

S.I. TECH

RS-422 to Fiber Solutions

03/19/24



Stand Alone Bit-Driver®



Mini Bit-Driver®



Rack Mounted Bit-Driver®

USA & International Headquarters

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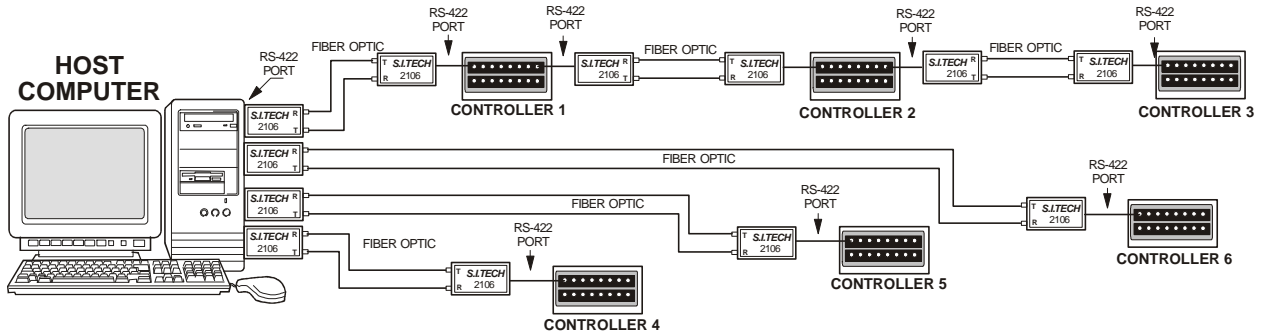
Web Site: <http://www.sitech-bitdriver.com>

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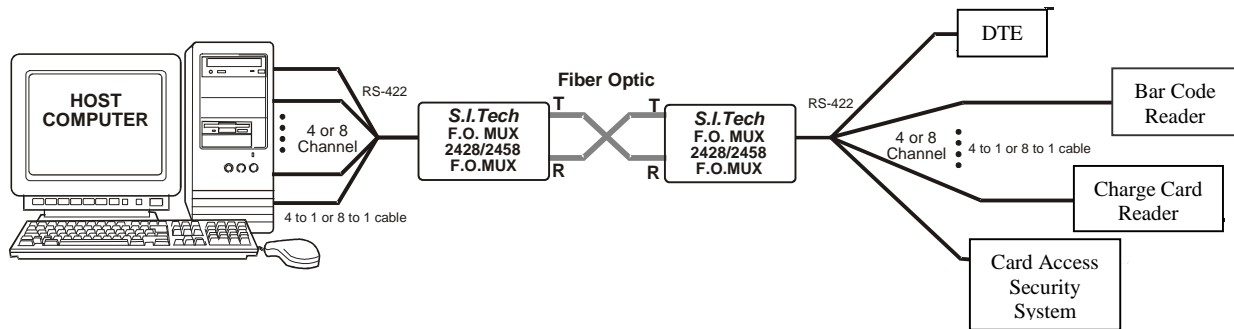
RS-422 PRODUCTS

RS-422 PRODUCTS

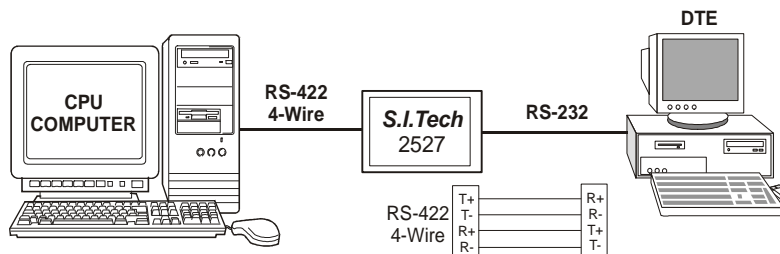
1. Point to Point:



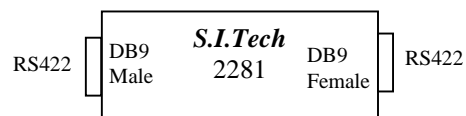
2. Multiplexer:



3. Protocol Conversion:

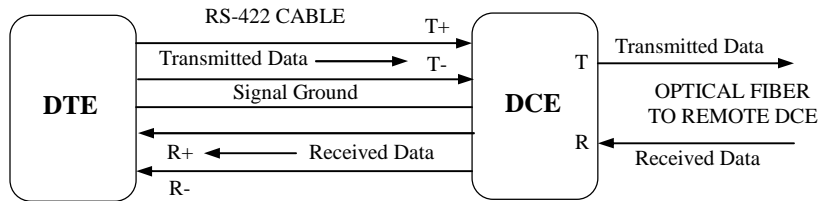


4. Opto Isolated:



RS-422

EIA-RS-422 is a widely used specification for balanced 4-wire transmission (twisted or 2 twisted shielded pairs) where there is a signal transmit pair and a signal receive pair. Balanced transmission allows much longer distances and reduces the number of data errors.



