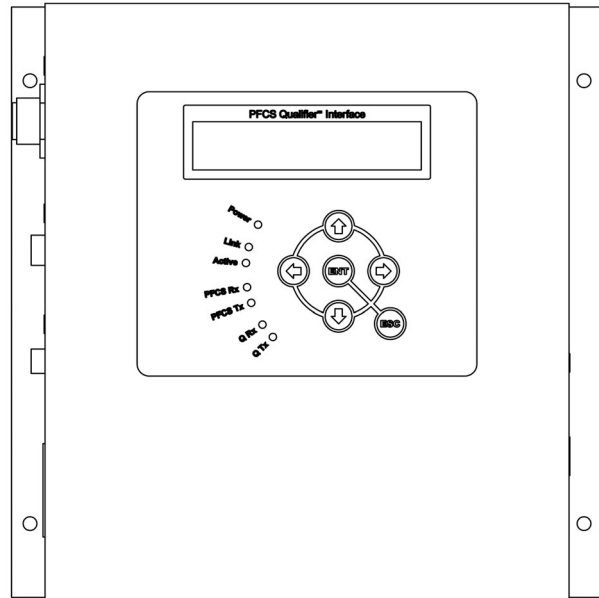# PFCS/Qualifier Interface

INSTRUCTION MANUAL

CE Electronics Inc.
2107 Industrial Drive
Bryan, OH 43506
(419) 636-6705
E-mail: sales@ceelectronics.com
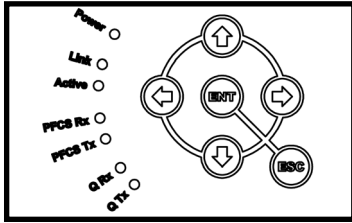www.ceelectronics.com

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Quick Start Guide (if connecting via UDS-10)

WARNING:
Be certain appropriate voltage is selected prior to applying power to the unit.

Step 1:
Power-up the Qualifier and the PFCS Interface. Using either the null-modem cable or the RJ12 cross over cable, connect the Qualifier to the PFCS Interface unit.
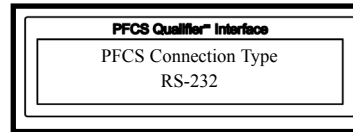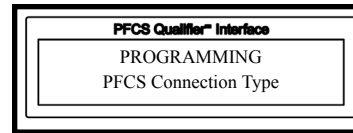
Once both units are able to communicate with one another, the Q RX and Q TX LEDs will both begin flashing.

Step 2:
Connect the Lantronix UDS-10 to the PFCS Interface unit via a 25 Pin DSUB male to male cable. This should be a "straight-through" cable meaning that pin 1 on one end is connected to pin 1 on the opposite end etc.

Step 3:
Power up the UDS-10. Make sure that it is configured properly and also that it is connected to the PFCS via the 10BASE-T connector.

> PFCS Qualifier™ Interface
> PROGRAMMING
> PFCS Connection Type

> PFCS Qualifier™ Interface
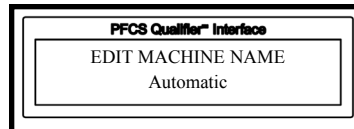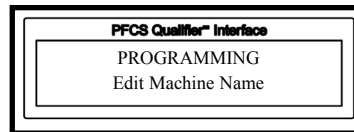> PFCS Connection Type
> RS-232

Step 4:
Using the keypad on the PFCS Interface unit go to the PFCS Connection Type item in the configuration menu.

To reach this point, you'll have to enter a password. The default password is "0 1 0 4".
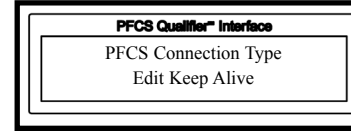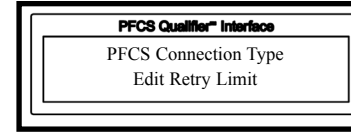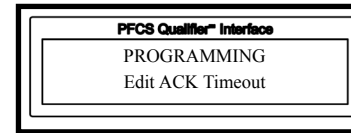
Set the connection type to RS-232. Be sure to save this selection.

> PFCS Qualifier™ Interface
> PROGRAMMING
> Edit Machine Name

> PFCS Qualifier™ Interface
> EDIT MACHINE NAME
> Automatic

Step 5:
Set the machine name to Automatic. The unit will automatically request a machine name from the PFCS. Be sure to save this selection.

Quick Start Guide (continued)

> PFCS Qualifier™ Interface
> PROGRAMMING
> Edit ACK Timeout

> PFCS Qualifier™ Interface
> PFCS Connection Type
> Edit Retry Limit

> PFCS Qualifier™ Interface
> PFCS Connection Type
> Edit Keep Alive

Step 6:
Set appropriate values for the ACK Timeout, the Retry Limit, and Keep Alive interval.

