

SERIAL COMMUNICATION INTERFACE FOR ESA ESTRO

ESA ECS-DRIVER SERIES

FEATURES

- Supply voltage: 90÷240vac
- Supply frequency: 40÷70 Hz
- Max. absorption: 40W
- Operating temperature: 0÷50°C
- Storage temperature: -10÷70°C
- Fixing: on 35 mm DIN guide (EN50022)
- Mounting position: any
- Dimensions ECS-DRIVER-S: 175X125 80mm high
- Dimensions ECS-DRIVER-D: 260X125 80mm high
- Weight ECS-DRIVER-S: 600 g
- Weight ECS-DRIVER-D: 750 g
- Protection degree: IP10
- Atmospheres: not suitable for use in explosive or corrosive atmospheres
- Fieldbus voltage: 25Vdc max.
- Data transmission speed: 9600 baud max.
- Length ECS line : 200 m max. with ECS cable or busway
- Units connectable to active output 4800 baud 70 max.; 9600 baud 60 max.

APPLICATIONS

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

DESCRIPTION

ECS-DRIVER is an interface card allowing any controlling device to communicate with units equipped with ECS (Esa Communication System) serial input. The ECS bus guarantees good immunity to electromagnetic disturbances, using high electrical signal levels and medium communication speed; it entails the parallel connection of all units and the simultaneous use of busways and cables with the additional advantage of connecting and disconnecting units without having to close the communication loop. The ECS bus entails a MASTER-SLAVE type communication with only one active interface for



ESA ECS-DRIVER-S

F7081101



ESA ECS-DRIVER-D

F7081102

each section of the serial line. If the application finds a number of units exceeding the number the ECS active output is designed for, it is possible to use ECS-DRIVER as a signal repeater. The connection to the controlling device may be obtained via either the EIA-RS-232 interface or the EIA-RS-422 interface (which can be selected via jumper), with HALF DUPLEX communication and without hardware control signals. The ECS signal to the bus is taken at the active output. The ECS-DRIVER is equipped with connection for DIN guide to be installed in electrical panels, located near the master controller or on the equipment. The supply section, made up of the ESA ALIM1



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DESCRIPTION

(switching) universal feeder accepts a wide range of supply voltage and guarantees excellent efficiency of the interface even in hostile atmospheres. All connections are performed using rapid extraction connectors which make cabling and maintenance operations easier.

The ECS-DRIVER has two LEDs to indicate the data flow sense on the serial line: one led lights when the interface is transmitting, whereas the second one lights when the interface is receiving.

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 via the active output. The connection to the controller occurs via the EIA-RS-232 or EIA-RS-422 interfaces. The use of one or the other depends

on the port 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	MAX. DISTANCE
EIA-RS-232	15 mt
EIA-RS-422	1.000 mt

The serial interface is provided with the EIA-RS-232 active port, the selection of EIA-RS-422 is obtained by switching the position of the "J5" jumper. **BEFORE SELECTING EIA-RS-422 MAKE SURE THE ECS-DRIVER IS NOT POWERED.**

REPEATOR MODE:

The ECS-DRIVER works as a repeater when it receives the 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 in the passive input respecting its polarity, the shunt from the master bus must be taken directly at the output of the master interface. If several repeaters are used, they will

all be shunt from the ECS-DRIVER master: each repeater introduces little distortions in the signal which, if in cascade connection, may result in the bus not working. When the ECS-DRIVER is used as a repeater it is not possible to connect any device to the EIA-RS-232 and EIA-RS-422 communications ports.

COMMUNICATION SPEED:

The choice of the communication speed depends on different elements: the number of connected units, the type of application, the foreseen cabling, and the environmental factors which may disturb the data flow with more evident effects at high speed. The ECS-DRIVER guarantees different communication speed, without

having to make any change or setting. It is important to set the controller and peripheral units at the same speed. The number of units which can be connected to the ECS active output varies depending on the communication speed used and application. Below is a table specifying the permitted limits:

