FEATURES

- **Two STAEFA SM2 TTL repeater ports**
- **STAEFA's SM2 TTL communication to RS-485**
- **Transformer isolation onboard**
- **Small enough to mount inside a 4 square handy box**
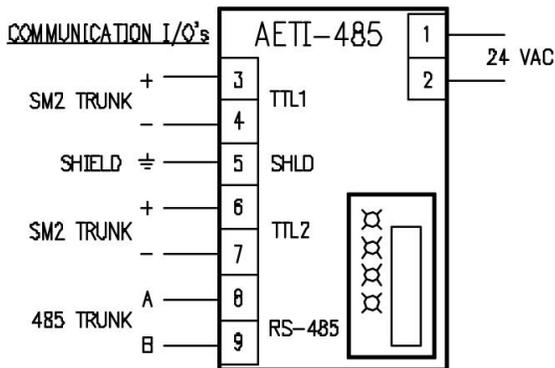
APPLICATIONS

- **Extend STAEFA's SM2 TTL communication trunk**
- **Convert STAEFA's SM2 TTL communication to RS-485 communication trunk**
- **Convert STAEFA's RS-485 communication trunk to STAEFA's SM2 TTL communication trunk**

DESCRIPTION & OPERATION

The AETI-485 is a TTL to TTL to RS-485 repeater module. It was designed to extend STAEFA's TTL communication trunk by repeating STAEFA's communications in either STAEFA's TTL format or in a RS-485 ½ duplex format. The RS-485 format allows for communications to be extended over 2,500 feet, while the TTL repeater allows additional quantities of Smart II controllers to operate on a single System panel trunk. The AETI-485 uses an on-board isolation transformer to provide isolation between each of the TTL and RS-485 communication ports.

The AETI-485 uses an on-board isolation transformer to provide three (3) isolated 12VAC sources for powering the three voltage regulators for each of the communication ports and the embedded micro controller. The micro controller monitors the three I/O ports and performs the hand-shaking between the TTL ports and the RS-485 port. Each of the TTL ports are fused with PolySwitch B resettable fuse.
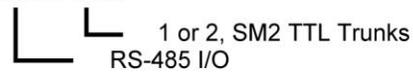
WIRING CONFIGURATION

SPECIFICATIONS

SIZE:	3.0"L x 3.0"W x 1.25" H
MOUNTING:	3.0" W RDI snap-track (supplied) Will mount in 4" x 4" electrical box
POWER:	24VAC ± 10%, 50/60Hz, 3.75VA
TRUNK I/O's:	STAEFA's SM2 TTL and RS-485 ½ duplex format
TRUNK CAPACITY:	Approximately 32-40 Smart II devices
BAUD RATES:	300 to 2400 baud.
MAX LENGTH:	TTL trunk 2,500 feet RS-485 trunk 4,000 feet
TRUNK WIRE:	18 AWG shielded twisted pair
AMBIENT TEMP:	0 TO 50°C

ORDERING INFORMATION

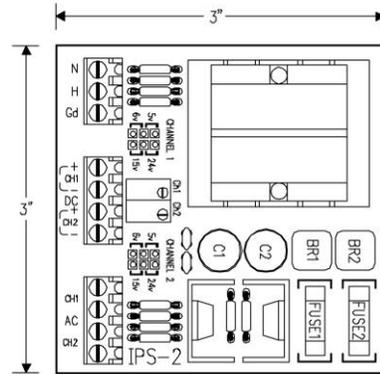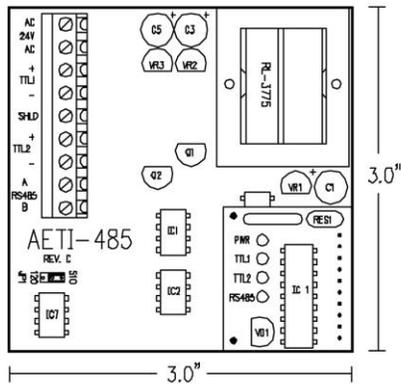**AETI-485/TTLX**
— 1 or 2, SM2 TTL Trunks
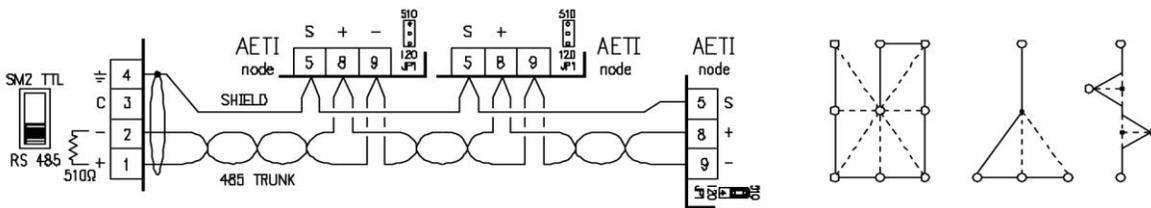— RS-485 I/O