The default values are as follows:

ACK Timeout = 10 seconds
Retry Limit = 5 attempts
Keep Alive = 120 seconds

> PFCS Qualifier™ Interface
> PROGRAMMING
> Edit Date/Time

> PFCS Qualifier™ Interface
> CURRENT DATE/TIME
> 04/23/03 13:22:05

> PFCS Qualifier™ Interface
> EDIT DATE/TIME
> 04/23/03 13:22:05
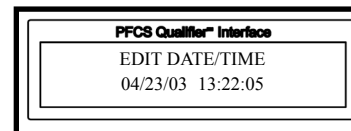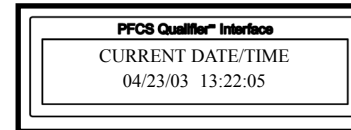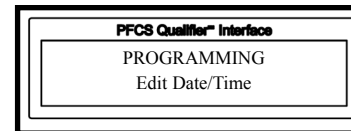
Step 7:
Edit the Date & Time.

Step 7 (continued):
The Date & Time information is included in messages that are sent to the PFCS. So, it is important that these values are set.

> PFCS Qualifier™ Interface
> PROGRAMMING
> PFCS COMM On/Off

> PFCS Qualifier™ Interface
> PFCS COMM ON/OFF
> Set PFCS Comm ON
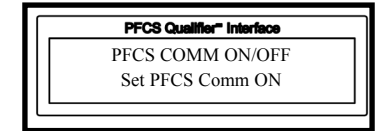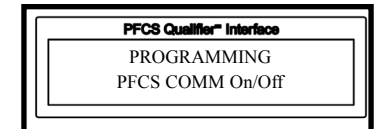
Step 8:
Turn the PFCS Communications on. This action will start the device communicating with the PFCS.

> PFCS Qualifier™ Interface
> QFYR Connected
> PFCS RS232 Connected
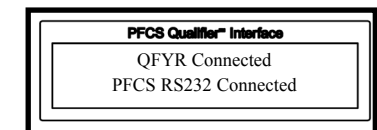
Step 8:
Return to the main screen. The top line on the LCD will give the connection status of the Qualifier. The bottom line will give the connection status of PFCS. Both items will need to be "Connected" for proper operation.

The Qualifier RX & TX LEDs will flash continuously. The PFCS RX & TX LEDs should flash each time an event occurs or a keep-alive message is sent.

Introduction:

Thank-you for your purchase of the PFCS/Qualifier Interface! We are proud to be included as part of your assembly process.

This document is an operations guide for the PFCS/Qualifier Interface. This interface unit is intended to work in conjunction with a Qualifier or Click Wrench.

As the Qualifier monitors a tool and a fastening process, the interface unit will continually poll the Qualifier collecting data. As events occur that should be reported to the PFCS system, the interface will send that information to PFCS either over the RS-232 port or via the Ethernet connection (depending upon which port is enabled).

Before using the PFCS/Qualifier Interface, it is recommended that the user read this manual thoroughly. If this unit is mishandled bodily injury or damage to the device may occur.

This manual is intended to be a general guide to the operations of the PFCS/Qualifier Interface. If any additional questions or concerns arise, please contact a CE Electronics representative.

Warnings:

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.

Warnings (continued):

Immediately discontinue use of the unit if smoke, an abnormal odor, or an unusual sound is detected coming from the unit.

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

Cautions:

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

The AC power entry can be set to accept 110VAC or 220VAC. Before powering up the unit for the first time, be certain that the voltage selection is appropriate for the power being supplied 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 plugs.

There are no user serviceable parts inside the main enclosure of the unit.
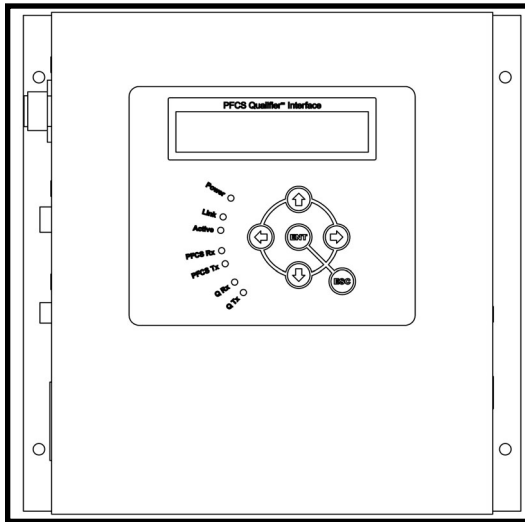
Unit Overview:

The PFCS/Qualifier interface is intended to provide a means of attaching a Qualifier to the Chrysler PFCS (Plant Floor Communications System) network.

On the face of the unit is a two line by twenty character LCD display, seven status LEDs, and six buttons.

There are five connectors on the outside of the unit.

On the left side of the unit there is a three pin circular connector used for interfacing with click wrench devices.

A nine pin DSUB connector is also on the left side of the unit. This connector is used for communicating with Qualifiers that are equipped with nine pin DSUB RS-232 ports.

