



Paragon Explorer Lite Communication Software

For Fireeye Paragon Scanners using Windows XP

DESCRIPTION

Paragon Explorer Lite, is the basic PC based configuration tool for Paragon model 105F1. Paragon Explorer Lite software is a Windows based software program designed to provide the ability to set, check and record, Paragon data settings, from a standard laptop or desktop PC. The software program requires an IBM compatible PC and allows the user to communicate with the scanners to provide the following capabilities:

- Communication with up to 254 scanners wired in a multi-drop wiring configuration via RS485 using a standard Modbus RTU protocol.
- Set fuel type
- Set temperature setting

To assist the user in the operation of the scanner and this software program, the technical bulletin for the Paragon Scanners (CU-108) should be reviewed.

REQUIREMENTS

The following represents the **minimum** hardware requirements for a Windows compatible PC to run the Paragon Explorer Lite communications software program:

- Microsoft Windows¹ XP operating system for correct operation and access to all features
- 1 serial communications port, or USB port configured for Serial communications.
- An RS232 to RS485 converter²

¹ Windows is a registered trademark of Microsoft.

² Fireeye recommends using either P/N EC485 or IC485 (optically isolated) RS232 to RS485 converter. Each includes a 110VAC to 12VDC power supply or P/N USB485 which is a USB to RS485 converter that is powered from the USB port.



WIRING THE SCANNERS FOR REMOTE COMMUNICATIONS

The scanners can be connected to an Windows compatible PC to allow the user to review flame status, system setpoints and other operational information. The individual flame scanners are connected via data link (a single, twisted shielded pair wire, e.g.: Belden 8761) in a multi-drop (e.g.: daisy chain) wiring configuration. Refer to bulletin **CU-108 for wiring scanners in a multi-drop configuration**. The flame scanners are then connected to an Windows compatible PC.

Up to 254 scanners can be connected on a data link. However, when more than 32 scanners are connected together, or the total length of the data link exceeds 4,000 feet. repeaters (or amplifiers) are required to boost the signal. Consult the factory for information on the use of repeaters.

NO TWO SCANNERS CAN HAVE THE SAME COMMUNICATION ADDRESS.

DIRECT CONNECT

The scanners communicate over the data link via RS485. An RS232/RS485 converter is required for the RS232 Serial Comm Port of the PC. Fireye recommends using either P/N EC485 or IC485 (optically isolated) RS232 to RS485 converter. Each includes a 110VAC to 12VDC power supply.

For USB, P/N UC485 (optically isolated) USB to RS485 converter is powered from the USB port.

