



# IC485 OPTICALLY ISOLATED RS232/RS485 CONVERTER

---

## DESCRIPTION

The IC485 **optically isolated** converter is an accessory for the Fireye® FLAME-MONITOR™ and MicroM flame safeguard control systems, the 45FS1 and 45UVFS1 Flame *Signature Scanners*™ and the 95IRS2, 95UVS2 and 95DSS2 InSight integrated scanners. Optical isolation offers a significant improvement in noise immunity and improves reliability in communications throughput. The IC485 is an RS232 to RS485 converter used to perform the following functions:

1. Customize the operating control messages and lockout alarm messages of the E300 Expansion Module.
2. Interface between a Windows based PC running the FS700W Communication Software and the 45FS1 and 45UVFS1 Flame *Signature Scanner* to provide remote communications capability.
3. Interface between a Windows based PC running the FS950W Communication Software and the 95IRS2, 95UVS2 and 95DSS2 InSight integrated scanners to provide remote communications capability.
4. Interface between a Windows based PC running the E720W BoilerWorx Communication Software and the E340 Burner Management Control System to provide remote communications capability.

The IC485 provides the means to directly connect to any device that has RS485 communication capability.

The IC485 is packaged with an RJ12 telephone jack mounted on a PC board to provide an easy method to use the ED512 cables to interface to the EP programmers when customizing E300 messages.

The IC485 also includes a 120 VAC to 12 VDC power supply.

The IC485 includes TRANSMIT and RECEIVE LED's that indicate the transmission and reception of data respectively. The LED's are also useful when first configuring a system.

### **RS-485 Driver Control, RTS / SD Jumper:**

The RS-485 side of the converter must be enabled to transmit data, and disabled when not transmitting. Via a jumper on the converter, either "RTS" or "SD" is selected as the control means to automatically enable and disable the converter.

With **SD** (Send Data) control selected, circuitry within the converter automatically controls the transmitter by sensing the data on the RS-232 side. This circuitry enables the driver during data transmission and disables the driver after the last character has been sent.

With **RTS** (Request To Send) control selected, the external software controls the driver by raising and lowering the Request To Send line on the RS-232 side. Because the RTS timing is not precisely controlled, this method is not usually suitable for Windows based systems.

## CUSTOMIZING E300 MESSAGES

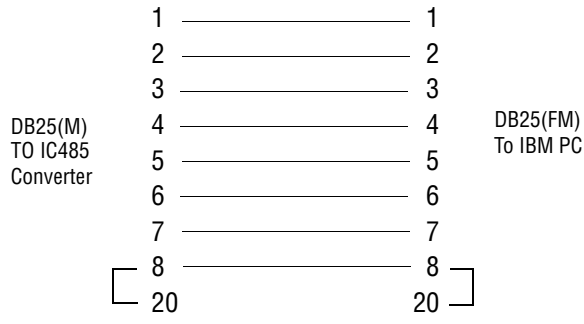
The user can customize the lockout alarm message associated with each pair of terminals of the E300 Expansion Module. Each customized message can be up to 40 characters in length.

*Note: Messages longer than 16 characters in length will scroll across the ED510 display. Messages longer than 8 characters will scroll across the ED500 display.*

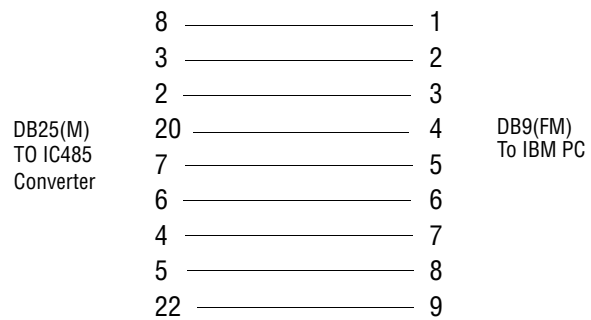
The following equipment is required:

- An IBM compatible PC with E300 programming software (available on the E700 or E720 software programs).
  - IC485 (RS232 to RS485 converter with power supply).
  - An ED512-2, -4, or -8 cable.
  - EP programmer with an Engineering code of 28 or later.
1. Connect the IC485 converter to the serial COMMunication port of the IBM PC using an appropriate serial communications cable. Depending on whether the IBM PC has a 9-pin or a 25-pin serial communications port, the cable should be configured as follows:

### CABLE CONNECTIONS, DB25 to DB25

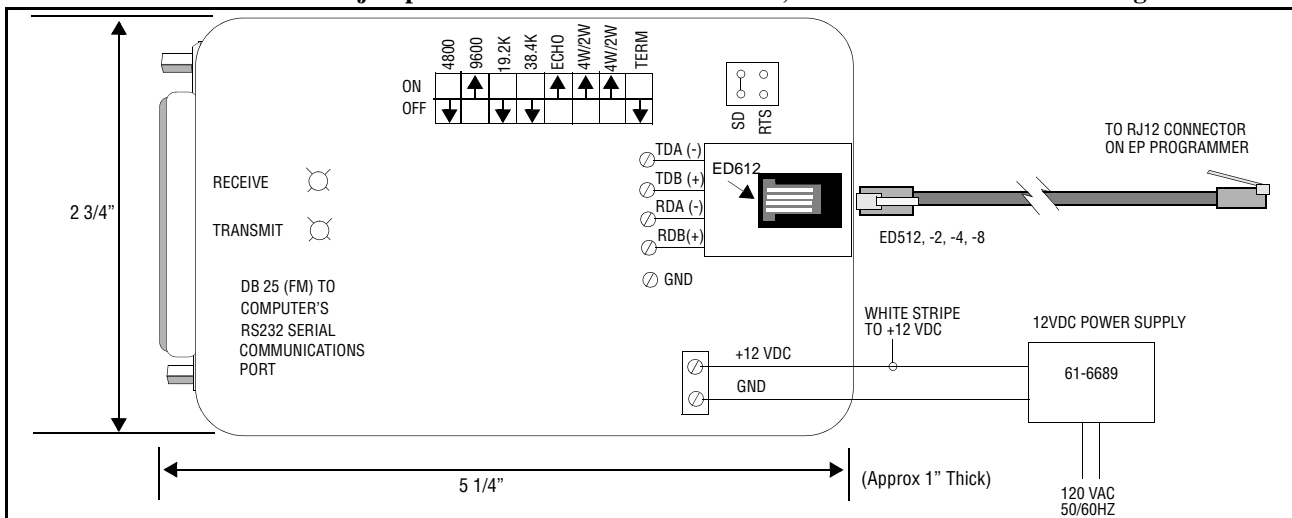


### CABLE CONNECTIONS, DB25 TO DB9



2. Connect the ED612 (RJ12 female connector provided with the IC485) to terminals TD(A), TD (B), RD(A), and RD(B) on the IC485. Bend the pins on the ED612 to line up with the terminals on the IC485 converter.

3. **Set the jumper on the IC485 converter to SD, and select ECHO ON. See diagram below.**