LEFT SIDE   RIGHT SIDE
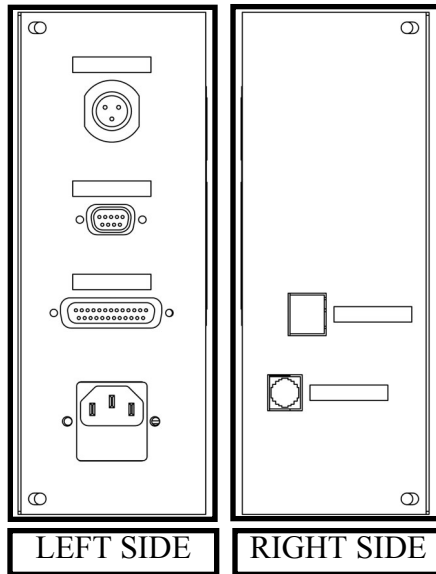
The twenty-five pin DSUB connector is used for connecting to the PFCS system if an RS-232 connection is desired.

The power entry module is also located on the left side of the unit.

The right side of the unit contains two connectors. The top connector is a 10BASE-T Ethernet connector for communicating with PFCS if an Ethernet connection is desired.

The second connector on the right side of the unit is a six pin RJ12 (phone) connector. This connector is used for communicating with Qualifiers that have RS-232 ports built into an RJ12 connector.

Power Entry Module:
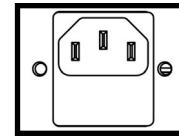
The Power Entry Module is the AC power entry for the unit. The PFCS/Qualifier Interface can be run at 110VAC or 220VAC.

A small "window" under the power entry shows the voltage that the unit is set up to accept. Be sure this window is showing the appropriate voltage before applying power to the unit. If the wrong voltage is applied, damage may occur.

The bottom of the Power Entry Module can be removed in order to change this setting. Removing this piece will also grant the user access to the fuse for the unit. A spare fuse is also tucked inside the power entry module.

Click Wrench Connector:
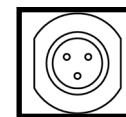
A three pin circular connector is located on the left side of the box. A click wrench can be directly attached to this connector. In the case of an FM click wrench, the FM receiver may be coupled with this connector.

An unregulated 20 VDC is available on pin 1 of this connector. Pin 2 is connected to an opto-isolator. Every time 20 VDC is issued to this pin, an "accept" event occurs. That event is time and date stamped and is transmitted to PFCS. Pin 3 is also opto-isolated. However, every time an input occurs on this pin, a "reject" event occurs and is transmitted to PFCS.
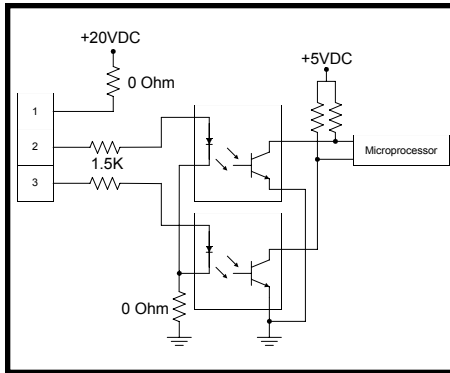
Click Wrench Connector

PIN 1 - 20VDC Unregulated
PIN 2 - Opto-Isolated Accept Input
PIN 3 - Opto-Isolated Reject Input

RS-232 Nine Pin DSUB Connector:
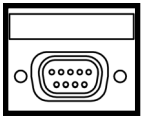
 The nine pin DSUB connector is an RS-232 port that is used to communicate with Qualifiers equipped with a nine pin DSUB RS-232 port.

This port is used to poll the Qualifier for it's current status. As a cycle is completed, data is passed from the Qualifier to the PFCS Interface via this port. Once the PFCS gets a status from the Qualifier, the PFCS Interface reformats the information, adds time and date information and then transmits the data to the PFCS.

Status LEDs on the face of the unit will indicated if this port is working properly when connected to a Qualifier.

A null modem cable is used to connect this port to a Qualifier.
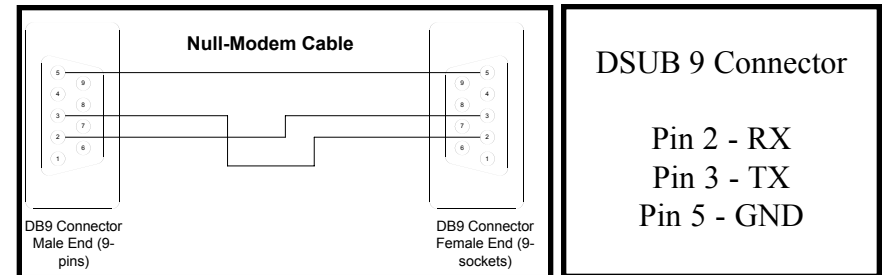
DSUB 9 Connector

Pin 2 - RX
Pin 3 - TX
Pin 5 - GND

RS-232 Twenty Five Pin Connector:

DSUB 25 Connector
Pin 2 - TX
Pin 3 - RX
Pin 4 - RTS
Pin 5 - CTS
Pin 6 - DSR
Pin 7 - GND
Pin 8 - DCD
Pin 9 - DTR
Pin 22 - RNG

The 25 pin DSUB connector is a second RS-232 port and is one of two ports that can connect this unit to the PFCS. This connector is used for communicating with PFCS if RS-232 communications are required.
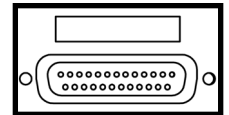
This port can be turned on and off through the user interface.

