provide any information about tightenings.

120

Name	Data Type	Description
Parameters	ARRAY of STRUCT of:	Status of up to 16 parameters currently running.
	UINT	Parameter number (0 means parameter not running.)
	USINT	Number of results performed in the current batch for the parameter.
	USINT	Number of results required for a batch in the parameter.
Multi Number	UINT	Number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group

		2 – Job Ignored if Multi-Number is 0.
Suspend	BOOL	

Total size: 68 bytes

121

Name	Data Type	Description
Tool Parameters	ARRAY of STRUCT of:	Status of up to 16 parameters currently running.
- Parameter Number	UINT	Parameter number currently using the tool. (0 means no parameter using the tool is running.)
- Count	USINT	Number of results performed in the current batch for the tool.
- Batch	USINT	Number of results required for a batch in the tool.
- Status	USINT	Status of tool 0 – None 1 – Cycle 2 – Batch 3 – Reject 4 – Batch NOK (batch complete with a counted reject)
Multi Number	UINT	Number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group 2 – Job Ignored if Multi-Number is 0.
Suspend	BOOL	Indicates if the Controller is suspended.
Operation Status	USINT	0 – None/In Progress 1 – Complete When running an individual Parameter (Multi Number = 0), Complete will correspond to a batch completion. When running a Group (Multi Number non-zero, Multi Type = 1), Complete will happen when the last parameter in the group to completes its batch. When running a Job (Multi Number non-zero, Multi Type = 2), Complete will happen when the last step (parameter or group) in the job is completed.
Reserved		Padding byte for devices requiring even connection point sizes.

Total size: 85-86 bytes

Input Connection Points for Last Tightening Data (fixed length)

The connection points in this group will contain data about the last tightening. As such, they are not updated after a parameter, group, or job selection until a tightening occurs. These points are similar to the points in the 11x range, except that the SHORT_STRING fields are now fixed-length character arrays. Strings shorter than the field length are left-aligned in the field and null-padded.

130

Name	Data Type	Description
Tightening ID	UDINT	ID number of the last tightening
Time	DT	Timestamp of the last tightening
Multi Sequence Number	UINT	Sequence number of the running multi-parameter operation.

Multi Number	UINT	Instance number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group 2 – Job Ignored if Multi-Number is 0.
Parameter	UINT	Instance number of the parameter that produced the tightening
Parameter Name	USINT[25]	Name of the parameter
Parameter Timestamp	DT	Timestamp of the last change to the parameter
Tool Serial Number	USINT[14]	Serial number of the tool that produced the tightening.
Tightening Status	BOOL	Indicates if the last tightening was accepted as valid.
Count	USINT	Number of results performed in the current batch for the parameter.
Batch	USINT	Number of results required for a batch in the parameter.
Torque Unit	ENGUNIT	Unit used for torque fields
Torque	REAL	Torque of the tightening just performed.
Min Torque	REAL	Minimum torque required for a tightening in the parameter.
Max Torque	REAL	Maximum torque required for a tightening in the parameter.
Angle	UDINT	Angle of the tightening just performed.
Min Angle	UDINT	Minimum angle required for a tightening in the parameter.
Max Angle	UDINT	Maximum angle required for a tightening in the parameter.
VIN	USINT[100]	
Reserved	USINT	Padding byte for devices requiring even connection point sizes.

Total size: 192 bytes

131

Name	Data Type	Description
Tightening ID	UDINT	ID number of the last tightening
Time	DT	Timestamp of the last tightening
Multi Sequence Number	UINT	Sequence number of the running multi-parameter operation.
Multi Number	UINT	Instance number of multi-parameter operation (job or group) currently running. Ignored if 0.
Multi Type	USINT	Type of multi-parameter operation currently running: 1 – Group 2 – Job Ignored if Multi-Number is 0.
Parameter	UINT	Number of the parameter that produced the tightening
Tightening Status	BOOL	Indicates if the last tightening was accepted as valid.
Count	USINT	Number of results performed in the current batch for the parameter.
Batch	USINT	Number of results required for a batch in the parameter.
Torque Unit	ENGUNIT	Unit used for torque fields
Torque	REAL	Torque of the tightening just performed.
Angle	UDINT	Angle of the tightening just performed.
VIN	USINT[100]	

Total size: 130 bytes

Backwards Compatibility Assembly Object Connection Points

The EYFR03 provides some connection points designed to match the connection points of the EYFR01. These points are not recommended for new installations.