Typical Setup

S.I.Tech supplies a broad array of products using RS-422 protocol for various applications such as process control, security systems, T-Net, etc..

EIA-422 Standard specifies the electrical characteristics of the balanced voltage digital interface circuit, normally implemented in integrated circuit technology that may be employed when specified for the interchange of serial binary signals between Data Terminal Equipment (DTE) and Data Circuit – Terminating Equipment (DCE) or in any point-to-point interconnection of serial binary signals between digital equipment.

The provisions of EIA-422 may be applied to the circuits employed at the interface between equipment where the information being conveyed is in the form of binary signals at the DC baseband level. This Standard shall be referenced by the specifications and specific interface standards applying these electrical characteristics.

EIA-422 is one of the series relating to the interconnection of DTE and DCE. Other EIA Standards in this series include RS-423-A and RS-449. RS-423 is applicable to unbalanced Interface Circuits and RS-449 is comprehensive Standard covering RS-422 plus flow control and timing circuits. EIA-422 is fully compatible with CCITT recommendations V.11 and X.27.

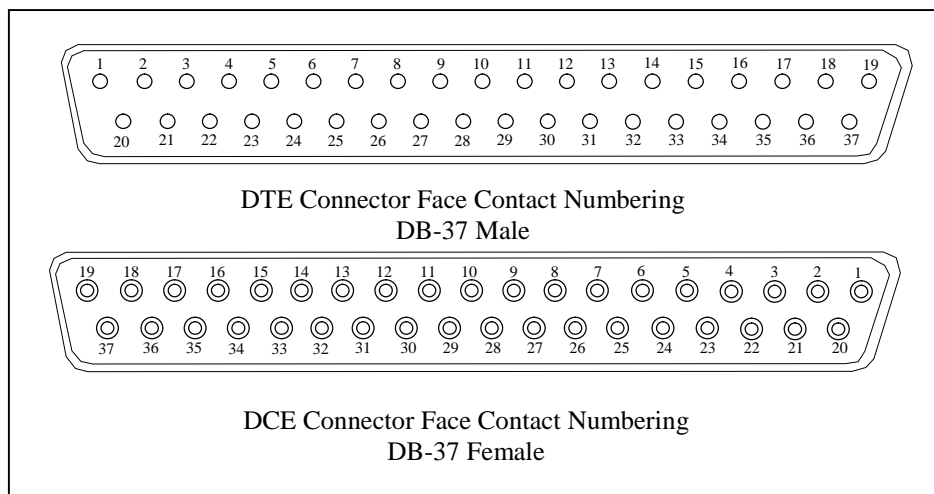
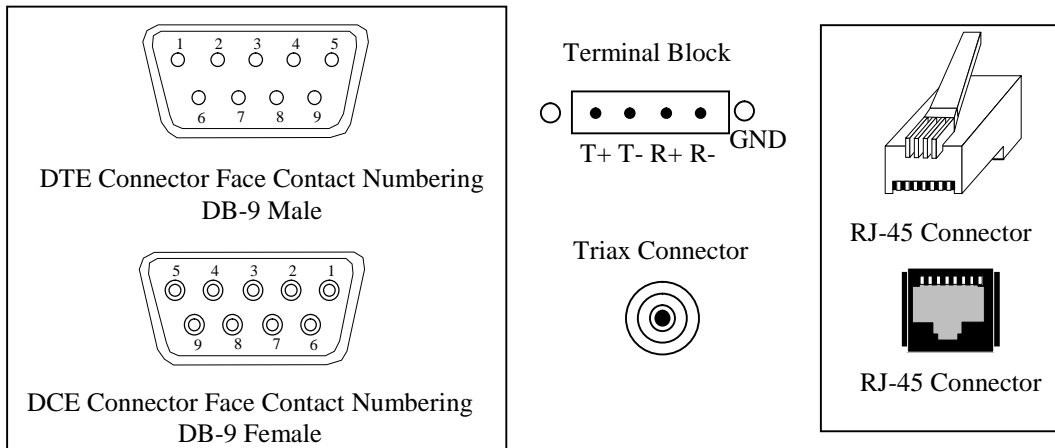
RS-422 CONNECTOR

Unlike RS-232, which is a standard for the interface between data terminal equipment and data terminating equipment, including connector dimensions and pin number assignments, RS-422 and RS-485 are standards for the electrical characteristics of balanced digital systems. They specifically do not cover such details as pin assignments.