RS-232 RJ12 Connector:

An RJ12 connector (phone jack) is found on the right hand side of the unit. This connector is an RS-232 serial port provided to communicate with

RJ-12 Connector
Pin 2 - GND
Pin 3 - RX
Pin 4 - TX
Pin 6 - GND

Qualifiers that are also equipped with an RJ-12 RS-232 port. A six-conductor cross over cable is used to connect this port to that of a Qualifier.

Ethernet Connector (RJ45 - 10BASE-T):

Ethernet Connector
Pin 1 - TX+
Pin 2 - TX-
Pin 3 - RX+
Pin 6 - RX-

The Ethernet port is one of two ports that can connect this unit to the PFCS. If this port is enabled through the user interface, this device will transmit TCP/IP messages directly to the PFCS each time the Qualifier witnesses a completed cycle.

Programming the Unit:

PFCS Qualifier™ Interface
QFYR Connected
PFCS RS232Connected
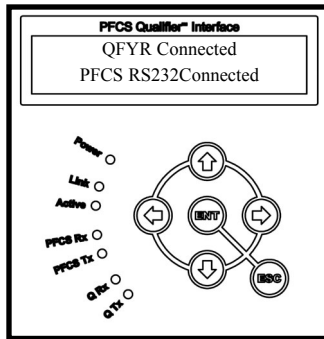
After the PFCS Interface unit powers up and displays firmware version information, the unit displays connection information. The connection information pertains to both the Qualifier and PFCS connections.

PFCS Qualifier™ Interface
ENTER PASSWORD
0 * * *
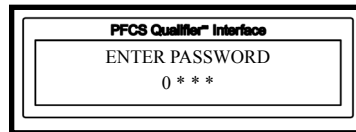
There are several items that are user configurable through the programming menu. In order to reach this menu from the main display, press the enter (ENT) key.

The display will prompt the user to enter a password before reaching the programming menu. The default password is "0 1 0 4".

While entering the password, the left and right arrow keys will move the cursor back and forth. The up and down arrows will raise and lower the value of the digit that the cursor is highlighting.

The escape key (ESC) will send the program back to the main screen without attempting to read the password. If the enter key (ENT) is pressed, the unit will compare the entered password to the password that is stored in the unit's non-volatile memory. If these values match, the unit will continue onto the programming menu.

Navigating the Program Menu:
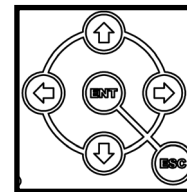
After the password has been entered and accepted, the first item on the programming menu will appear.

The user can manipulate this menu by pressing the UP and DOWN arrows and by pressing the enter key (ENT) to select an item or the escape key (ESC) to return to the main screen.

If the UP arrow key is pressed, the next item on the menu will be displayed. The DOWN arrow key selects the previous item from the menu and displays it.

Pressing the enter key (ENT) allows the user to select a given menu item for editing. When this key is pressed, the unit will retrieve and display the stored value for that particular item. That item can then be edited and saved to non-volatile memory.

The escape key allows the user to "back out" of editing any given item without actually changing or saving the value.

Program Menu Overview:

```
┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│     PFCS Connection Type     │        │      Edit Machine Name       │
└─────────────────────────────┘        └─────────────────────────────┘

              ⬆                         ┌─────────────────────────────┐
            (ENTER)                     │   PFCS Qualifier™ Interface │
              ⬇                         │        PROGRAMMING           │
                                        │       Edit ACK Timeout       │
                                        └─────────────────────────────┘

┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│       Edit IP Address        │        │       Edit Retry Limit       │
└─────────────────────────────┘        └─────────────────────────────┘

┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│       Edit Subnet Mask       │        │       Edit Keep Alive        │
└─────────────────────────────┘        └─────────────────────────────┘

┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│        Edit Gateway          │        │      PFCS Comm On/Off        │
└─────────────────────────────┘        └─────────────────────────────┘

┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│       Edit Local Port        │        │       Edit Date/Time         │
└─────────────────────────────┘        └─────────────────────────────┘

┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│       Edit Remote Port       │        │      Edit LCD Contrast       │
└─────────────────────────────┘        └─────────────────────────────┘

┌─────────────────────────────┐        ┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │        │   PFCS Qualifier™ Interface │
│        PROGRAMMING           │        │        PROGRAMMING           │
│      Edit Server Address     │        │        Edit Password         │
└─────────────────────────────┘        └─────────────────────────────┘
```
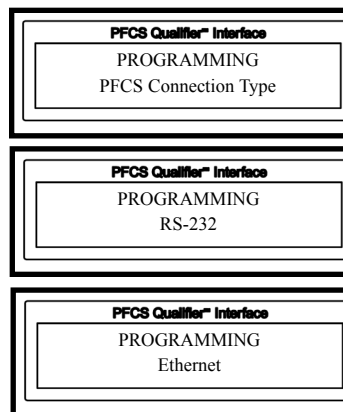
Programming the Connection Type:

```
┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │
│        PROGRAMMING           │
│     PFCS Connection Type     │
└─────────────────────────────┘

┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │
│        PROGRAMMING           │
│           RS-232             │
└─────────────────────────────┘

┌─────────────────────────────┐
│   PFCS Qualifier™ Interface │
│        PROGRAMMING           │
│          Ethernet            │
└─────────────────────────────┘
```