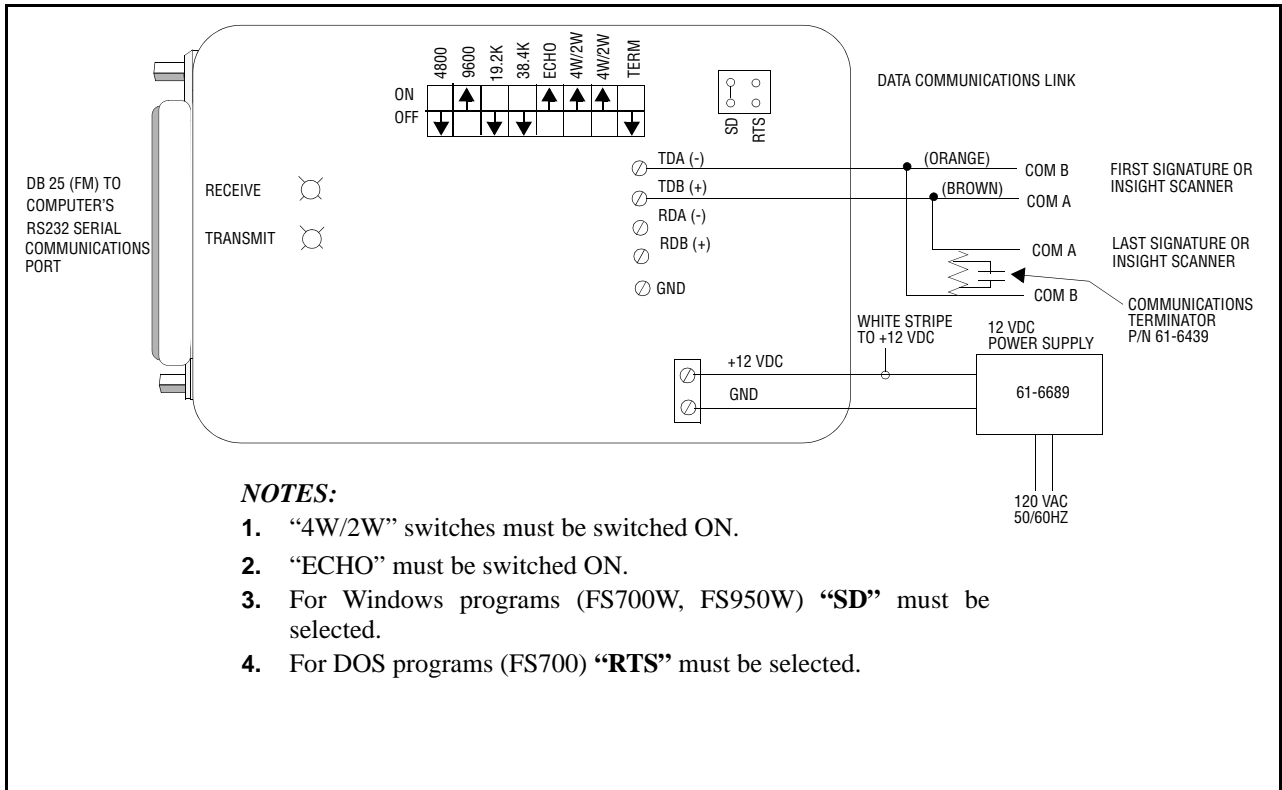
4. Plug one end of the ED512-2, -4, -8 cable into the RJ12 jack on the ED612, and the other end into either of the RJ12 jacks on the EP programmer.
5. Hook up power supply 61-6689 to +12V and GND. White stripe wire is (+) lead.

The Flame-Monitor control must be powered, and the operating control (L1-13) should be open. For complete details on customizing the E300 lockout messages, refer to Bulletin E-3001.

## COMMUNICATING WITH 45FS1/45UVFS1 SIGNATURE SCANNERS OR 95IRS2/95UVS2/95DSS2 INSIGHT INTEGRATED SCANNERS

These flame scanners provide remote communications capability over an RS485 communication data link. The data link uses a single, twisted shielded pair wire (e.g. Belden 8761) in a multi-drop (e.g. daisy chain) wiring configuration. The Fireye communication software programs (P/N FS700W for Signature, P/N FS950W for InSight) running on an IBM compatible PC is required for communicating with the flame scanners.