Over the years, individual manufacturers of equipment having electrical characteristics conforming to RS-422 or RS-485 have selected electrical connections ranging from twisted pig-tails through screw terminals, various type D connectors and modular RJ-XX telephone-type plugs and jacks.

S.I. Tech products made for use in RS-422 or RS-485 systems employ all of the above connection methods to comply with standards set by individual manufacturers. Some of these are shown in the sketches below.

Please check the appropriate tables or individual data sheets to determine which data connection methods are available on the product you are considering and to get pin-out information.



**TABLE D
RS-422 TO FIBER BIT-DRIVERS® (MODEMS)**

| Model No. | Package | | | Max. Data Rate Kbps | Data Format | | Power Option* | 4 Wire Data Connector** | Multimode Fiber | | Singlemode Fiber Connector ***** 1300 nm | Point to Point | Multi-Drop | Distance *** | | | Weight LB/KG | Remarks |
|-----------|-----------|-------------|------------|---------------------|-------------|------|---------------|-------------------------|-----------------|---------------|---|----------------|------------|--------------|------|----------|------------------------------|---------|
| | PCB Alone | Stand Alone | Rack Mount | | Async | Sync | | | Connector | Wavelength nm | | | | 2 Km | 5 Km | 10 Km | | |
| 2012 | ✓ | | | 56 | ✓ | | 1,2 | Terminal Block | ST/SMA | 880 | -- | ✓ | ✓ | ✓ | ✓ | 31/4 | Wall Mount | |
| 2106 | | ✓ | | 56 | ✓ | | 6 | DB-9M/F | ST/SMA | 880 | -- | ✓ | ✓ | ✓ | ✓ | .25/1.1 | Mini, 4 Wire RS-422 | |
| 2116 | | | ✓ | 38.4 | | ✓ | 6 | DB-9M/F | ST/SMA | 880 | -- | ✓ | ✓ | ✓ | ✓ | .25/1.1 | Variable Speed, 4 Wire | |
| 2140 | | ✓ | | 230 | ✓ | | 6 | Terminal Block | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | -4/2 | Multidrop, ADD/Drop | |
| 2176 | | ✓ | | 256 | ✓ | | 6 | DB-9 F | ST/SMA | 820 | ST | ✓ | ✓ | ✓ | ✓ | .25/1.1 | High Speed, Mini | |
| 2281 | | ✓ | | 2.5M | ✓ | | 5 | DB-9M/F | -- | -- | -- | --- | --- | --- | --- | 0.8/0.3 | Opto Isolated RS-422 | |
| 2322 | | | ✓ | 56 | ✓ | | 1,2 | RJ45 | ST/SMA | 880 | -- | ✓ | ✓ | ✓ | ✓ | .5/2 | Card - 3000 Chassis | |
| 2376 | | | ✓ | 256 | ✓ | | 1,2 | RJ45 | ST/SMA | 820 | ST | ✓ | ✓ | ✓ | ✓ | .5/2 | Card - 3000 Chassis | |
| 2561 | | | | 115 | ✓ | | 1,2,3,10 | DB-25 | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 0.9/-4 | Ruggedized RS-422 | |
| 2563 | | | ✓ | 115 | ✓ | | 6 | DB-25 | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 0.4/0.2 | Three in One RS232/422/485 | |
| 2857 | | ✓ | | 10 M | ✓ | | 1,2 | Terminal Block | ST/SMA | 820 | ST/FC/SC | ✓ | ✓ | ✓ | ✓ | 3/1.4 | High Speed RS-422 | |
| 2859 | | | | 20M | ✓ | | 1,2 | Triax Conn | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 6/3 | 2 CH RS-422, 1U Rack | |
| 2860 | | | ✓ | 20M | ✓ | | 1,2 | Triax BNC | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 5/2.3 | 4 CH RS-422/TTL, 1U Rack | |
| 2861 | | | ✓ | 20M | ✓ | | 1,2 | Coax | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 5/2.3 | 5 CH RS-422/TTL, 1U Rack | |
| 2866 | | | | 20M | ✓ | | 4,9 | Terminal Block | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 0.1/0.06 | 3" X 3" PCB (7.6 X 7.6 cm) | |
| 2867 | | ✓ | | 20M | ✓ | | 1,2 | BNC & Term Blk | ST/SMA | 820 | ST/FC | ✓ | ✓ | ✓ | ✓ | 6/3 | 3 CH Switchable RS-422 & TTL | |
| 212106 | | | ✓ | 256 | ✓ | | -- | DB-9F/USB | -- | -- | -- | ✓ | ✓ | ✓ | ✓ | 0.25/0.1 | RS-422 to USB | |
| Kit #9 | | | ✓ | 256 | ✓ | | 6 | DB-9 F | ST/SMA | 820 | -- | ✓ | ✓ | ✓ | ✓ | - | POS Kit - Micros System | |

* Power Options: See "Power Options and How to Order" sheet (p. 106) for options and ordering instructions.