The PFCS Interface unit can connect with the Plant Floor Communication System (PFCS) in one of two different ways. It can either send messages over the RS-232 port or the Ethernet port.
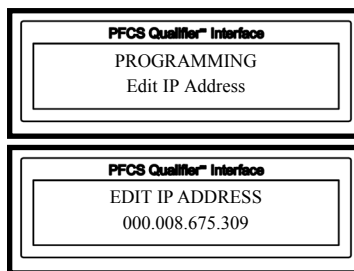
This option is programmable. To edit this feature, the user needs to navigate to the PFCS Connection Type option on the programming menu by using the UP and DOWN arrow keys and then pressing the enter key.

After the enter key is pressed, the unit will display the current connection type (either RS-232 or Ethernet). If any of the arrow keys are pressed (UP, DOWN, LEFT or RIGHT) the display will toggle to show the other connection type.

Once the desired connection type is displayed, the enter key can be pressed to save that value. All programmable values are stored in non-volatile memory. This allows the unit to "remember" these values even when the unit is turned off and unplugged.

If the escape key is pressed during the edit process the unit will return to the program menu.

Programming the Unit's IP Address:

```
┌──────────────────────────────┐
│  PFCS Qualifier™ Interface    │
│       PROGRAMMING             │
│      Edit IP Address          │
└──────────────────────────────┘
```

```
┌──────────────────────────────┐
│  PFCS Qualifier™ Interface    │
│      EDIT IP ADDRESS          │
│      000.008.675.309          │
└──────────────────────────────┘
```

If the unit is using it's Ethernet Connection to communicate with PFCS, an IP address will need to be programmed.

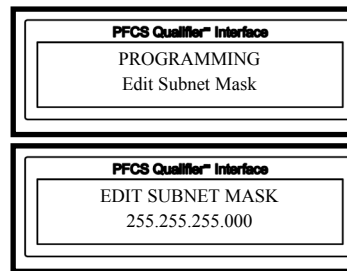*This value is unused if the unit is in RS-232 mode (terminal server).*

It's important that each device on the network has it's own unique IP address. In order to edit this interface's IP address, select Edit IP Address from the main menu and press enter.

The current IP address will be displayed at this point. In order to change the address use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.

Pressing the enter key will allow the user to save the IP address that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Programming the Subnet Mask:

```
┌──────────────────────────────┐
│  PFCS Qualifier™ Interface    │
│       PROGRAMMING             │
│      Edit Subnet Mask         │
└──────────────────────────────┘
```

```
┌──────────────────────────────┐
│  PFCS Qualifier™ Interface    │
│      EDIT SUBNET MASK         │
│      255.255.255.000          │
└──────────────────────────────┘
```

The Subnet Mask is used to identify which part of the IP address is the network ID and which part is the host ID. This is accomplished by a logical bit-wise ANDing of the IP address and the netmask.

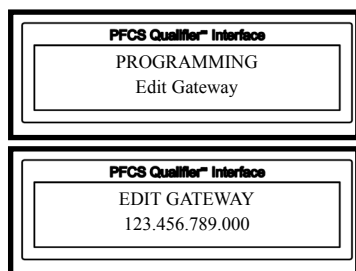*This value is unused if the unit is in RS-232 mode (terminal server).*

In order to edit the netmask, select Edit Subnet Mask from the main menu and press enter.

The current mask value will be displayed at this point. In order to change the mask's value use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.

Pressing the enter key will allow the user to save the new subnet mask that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Programming the Gateway:

```
┌──────────────────────────────┐
│  PFCS Qualifier™ Interface   │
│  ┌────────────────────────┐  │
│  │      PROGRAMMING       │  │
│  │      Edit Gateway      │  │
│  └────────────────────────┘  │
└──────────────────────────────┘

┌──────────────────────────────┐
│  PFCS Qualifier™ Interface   │
│  ┌────────────────────────┐  │
│  │     EDIT GATEWAY       │  │
│  │     123.456.789.000    │  │
│  └────────────────────────┘  │
└──────────────────────────────┘
```

Gateways perform routing functions. This gateway value identifies the router that connects a LAN to an internet. Some gateways also perform protocol conversions.