In the EYFR01, the parameters were represented primarily as 'A' – 'H', but allowed 0 – 7 and '0' – '7'. Since the EYFR03 starts at parameter 1 and does not have a parameter 0, an offset will be applied to the parameter value in the compatibility points. A value of 'A', '0', or 0 in these connections will select parameter 1, a value of 'B', '1', or 1 will select parameter 2; and so on in the EYFR03. For T->O compatibility connection points, 'A' will be output if parameter 1 is running, 'B' if parameter 2 is running and so on.

Data Types

Most data types used correspond to the data types in the EtherNet/IP^{TM} specification and IEC 1131-3. One additional data type is defined for backwards compatibility points:

Name	Size (bytes)	Description
CHAR	1	Character in the ASCII range. Used to indicate fields that should be interpreted as characters rather than numeric values, where USINT would be used instead. When used in an array, indicates a fixed-length string instead of the length prefixed strings defined by the specification.

Fixed-length arrays are represented as TYPE[n] where TYPE is the element type and n is the number of elements.

Output (O->T) Connection Points

Connection points in the 15x range correspond to the masks used with the EYFR01, which used only 150 as the output connection point. These connection points are provided for backwards compatibility and are not recommended for new installations. New data configurations start at connection point 160.

150

This connection point corresponds to the default mask of the EIP network card for the EYFR01.

Name	Data Type	Description
Parameter	USINT	Selects a parameter for the EYFR03 to run. May be any value in the ranges 0-7, '0'-'7', 'A'-'H' (see above for details). Values outside these ranges will cause the current parameter to be stopped and leave no parameter running.
Batch Reset	USINT	When this value changes, the batch will be reset.
Suspend	BOOL	When true, suspends the EYFR03.
Batch	USINT	The number of tightenings to run per batch for the selected parameter. Ignored if 0.
Time	CHAR[6]	ASCII digits of Controller time in HHMMSS format. Ignored if Date field does not represent a valid date.
Date	CHAR[6]	ASCII digits of Controller date in MMDDYY format. Ignored if Time field does not represent a valid time.
Min Torque	CHAR[6]	ASCII digits and decimal point ('.') representing the value. Not used by the EYFR03.
Max Torque	CHAR[6]	ASCII digits and decimal point ('.') representing the value. Not used by the EYFR03.
Min Angle	CHAR[5]	ASCII digits representing the value. Not used by the EYFR03.

Max Angle	CHAR[5]	ASCII digits representing the value. Not used by the EYFR03.
Units	CHAR	Character representing the units of the torque. Not used by the EYFR03 .
Reserved	USINT	

Total size: 40 bytes

151

This connection point corresponds to the mask 1 of the EIP network card for the EYFR01.

Name	Data Type	Description
Parameter	USINT	Selects a parameter for the EYFR03 to run. May be any value in the ranges 0-7, '0'-'7', 'A'-'H' (see above for details). Values outside these ranges will cause the current parameter to be stopped and leave no parameter running.
Batch Reset	USINT	When this value changes, the batch will be reset.
Suspend	BOOL	When true, suspends the EYFR03.
Batch	USINT	The number of tightenings to run per batch for the selected parameter. Ignored if 0.

Total size: 4 bytes

Input Connection Points for Backwards Compatibility

The connection points in this group correspond to the default masks provided in the EtherNet/IP™ network card for the EYFR01 and are provided to make the EYFR03 easier to drop into existing installations. These connection points are not recommended for new installations.

100

This connection point corresponds to the default mask of the EIP network card for the EYFR01.

Name	Data Type	Description
Parameter	CHAR	'A'-'H'
Tool Type	CHAR[3]	Type of the tool for the current parameter. One of: "AIR" – Pneumatic air tools "BAT" – Battery operated tool "CLK" – Click wrench "DIG" – Digital torque wrench " " – No parameter running
Parameter Name	CHAR[8]	Name of the parameter
Tightening Status	CHAR	Status of the last tightening. One of: 'O' – Good tightening 'N' – Bad tightening or no tightening performed since the last parameter change
Tightening Type	CHAR	Type of the last tightening. One of: 'B' – Good tightening that finished a batch 'C' – Good tightening that did not finish a batch 'R' – Bad tightening 'N' – No tightening performed since the last parameter change
Count	USINT	The count of the last tightening.
Batch	USINT	The batch size of the last tightening
Rolling Count	UINT	Number of tightenings that have occurred.
Total	UINT	Number of batches completed in the parameter.
Time	CHAR[6]	ASCII digits of time of last tightening in HHMMSS format.
Date	CHAR[6]	ASCII digits of date of last tightening in MMDDYY format.