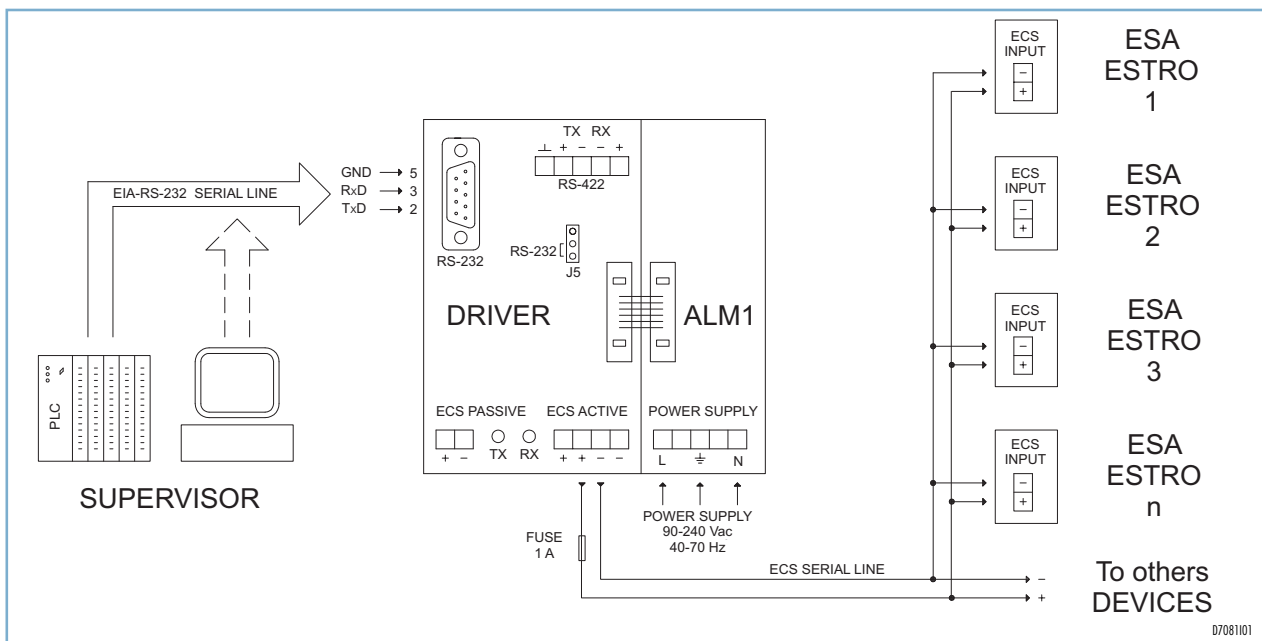
Communication speed	ECS-DRIVER Master with no shunt to repeater	ECS-DRIVER Master with shunt to repeater	ECS-DRIVER repeater	With busway
4800 Baud	70	50	70	Permitted
9600 Baud	60	40	60	Permitted

ECS-DRIVER-S

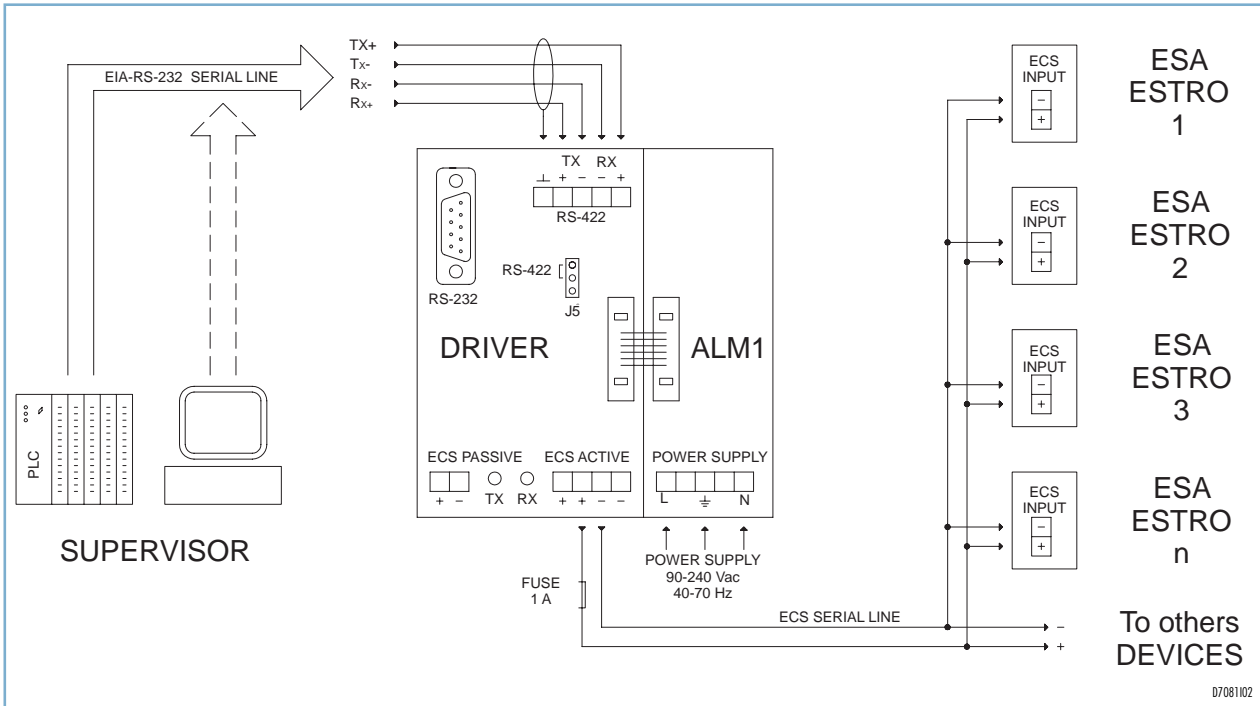
ECS-DRIVER-S is the serial interface with only one ECS active output. This version is advisable for all applications with a number of burners lower than the specified limit, or when the interface cards are placed in different points and are not grouped in the same electrical panel.