** Pin outs are specified in data sheets

Temperature range 0 - 50 degrees C unless shown otherwise.
Extended Temperature (ET) range available on some products.

*** Distance: 2 km - STD, 5 km - L, 10 km - XL, 20 km - UL

**** Use one wavelength throughout system except if WDM is used

***** Only Models having fiber connector entry in this column are available in single mode

HOW TO ORDER

| Base Model | Fiber and Connector | | Data Connector** | Distance*** | Temperature |
|------------|---------------------|-------------------------|----------------------------------|--|---|
| Number | Multimode (MM)-STD | Singlemode (SM)-Specify | M or F (F is STD on most models) | 2 Km - STD Other - Specify L, XL, or UL | 0 - 50° C - STD -40 to +80° C - ET Other - Call S.I. Tech |
| XXXX | ST-STD | Other-Specify | | | |

e.g. 2012 = RS 422 to Fiber Bit-Driver, 110 VAC, Terminal Block, 2 Km, Multimode, ST Connectors, 0 - 50° C
2106 = RS-422 to Fiber, Mini Bit-Driver, DB9F, 2 Km, Multimode, ST Connectors, 0 - 50° C, uses 2121 Power Supply

Specifications subject to change without notice.

RS422 TO FIBER OPTIC BIT-DRIVERS®

2012



- ❑ Wall mounted Asynchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Max Data Rate is 56 Kbps
- ❑ Input/Output Interface is 4 wire (plus ground) Terminal Block for RS-422
- ❑ Power Supply Cord for 110VAC. Order S.I. Tech 2012V for 230VAC
- ❑ Particularly suitable for use with GE, SIEMENS, and other Programmable Controllers in environments such as cargo container cranes at Seaports

2106



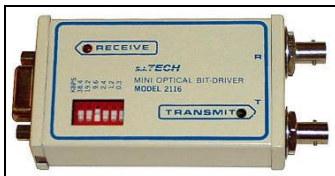
- ❑ Mini Asynchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Max Data Rate is 56 Kbps
- ❑ Input/Output Interface DB-9 Female (Male optional)
- ❑ Connects directly to Terminal or by RS-422 2 pair cable
- ❑ Uses External Power Supply, S.I. Tech Model 2121 (110VAC) or 2164 (230VAC)
- ❑ T-Net Approved

212106*



- ❑ RS-422 to USB
- ❑ Can be used to Connect Legacy RS-422 Interface to new PCs with only USB ports
- ❑ Supplied with virtual comport drivers
- ❑ Can be used with S.I.Tech #2106 RS-422 Fiber Bit-Driver®

2116



- ❑ Mini Synchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Switch Selectable Synchronous Data Rates from 0.3 through 38.4Kbps
- ❑ Input/Output Interface is DB-9 Male (Female optional)
- ❑ Connects directly to Terminal or by RS-422 2 pair cable
- ❑ Designed to work with United Telecom C, X, and L BUS System
- ❑ Uses External Power Supply, S.I. Tech Model 2121 (110VAC) or 2164 (230VAC)

2176



- ❑ Mini Asynchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Max Data Rate is 256 Kbps
- ❑ Designed for use with Micros POS Systems
- ❑ Works with S. I. Tech Model 2376 Card Mounted Bit-Driver
- ❑ Use External Power Supply S.I.Tech 2121 (110VAC – USA) or 2164 (230VAC)

2322



- ❑ Card Cage Mounted Asynchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Max Data Rate is 56 Kbps
- ❑ Input/Output Interface is 8 Pin RJ-45 Female Connector
- ❑ Available on Eurocard, fits S.I. Tech Model 3000A, 19 inch Rack
- ❑ Designed to work with S.I. Tech Model 2106 or 2012 Bit-Drivers®

2376



- ❑ Card Cage Mounted Asynchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Max Data Rate is 256 Kbps
- ❑ Input/Output Interface is 8 Pin RJ-45 Female Connector
- ❑ Switchable Line Termination provided
- ❑ Designed for use with Micros System
- ❑ Designed to work with S.I. Tech Model 2176 Mini Bit-Driver®