EE Time	CHAR[6]	ASCII digits of time of last EEPROM write in HHMMSS format.
EE Date	CHAR[6]	ASCII digits of date of last EEPROM write in MMDDYY format.
Torque	CHAR[6]	ASCII digits and decimal point ('.') representing the value. Not used by the EYFR03.
Min Torque	CHAR[6]	ASCII digits and decimal point ('.') representing the value. Not used by the EYFR03.
Max Torque	CHAR[6]	ASCII digits and decimal point ('.') representing the value. Not used by the EYFR03.
Units	USINT	Character representing the units of the torque. Not used by the EYFR03.
Angle	CHAR[5]	ASCII digits representing the value. Not used by the EYFR03.
Min Angle	CHAR[5]	ASCII digits representing the value. Not used by the EYFR03.
Max Angle	CHAR[5]	ASCII digits representing the value. Not used by the EYFR03.
Tool Type 1	CHAR[3]	Type of tool in parameter 1. See Tool Type for values.
Tool Type 2	CHAR[3]	Type of tool in parameter 2. See Tool Type for values.
Tool Type 3	CHAR[3]	Type of tool in parameter 3. See Tool Type for values.
Tool Type 4	CHAR[3]	Type of tool in parameter 4. See Tool Type for values.
Tool Type 5	CHAR[3]	Type of tool in parameter 5. See Tool Type for values.
Tool Type 6	CHAR[3]	Type of tool in parameter 6. See Tool Type for values.
Tool Type 7	CHAR[3]	Type of tool in parameter 7. See Tool Type for values.
Tool Type 8	CHAR[3]	Type of tool in parameter 8. See Tool Type for values.

Total size: 102 bytes

101

This connection point corresponds to the mask 1 of the EIP network card for the EYFR01.

Name	Data Type	Description
Parameter	CHAR	'A'-'H'
Tightening Status	CHAR	Status of the last tightening. One of: 'O' – Good tightening 'N' – Bad tightening or no tightening performed since the last parameter change.
Tightening Type	CHAR	Type of the last tightening. One of: 'B' – Good tightening that finished a batch 'C' – Good tightening that did not finish a batch 'R' – Bad tightening 'N' – No tightening performed since the last parameter change
Count	USINT	The count of the last tightening.
Batch	USINT	The batch size of the last tightening
Rolling Count	UINT	Number of tightenings that have occurred.
Total	UINT	Number of batches completed in the parameter.
Reserved	USINT	

Total size: 10 bytes

102

This connection point corresponds to the mask 2 of the EIP network card for the EYFR01.

Name	Data Type	Description
Tightening status	CHAR	Status of the last tightening. One of: 'O' – Good tightening 'N' – Bad tightening or no tightening performed since the last parameter change.
Rolling Count	UINT	Number of tightenings that have occurred.
Reserved	USINT	

Total size: 4 bytes

Chapter 8: ToolsNet

Introduction

This chapter describes the support for the ToolsNet Open Protocol in the EYFR03. Implementation of the protocol is according to ToolsNet Open Protocol version 3.2.

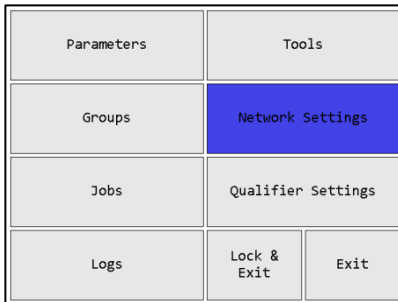The EYFR03 reports System Type as 3 and System Name as "EYFR03".

Configuration Options

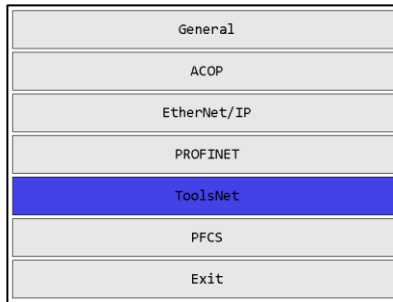**Figure 61: Main Menu - Network Settings**
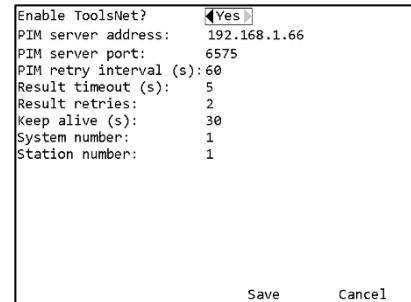

Figure 62: Network Settings Menu – ToolsNet

Figure 63: ToolsNet Settings

Enable ToolsNet?

Default: No

This setting determines if the Controller will attempt to establish a ToolsNet connection. Unlike the other network protocols supported by the Controller, ToolsNet requires the controller to establish connections. Since the Controller will repeatedly make network requests to attempt to establish a network connection to the ToolsNet server, you should only enable ToolsNet if you have a server set up in the network.

PIM server address

Default: 192.168.1.66

This setting controls the IP address the Controller will use to establish a ToolsNet connection.