Furthermore it is advisable for more important applications or in case of communication lines almost reaching the max. specified length. ECS-DRIVER-S, depending on the connection, allows for either the "Master" or "Repeater" mode.

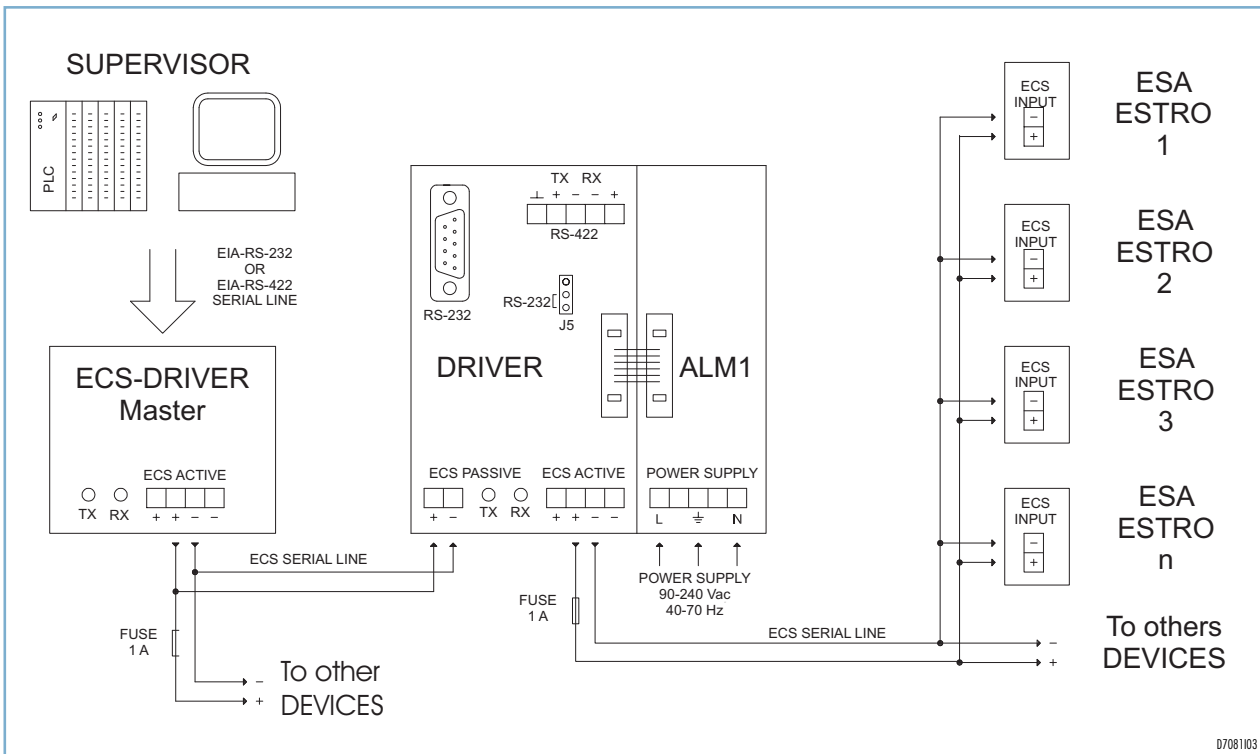