FIGURE 1. EC485 WIRING

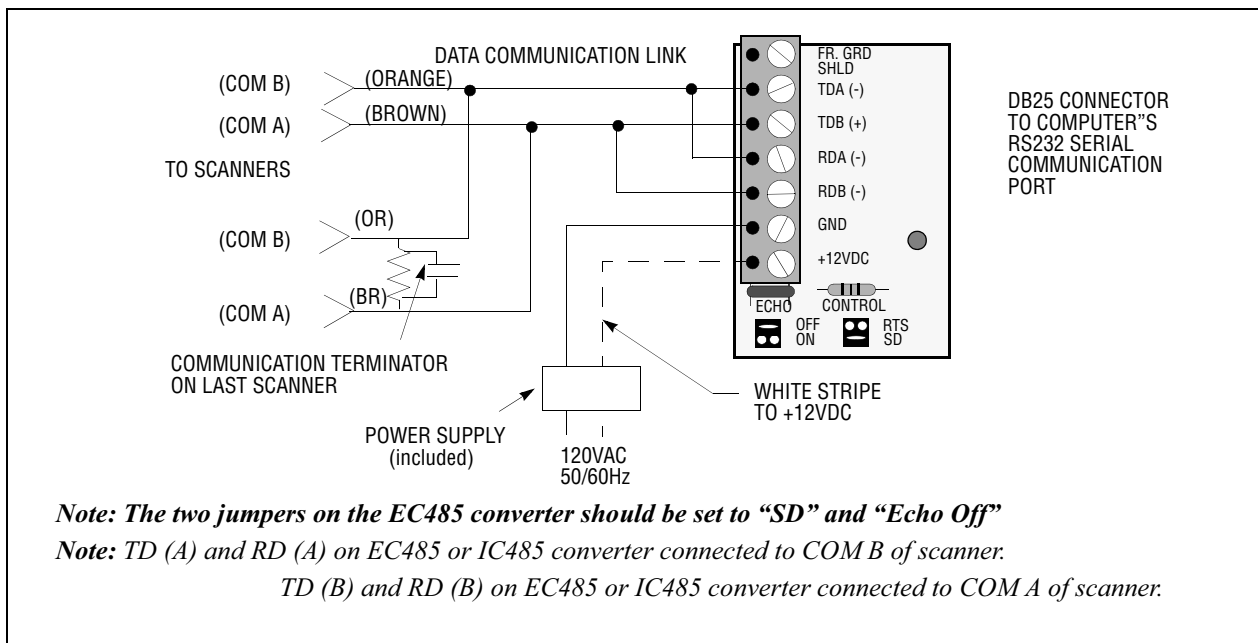


FIGURE 2. IC485 WIRING

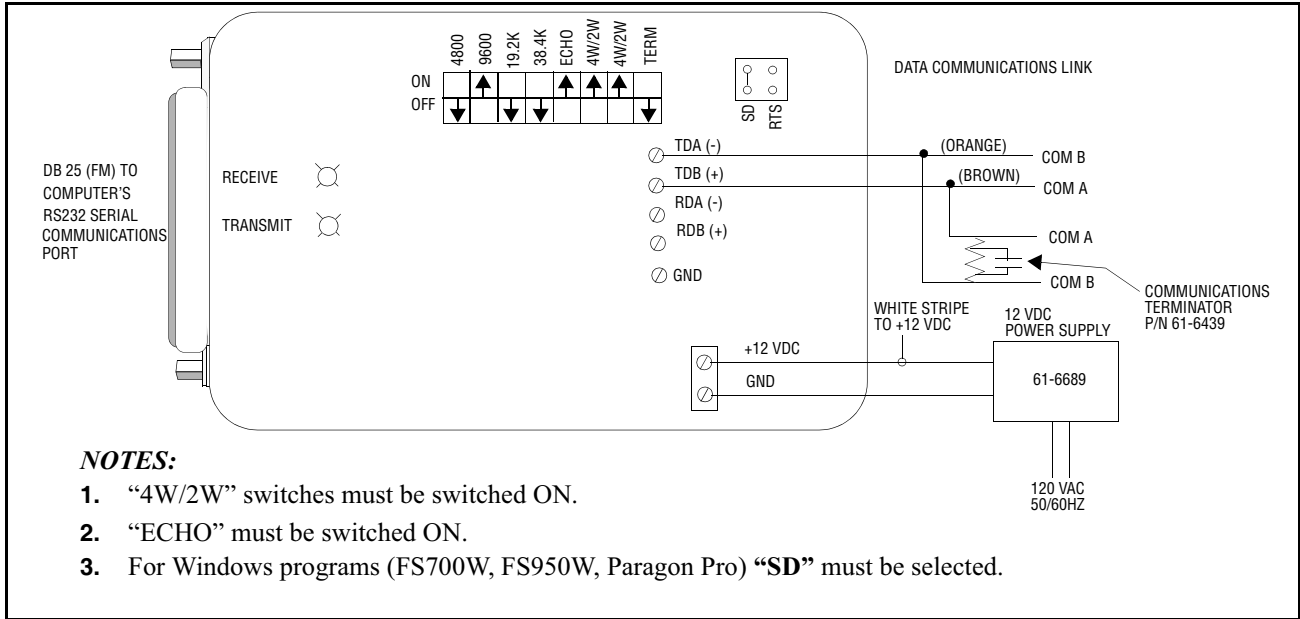
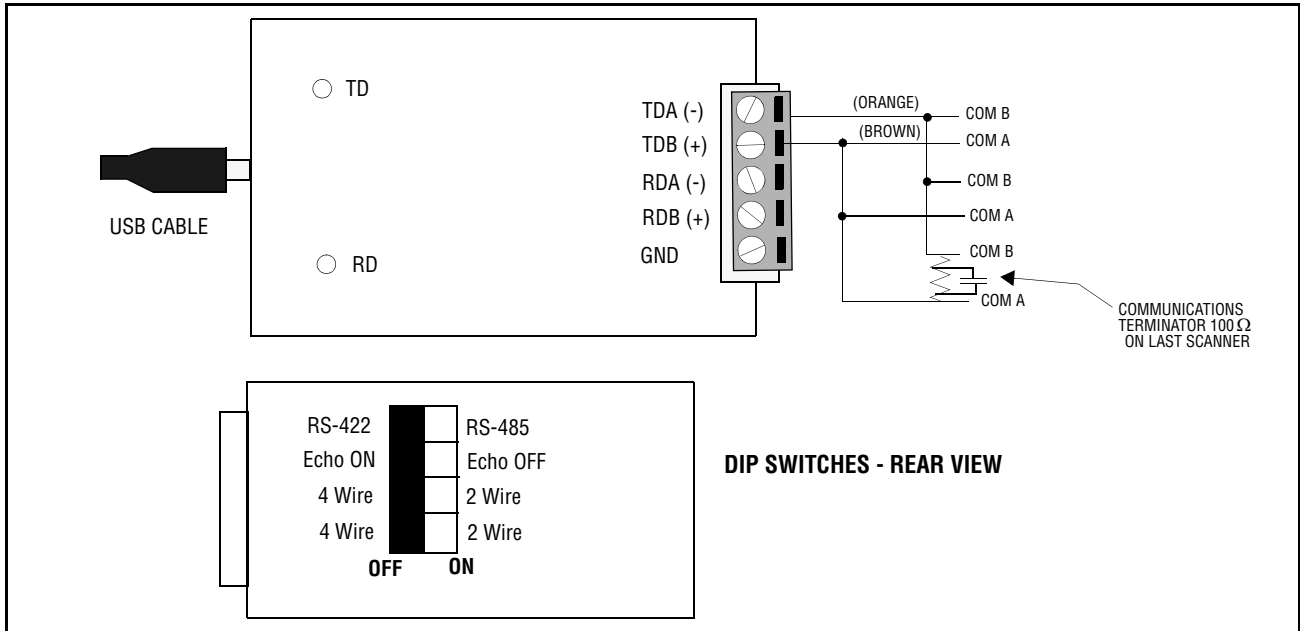