PIM server port

Default: 6575

Range: 0 to 65535

This setting controls the port the Controller will use to establish a ToolsNet connection at the PIM server address.

PIM retry interval

Default: 60 seconds

Range: 0 to 3600 seconds

This setting controls how long the Controller will wait after a failed attempt to establish a ToolsNet connection before it tries again.

Result timeout

Default: 5 seconds

Range: 0 to 60 seconds

This setting controls how long the Controller will wait for a response from the ToolsNet server when sending a tightening or keep alive packet. If no response is received within the specified result timeout, the Controller will try again, up to the specified number of retries. If no response is received after all retries, the ToolsNet connection is considered broken and will have to be re-established.

Result retries

Default: 2

Range: 0 to 10

This setting controls how many times the Controller will resend a tightening or keep alive packet to the ToolsNet server before considering the connection broken. If no response is received within the specified result timeout, the Controller will try again, up to the specified number of retries. If no response is received after all retries, the ToolsNet connection is considered broken and will have to be re-established.

Keep alive

Default: 30 seconds

Range: 0 to 3600 seconds

This setting controls how often the Controller will send a keep alive packet to the ToolsNet server if no other packets are being sent. When set to 0, the Controller does not send keep alive packets.

This value is recommended to be less than half the inactivity timeout of the server to ensure the connection is not closed due to a single missed keep alive packet. For example, if the server is configured to timeout after 30 seconds of inactivity, the keep alive setting on the unit should be less than 15 seconds.

System number

Default: 1

Range: 0 to 9999

This setting controls the system number the Controller reports to the ToolsNet server in identification and tightening packets.

Station number

Default: 1

Range: 0 to 9999

This setting controls the station number the Controller reports to the ToolsNet server in identification and tightening packets.

Chapter 9: PFCS Network Protocol

Configuration Options

The PFCS network has several options that need to be configured to set up the device for use in the plant. Besides the PFCS specific options listed below, be sure to set the general network options such as device IP address under the General settings. The main User Manual describes the process to set these options.
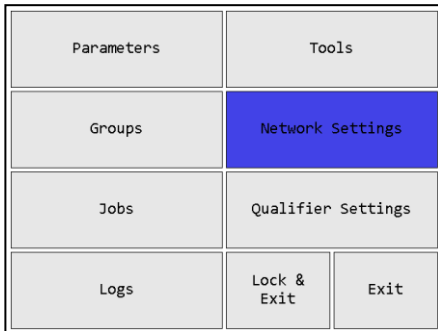

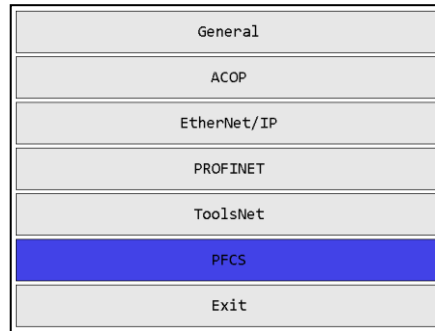Figure 64: Main menu - Network Setup
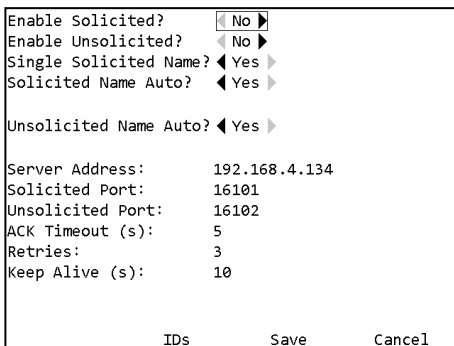

Figure 65: Network Setup Menu - PFCS
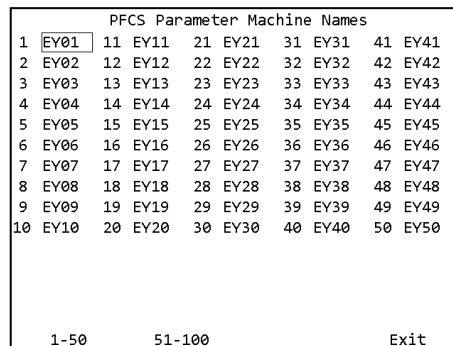

Figure 66: PFCS Settings

Figure 67: PFCS Machine Names

Protocol Settings

Enable Solicited?

Default: no

This setting determines if the Controller will attempt to establish a solicited PFCS connection. This setting is disabled by default because the Controller will repeatedly make network requests to attempt to establish a network connection to the PFCS server when enabled.

Enable Unsolicited?

Default: no

This setting determines if the Controller will attempt to establish an unsolicited PFCS connection. This setting is disabled by default because the Controller will repeatedly make network requests to attempt to establish a network connection to the PFCS server when enabled.