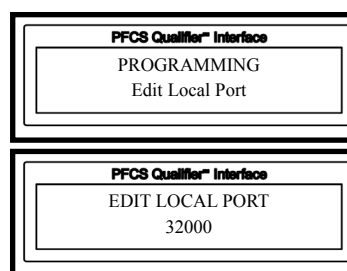*This value is unused if the unit is in RS-232 mode (terminal server).*

In order to edit this gateway's IP address, select Edit Gateway from the main menu and press enter.

The current gateway address will be displayed at this point. In order to change the address use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.

Pressing the enter key will allow the user to save the gateway's IP address that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Programming the Local Port:

```
┌──────────────────────────────┐
│  PFCS Qualifier™ Interface   │
│  ┌────────────────────────┐  │
│  │      PROGRAMMING       │  │
│  │     Edit Local Port    │  │
│  └────────────────────────┘  │
└──────────────────────────────┘

┌──────────────────────────────┐
│  PFCS Qualifier™ Interface   │
│  ┌────────────────────────┐  │
│  │    EDIT LOCAL PORT     │  │
│  │         32000          │  │
│  └────────────────────────┘  │
└──────────────────────────────┘
```

The Local Port sets the service port value that is used to connect to the PFCS system.

This value is programmable to any number between 0 and 32000.

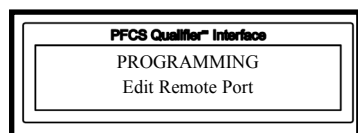*This value is unused if the unit is in RS-232 mode (terminal server).*

In order to edit the local port, select Edit Local Port from the main menu and press enter.

The current port number address will be displayed at this point. In order to change the address use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.
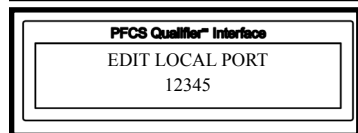
Pressing the enter key will allow the user to save the port number that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Programming the Remote Port:

```
PFCS Qualifier™ Interface
    PROGRAMMING
   Edit Remote Port
```

```
PFCS Qualifier™ Interface
   EDIT LOCAL PORT
       12345
```

The Remote Port specifies the port value of the PFCS server.

This value is programmable to any number between 0 and 32000.

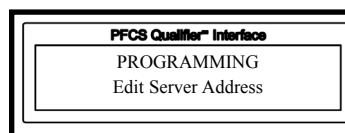*This value is unused if the unit is in RS-232 mode (terminal server).*

In order to edit the remote port, select Edit Remote Port from the main menu and press enter.

The current port number will be displayed at this point. In order to change the address use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.
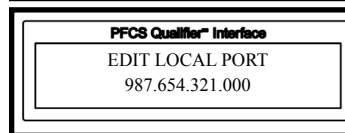
Pressing the enter key will allow the user to save the port number that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Programming the Server Address:

```
PFCS Qualifier™ Interface
    PROGRAMMING
  Edit Server Address
```

```
PFCS Qualifier™ Interface
   EDIT LOCAL PORT
    987.654.321.000
```

The Server Address represents the IP address of the PFCS Server.

This value is unused if the unit is in RS-232 mode (terminal server).
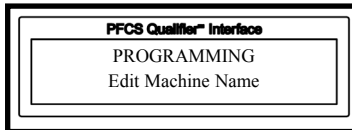
In order to program the server's IP address, select Edit Server Address from the main menu and press enter.

The current IP address will be displayed at this point. In order to change the address use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.

Pressing the enter key will allow the user to save the IP address that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Programming the Machine Name:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit Machine Name
```

```
PFCS Qualifier™ Interface
EDIT MACHINE NAME
Automatic
```

Each message that is sent from this unit to the PFCS contains a machine name that identifies this unit to the PFCS system.

The machine name can be automatically assigned by the PFCS system, or it can be user specified in a manual mode.

In order to set the Machine Name, select Edit Machine Name from the main menu and press enter.

At this point either the word Automatic or Manual will appear on the screen. Pressing the LEFT, RIGHT, UP, or DOWN arrows will toggle the value between Automatic and Manual. Once the desired selection is on the display, the enter key may be pressed in order to save the selection.

```
PFCS Qualifier™ Interface
PROGRAMMING
Manual
```

```
PFCS Qualifier™ Interface
EDIT MACHINE NAME
BF01
```
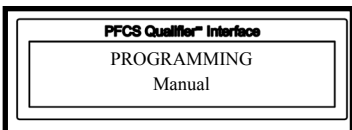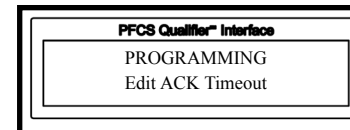
If Manual Mode is selected, the user will be able to program a four character alpha-numeric name. This is the name that will identify the messages that are sent from this unit.
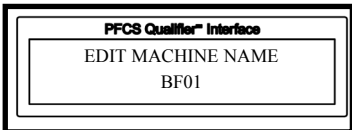
Once the characters are programmed, the enter key may be pressed in order to save the new machine name.

Escape can be pressed at any time in order to exit without saving a new value.

Programming the ACK Timeout:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit ACK Timeout
```

```
PFCS Qualifier™ Interface
EDIT ACK TIMEOUT
5
```

Every time this unit sends out a message to the PFCS system, it expects a response message in return. The amount of time that the unit will wait for this response before ta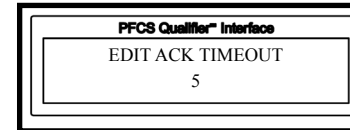king some action is programmable. This value is called the Acknowledge (ACK) Timeout. The ACK timeout can be set to a value between 5 and 30 seconds.