ECS-DRIVER-S MASTER EIA-RS-232 ELECTRICAL CONNECTIONS



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



ECS-DRIVER-S REPEATOR

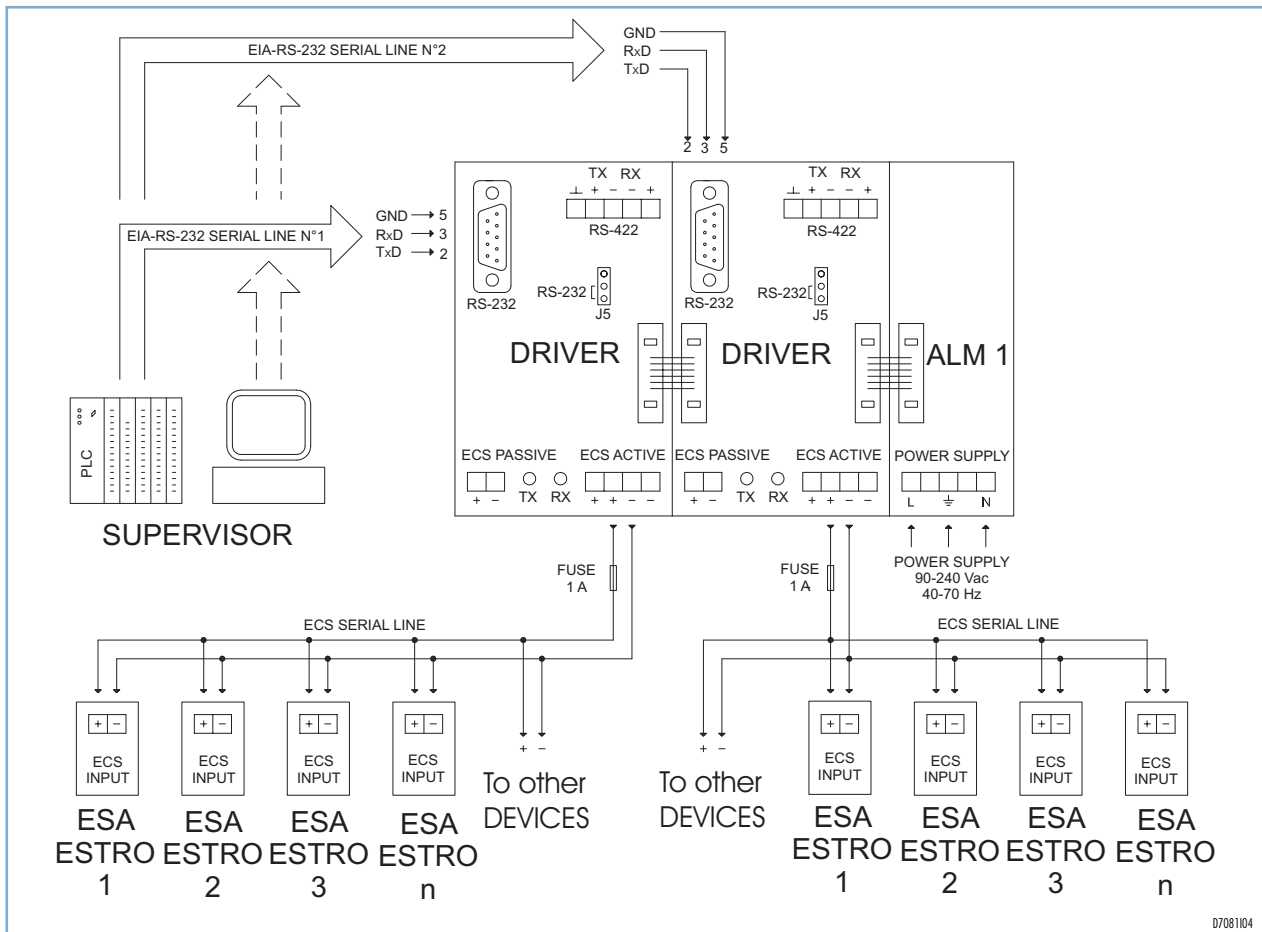


ECS-DRIVER-D

ECS-DRIVER-D is the serial interface with double ECS active output. This version is advisable for all applications with a