Single Solicited Name?

Default: yes

This setting determines if the Controller will use a single machine id on the solicited connection or if it will use a separate machine id per parameter. When this setting is set to No, the machine ids for each parameter can be set from the IDs page.

Solicited Name Auto?

Default: yes

This setting determines if the Controller will use an automatically assigned machine id on the solicited connection. If this setting is set to no, you must enter the desired machine id in the Solicited Name setting.

Solicited Name

Default: ----

This setting determines the name the Controller will use for solicited connections when not using an automatically assigned machine id on the solicited connection. This setting is ignored if Solicited Name Auto is set to yes.

Unsolicited Name Auto?

Default: yes

This setting determines if the Controller will use an automatically assigned machine id on the unsolicited connection. If this setting is set to no, you must enter the desired machine id in the Unsolicited Name setting.

Unsolicited Name

Default: ----

This setting determines the name the Controller will use for unsolicited connections when not using an automatically assigned machine id on the unsolicited connection. This setting is ignored if Unsolicited Name Auto is set to yes.

Server Address

Default: 192.168.1.69

This setting controls the IP address the Controller will use to establish PFCS connections.

Solicited Port

Default: 16101

Range: 0 to 65535

This setting controls the port the Controller will use to establish a PFCS solicited connection.

Unsolicited Port

Default: 16102

Range: 0 to 65535

This setting controls the port the Controller will use to establish a PFCS unsolicited connection.

ACK Timeout

<u>Default</u>: 5 seconds

<u>Range</u>: 0 to 60 seconds

This setting controls how long the Controller will wait for an ACK to its messages.

Retries

<u>Default</u>: 3

<u>Range</u>: 0 to 10

This setting controls how many times the Controller will retry a message.

Keep Alive

<u>Default</u>: 120 seconds

<u>Range</u>: 0 to 3600

This setting controls how often the Controller will send a keep alive packet to the PFCS server if no other packets are being sent.

<u>Parameter specific Machine IDs</u>

When the Single Solicited Name setting is set to No, the machine IDs for each parameter can be set from the IDs page.

Unsolicited Messages

The EYFR03 allows the PFCS network to select parameters, groups, or jobs to be selected via the unsolicited messages. The device-specific data consists of a letter followed by a number of 1-3 digits.

The letter may be one of P, G, J, or N.

When the letter is 'N', the Controller will stop the currently running operation and the number will be ignored.

Otherwise, the letter indicates which type of operation to start:
- P – Parameter
- G – Group
- J – Job

The number may be 1 to 100 and indicates which parameter, group, or job to select.

Examples:
- P01 – selects parameter 1
- G30 – selects group 30
- J074 – selects job 74
- N1 – stops the running operation

Chapter 10: PROFINET

This chapter describes the PROFINET implementation provided by the EYFR03.
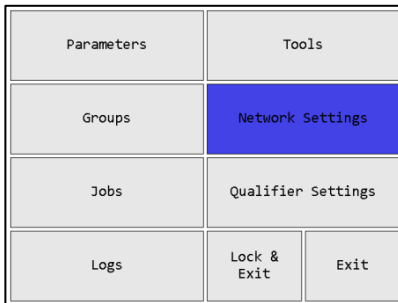
Configuration Options

Figure 68: Main menu - Network Setup
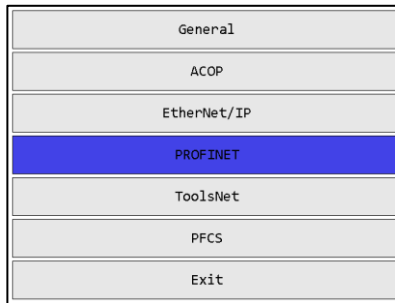

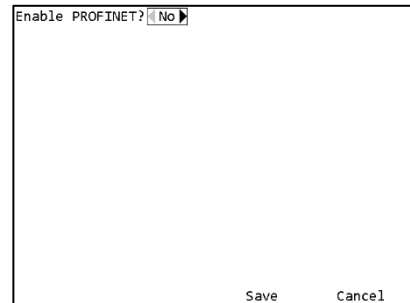**Figure 69: Network Setup Menu – PROFINET**

Figure 70: PROFINET Settings

Enable PROFINET?

<u>Default</u>: no

This setting determines if PROFINET is enabled in the EYFR03. Please be aware that when enabling PROFINET, the IP address in the EYFR03 will be erased and will either need to be reentered through the menu or set by a PROFINET configuration tool.

Data Format

The below tables show the data available for the input and output slots. The offsets are relative to the start address for each slot's address space.