2857



- ❑ High Speed Stand Alone Asynchronous Simplex or Full Duplex Optical Bit-Driver®
- ❑ Max Data Rate is 20 Mbps
- ❑ Input/Output Interface is 4 Wire (plus Ground) Terminal Block for RS-422
- ❑ Power Supply Cord for 110VAC. Order S.I. Tech Model 2857V for 230VAC
- ❑ Available as 1/2/4 Channel in 1U high rack

2140*



- ❑ RS422/RS485 (4 Wire) Multidrop Bit Driver
- ❑ Fiber in, Fiber out, RS422 Drop
- ❑ Up to 230 Kbps Data Rate
- ❑ Multimode or Single mode
- ❑ Repeater with RS422/RS485 (4 Wire) Add/Drop
- ❑ 12VDC Power

2281*



- ❑ Opto Isolated RS422 to RS422
- ❑ DB9 Male to DB9 Female
- ❑ Data Rate to 2.5 Mbps
- ❑ Input Power 10 to 15VDC nor VAC
- ❑ 1000 VAC Isolated

2561*



- ❑ Up to 115.2 Kbps Async Operation
- ❑ Extended Temp Range: -40 to +80°C
- ❑ Ruggedized Enclosure, Panel Mounting
- ❑ Complies with IEEE C37-90-1
- ❑ IEC 801 Surge Protection
- ❑ Conformal Coated – Environmental Protection
- ❑ Various AC/DC Power Options

2563*



- ❑ “Three in One” Design RS232/422/485 to Fiber Bit-Driver
- ❑ Max Data Rate is 115.2 Kbps
- ❑ Multimode or Single mode
- ❑ DIN Rail Option
- ❑ 12VDC Power

2859*



- ❑ 2 Channel RS422 Fiber Optic Bit Driver
- ❑ 1U High Case
- ❑ Up to 20 Mbps data rate
- ❑ Multimode or Single mode
- ❑ Uses Triax Connector for High Level Instrumentation, Security, Shielding. Used for Military Systems.

2860*



- ❑ 4 Channel RS422 and TTL to Fiber Optic Bit Driver
- ❑ 1U High Case
- ❑ Up to 20 Mbps Data rate
- ❑ Multimode or Single mode
- ❑ Uses Triax (RS-422 Input) and BNC (TTL Output) to Connect to High Speed Network
- ❑ Used in Military System for High Security

2861*



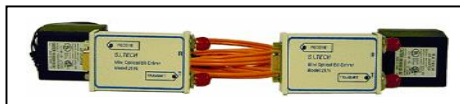
- ❑ 5 Channel RS422 and TTL to Fiber Optic Bit Driver
- ❑ 1U High Case
- ❑ Up to 20 Mbps Data rate
- ❑ Multimode or Single mode
- ❑ Uses Coax Connectors
- ❑ Unit has Isolated Filtered Power Supply and Isolated Grounds

2867*



- ❑ 3 Channel RS422 and TTL Switchable Input to Fiber Optic Bit Driver with Continuous RS-422 and TTL Outputs
- ❑ 1U High Case
- ❑ Up to 20 Mbps Data rate
- ❑ Multimode or Single mode
- ❑ Uses BNC and Terminal Blocks
- ❑ Used in Military System

Kit #9*



- ❑ POS Kit: 2 – 2176 Bit Driver (RS422), 2 – 2121 Power Supplies, 1 – 5202-010-8255 (10m) FO Cable Assembly, ST/ST. 1 – 7176 Cable Assembly, 1 – 7177 Cable Assembly
- ❑ Designed for Micros System Provides Electrical Isolation to Protect Computer, POS Terminals
- ❑ Long Distances are Possible

TABLE E RS-422 TO FIBER MULTIPLEXERS

| Model No. | Package | | Data Format | | | Power Option* | Data Connector** | Number of Channels | Point to Point | Distance *** Km | | | | Weight LB/KG | Multimode (820 nm)/ Singlmode (1300 nm) | Trunk**** Fiber Connector | Remarks |
|-----------|-------------|------------|---------------------|-------|------|---------------|------------------|--------------------|----------------|-----------------|---|---|-------|--------------|---|---------------------------|---------|
| | Stand Alone | Rack Mount | Max. Data Rate Kbps | Async | Sync | | | | | Control Signals | 2 | 5 | 10 | | | | |
| 2424 | ✓ | | 256 | ✓ | | 1,2 | DB37 F | 4 | ✓ | ✓ | ✓ | | 3/1.4 | MM/SM | ST/SMA | uses 1 to 4 cable 7024 | |
| 2428 | ✓ | | 76.8 | ✓ | | 1,2 | DB37 F | 8 | ✓ | ✓ | ✓ | | 3/1.4 | MM/SM | ST/SMA | uses 1 to 8 cable 7028 | |

* Power Options: See "Power Options and How to Order" sheet (p. 106) for options and ordering instructions.