Single or dual SM2 TTL to RS-485 converter module

PHYSICAL CONFIGURATION

MOUNTING CONFIGURATION

RS-485 TERMINATION RECOMMENDATIONS

When using RS-485 a few things to remember:

- RS-485 is a bidirectional half-duplex bus comprising one or more transceivers located on a twisted-pair cable. Data can flow in either direction but can flow only in one direction at a time.
- RS-485 allows up to 32 nodes to be connected to a trunk. Nodes should be connected as shown by the solid lines on the three above diagrams on the right. Trunks should not be starred, branched, or stubbed as shown by the dashed lines.
- *The RS-485 trunk requires a termination load to prevent adverse transmission-line problems, such as reflections*. This is accomplished by connecting a single resistor across each end of the trunk. STAEFA's NCRS RS-485 trunk has a *510 Ohm* resistor connected internally.

STAEFA's Talon (Jace) has a passive 510 Ohm termination resistor internally, for distance greater than 25 feet an external 510 Ohm resistor may be required, set the AETI-485 jumper set for 510 Ohm. The AETI-485 also has a 510 Ohm resistor and 120 Ohm resistor-jumper selectable connected internally as shown above. If being used with something other than a STAEFA NCRS panel the termination resistor must match that device's impedance requirements to avoid communication problems. (www.national.com/an/AN/AN-1057.pdf)

APPLICATION 1
### EXTENSION OF EXISTING STAEFA COMMUNICATION TRUNK
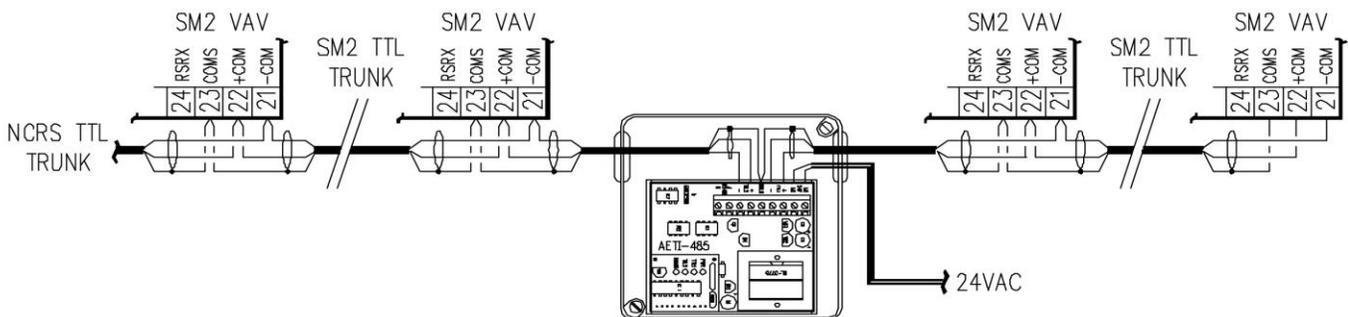
The AETI-485/TTL2 is configured as a SM2 TTL repeater. It can be used to extend an existing communications trunk or split a trunk to eliminate communication problems caused by wire resistance and or capacitance due to long trunk runs. If the RS-485 port is not used, no termination resistor is needed across the AETI's RS-485 terminals (8, 9) because the AETI-485 has a 510 Ohm internal impedance resistor on board.