FIGURE 3. UC485 WIRING



UC485 dip switch settings on the back of the device should be:

- (SW1) RS-485
- (SW2) ECHO OFF
- (SW3) 2 Wire
- (SW4) 2 Wire

For use with Fireye equipment, it is recommended that all dip switches be set to the ON position.

Wiring (Fireye cable colors are listed):

- TDA (-) = Orange
- TDB (+) = Brown

INSTALLING PARAGON EXPLORER LITE SOFTWARE

1. Install P/N PGEXLT CD-ROM
2. A screen will appear automatically, click Install and follow the instructions using default settings. This will install Paragon Explorer Lite into Program Files, under Paragon Explorer Lite Directory, and on completion will create a Paragon Explorer Lite icon on the PC desktop.

SOFTWARE OVERVIEW

The following is a brief description of the available option screens:

DEVICE TYPE - Select a device type to configure (currently Paragon 105f1-1 is the only choice)

LANGUAGE PREFERENCE - Select language English, German, Spanish

BROWSE WINDOW - During the discovery process, the window where each identified scanner and its address is displayed

CONFIGURATION SCREEN - Window that displays current settings of the scanner. Data parameters can also be modified from this screen. You can set Relay Delay time, Fuel Type, Relay on/off values, 4-20 LED range setting and display the Active Data file.

GETTING STARTED



PEX Lite can be started via the Icon on the desktop, which is automatically created during the program installation. Use Start/Programs/Fireeye/Get Latest Docs to check and update documentation. If the PC is connected to the internet, the latest copy from the Fireeye website will be shown.

