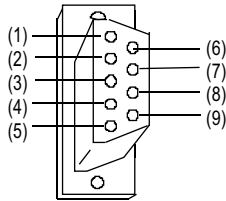


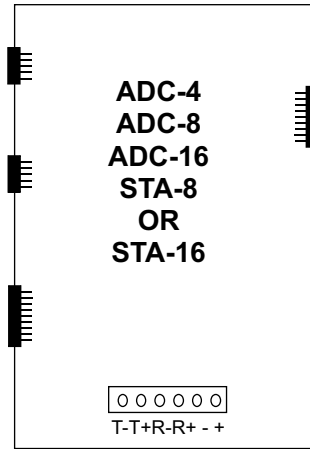
RS-485 TERMINAL CONNECTIONS

DB-9 Pin-out



RS-485 (DB-9 plug)
viewed from rear (solder side)

Pin #	Connection
(2)	Transmitter (+)
(3)	Equipment Ground
(4)	Receiver (+)
(7)	Transmitter (-)
(8)	Receiver (-)

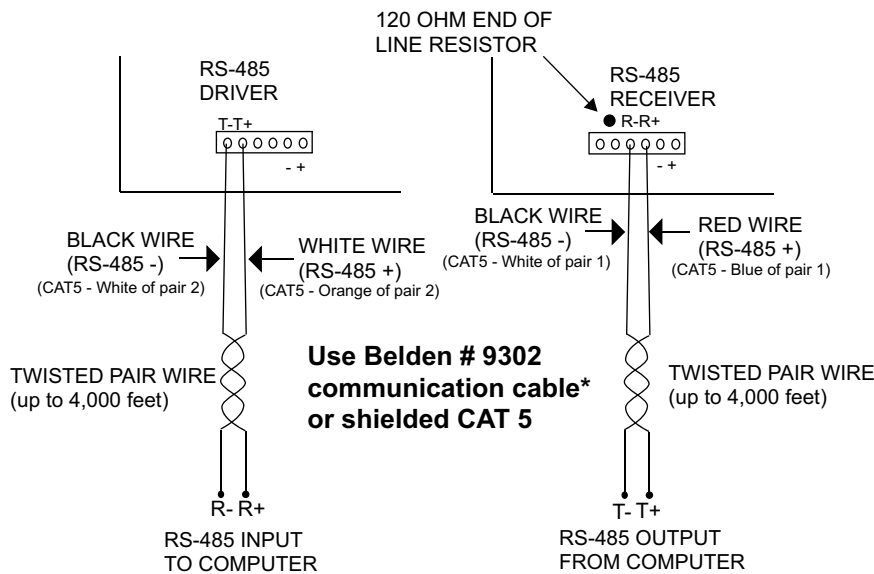


NOTE: On cards equipped with a resetting fuse, the fuse is the yellow disc located to the right of the terminal block. When the fuse is tripped due to a short or overload, the fuse may be reset by correcting the short and removing power for about a minute (or the fuse will reset automatically after the fuse cools). The Transzorb is the black part located above the terminal block.

TERMINAL BLOCK CONNECTIONS

- (T-) RS-485 Transmitter (-) (connect to black of white/black pair)
- (T+) RS-485 Transmitter (+) (connect to white wire)
- (R-) RS-485 Receiver (-) (connect to black of red/black pair)
- (R+) RS-485 Receiver (+) (connect to red wire)
- (-) Power supply input (use caution, reversed polarity may cause damage, 9 to 14 volts DC only)
- (+) Power supply input

NOTE: RECEIVER/TRANSMITTER PAIRS SHOULD BE TWISTED

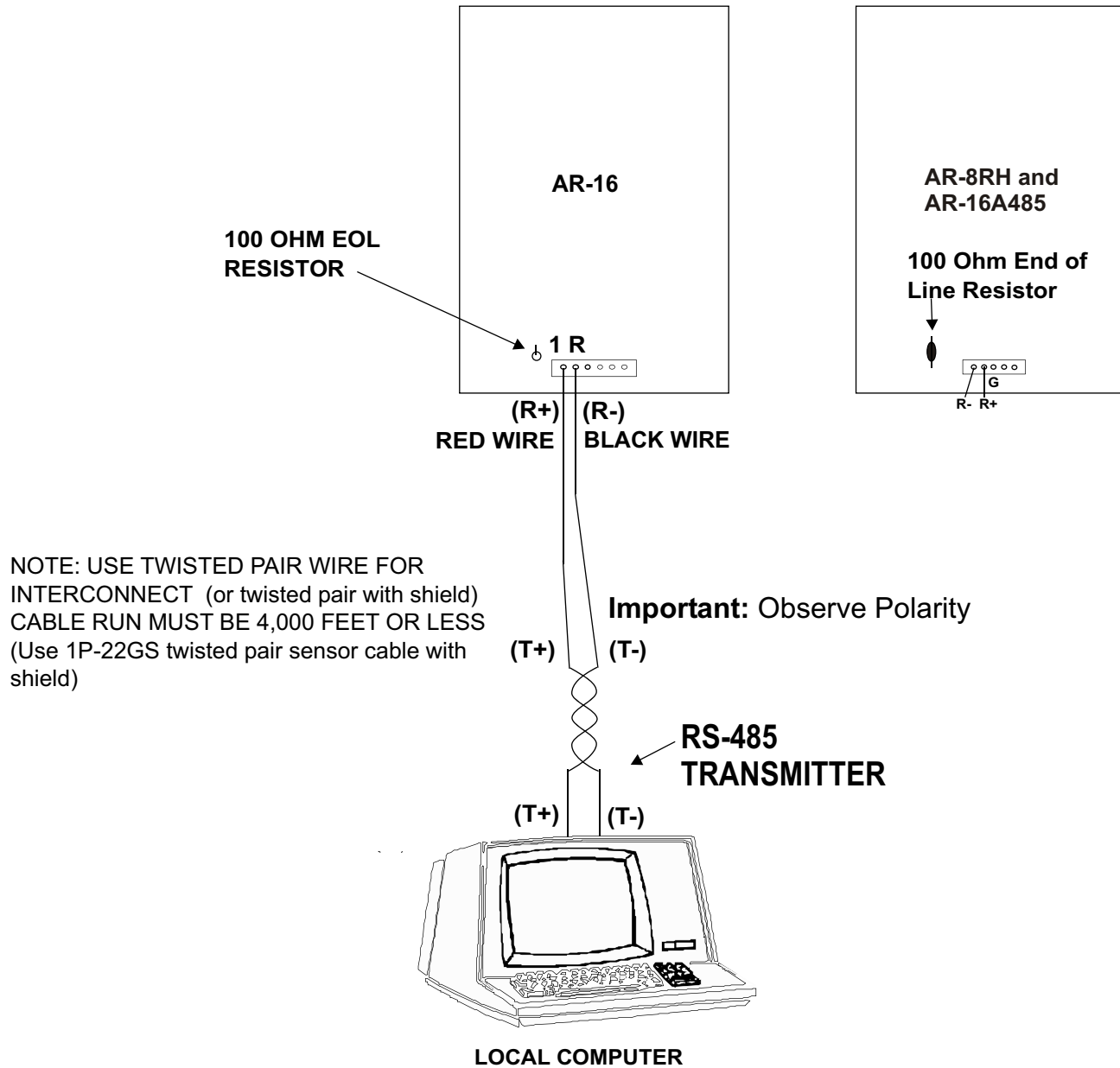


NOTE: The use of shielding on the RS-485 interconnect cable is strongly recommended to protect the RS-485 receiver/driver ICs from damage which may be caused by electrical storm and lightning transients. The shield of the cable should be connected to an earth ground or an equipment ground (connected to your electric system ground via the third prong on the electric cord).

IMPORTANT CAUTION: The RS-485 signal standard is very forgiving of incorrect wire connections. The ADC-16 may appear to operate normally for a period of time (ranging from several hours to several months) even with incorrect polarity of the receiver/driver pairs or crossed wires (such as driver to driver or receiver to receiver or other combinations). **DOUBLE CHECK ALL WIRE CONNECTIONS OF THE TWISTED PAIRS.** The computer RS-485 driver (+) must connect to the ADC-16 receiver (+). The computer RS-485 driver (-) must connect to the ADC-16 receiver (-). The ADC-16 driver (+) must connect to the computer receiver (+) and the ADC-16 driver (-) must connect to the computer receiver (-). All end of line resistors must be in place (120 ohm resistor is installed on the ADC-16 or STA-16 at the factory - see above). Failure to correctly connect the receiver/driver pairs and/or failure to correctly install the end of line resistors will result in data errors and/or failure of the RS-485 receiver/driver ICs.

*Peel back cable at least 10" to verify twisting of cable pairs. The two black conductors can become cross paired which can not be detected by a continuity test. Cross paired wiring will cause intermittent data errors.

RS-485 TERMINAL CONNECTIONS for a single AR-16



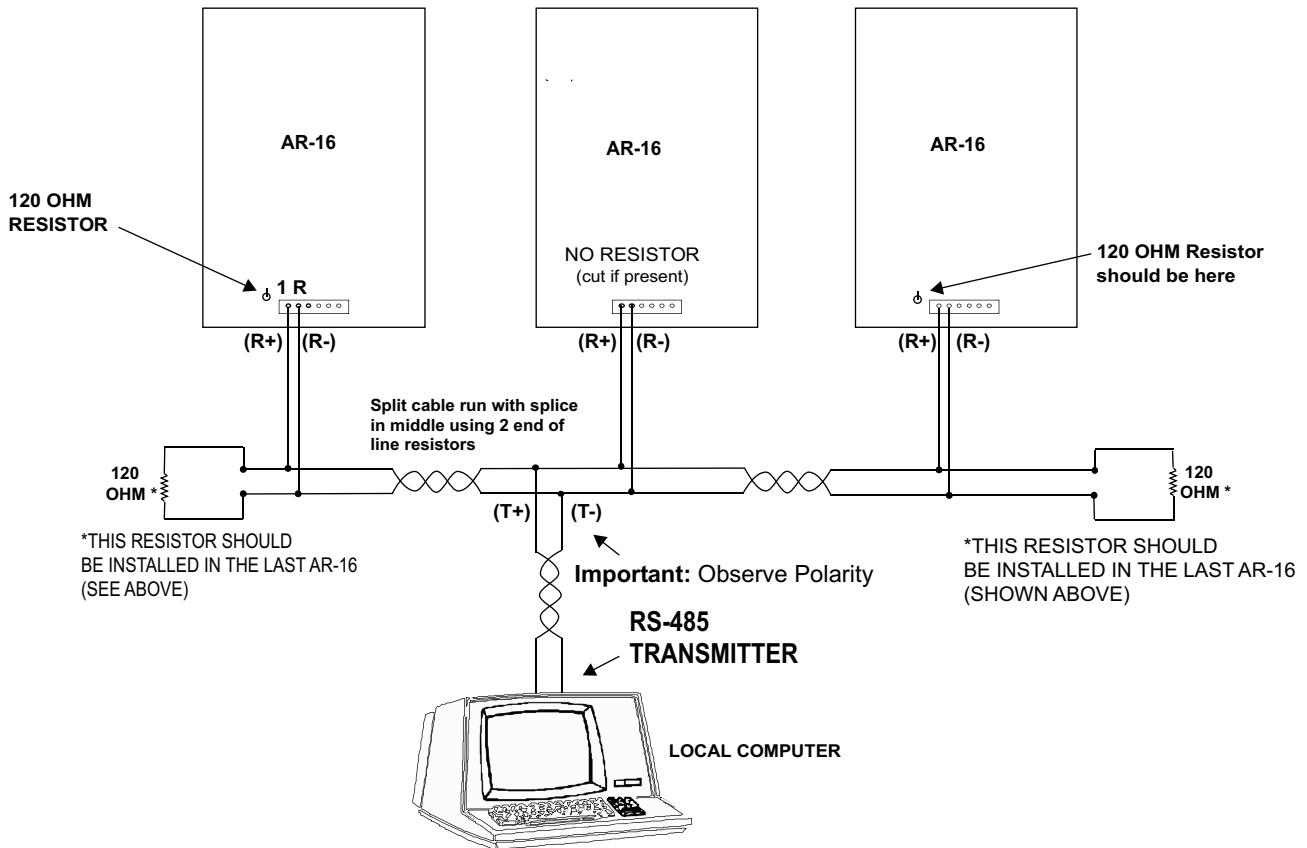
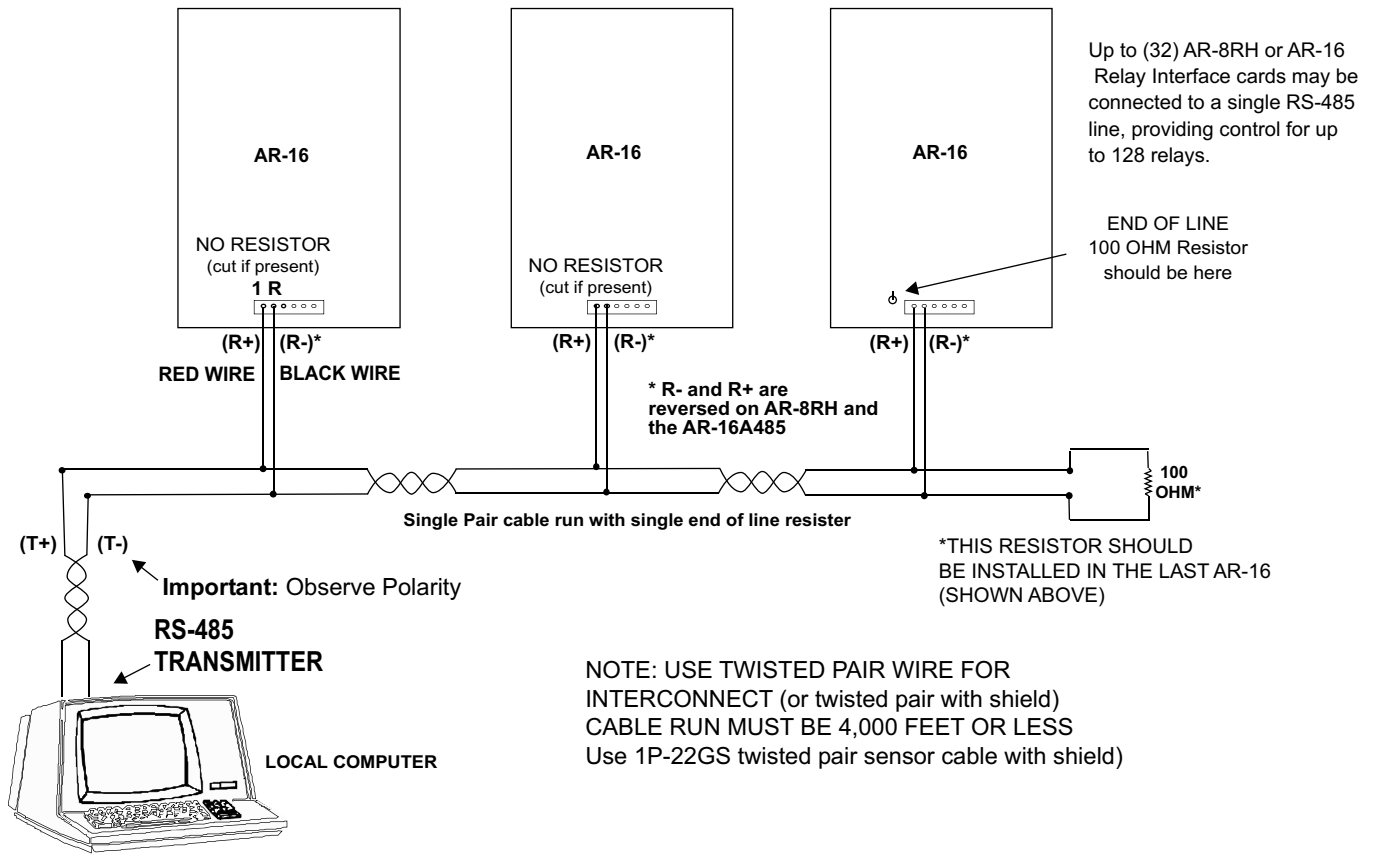
NOTE: The use of shielding on the RS-485 interconnect cable is strongly recommended to protect the RS-485 receiver/driver ICs from damage which may be caused by electrical storm and lightning transients. The shield of the cable should be connected to an earth ground or an equipment ground (connected to your electric system ground via the third prong on the electric cord or connected to a ground rod).

RS-485 END OF LINE RESISTOR: the end of line resistor which is installed on the AR-16 may be in the range of 54 ohms to 120 ohms. The default value for use with a single AR-16 is 100 ohms. If the twisted pair cable run to the AR-16 is in a high noise electrical environment it is best to use a lower value (but no lower than 54 ohms). The disadvantage to using a lower value is that the RS-485 receiver/driver ICs will run hotter.

When multiple AR-16 cards are connected to the RS-485 twisted pair, the last AR-16 should have the end of line resistor installed (clip the end of line resistor on all the other AR-16 cards).

When the AR-16 or AR-8 cards are ordered with the RS-485 Transzorb kit installed, the G terminal (to the right of R+) must be connected to an earth or electrical ground.

RS-485 CONNECTIONS FOR THE AR-16



NOTE: The use of shielding on the RS-485 interconnect cable is strongly recommended to protect the RS-485 receiver/driver ICs from damage which may be caused by electrical storm and lightning transients. The shield of the cable should be connected to an earth ground or an equipment ground (connected to your electric system ground via the third prong on the electric cord or ground rod).

IMPORTANT CAUTION: The RS-485 signal standard is very forgiving of incorrect wire connections. The ADC-16 may appear to operate normally for a period of time (ranging from several hours to several months) even with incorrect polarity of the receiver/driver pairs or crossed wires (such as driver to driver or receiver to receiver or other combinations). **DOUBLE CHECK ALL WIRE CONNECTIONS OF THE TWISTED PAIRS.** The computer RS-485 driver (+) must connect to the ADC-16 receiver (+). The computer RS-485 driver (-) must connect to the ADC-16 receiver (-). The ADC-16 driver (+) must connect to the computer receiver (+) and the ADC-16 driver (-) must connect to the computer receiver (-). All end of line resistors must be in place (120 ohm resistor is installed on the ADC-16 or STA-16 at the factory - see above). Failure to correctly connect the receiver/driver pairs and/or failure to correctly install the end of line resistors will result in data errors and/or failure of the RS-485 receiver/driver ICs.

*Peel back cable at least 10" to verify twisting of cable pairs on Beldon 9302 cable. The two black conductors can become cross paired which can not be detected by a continuity test. Cross paired wiring will cause intermittent data errors.

RS-485 END OF LINE RESISTOR: the end of line resistor which is installed on the AR-16 may be in the range of 54 ohms to 120 ohms. The default value for use with a single AR-16 is 100 ohms. If the twisted pair cable run to the AR-16 is in a high noise electrical environment it is best to use a lower value (but no lower than 54 ohms). The disadvantage to using a lower value is that the RS-485 receiver/driver ICs will run hotter.

When multiple AR-16 cards are connected to the RS-485 twisted pair, the last AR-16 should have the end of line resistor installed (clip the end of line resistor on all the other AR-16 cards (see page 3).

When using a split cable run and (2) end of line resistors (see page 3), the total end of line resistance must not be lower than 54 ohms (use (2) 120 ohm resistors).

NOTE: The AR-16 relay select lines normally default to relays 1 thru 16. When additional AR-16 Relay Interface cards are placed on the same RS-485 line, the relay select line must be jumpered to control the desired relays. The line should be cut where the track narrows at the feed thru hole on the two 16 pin 74LS138 ICs on the top of the card. The select pin on each 74LS138 should connect to the desired select line on the lower 74LS154 (pins 3 thru 17, pin 12 is ground, pins 1 and 2 are default).

Relay address selection for the AR-8RH is set by placing the shunt in the required position (1 thru 16) with position 1 controlling relays 1-8 and position 16 controlling relays 121-128. The relay address header is located on the top right of the AR-8RH card. The default setting is position 1 (relays 1-8).

The AR-8RH may be ordered with relays installed only in relay positions 1 to 4 (or with relays in positions 5 to 8). This will permit up to (32) AR-8RH cards to be multi-dropped on a single RS-485 twisted pair and allow up to 128 relays to be controlled. The AR-8RH address setting may be set the same for several cards but the relays will be controlled in unison.



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