number of burners exceeding the specified limit, provided the interface cards are grouped in the same electrical panel.

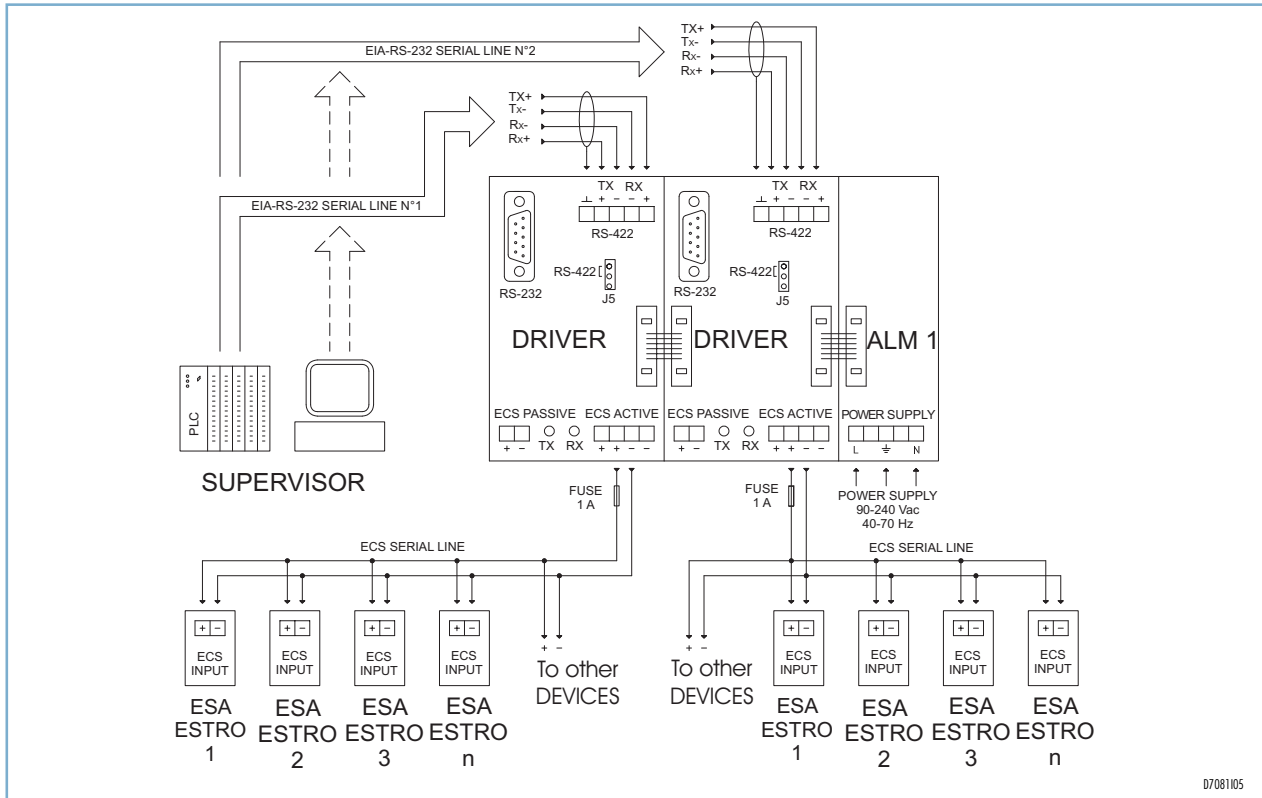
ECS-DRIVER-D, depending on the connection, allows for either the double "Master" / double "Repeater" or the "Master/Repeater" mode.

