SERIAL COMMUNICATION INTERFACE FOR ESTRO ECS-DRIVER SERIES

MODEL: 7510

Revision: 0

BULLETIN 7510

DESCRIPTION

The **ECS-DRIVER** is an interface card allowing any controlling device (PLC, PC, etc.) to communicate with flame safety units equipped with ECS serial input capability. The ECS bus provides good isolation from any electromagnetic disturbances using high electrical signal levels and medium communication speed. It also facilitates the parallel connection of all the flame safety units and the simultaneous use of busways and cables with the additional advantage of connecting and disconnecting the units without having to close the communication loop. The ECS bus allows the use of a MASTER-SLAVE type communication with only one active interface for each section of the serial line. If an application has more flame safety units than a single ECS can accommodate an additional ECS-DRIVER can be used as a single repeater.

The connection to the controlling device may be made by using either an EIA-RS-232 interface or an EIA-RS-422 interface with HALF DUPLEX communication and without hardware control signals. The ECS signal to the bus is received via the active output. The ECS-DRIVER is equipped with connections to allow installation in electrical panels either located near the master controller or the flame safety devices.

The power supply section, made up of the ALIM-1, universal feeder accepts a wide range of supply voltages. All connections are simplified by the use of rapid connectors making wiring and maintenance easier and quicker.

The ECS-DRIVER has two (2) LEDs that indicate the flow of data on the serial line. One LED is illuminated when the interface is transmitting, whereas the second LED is illuminated when the interface is receiving data.

FEATURES

- Supply voltage ..... 90-240 VAC
- Supply frequency ..... 40-70 Hz
- Maximum power consumption ..... 40 W
- Operating temperature ..... 30 - 125 °F.
- Storage temperature ..... 15 - 160 °F.
- Mounting position ..... Any
- Dimensions ECS-DRIVER-S ..... 6-7/8" x 5" x 3-1/8" High
- Dimensions ECS-DRIVER-D ..... 10-1/4" x 5" x 3-1/8" High
- Weight ECS-DRIVER-S ..... 1/4 Lb.
- Weight ECS-DRIVER-D ..... 1/3 Lb.
- Electrical enclosure ..... NEMA 1
- Atmospheres ..... not suitable for use in explosive or corrosive atmospheres
- Fieldbus voltage ..... 25 VDC max.
- Data transmission speed ..... 19200 baud max.
- Length ECS line ..... 650 ft. max. with ECS cable or busway
- Units connectable to active output ..... 4800 baud - 70 max.
  9600 baud - 60 max.
  19200 baud - 40 max.

ECS-DRIVER-S

APPLICATIONS

- Converter from EIA-RS-232 / EIA-RS-422 interface to ECS interface
- Communication interface for ESTRO
- Repeator for ECS bus

CAUTION: Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.

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MASTER MODE

The ECS-DRIVER works as a master when it receives the serial signal from the controlling device and transmits it to the ECS bus by means of the active output. The connection to the controller is via the EIA-RS-232 or the EIA-RS-422 interfaces. The use of one or the other depends on which port is available on the supervisor or the distance between the supervisor and the serial interface. In both cases, the serial signal may not be connected to more than one ECS-DRIVER (input).

Interface	Maximum Distance
EIA-RS-232	50 feet
EIA-RS-422	3 feet

The ECS-DRIVER serial interface, as wired at the factory, assumes the active port to be the EIA-RS-232 port. If the EIA-RS-422 serial interface is to be used it is necessary to switch the position of the "J5" jumper. BEFORE CHANGING THE "J5" JUMPER POSITION CONFIRM THAT THE ELECTRICAL POWER TO THE ECS-DRIVER IS OFF.