When starting the program for the first time after installation, the user must select a language. Paragon Explorer Lite is supplied with English, Spanish, German and French. Other languages can be provided upon request.

Select the appropriate flag and select the check box.

If English is selected, the program will run immediately. If an alternative language is selected, the program will automatically shut down and should then be restarted, when the chosen language will be applied.

Having made the language selection, this display will not appear again. A language change can be made under the options menu.

Select the scanner type to be set (currently only 105F1-1 is shown). This will be increased as new models are released). Then select "Next".

Connect one or more Paragon units to the PC serial port. The program will automatically find all configured serial ports that exist on the PC. There is no requirement to set baud rates, etc. The user only needs to select the port to which the Paragon is connected. Select the port, then select "Next".

Identifying Connected Scanners

Paragon Explorer Lite will automatically look for scanners connected to the selected serial port, by sending a short message to each address, starting with address 255, which is one of the factory defaults addresses. It continues with address 1 up to the maximum selected node address, as shown in the browser window.

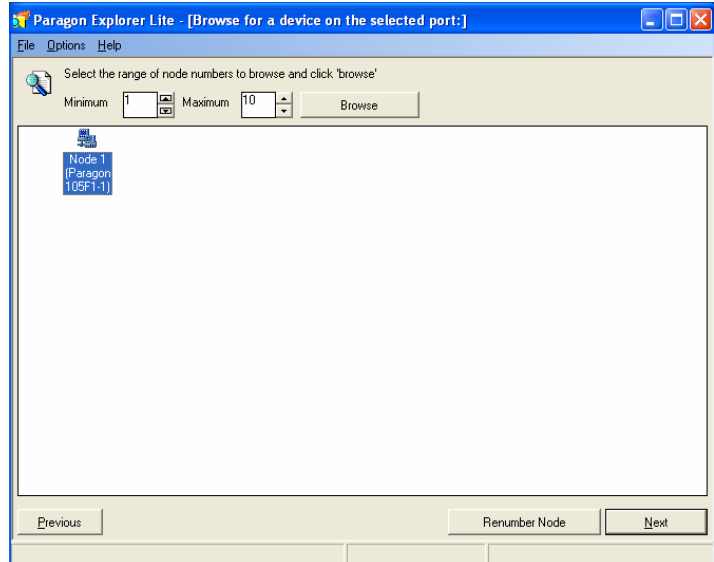
The address range can be changed to suit the application, by increasing or decreasing the maximum number. The maximum can be set to 254, but the time to browse increases, significantly.

To avoid communications problems, each scanner must have a unique address. All scanners sent from the factory are set to address 1. Connect only one scanner at a time and set new address, then add another scanner.

All selected scanners appear, as icons, on the browser screen.

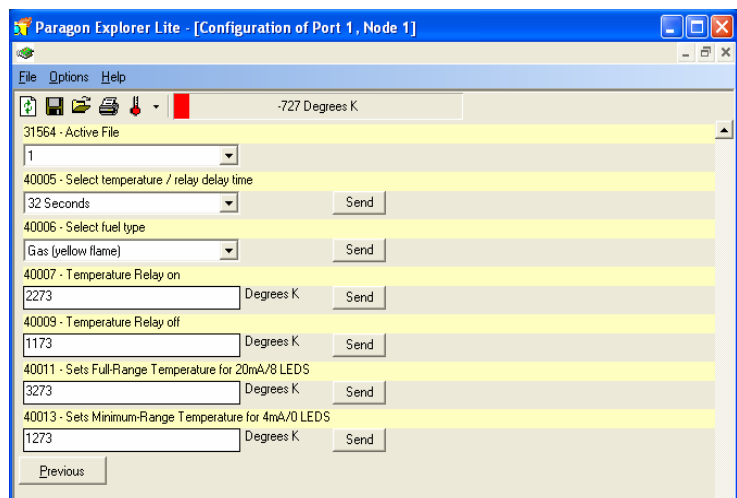
If a scanner is connected, and the browser does not show any nodes in the white area of the display, the connections to the scanner should be re-checked, as should the serial port, and the RS232/485 converter. (check TX & RX LED on interface).