In order to program the acknowledge timeout, select Edit ACK Timeout from the main menu and press enter.
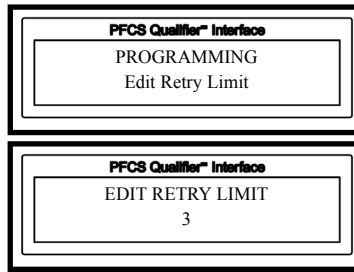
The current timeout value (in seconds) will be displayed at this point. In order to change the value the arrow keys may be pressed. The UP key will add one second, DOWN will subtract a second, RIGHT will add 10 seconds, and LEFT will subtract 10 seconds from the value.

Pressing the enter key will allow the user to save the value that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving.

Programming the Retry Limit:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit Retry Limit
```

```
PFCS Qualifier™ Interface
EDIT RETRY LIMIT
3
```

When a message is sent to the PFCS system and an acknowledgment is not received, this unit will wait for an amount of time defined by the ACK Timeout setting before resending the message. The number of times the unit will attempt sending a message is defined by the Retry Limit.

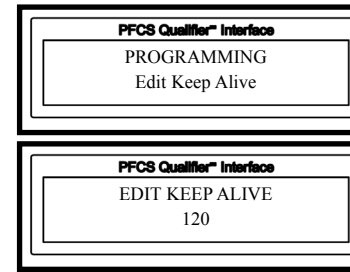The retry limit is programmable between 1 and 10 attempts.

In order to program the retry limit, select Edit Retry Limit from the main menu and press enter.

The current limit value (number of attempts) will be displayed at this point. In order to change the value the arrow keys may be pressed. The UP key will add one attempt, DOWN will subtract an one attempt, RIGHT will add 10 attempts, and LEFT will subtract 10 attempts from the value.

Pressing the enter key will allow the user to save the value that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving.

Programming the Keep Alive Timer:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit Keep Alive
```

```
PFCS Qualifier™ Interface
EDIT KEEP ALIVE
120
```

The PFCS system expects to see messages from PFDs (Plant Floor Devices) on a regular interval. The Keep Alive value defines the amount of time that this unit will wait to send a "keep alive" message if there is no other information (like fastening results) to send.

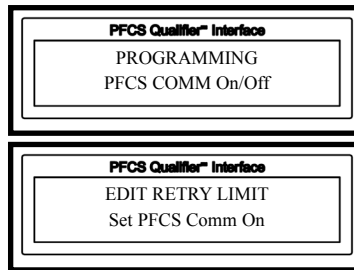The keep alive value can be programmed to a value between 30 and 240 seconds.

In order to program the keep alive timeout, select Edit Keep Alive from the main menu and press enter.

The current timeout value (in seconds) will be displayed at this point. In order to change the value the arrow keys may be pressed. The UP key will add one second, DOWN will subtract a second, RIGHT will add 10 seconds, and LEFT will subtract 10 seconds from the value.

Pressing the enter key will allow the user to save the value that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving.

Turning the PFCS Communications On and Off:

```
PFCS Qualifier™ Interface
PROGRAMMING
PFCS COMM On/Off
```

```
PFCS Qualifier™ Interface
EDIT RETRY LIMIT
Set PFCS Comm On
```

While programming a unit, it may be advantageous for the unit not to be sending information to the PFCS system.

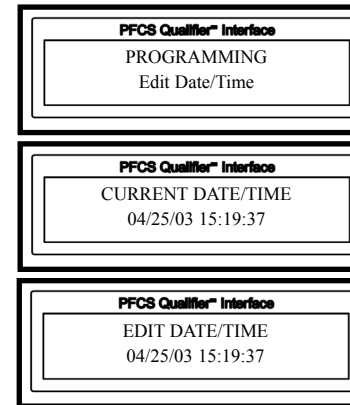If this value is off, no messages will be generated or sent to PFCS.

In order to set this communications value, select PFCS COMM On/Off from the main menu and press enter.

The display will read either "Set PFCS Comm On" or "Set PFCS Comm Off". Pressing the LEFT, RIGHT, UP, or DOWN arrows will toggle the value between the two settings. Once the desired selection is on the display, the enter key may be pressed in order to save the selection.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving.