Tool IO Module Input

Offset	Size	Name	Type	Description
0	1	Job Number	USINT	Job number. (0 means job not running)
1	1	Parameter Number	USINT	Parameter number. (0 means parameter not running.)
2	1	Tool Number	USINT	Active tool number. (0 means no tool active)
3	1	Status	USINT	Status of parameter 0 – None 1 – Cycle 2 – Batch 3 – Reject 4 – Batch NOK (batch complete with a counted reject)
4	1	Count	USINT	Number of tightenings performed in the current batch for the parameter.
5	1	Batch	USINT	Number of tightenings required for a batch in the parameter.
6	2	Timestamp Date	DATE	Date portion of timestamp of the last tightening
8	4	Timestamp Time	TOD	Time portion of timestamp of the last tightening
12	2	Last Parameter Write Date	DATE	Date portion of the last time the parameter of the last tightening was written
14	4	Last Parameter Write Time	TOD	Time portion of the last time the parameter of the last tightening was written
18	4	Tightening ID	UDINT	ID number of the last tightening
22	1	Result Status	USINT	0 – OK; 1 – NOK
23	14	Tool Serial Number	CHAR[14]	Serial number of the tool that performed the last tightening
37	25	VIN	CHAR[25]	VIN of the last tightening.

Tool IO Module Output

Offset	Size	Name	Type	Description
0	1	Job Number	USINT	Job number to run.
1	1	Parameter Number	USINT	Parameter number to run. Ignored if Job Number is not 0. 255 means temporary parameter with information below.
2	1	Batch	USINT	Sets the batch size for the selected parameter. Ignored if Job Number is not 0. If this value is 0, the parameter size stored in the EYFR03 will be used.
3.0	bit	Suspend	BOOL	When set, suspends on the interface without stopping a running parameter or job.
3.1	bit	Batch Reset	BOOL	When this value changes from false to true, the batch count of the currently running parameter on the interface is reset.
3.2	bit	Job Step Increment	BOOL	When this value changes from false to true, the EYFR03 will move to the next step in the active job. Ignored if Job Number is 0.
3.3	bit	Job Step Decrement	BOOL	When this value changes from false to true, the EYFR03 will move to the previous step in the active job. Ignored if Job Number is 0 or if already on the first step in the job.
3.4	bit	Batch Increment	BOOL	When this value changes from false to true, the EYFR03 will increment the count as if a valid tightening was performed.

3.5	bit	Batch Decrement	BOOL	When this value changes from false to true, the EYFR03 will decrement the batch count. Ignored if the count is 0.
4	25	VIN	CHAR[25]	Sets the VIN to be used by the controller.
29	1	Reserved	USINT	Padding byte to align structure. This field does not need to be listed in the PLC data type.
		Temporary Parameter Settings		
30	1	Temp Tool Number	USINT	Tool number used for temporary parameter
31	1	Temp Socket	USINT	
32	1	Temp Batch	USINT	
33	1	Temp Lock on Batch	BOOL	
		AccuPulse Tool Settings		
34	1	Temp Cross Thread Reduction	USINT	Controls if the tool uses its cross-thread reduction behavior 0 – Off 1 – >360° Reverse
35	1	Temp Buzzer Setting	USINT	Controls when the buzzer in the tool sounds 0 – Off 1 – OK 2 – NOK
36	1	Temp Crossthread/Rehit Detection	USINT	If the clutch is activated before the minimum runtime set by this setting, the tool alerts the operator to a NOK fastening. Specified in tenths of a second (range 0-3.0s)
37	1	Temp Variable Speed Control	USINT	Controls if the tool run speed can be controlled by use of the trigger 0 – Variable 1 – Fixed
38	1	Temp Flush Detection Mode	USINT	Set to 1 for applications with light load before snug point. Set to 7 for applications with heavy loads or varying joint rate before snug point. (range 1-7)
39	1	Temp Torque Setting	USINT	Controls the torque setting of the tool. (range 0-40)
40	1	Temp LED Light	USINT	Controls how the LED on the tool is activated 1 – Remote 2 – Trigger
41	1	Temp Flush Detection Delay	USINT	Delays Flush Torque Detection mode and ignores loads for the specified time. Specified in seconds (range 0-30s)
42	1	Temp Retightening Prevention	USINT	Controls the amount of time the tool is prevented from operating after shut-off. Specified in tenths of a second (range 0-3.0s)
43	1	Temp Socket Extension Mode	USINT	Specifies the socket extension in use. 0 – None 1 – 150mm 2 – 250mm
		OK/NOK Tool Settings		
44	2	Temp Time Between Cycles	UINT	Amount of time after an accepted tightening before another tightening should be accepted. Specified in seconds (range 0-9999s)
46	2	Temp Time Between Batches	UINT	Amount of time after a batch completion before another tightening should be accepted. Specified in seconds (range 0-9999s)

Chapter 11: Data Management

The EYFR03 can download configuration data, results and event logs to and upload configuration data and firmware from a USB drive. When a USB drive is plugged into the unit, it will switch from whatever screen it is on to the USB Menu.