Since the flame scanners communicate over the data link via RS485, the IC485 RS232/RS485 converter is required for the RS232 Serial Comm Port of the IBM PC. The IC485 converter should be wired in the following manner:



For complete details on wiring and communicating with these flame scanners, refer to the following bulletins:

	SCANNER BULLETIN	SOFTWARE BULLETIN
45FS1/45UVFS1 SIGNATURE SCANNERS	CU-32 & CU-33	CU-56 (FS700W/WINDOWS) CU-39 (FS700/DOS)
95IRS2/95UVS2/95DSS2 INSIGHT INTEGRATED SCANNERS	CU-95	CU-102 (FS950W/WINDOWS)

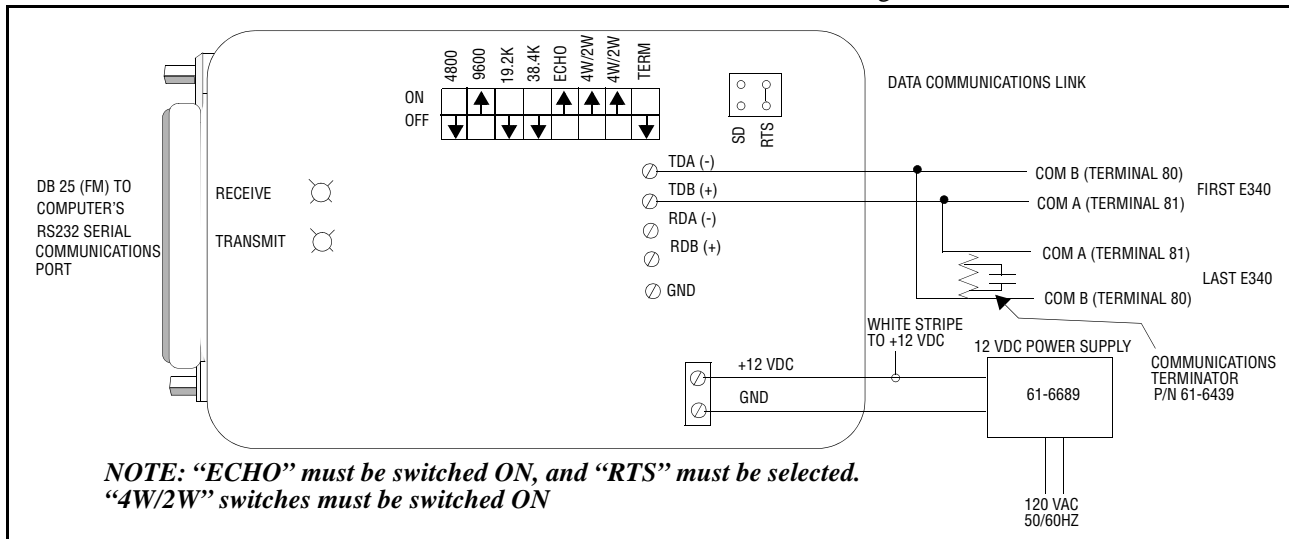
## COMMUNICATING WITH THE E340 BOILER CONTROL VIA BOILERWORX™ SOFTWARE

The E340 Boiler Control also communicates over an RS485 communication data link. The data link uses a single, twisted shielded pair wire (Belden 8761) with the E340 controls wired in a multi-drop (e.g. daily-chain) wiring configuration. The Fireeye BoilerWorx communication software program (P/N E720W) running on a Windows based PC is required for communication with the E340 controls.

Fireeye recommends using the E500 Communication interface when communicating with the E340 controls, since the E500 provides communication with the Flame-Monitor™ flame safeguard controls as well. However, the IC485 converter can be used to communicate only with the E340 controls.

For complete details on wiring and communicating with the E340 controls refer to bulletin BW-1000 (E720W BoilerWorx Communication Software Program).

Wire the IC485 converter to the E340 controls in the following manner:



## 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, electronic tubes 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.



FIREYE™  
3 Manchester Road  
Derry, New Hampshire 03038  
www.fireye.com

IC-4851  
AUGUST 31, 2005  
Supersedes Nov. 20031