REPEATER MODE

The ECS-DRIVER functions as a repeater when it receives a signal from an ECS-DRIVER MASTER and transmits it to another section of the ECS bus via the active output. The signal coming from the master serial interface must be connected to the passive input (confirm that the polarity is correct). The shunt from the master bus must be connected to the outlet of the master interface. If several repeaters are used, each ECS will be connected the to ECS-DRIVE MASTER with a shunt. It is important to note that each repeater will slightly distort the emitted signal and if additional repeaters are connected in series it is possible that the distorted signal(s) may result in the bus not functioning properly. Also, when the ECS-DRIVER is used as a repeater, no device(s) can be connected to the EIA-RS-232 or EIA-RS-422 communication ports.

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COMMUNICATION SPEED

The choice of communication speed depends on several system parameters including the following: the number of connected ESTRO units, the type of system, the type of cabling to be used, the area's potential data transmission interference and the speed of transmission.

Without having to make any changes or settings, the ECS-DRIVER can efficiently operate at three (3) communication speeds. However, it is important that the controller and the ESTRO units are operating at the same speed settings. The number of ESTRO units that can be connected to the ECS active output varies depending on the communication speed and the application. Below is a table that defines the parameters limiting the number of ESTROs in a given system.

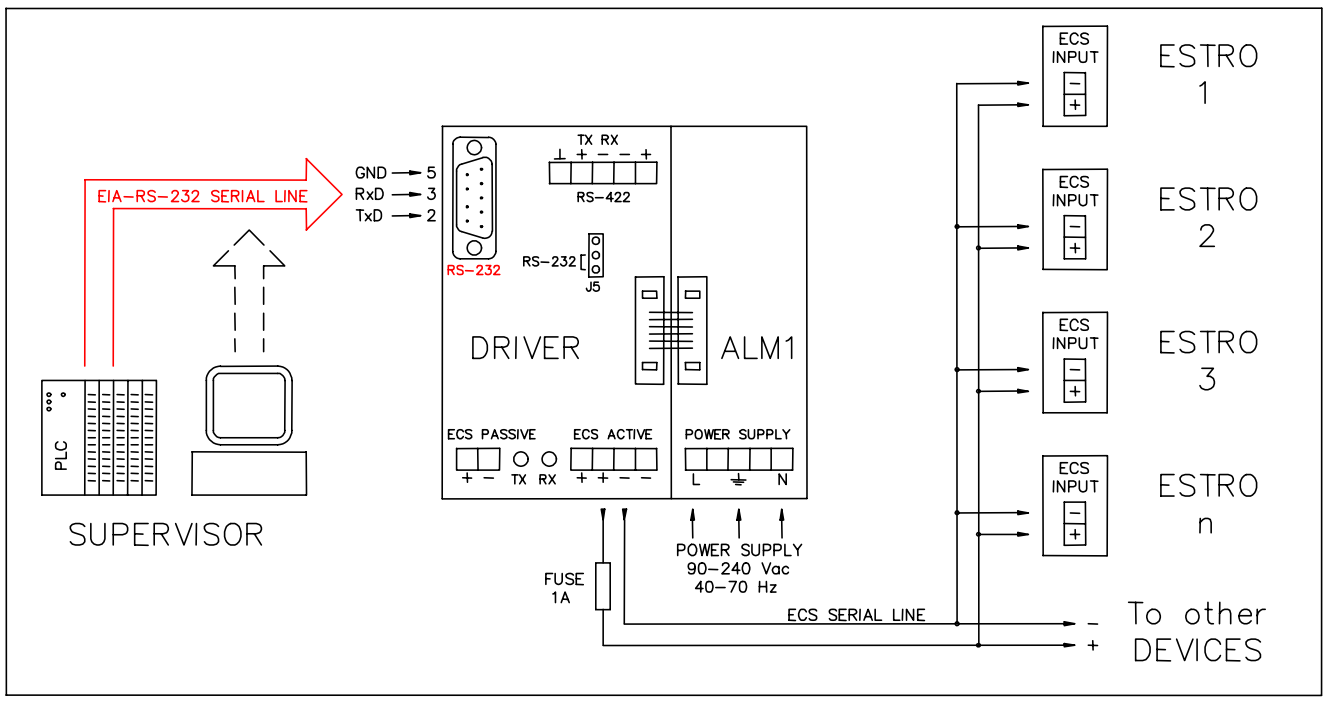
Communication Speed	ECS-Driver Master With No Shunt to Repeater	ECS-Driver Master With Shunt to Repeater	ECS-Driver Repeater	With Busway
4800 Baud	70	50	70	Permitted
9600 Baud	60	40	60	Permitted
19200 Baud	40	0	40	Not Permitted

For applications with a communication speed of 19,200 baud, the connection of the ECS serial line must be made with ECS cable.