APPLICATION 2
CONVERSION OF RS-485 TO STAEFA'S TTL COMMUNICATION TRUNK
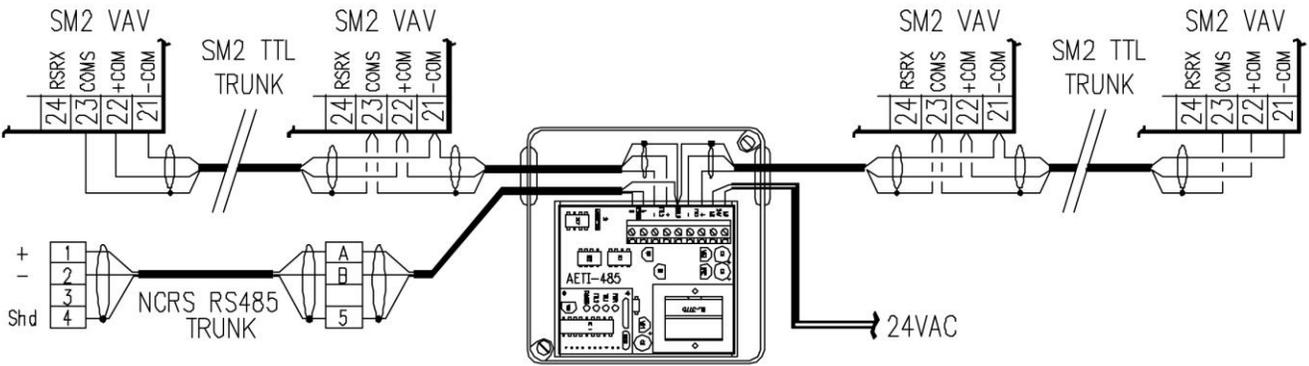
The AETI-485/TTL2 is configured to convert STAEFA's NCRS System panel's RS-485 Communication trunk back to two SM2 TTL communication trunks. For further technical information on RS-485 trunks see National's ten ways to bulletproof RS-485 interfaces at: www.national.com/an/AN/AN-1057.pdf.

APPLICATION 3
CONVERSION OF JACE RS-485 TO STAEFA'S TTL COMMUNICATION TRUNK
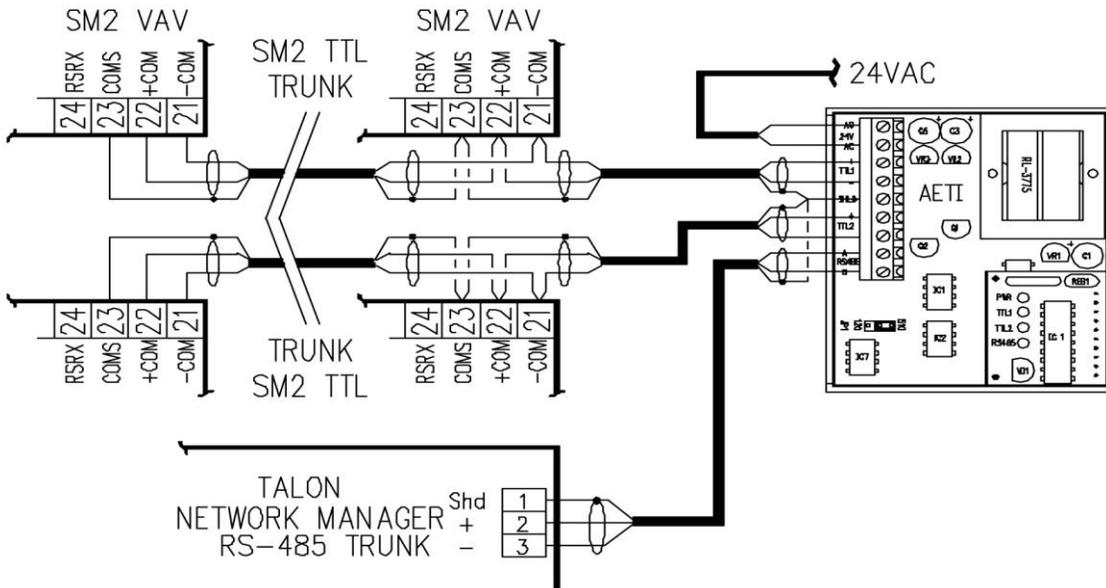
The AETI-485/TTL2 is configured to convert STAEFA's TALON (JACE 511, 512) Network Manager's RS-485 communication trunk back to two SM2 TTL communication trunks. The TALON (JACE 511, 512) has an internal passive 510 Ohm terminator resistor. If the RS-485 trunk wire run is less than 5 feet no termination resistor is needed, but for distances greater than 25 feet a 510 Ohm termination resistor may be required across RS-485 +/- terminals and set the AETI's RS-485 jumper to match at 510 Ohms to minimize transmission line problems caused by misbalanced RS-485 trunks. See *RS-485 Termination Recommendations*. For further technical information on RS-485 trunks see National's ten ways to bulletproof RS-485 interfaces at: www.national.com/an/AN/AN-1057.pdf.