Download data to USB
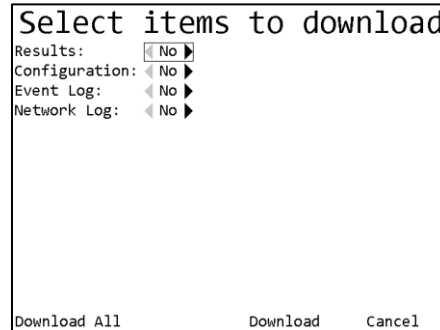

Figure 71: USB Menu - Download

Figure 72: USB Download screen

Soft keys

1. Download All – Downloads all files to the USB drive.
2. No function
3. Download – Downloads the selected files to the USB drive.
4. Cancel [ESC] – Returns to the USB Menu screen.

Available Files

Results

The results file will be saved to the USB drive as "####res.csv" where the #### is the last four digits of the unit serial number. This file contains all tightening results saved in the unit's memory in a CSV format.

Configuration

The configuration file will be saved to the USB drive as "####conf.eqc" where the #### is the last four digits of the unit serial number. This file contains all the configuration settings for the unit, including tools, parameters, groups, jobs, Controller and network settings, and I/O settings. This file can be loaded into the PC application for viewing or editing.

Event Log

The event log file will be saved to the USB drive as "####evt.csv" where the #### is the last four digits of the unit serial number. This file contains all non-tightening events saved in the unit's memory in a CSV format.

Network Log

The network log file will be saved to the USB drive as "####net.g4n" where the #### is the last four digits of the unit serial number. This file contains the network log data in a binary format. *This log does not persist across power cycles.*
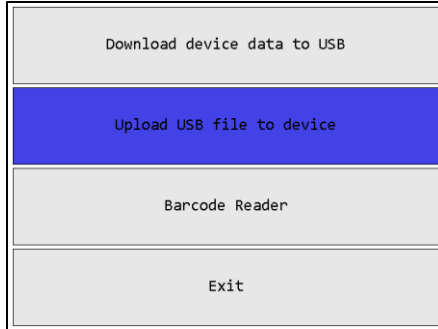
Upload USB file to device
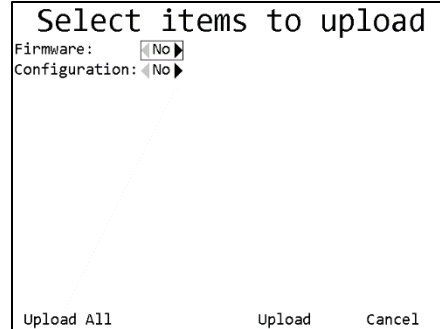

Figure 73: USB Menu - Upload

Figure 74: USB Upload screen

When entering the USB Upload screen, the unit will look in the root folder to find any available files to upload. Make sure you have no more than one file of a given type on the USB drive, as the unit does not provide a way to select between multiple files of a given type.

Soft keys

1. Upload All – Uploads all files from the USB drive.
2. No function
3. Upload – Uploads the selected files from the USB drive.
4. Cancel [ESC] – Returns to the USB Menu screen.

Available Files

Firmware

Firmware files have the extension ".bec". If a file is found, the unit will validate the file before uploading it. If a firmware file is uploaded, the unit will reprogram itself with the new firmware and reboot.

Configuration

Configuration files have the extension ".eqc". If a file is found, the unit must validate the file before uploading it. These files can be created by downloading from a Controller or by saving a configuration file from the PC application. This file contains all the configuration settings for the unit, including tools, parameters, groups, jobs, Controller and network settings, and I/O settings. When uploading the configuration, all existing settings will be overwritten with the new values. New tools referenced in the configuration file will need to be associated with the Controller, as if learning them to the unit.
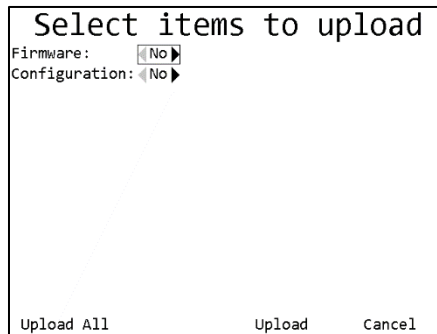
Chapter 12: Firmware Updates