ECS-DRIVER-S

ECS-DRIVER-S is a serial interface with only one ECS active output. This version is used for applications where the number of burners (ESTROs) is lower than the specified limit or when the interface cards are placed in different locations and are not grouped in the same electrical panel. It is also preferred in cases where the communication lines are nearing the maximum length. Depending on the connection, the ECS-DRIVER-S may also be used in the "MASTER" or "REPEATER" mode.

ECS-DRIVER-S MASTER EIA-RS-232 ELECTRICAL CONNECTIONS



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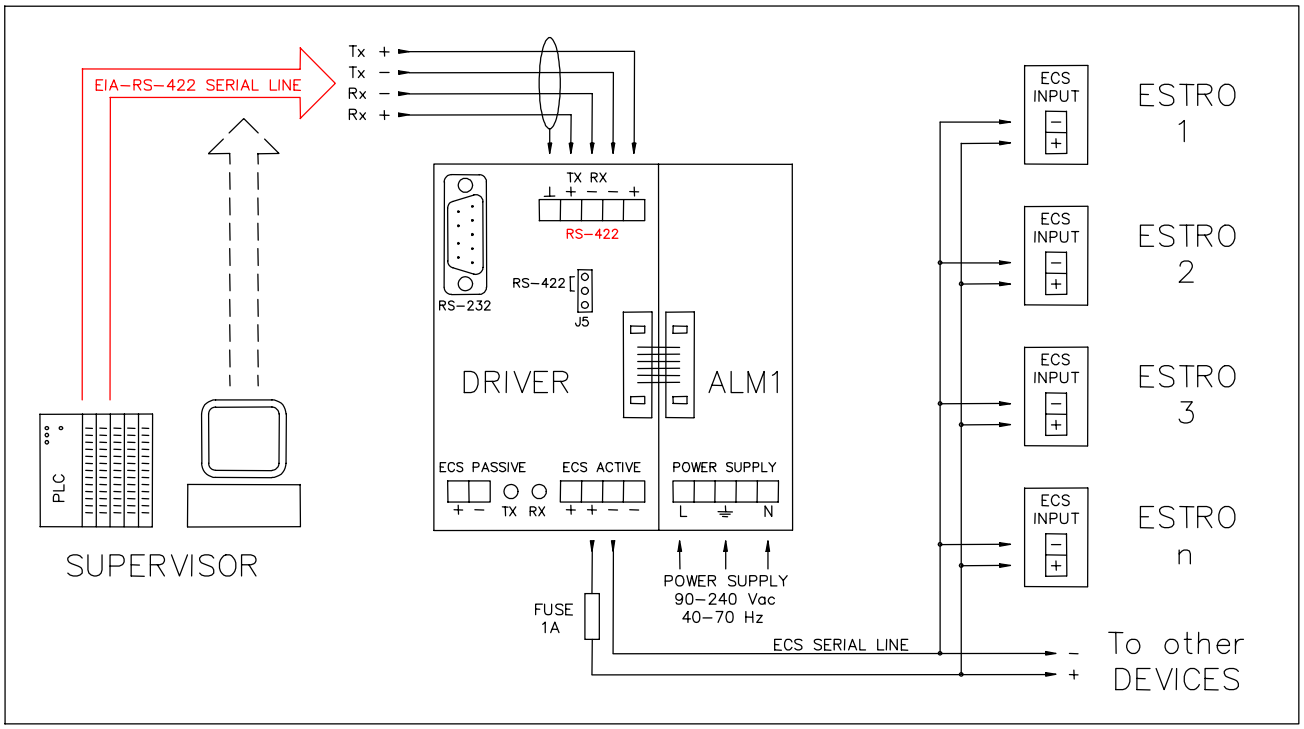
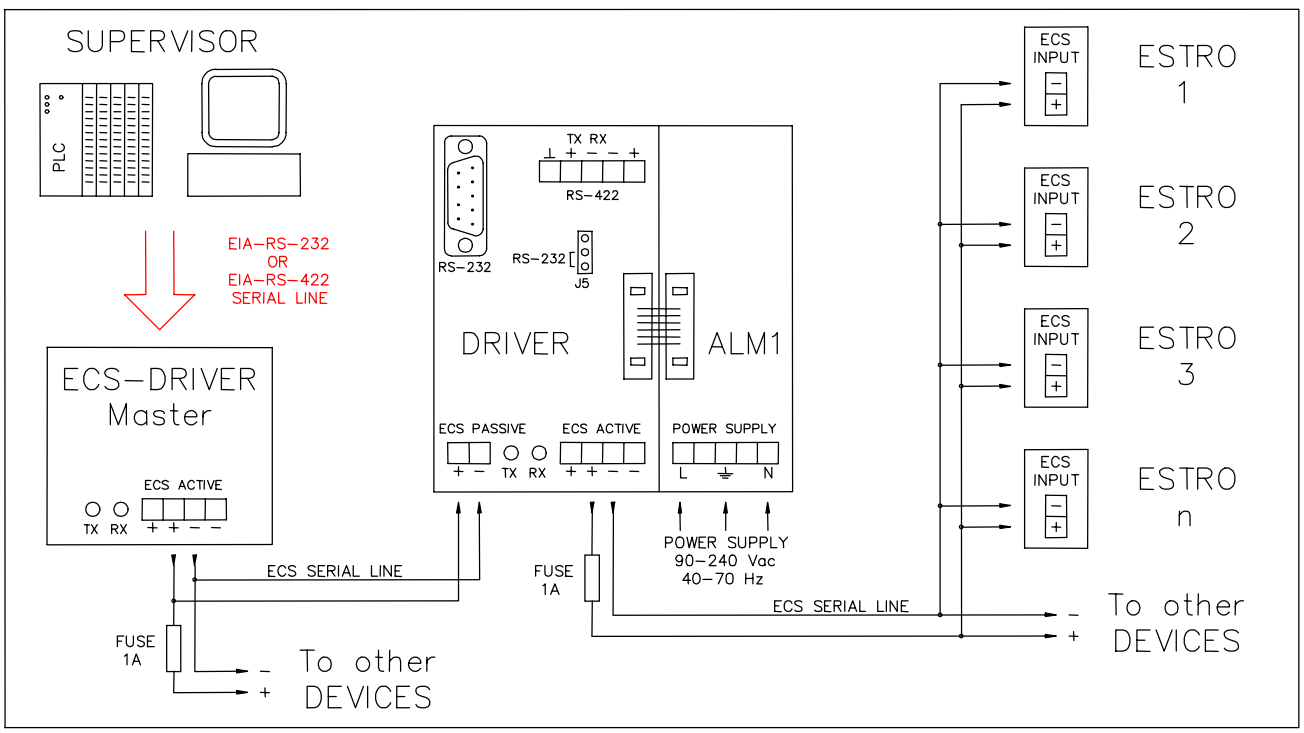
ECS-DRIVER-S MASTER EIA-RS-422 ELECTRICAL CONNECTIONS