** Pin outs are specified on data sheets

*** Distance: 2 km - STD, 5 km - L, 10 km - XL, 20 km - UL.

**** Other connector options for singlemode is FC.

Temperature range 0 - 50 degrees C unless shown otherwise.

HOW TO ORDER

| Base Model Number XXXX | Power* 110V - STD 230VAC - V | Data Connector** M or F (F is STD on most models.) | Distance*** 2 Km - STD Other - Specify L, XL, or UL | Fiber and Connector | | Temperature 0 - 50° C - STD Other - Call S.I. Tech |
|--|------------------------------------|--|---|---|---|--|
| | | | | Multimode (MM) - STD Other - Specify | Singlmode (SM)-Specify ST - STD Other - Specify | |
| e.g. 2424 = RS422 Async, 4 CH Fiber Multiplexer, 110VAC, DB37 F, 2Km, Multimode ST, 0-50 C | | | | | | |

Specifications subject to change without notice.

RS-422 TO FIBER MULTIPLEXERS

2424



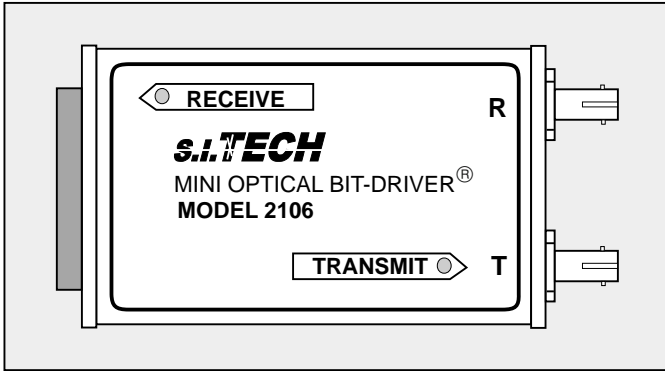
- ❑ Four Channel Asynchronous Simplex or Full Duplex Time Division Multiplexer Optical Bit-Driver®
- ❑ Max Data Rate is 256 Kbps on each channel
- ❑ Powered through 110 VAC line cord
- ❑ 230 VAC version available as S.I. Tech Model 2424V
- ❑ Each unit requires 4-to-1 RS-422 cable S.I. Tech #7024

2428



- ❑ Eight Channel Asynchronous Simplex or Full Duplex Time Division Multiplexer Optical Bit-Driver®
- ❑ Max Data Rate is 76.8 Kbps on each channel
- ❑ Powered through 110 VAC line cord
- ❑ 230 VAC version available as S.I. Tech Model 2428V
- ❑ Each unit requires 8-to-1 RS-422 cable S.I. Tech #7028

Optical Asynchronous Mini Bit-Driver® Point to Point



Features:

- 50 to 115.2 Kbps asynchronous, simplex or full duplex operation
- 6600 ft (2 Km) distance capability
- 0 °C to 50 °C operating range
- ST connector receptacles (SMA option)
- RS-422 or 4 Wire RS-485
- Can be used with T-Network

**RS - 422 PINS UTILIZED BY 2106 MINI BIT - DRIVER®
9 PIN CONNECTOR - FEMALE (MALE OPTION)**

| Pin No. | Description | Symbol |
|---------|-------------------|--------|
| 1 | Ground | |
| 3 | Transmit Data (+) | T + |
| 4 | Receive Data (+) | R + |
| 5 | Ground | |
| 6 | Receive Data (-) | R - |
| 9 | Transmit Data (-) | T - |

Operation Mode: Asynchronous, simplex or full duplex

Input/Output Interface: RS-422, 9 pin type D, (4 Wire RS-485)
Asynchronous at 50 to 115.2 Kbps, connects directly to terminal (RS-422 cable not required)

Transmission Line Interface: ST connector is standard for interfacing with fiber optic duplex cable (SMA option)

Transmission Distance: 6600 Ft (2 Km).