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



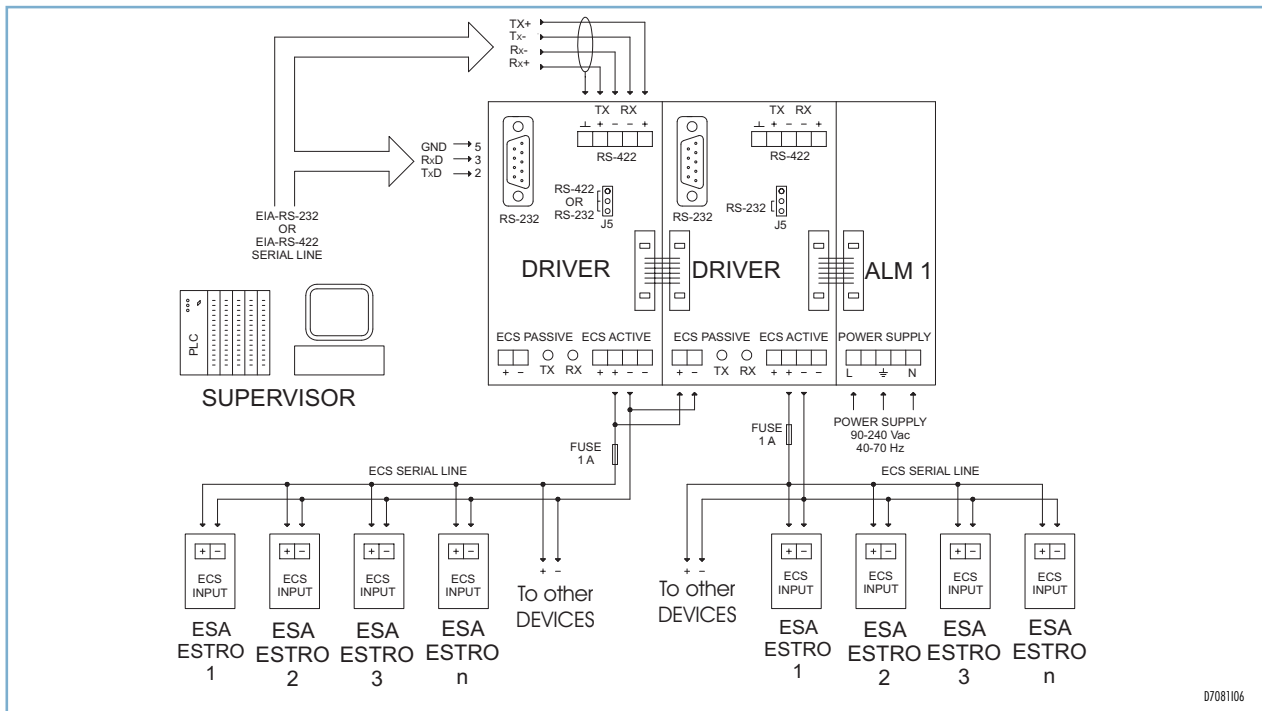
D7081104

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



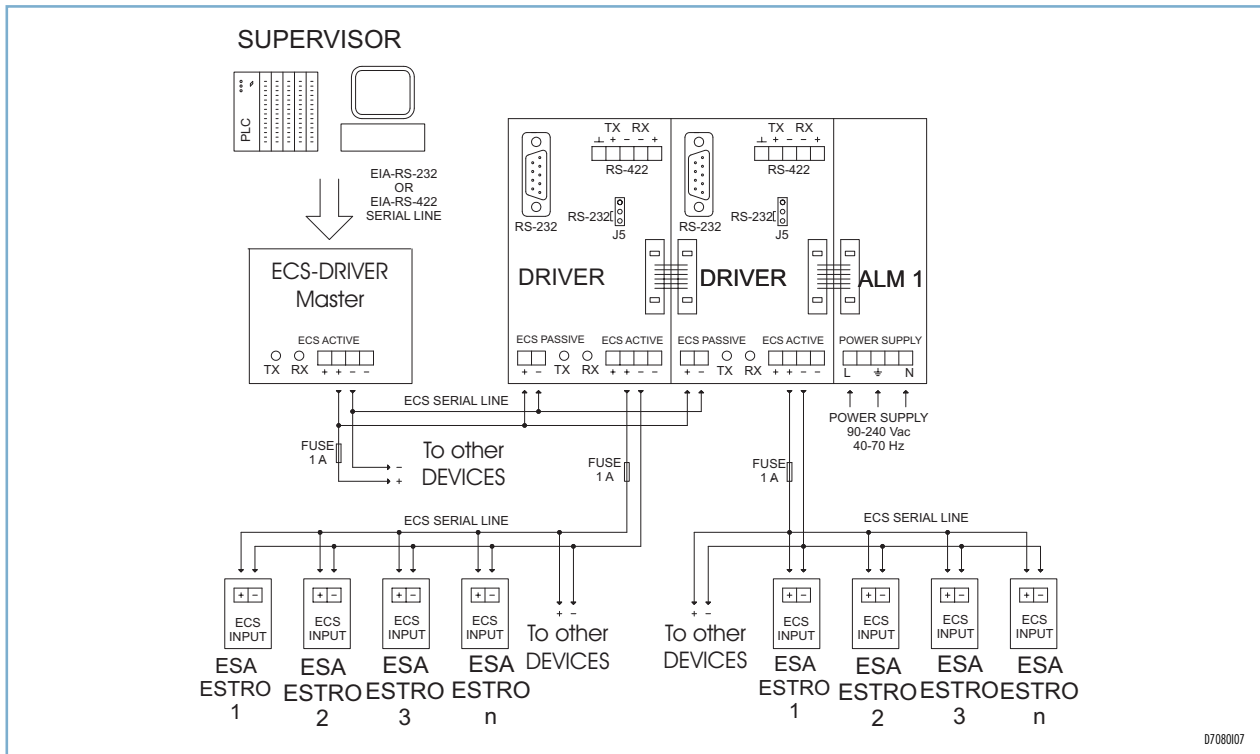
0708105

ECS-DRIVER-D MASTER REPEATER



0708106

ECS-DRIVER-D DOUBLE REPEATOR



07080107

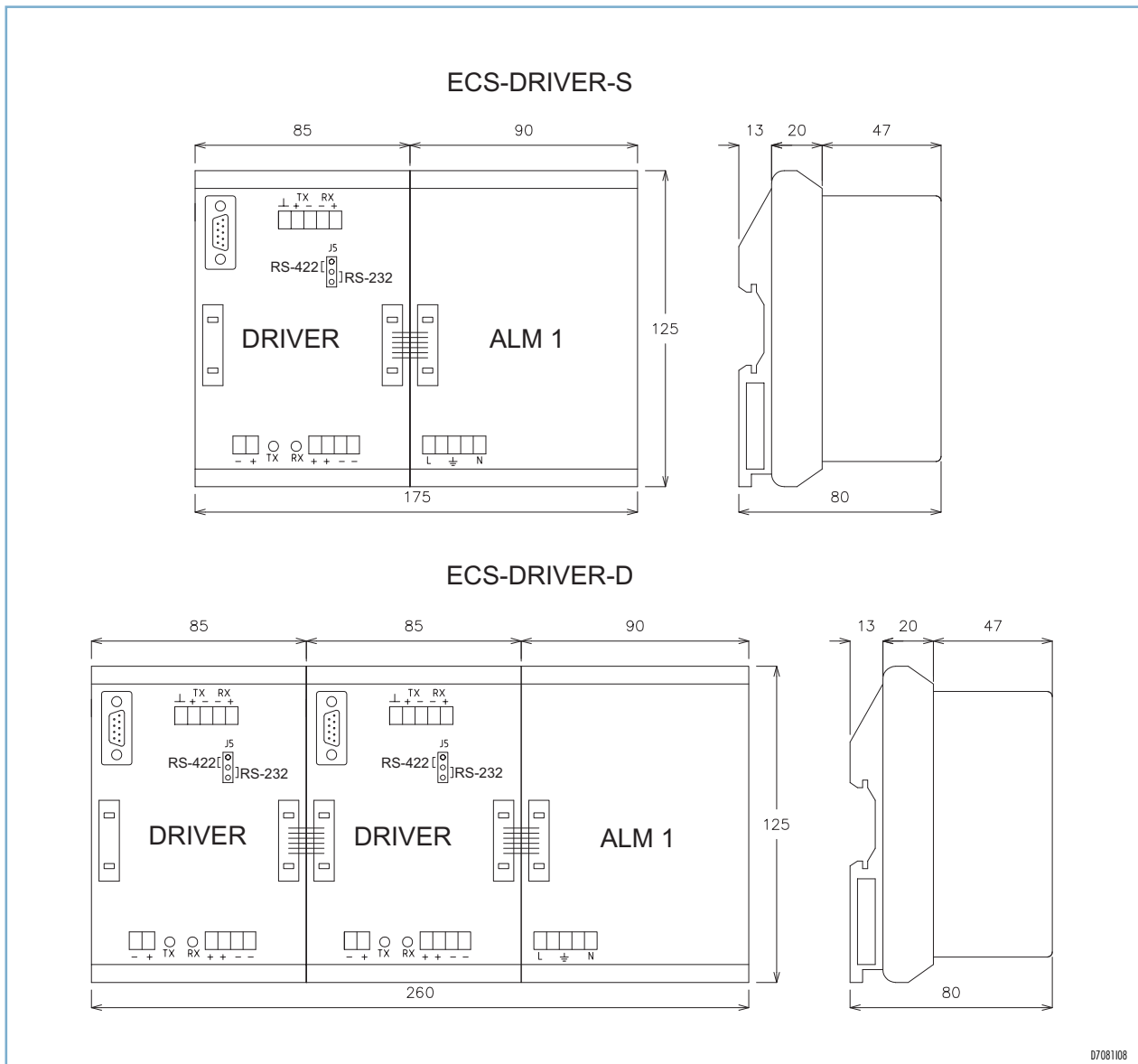
INSTALLATION

For the correct installation please follow the instructions below:

- Avoid placing the equipment next to intense magnetic or electric fields, and in such conditions as to be exposed to direct heat or products resulting from combustion, such as corrosive liquids, solvents or gases.
- The equipment must be installed by skilled personnel, in compliance with the regulations in force at the time and in the place of installation.
- The serial interface must be placed into electrical panels mounted on DIN guide. It must be easy to reach and good ventilation must be ensured.
- Follow all technical specifications and respect them, in particular the phase-neutral polarity, when making electric connections. Terminals for electrical connections are screw-terminals and may accept conductors having a 0.5 to 2.5 mm² section.
- The communication line must be separated from the supply lines, engine control (inverters) and network voltage. Neither multipolar nor shielded cables must be used.