ECS-DRIVER-S REPEATER



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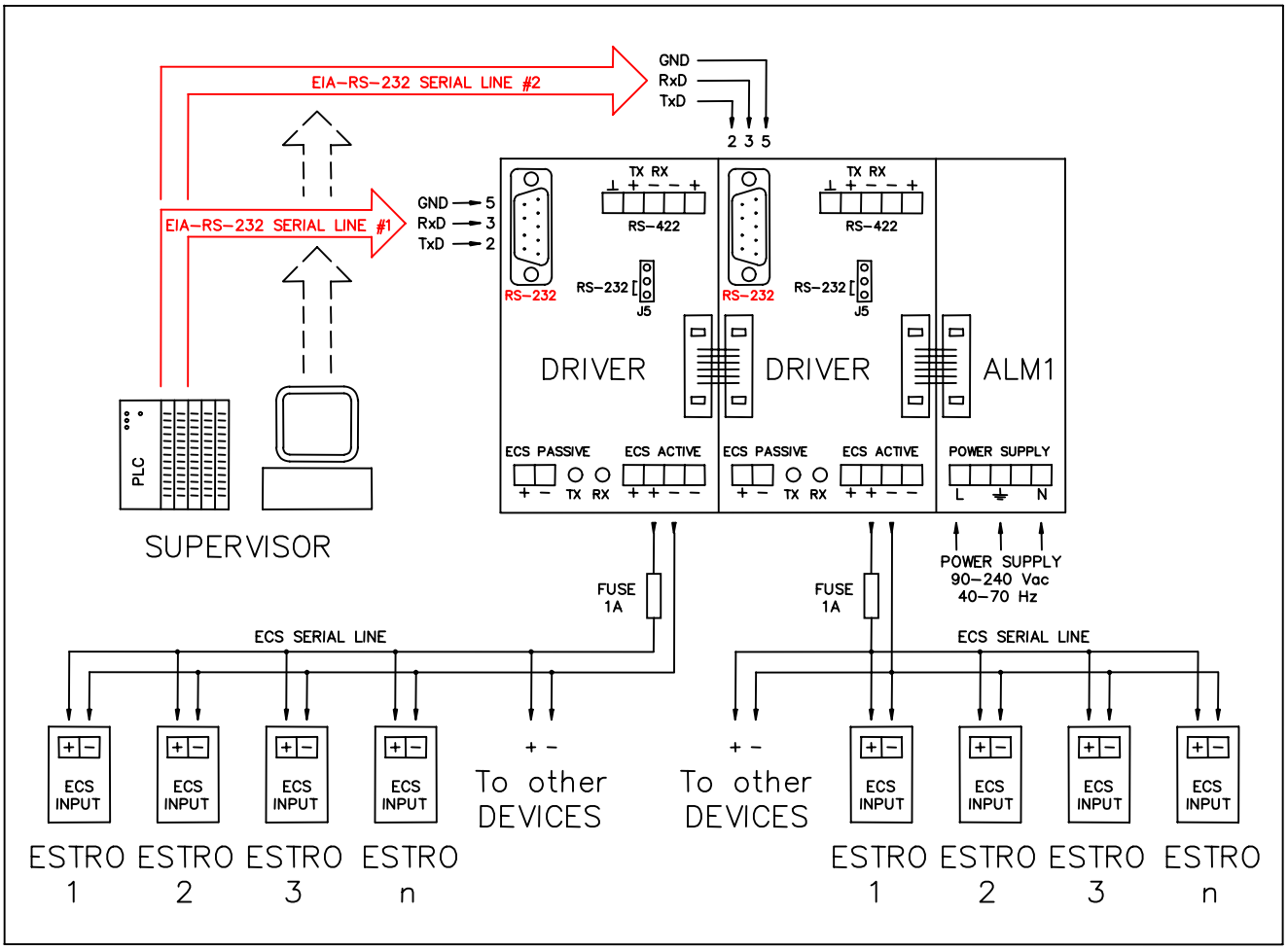
ECS-DRIVER-D

The ECS-DRIVER-D is a serial interface with two (2) ECS active outputs. This version may be used for applications where the number of burners (ESTROs) exceeds the specified limits (see chart on page 3) and where the interface cards are grouped in the same electrical panel.

ECS-DRIVER-D DOUBLE MASTER EIA-RS-232 ELECTRICAL CONNECTIONS



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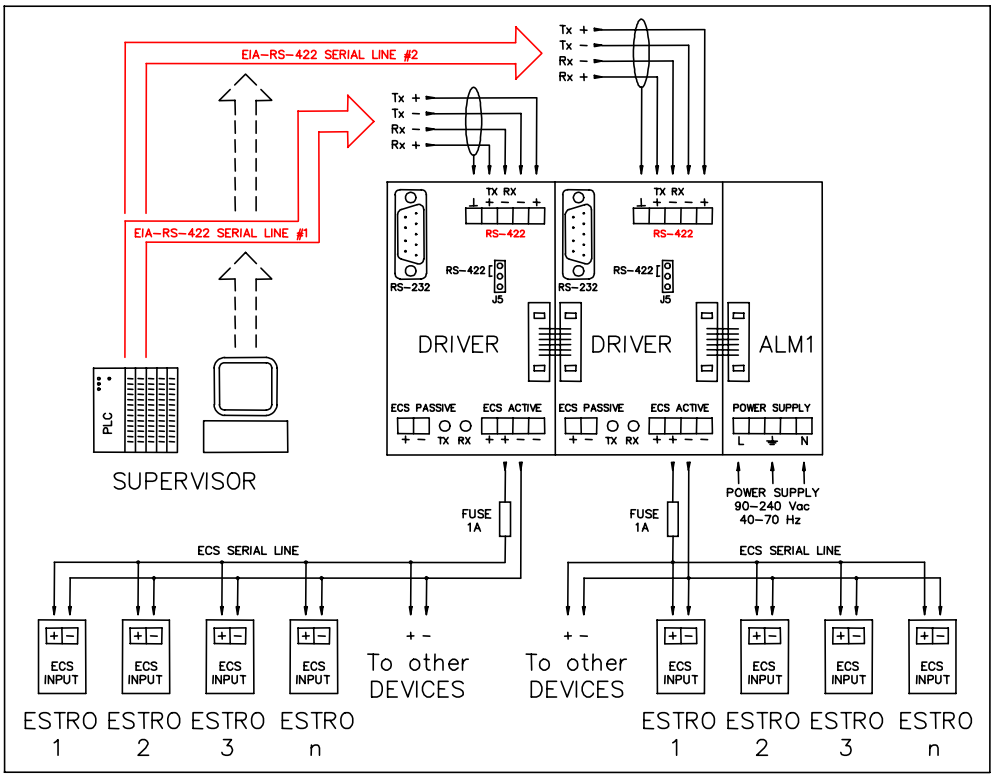
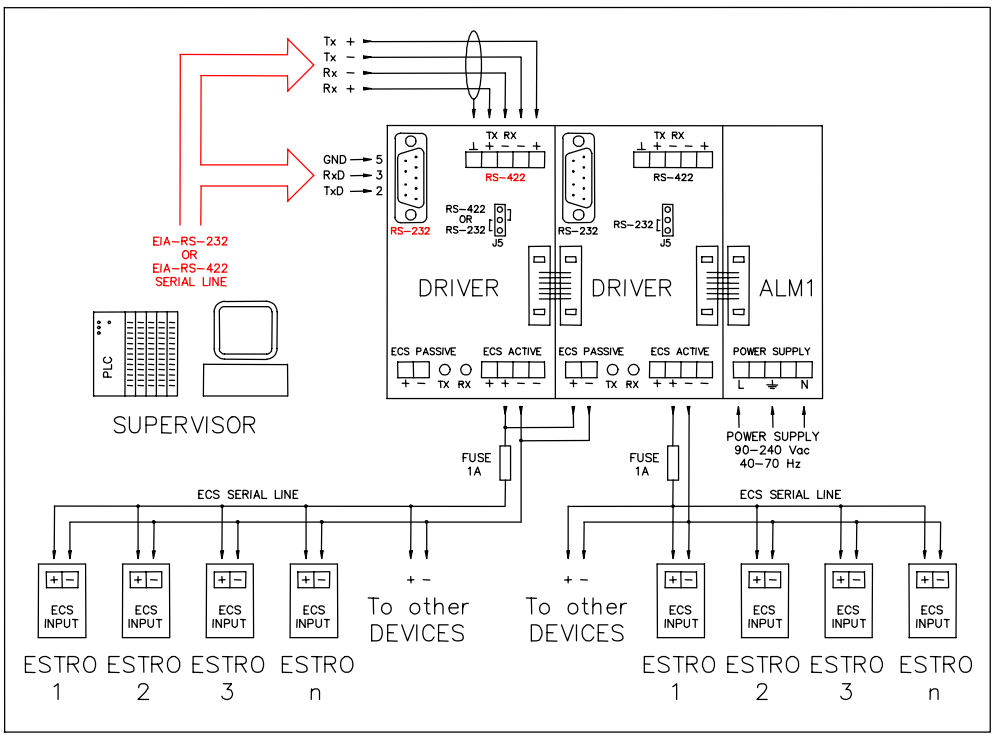
ECS-DRIVER-D DOUBLE MASTER EIA-RS-422 ELECTRICAL CONNECTIONS

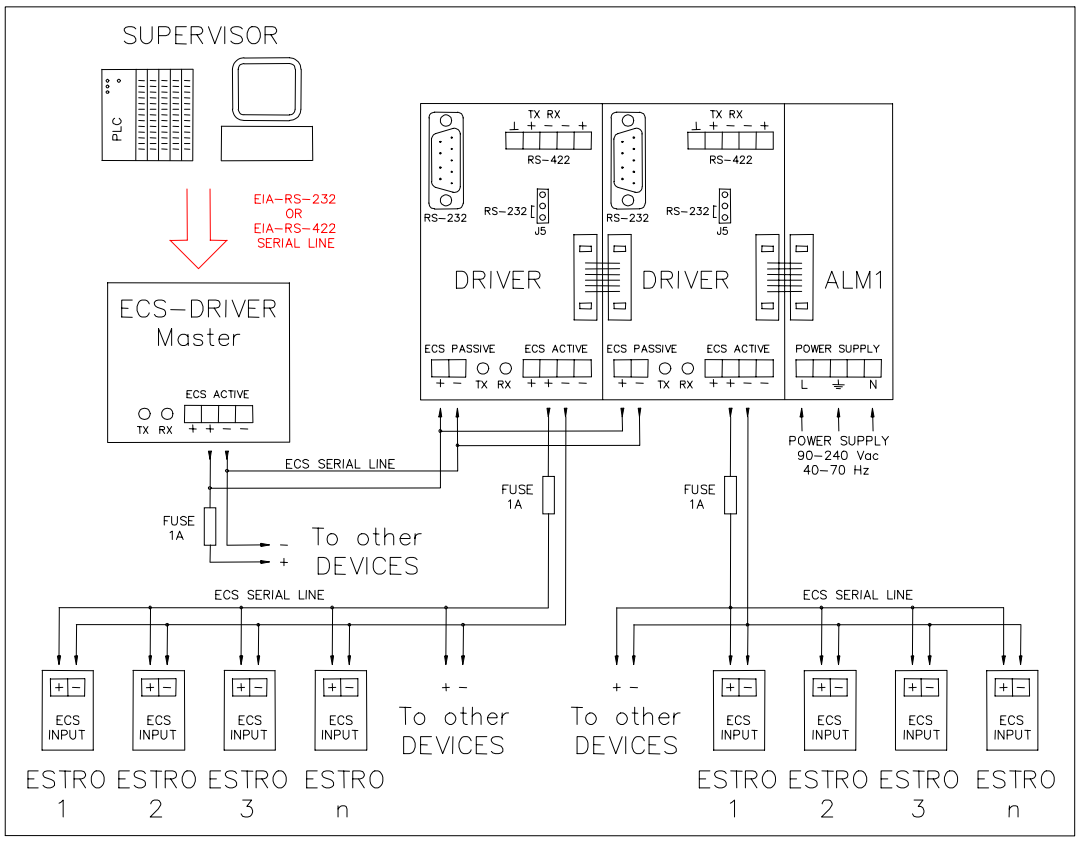


ECS-DRIVER-D DOUBLE MASTER REPEATER



SERIAL COMMUNICATION INTERFACE FOR ESTRO ECS-DRIVER SERIES

ECS-DRIVER-D DOUBLE REPEATER



INSTALLATION

- Avoid placing the ECS-DRIVER near intense magnetic or electric fields or other locations that would expose the unit to direct heat or products of combustion.
- The ECS-DRIVERS must be installed by skilled personnel and in compliance with the regulations at the time and place of the installation.
- The serial interface must be mounted inside electric panels on DIN rails. It must be easy to reach and have good ventilation.
- Review all technical information when making electrical connections. The phase-neutral polarity is particularly important. The type of conductors and their location, with respect to other electrical wires, must be suitable for the applications.
- The communication line must be separated from the other conductors. Do not use multiple strand nor shielded cables.
- The use of ECS cable communication lines is recommended. Use single strand 18 gauge or larger electrical cable. An alternative to single strand cable or ECS cable is to use a bus bar. However, the length between the bus and the equipment should not exceed three feet (3ft.) both for the communication and the supply lines.
- The length of the communication lines must not exceed the specified limits. If the controller is located outside the specified maximum limit locate the ECS-DRIVER closer to the furnace.
- A one-ampere (1 amp) fast acting fuse should be incorporated in the electrical supply line to prevent possible damage to the equipment due to power surges or short-circuits.
- Incorrect polarity connections on one or several pieces of equipment will cause the malfunctioning of the entire ECS bus. If this occurs the RX LSD will be lit. The same situation occurs when a short-circuit occurs on the communication line. This problem must be resolved because if it persists the ECS-DRIVER interface may be permanently damaged.

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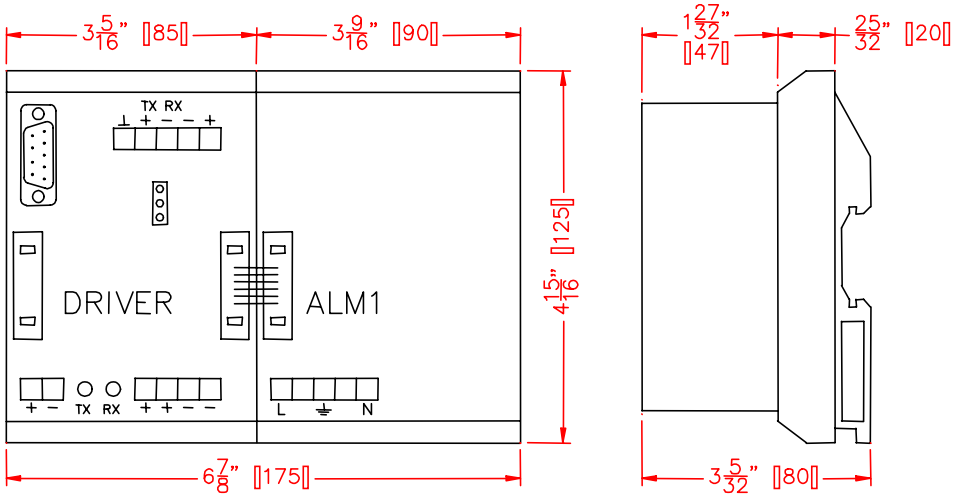
- Verify that the supply voltage, frequency and capacity are correct and that the protection ground is connected to the correct terminal. As soon as the interface is powered, verify that the RX LED is not lit. If it is lit disconnect the active output, locate the fault and correct the problem.
- Do not connect equipment to the ECS bus when the power is on as it can cause interruptions with the communications.
- If the ECS-DRIVER is not working properly return the unit to Pyronics Inc. for repairs. Do not attempt to modify or repair the unit.

DIMENSIONS

ECS–DRIVER–S



ECS–DRIVER–D