1. If the firmware update file was emailed to you, put it on a USB drive, in the root folder of the drive. If you received the firmware update already on a USB drive, proceed to step 2.
2. Turn on power to the unit and let it go through the startup process.
3. Insert the USB drive into the connector on the unit.
4. Wait for the unit to detect the USB drive. (This may take several seconds.) When the drive is detected, you should see the USB menu.

```
Download device data to USB

Upload USB file to device

Barcode Reader

Exit
```

If the unit does not detect the drive, contact support. If the update was emailed to you, you may also try another USB drive.
5. To upload the firmware into the unit, press the down arrow to highlight "Upload USB file to device" then press ENT. This will take you to the USB Upload screen.

```
Select items to upload
Firmware:      ◀No▶
Configuration: ◀No▶




Upload All          Upload    Cancel
```

6. When the unit changes to the upload screen, it will search the root folder of the drive for the firmware update. If no valid update file is found, the screen will show an error. Otherwise, press the right arrow to select "Yes" for the firmware and then press the **Upload** soft key to start the upload.
7. When the upload is complete, the unit will restart. At this point, you may remove the USB drive.

Chapter 13: Product Specifications

Controller Placement

- Mount the Controller within 33ft of the tool during assembly.
- Keep tool line of sight in view to the Controller. Metal, stone, glass, plaster and other material will obstruct the wireless signal
- Avoid channels used by other 2.4Ghz tools. Channel 1 is default in the Controller
  - Do a channel scan to choose the channel with the least interference. See the XBEE Channel screen on page 36 for more details
  - Channels 1, 6 and 11 are the most commonly used on 2.4Ghz hardware.
- Avoid mounting the Controller on vibrating surfaces
- Do not mount other equipment within 24-36" of the Controller
- Be aware of interference from other devices such as microwaves, wireless barcode readers, fluorescent lighting, power cables, garage door openers, walkie talkies, cordless phones, wireless security hardware and Bluetooth devices that can interrupt the wireless signal
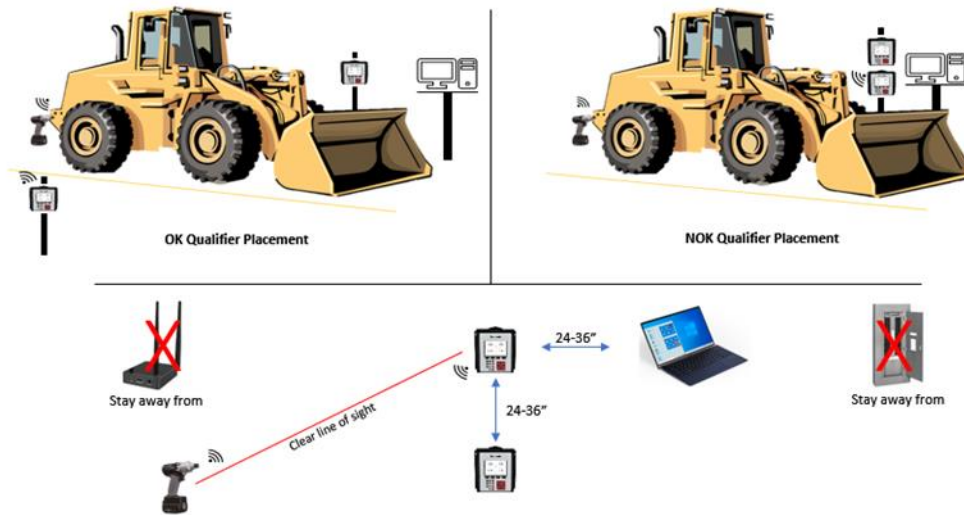
Dimensions

	English		Metric	
	Value	**Unit**	**Value**	**Unit**
Height	10 5/8	in	26.9	cm
Width	10 5/16	in	26.1	cm
Depth	4 1/2	in	11.0	cm
Weight	8.2	lb	3.72	kg
Power consumption			11	W

Radio Information

Item	**Value**
Indoor/Urban range	300 ft. / 100 m
Outdoor line-of-sight range	1 mile / 1500 m
Transmit power	60 mW (18 dBm) conducted 100 mW (20 dBm) EIRP
Receiver sensitivity	-100 dBm (1% packet error)
FCC Part 15.247	OUR-XBEEPRO
Industry Canada	4214A XBEEPRO
Europe (CE)	ETSI

FCC Statement

> **Contains FCC ID: OUR-XBEE/OUR-XBEEPRO**
>
> The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (i.) this device may not cause harmful interference and (ii.) this device must accept any interference received, including interference that may cause undesired operation.

Channel Frequencies

Channel	**Frequency (GHz)**
1	2.410
2	2.415
3	2.420
4	2.425
5	2.430
6	2.435
7	2.440
8	2.445
9	2.450
10	2.455
11	2.460
12	2.465