Once a scanner is detected the icon appears on the white area of the screen, select the scanner icon, and then re-number as required, and check that a message showing address applied occurs. The program will automatically re-browse, and the scanner will appear with the new address. Select the scanner, with the mouse, and then select "Next".



Configuration Screen

On first selection the program will refresh the data, from the scanner, and the data in the boxes will show the current settings.



Display Icons

The icons from the left hand side of the configuration screen are:

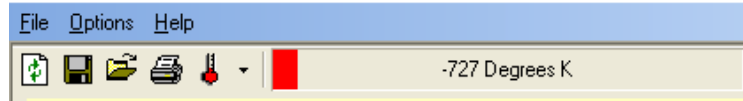
REFRESH,

SAVE

OPEN FILE

PRINT

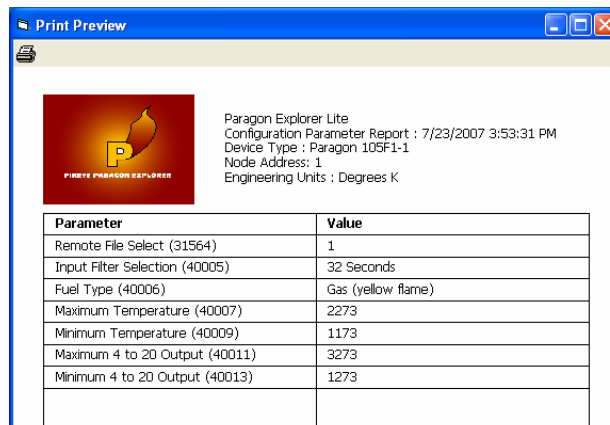
TEMPERATURE UNITS



The actual measured temperature is also shown, as a numerical value and red bar, in the currently selected units.

***Note:** The scanner uses °K internally, but the user may set the values in °C, or °F. When using F, due to mathematical rounding errors, the value sent, may be displayed, +/- one degree. This does not occur when using °C or °K.*

REFRESH - The data is automatically refreshed on initial display of the page, subsequent to this, the user must select refresh, to read the current data, once configuration of all parameters is complete.



SAVE - It is recommended that settings be saved for future reference. Note, the scanner holds four files which may each have different settings. Each must be saved separately after first learning file. The selected file is shown on the display. (Remote File Select).

OPEN FILE - Allows the user to recall saved data. The data will be saved in the currently selected units. On recalling the data, the current units being used will be changed to the stored file units, unless they are

the same, in which case no change occurs.

PRINT - The print format records data, time, numerical address and data settings.

TEMPERATURE UNITS - Allows the user to set data in units of °K (scanner internal units) °C or °F. Changing units converts all values being displayed including the dynamic temperature value, to the required setting.

MENUS

Menus contain the options available to the user:

FILE - Allows the user to return to the start of the program, or to Exit.

OPTIONS - Under Preferences, the user can select different language settings.

HELP -

Documentation - Provides a link to the documentation

About - Provides software version, e-mail support link, and telephone number.

Video - Future implementation.

***Note:** the F1 key will bring up the documentation during program operation, for quick reference.*

Closing Paragon Explorer Lite

Paragon Explorer Lite can be closed as with any other Windows application, i.e. using the X, icon, or from File, Exit. Fireeye recommends that scanner data settings are stored, for future reference.

Changing Language Settings

Paragon Explorer Lite will always start up in the language which was selected when the program was first installed and run for the first time. To change language, select **OPTIONS, PREFERENCES**. From the display, the user can select his chosen language, and then select "Use selected language". Paragon Explorer Lite will now shut down, and must be restarted. From this point the selected language will always be displayed, until the language is changed again.

SETTING DATA VALUES

The following parameters can be set on the configuration screen:

RELAY DELAY TIME (2, 4, 8, 16, 32 seconds) - This value provides an averaging time, to smooth fast changing temperature fluctuations. The temperature relay operates from the filtered signal, so it too will change based on the filtered values.