Programming the Date and Time:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit Date/Time
```

```
PFCS Qualifier™ Interface
CURRENT DATE/TIME
04/25/03 15:19:37
```

```
PFCS Qualifier™ Interface
EDIT DATE/TIME
04/25/03 15:19:37
```

Some messages that are sent to the PFCS system need to include time and date information. This unit will keep track of time and date even when it is unplugged.

In order to program the date and time, select Edit Date/Time from the main menu and press enter.

The time is both displayed and programmed in military time (i.e. 1 p.m. would be represented as 13:00:00)
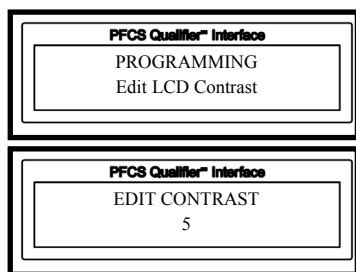
After enter is pressed, the current date and time will be displayed and updated at regular intervals. The enter key will have to be pressed again in order to leave this live display and to start editing the date and time.

In order to change the date and or time use the LEFT and RIGHT arrow keys to select any given digit and then use the UP and DOWN keys to alter that digit's value.

Pressing the enter key will allow the user to save the Date and Time that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Adjusting the LCD Contrast:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit LCD Contrast
```

```
PFCS Qualifier™ Interface
EDIT CONTRAST
5
```

The LCD Contrast setting controls the bias voltage that is sent to the LCD display. This variable is set at the factory and probably will not need to be adjusted.

However, if the need arises, select Edit LCD Contrast from the programming menu and press enter.

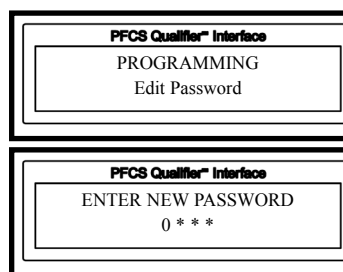A value from 0 to 50 will appear on the display.

In order to change the value the arrow keys may be pressed. The UP key will add one to the value, DOWN will subtract one, RIGHT will add 10 to the value, and LEFT will subtract 10 from the value.

As adjustments are made, the displayed characters will become lighter or darker.

Pressing the enter key will allow the user to save the value that is displayed on the LCD.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving.

Changing the Password:

```
PFCS Qualifier™ Interface
PROGRAMMING
Edit Password
```

```
PFCS Qualifier™ Interface
ENTER NEW PASSWORD
0 * * *
```

In order to gain access to the programming menu, the user must enter a password. The password is a four digit (numeric) code.

All units ship with a default code of "0 1 0 4". This default code may be changed to a value that is more easily remembered by the user.

In order to edit the password, select Edit Password from the programming menu and press enter.

To change the password use the LEFT and RIGHT arrow keys to select any given digit in the address and then use the UP and DOWN keys to alter that digit's value.

Pressing the enter key will allow the user to save the new password.

The escape key can be pressed any time during the editing process allowing the user to return to the main menu without saving a new value.

Supported Messages:

This particular PFD (plant floor device) is capable of sending out two different types of messages to the PFCS system. When the Qualifier this unit is attached to witnesses the completion of a fastening process, this unit will generate a Test Result Data message (type 0002).

If the keep alive timer times out, a Keep Alive message (type 9999) will be generated and sent to the PFCS system.

Test Result Data Message (type 0002):

Start	End	Length	Description
1	4	4	Machine ID
5	7	3	ACK/NAK area
8	13	6	Message Sequence Number
14	17	4	Message Type (0002)
18	21	4	Data Byte Count (position 22 to the end of message)
22	25	4	Number of Record in block: 0001
26	27	2	Filler Spaces
28	33	6	Last 6 digits of VIN (Set to all 0's)
34	39	6	Last 6 digits of Track Seq# (Set to all 0's)
40	51	12	Date and Time (YYMMDDHHMMSS)
52	52	1	Overall Pass of Fail Flag (P=Pass F=Fail)
53	53	1	Pass or Fail for fastening (P=Pass F=Fail)
54	55	2	Spindle Number (Always 01)
56	57	2	Bolt Count (Always 01)
58	58	1	Torque Status (P=Pass F=Fail)
59	63	5	Torque High Limit (Always set to 000.0)
64	68	5	Torque Low Limit (Always set to 000.0)
69	73	5	Torque Reading (Always set to 000.0)
74	74	1	Angle Status (P=Pass F=Fail)
75	79	5	Angle High Limit (Always 00000)
80	84	5	Angle Low Limit (Always 00000)
85	89	5	Angle Reading (Always 00000)
90	90	1	Message Terminator (0x0D <CR>)

Keep Alive Message (type 9999):

Start	End	Length	Description
1	4	4	Machine ID
5	7	3	ACK/NAK Area (Blanks)
8	13	6	Message Sequence Number (Last Sequence Number)
14	17	4	Message Type (9999)
18	21	4	Data Byte Count (position 22 to the end of message)
22	29	8	Vendor ID (CE ELTR.)
30	35	6	Hardware Model (Q2/PFD)
36	41	6	Software Version (v1.0.0)
42	42	1	Message Terminator (0x0D <CR>)

Box Dimensions: