FEATURES

- **One STAEFA SM2 TTL TRUNK I/O**
- **One STAEFA NCRS RS-485 trunk I/O**
- **One transmit/ receive fiber optic I/O**
- **Selectable distance setting for fiber transmitter**
- **Transformer isolation onboard**
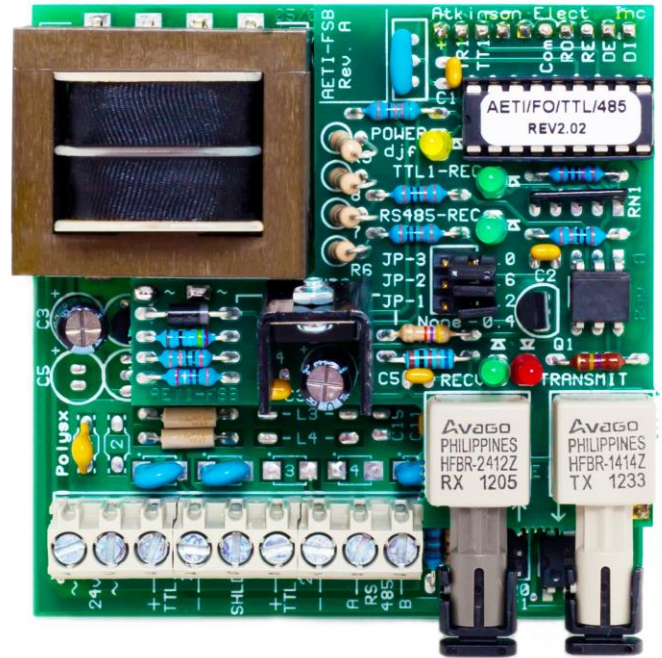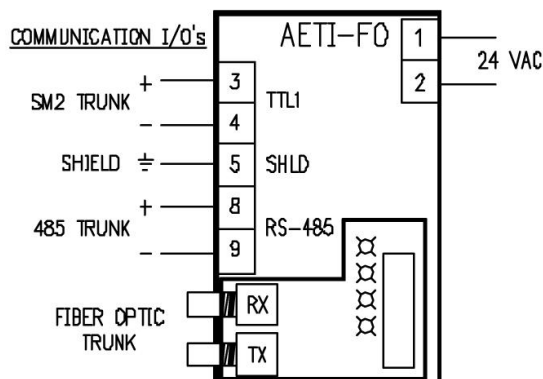
APPLICATIONS

- **Extend STAEFA's trunk communications between buildings via RS-485 or fiber optic cable**
- **Convert STAEFA's communication trunk to a fiber optic (a non-electrical) serial communication trunk**
- **Convert a fiber optic serial communication trunk to STAEFA SM2 TTL trunk or RS-485 communication trunk**

DESCRIPTION & OPERATION

The AETI-FO is a fiber optic repeater module. It accepts STAEFA's TTL and RS-485 communication trunks and transmits and receives on two 62.5/125mm fiber optic cables. It was designed to extend STAEFA's communications trunk by repeating the trunk communications in either a STAEFA's TTL format, a RS-485 ½ duplex format, or in a duplex fiber optic format. The AETI-FO uses an onboard isolation transformer to provide isolation between the TTL and RS-485 communication ports.

The AETI-FO uses a Microchip ® micro-controller to monitor the three I/O ports (TTL, RS-485, and the fiber optic receiver port) for serial transmitted data and retransmits that data on the other two ports bit for bit. The NCRS and Smart II controller provide the transmit/ receive timing for ½ duplex operation.

WIRING CONFIGURATION

SPECIFICATIONS

SIZE:	3" W x 3" L x 1.25" H
MOUNTING:	3" W RDI snap track (supplied)
POWER:	24VAC ± 10%, 50/60Hz 3.75VA
TRUNK I/O's:	STAEFA's SM2 TTL, RS-485 ½ duplex Fiber optic – 820nm – duplex format
TRUNK CAPACITY:	Approximately 32-40 Smart II devices
BAUD RATES:	300 to 2400 baud
MAXIMUM LENGTH:	TTL trunk 2,500 feet RS-485 4,000 feet Fiber optic ≥2K meters
TRUNK WIRE:	18 AWG shielded twisted pair
FIBER CABLE:	Dual 62.5/125 µm diameter cable
CONNECTION:	Industry-standard ST ports
AMBIENT TEMP:	0 to 50°C

ORDERING INFORMATION

AETI-FO/TTL1/RS-485

- Fiber Optic Option
- Single SM2 TTL Trunk
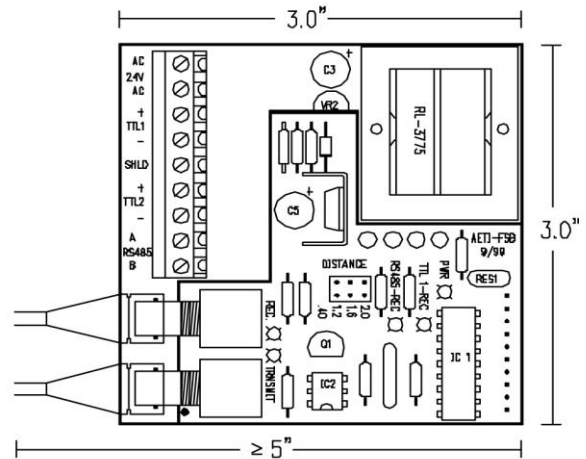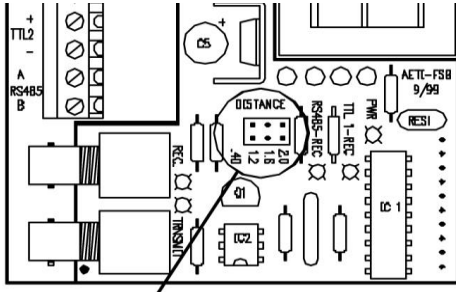- NCRS RS-485 I/O

Single SM2 TTL to RS-485 to Fiber Optic Converter interface module.

DISTANCE SETTING FOR FIBER TRANSMITTER

REQUIRED SPACE FOR IBER OPTIC CABLES

| DISTANCE	JUMPERS REQUIRED
400m	No jumpers required
1200m	Jp 1
1600m	Jp 1 & Jp2
2000m	Jp 1, Jp2, & Jp3

RS-485 TERMINATION RECOMMENDATIONS
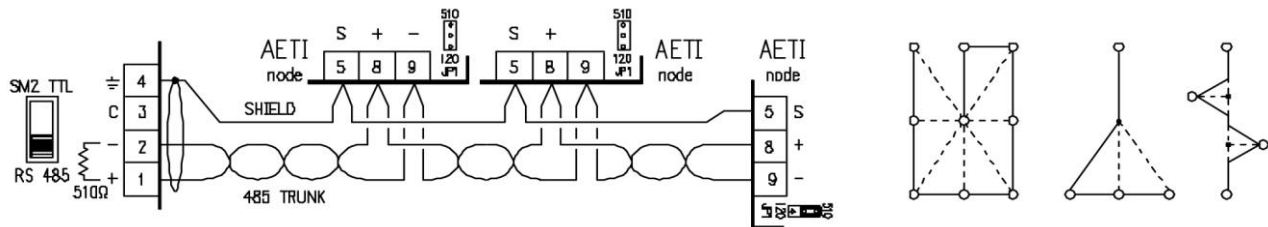
There are a few things to remember when selecting a RS-485:

- 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 trunks 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, a 510 Ohm is connected across the AETI-485 shown above. If being used with something other than a NCRS panel the termination resistor must match that device's impedance requirements to avoid communication problems.

APPLICATION 1
## EXTENDING A STAEFA TRUNK VIA FIBER OPTIC CABLE
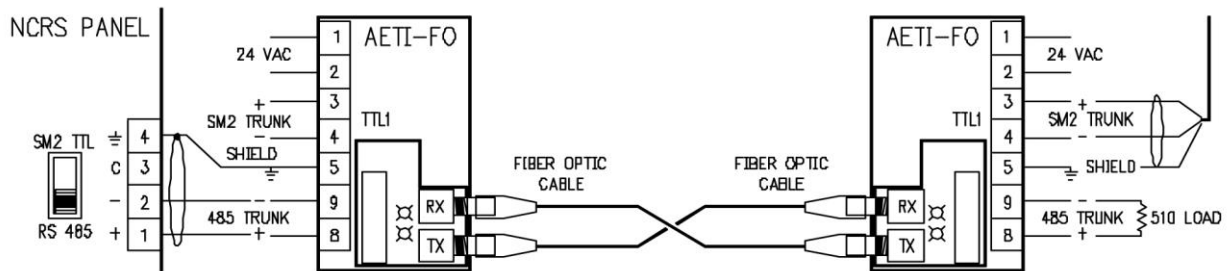
This application depicts a STAEFA NCRS communications trunk extended via fiber optic cable. The AETI/TTL1 main board is configured with a fiber optic sub board. The AETI-FO connects to the NCRS's RS-485 trunk. Note the position of NCRS TTL/RS-485 trunk switch and set to the appropriate communication format. The AETI-FO repeats the information requested by the NCRS, out on a fiber optic cable. The second AETI-FO receives the information request from the first AETI-FO and repeats the request on both the SM2 TTL and RS-485 trunk outputs. The Smart II controller receives the request on the TTL trunk and responds with the requested information.

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APPLICATION 2
EXTENDING THE SM2-TTL TRUNK OF AN AETI-FO INTERFACE
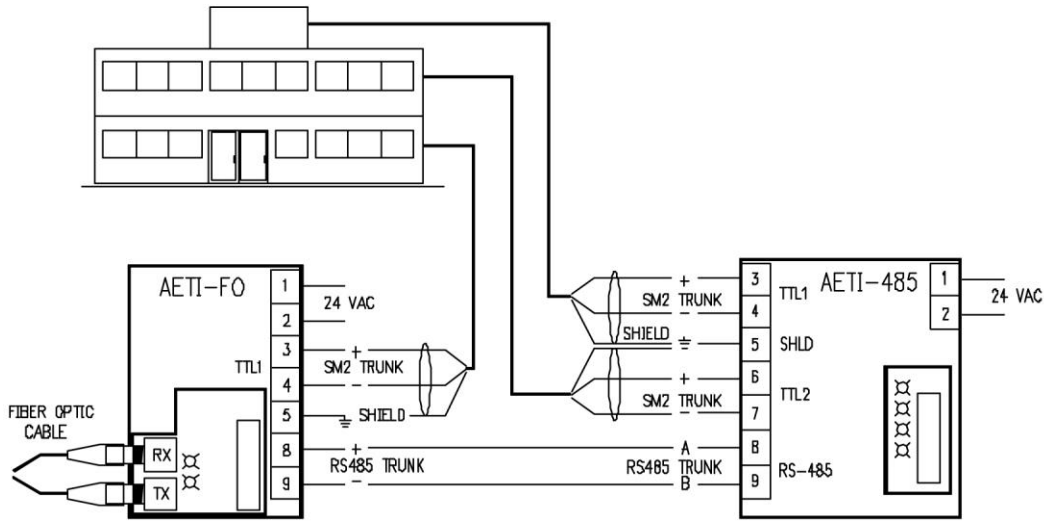
This application depicts the extension of a NCRS trunk by a set of AETI-FO transducers and the expansion of one SM2 TTL trunk by the use of the RS-485 port and an AETI-485/TTL2 transducer. The 2nd AETI-FO transducer receives the NCRS's information request via fiber cable and repeats the request on both the SM2 TTL and RS-485 trunk I/O ports. The third AETIFO receives the request on its RS-485 I/O port and repeats the request out on its two SM2 TTL I/O ports. The Smart II controller receives the request on the TTL trunk and responds with the requested information, sending it back to the NCRS panel.

APPLICATION 3
AETI-FO TRANSDUCER AND SMVU-TI P-BUS TRUNK INTERFACE
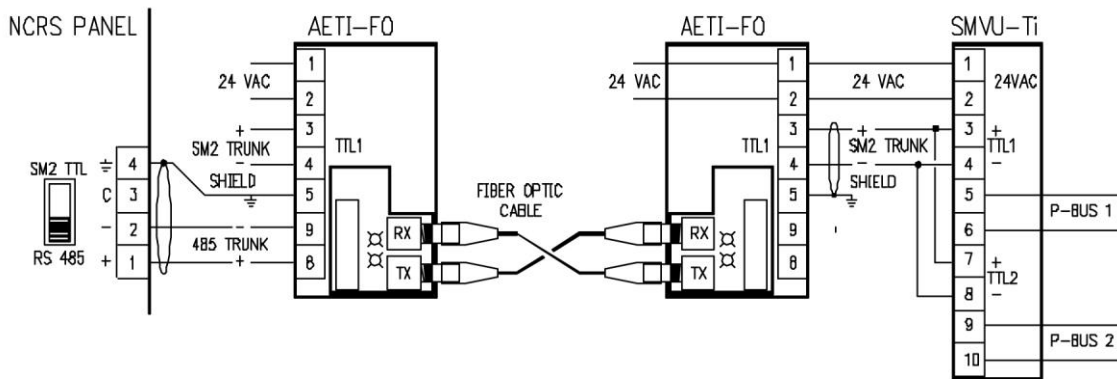
This application depicts the use of the AETI-FO transducers and a SMVU-Ti P-Bus interface. The AETI-FO transducers will repeat the 2400 baud TTL or RS-485 signals from the NCRS panel and interface to STAEFA's SMVU-Ti1P-bus interface. By connecting the AETI-FO's SM2 TTL I/O port up to both the SM2 TTL ports on the Ti you are able to run two P-bus trunks of 50 + SMVU controllers.