FUEL TYPE - The scanner uses the principle of pyrometry to measure flame temperature, and therefore detects the difference between Infrared radiation at 2 fixed wavelengths. Different fuels create variations in the signals, which need to be corrected within the scanner, to provide a valid temperature measurement. The types are:

COAL OIL - This setting is used for coal, and heavy fuel oils

GAS YELLOW - This setting is used for light oil, and yellow gas flames.

GAS BLUE - This setting is used for pure gas flames, particularly, very blue flames.



CAUTION: This selection MUST be made prior to learning the flame for safety purposes, as this setting can change the response of the scanner, quite significantly.

RELAY ON /OFF - The relay operation, has an on setting, which may be set between 50° C or °K, 90° F above the minimum up to the maximum range of the scanner, (1000 °K - 4000 °K, 727 °C - 3727 °C, 1341 °F - 6741 °F) and is independent of the 4-20mA signal settings. In operation the temperature must exceed the ON to operate the relay, and must then drop below the OFF, for the relay to de energize. The OFF setting, can be set between, 50° C or °K, 90°F below maximum and the minimum value. It is recommended that the user sets a minimum of 50 °K or °C, or 90 °F between the ON and OFF settings.

The **ON** should be set first.

Note: The internal data in the Paragon uses degrees K. Paragon Lite converts into °C, and °F. As a result there will be small single digit rounding errors, in the °F conversions.

4-20 / LED SETTING - sets both the 4-20mA out put, and the LED display, where 4mA is 0 LEDs, and 20mA is 8 LEDs.

The range of settings is 1000 °K - 4000 °K, 727 °C - 3727 °C, 1341 °F - 6741 °F.

The user may select whichever degree units are preferred.

To effect a change the user must send the 4 mA value last, to effect the change of the upper limit.

Changing a Parameter

1. Using the cursor, set the required value. The box will change to yellow.
2. Select "send". The value is transmitted and the box changes to white. The program waits for 2 seconds, and then reads back the value to confirm that it has been correctly set. If the value has been loaded correctly, the box will change to white, then after the 2 seconds to green indicating that the value has been changed. If the value has been rejected, probably due to a communications transaction error, the display will change to red. The user should perform a re-send. If the error reoccurs, check that the communications are operating (see diagnostics section).

The box remains green, until a refresh is performed, when all boxes change to white.



File Display

The scanner has four (4) files which may only be changed from two (2) digital signals wired to the scanner. The file display shows which file is currently selected and the data that relates to that file.

Note: Only the file selected is stored, when data is saved, and the data is saved in the units currently selected. These same units will be displayed when a file is recalled from memory. To store all files the user must select each file with the digital inputs refresh then save each one individually.

Diagnostics

PROGRAM FAILS TO LOAD CORRECTLY

Check that the Operating system on the PC is Microsoft Windows XP or later version.

Check that the Paragon Explorer Lite copy is not a corrupted file. Contact Fireeye Distributor.

Any error messages occurring during installation should be recorded, and reported to Fireeye, it is unlikely that the program will operate correctly if this occurs.

PROGRAM RUNS, BUT NO SERIAL PORT IS DETECTED

Does PC have a serial port? Modern PCs use the USB port for use as a serial port. A serial port adaptor must be fitted to this type of PC to allow connection of the Fireeye RS232/485 converter, or, Fireeye recommends a USB to RS485 converter P/N UC485, available from Fireeye distributors. (Check switch settings on converters).

UC485 dipswitch settings on the back of the device should be:

(SW1) 485-ON

(SW2) ECHO OFF-ON

(SW3) 2 Wire-ON

(SW4) 2 Wire-ON

Wiring (Fireeye cable colors):

TDA (-) = Orange

TDB (+) = Brown

NO SCANNER DETECTED

Connect only one (1) Paragon initially.

Check that the scanner is powered, and the LEDs on the scanner are lit up.

Check that the scanner serial cable connection is correct.

Check that the RS232/485 converter is connected to the correct port. Select Browse. The TX LED should flash. If either LED is permanently on, swap the communication wires to the scanner.