Optical Power into a 50 Micron

Core Optical Fiber: 0.5 microwatt, 10 dB power budget* @ 880 nanometers

Receiver Sensitivity: 50 nanowatts at less than 10⁻⁹ bit error rate

Operating Temperature: 0 °C to 50 °C

Metal Enclosure: 1.75 x 3 x 0.625 in (4.5 x 7.5 x 1.6 cm)
Panel or DIN rail mounting option

Weight: 0.25 lb (100 grams)

Input Power: External with power supply (S.I. Tech #2121 - 110 VAC to 12 VDC)

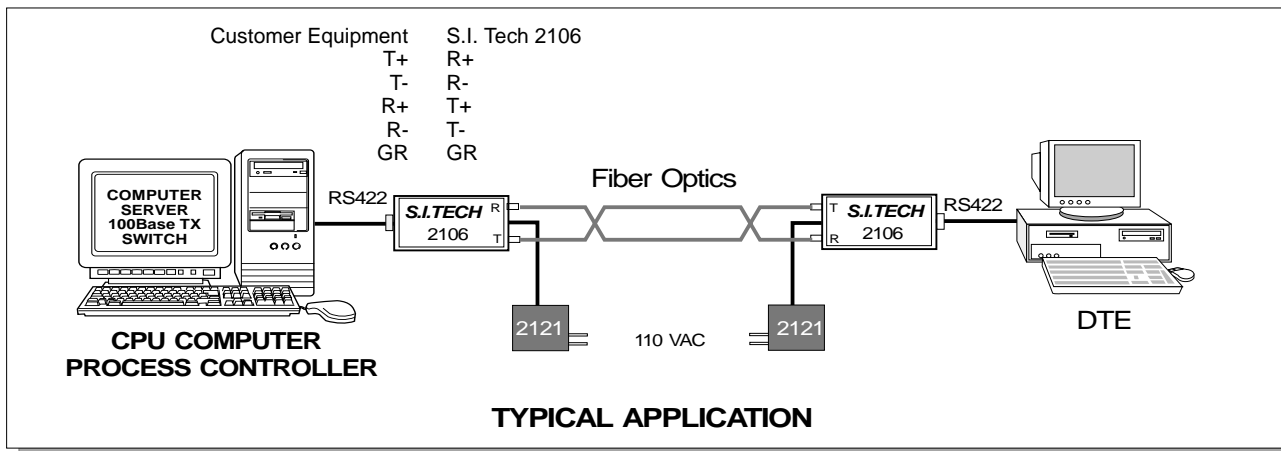
230V Version: Use S.I.Tech #2122 power supply

OPERATING DISTANCE FOR FIBER OPTIC CABLE

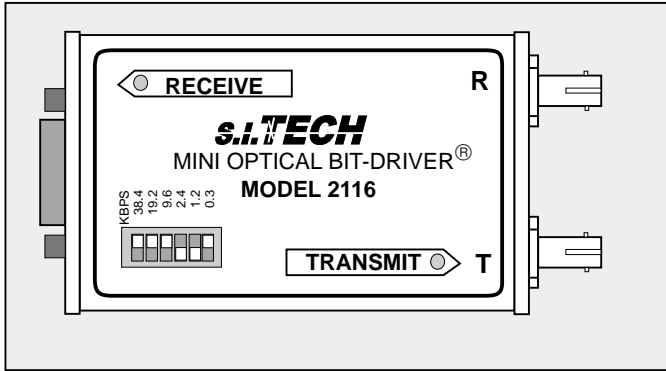
| Fiber Size (Microns) | Attenuation dB/Km | Distance Meters* | Distance Feet* |
|----------------------|-------------------|------------------|----------------|
| 1000 | 200 | 100 | 330 |
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 100 | 5.0 | 2000 | 6600 |

* High power option available
1000 Micron is plastic fiber, 660nm, SMA connectors

*Meets FCC Requirements of Class A, Part 15 Computing Devices Standard.
Specifications subject to change without notice.*



Optical Synchronous Mini Bit-Driver[®] Point to Point



Features:

- 0 to 38.4 Kbps synchronous, simplex or full duplex operation
- 6600 ft. (2Km) distance capability
- 0 °C to + 50 °C operating range
- ST connector receptacle (SMA option)
- Designed to work with C, X, and L BUS system
- Switch is provided to set system speed

Operation Mode: Synchronous, simplex or full duplex

Input/Output Interface: RS-422, 9 pin type D, asynchronous at 0 to 38.4 Kbps, connect directly to terminal (RS 422 cable not required)

Transmission Line Interface: ST connector is standard for interfacing with fiber optic cable (SMA option)

Optical Power into a 50 Micron

Core Optical Fiber: 0.5 microwatt, 10 dB power budget* @ 880 nanometers

Receiver Sensitivity: 50 nanowatts at less than 10⁻⁹ bit error rate

Bit Error rate: 10⁻⁹ bit error rate

Operating Temperature: 0 °C to 50 °C

Metal Enclosure: 1.75 x 3 x 0.625 in (4.5 x 7.5 x 1.6 cm) Panel or DIN rail mounting option

Weight: 0.25 lb (100 grams)

Input Power: External with power supply (S.I. Tech #2121 - (110VAC to 12 Volt DC)