- In communication lines, either ECS cables or unipolar cables, featuring a section of over 0.5 mm² must be used. An alternative to unipolar cables and ECS cables is represented by busway systems, bearing in mind that the length between the busway and the device should not exceed 1 m, both for the communication and the supply lines.
- The length of the communication lines must not exceed the specified limit; if the controller is far away from the equipment, we advise ECS-DRIVER being positioned near the furnace.
- A protection fuse on the active ECS line should be installed to avoid prolonged short-circuits from damaging the card. In case use a rapid blow fuse (1A).
- On each bus section it is only possible to connect one active ECS-DRIVER connected to the master controller. If a number of slave units are installed which exceeds the admitted number, the use of ECS signal repeaters is necessary.
- The inversion of polarity on one or several peripheral equipments causes the malfunctioning of the whole ECS bus and may be discovered because the RX LED lights. The same situation occurs when a short-circuit occurs on the communication line. This problem must be solved because if it persists it causes the ECS-DRIVER interface to break.

- Check 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 it is advisable to make sure that the RX LED is not lit; should the RX LED be lit it is advisable to disconnect the active output and look for the reason of the anomaly on the ECS bus.
- The connection of equipments to the ECS bus when working could cause a short interruption in the communication.
- If the ECS-DRIVER does not work properly it must be sent back to the factory for repair. No modifications or repair performed by other people are admitted.

DIMENSIONS



NOTE: Based on the company's policy aimed at a continuous improvement on product quality, ESA-PYRONICS reserves the right to bring changes to the technical characteristics of this device without previous notice. Our catalog updated to the latest version is available on our web site www.esapyronics.com and it is possible to download modified documents

WARNING: Operating a combustion system can be dangerous and cause harm to persons or damage to equipment. Every burner must be provided with safety devices that monitors the combustion. The installation, adjustment and maintenance operations should only be performed by trained and qualified personnel.