TDA (-) = Orange

TDB (+) = Brown

With DOWN arrow on the scanner pressed, select BROWSE. Address 255 should be detected. If the scanner has previously had its unique address set this too will be displayed. The user should only use address 255, as a means to change the scanner to its own unique address. This operation requires the scanner down arrow to be depressed during the renumber address activity.

Note: When the *DOWN* arrow button on the scanner is pressed, the left hand (temperature LEDs) will display the currently set scanner address, in binary format as shown below:

1st (lowest) LED = 1

2nd = 2

3rd = 4

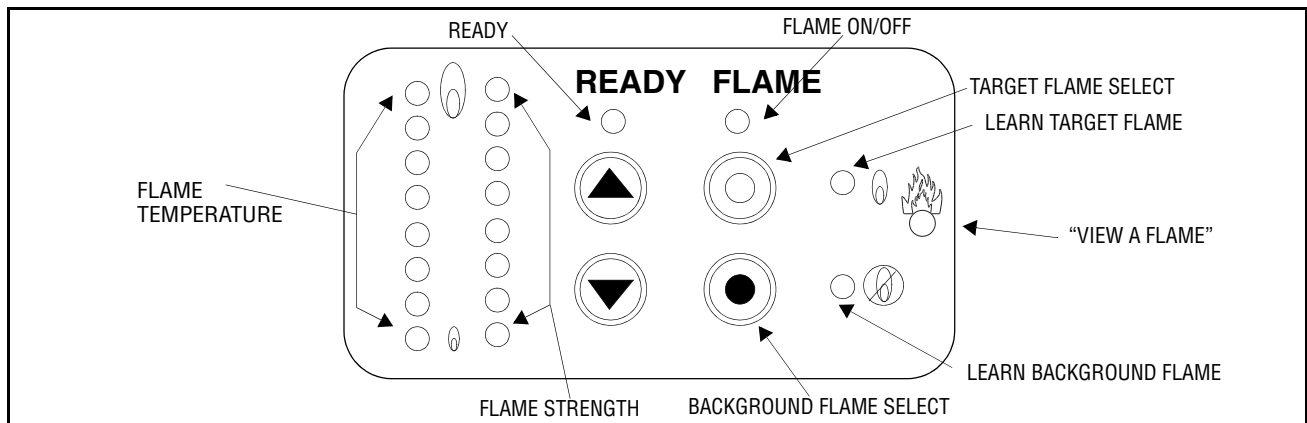
4th = 8

5th = 16

6th = 32

7th = 64

8th = 128



A scanner with an address of 9 would have LEDs 1, and 4 on, and a scanner with address 7 would have LEDs 1, 2, and 3 on.

TX LED FLASHES, BUT NO RX LED

Check scanner operation, to determine that the unit is reacting to push buttons.

Check converter, links, and wiring, to the scanner.

DATA DISPLAY ON CONFIGURATION WINDOW ALWAYS SHOWS RED

Check the data value is in the correct range of values, check temperature units, are as required.

REPORTING ERRORS

Select HELP, ABOUT, and Paragon Support. This will allow a message to be sent for review, and help. If possible, perform a screen copy of the screen display when the error occurred by pressing the "Print Screen" button and paste the screen image (right mouse click, select paste) into the message before sending.



NOTICE

When Fireeye products are combined with equipment manufactured by others and/or integrated into systems designed or manufactured by others, the Fireeye warranty, as stated in its General Terms and Conditions of Sale, pertains only to the Fireeye products and not to any other equipment or to the combined system or its overall performance.

WARRANTIES

FIREYE guarantees for *one year from the date of installation or 18 months from date of manufacture* of its products to replace, or, at its option, to repair any product or part thereof (except lamps and photocells) which is found defective in material or workmanship or which otherwise fails to conform to the description of the product on the face of its sales order. **THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES AND FIREYE MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.** Except as specifically stated in these general terms and conditions of sale, remedies with respect to any product or part number manufactured or sold by Fireeye shall be limited exclusively to the right to replacement or repair as above provided. In no event shall Fireeye be liable for consequential or special damages of any nature that may arise in connection with such product or part.



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