230V Version: Use S.I.Tech #2122 power supply

RS - 422 PINS UTILIZED BY 2116 MINI BIT - DRIVER[®] 9 PIN CONNECTOR - MALE (Female Option)

| Pin No. | Description | Symbol |
|---------|-------------------|-------------------------|
| 1 | Signal Ground | SG |
| 3 | Transmit Data (+) | T + (SSD) |
| 4 | Receive Data (+) | R + (SRD) |
| 5 | Protective Ground | Chassis |
| 6 | Receive Data (-) | R - (RC) Receive Common |
| 9 | Transmit Data (-) | T - (SC) Send Common |

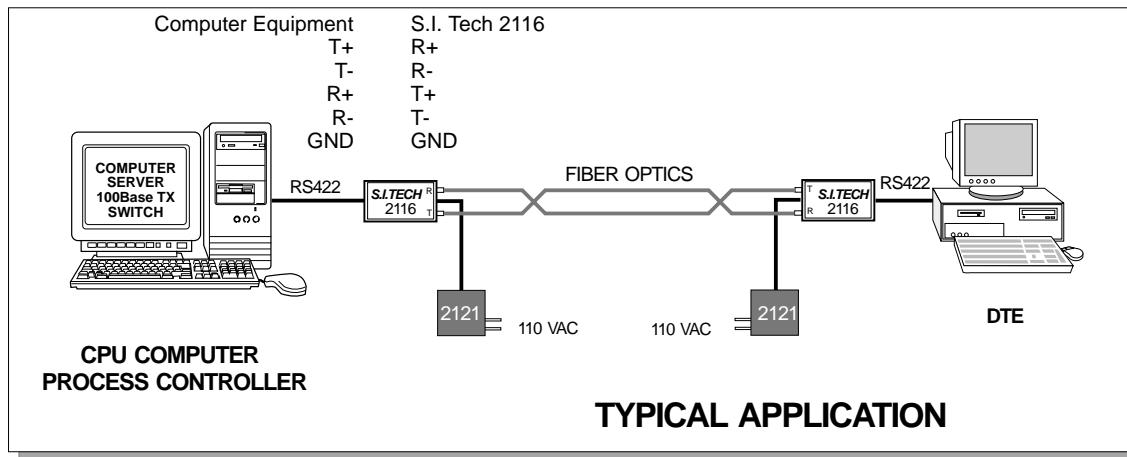
OPERATING DISTANCE FOR FIBER OPTIC CABLE

| Fiber Size (Microns) | Attenuation dB/km | Distance Meters* | Distance Feet* |
|----------------------|-------------------|------------------|----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 100 | 5.0 | 2000 | 6600 |

* High power option available

Meets FCC Requirements of Class A, Part 15 Computing Devices Standard.

Specifications subject to change without notice.

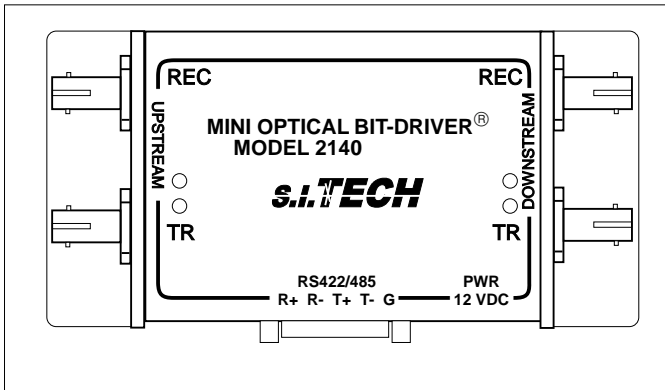


TYPICAL APPLICATION

Model 2140



Optical Mini Bit-Driver®



Features:

- RS-422/485 Multipoint operation with up to 32 nodes
- Various speeds - 110 bps to 230 Kbps, 4 Wire (Speed set at the factory)
- Flange Mounting
- Multimode or single mode options
- Repeater with 4-wire RS-422/485 Add/Drop

Fiber ports repeat data through the 2140 and drop/insert data on the RS-422/485 port. The RS-422/485 port inserts data onto both fiber ports and drops data from both fiber ports.

- Operation Mode:** RS-422/485 Full duplex
- Input/Output Interface:** RS-422/485, 4 wire port operating 110 bps to 230 Kbps (Factory set)
- Transmission Line Interface:** ST connectors are standard for interfacing with fiber optic duplex cable (SMA option)
- Optical Power into a 62.5 Micron Core Optical Fiber:** 30 microwatts, 13 dB power budget @ 850 nanometers (1300 nm option)
- Receiver Sensitivity:** 1 microwatts at less than 10^{-9} bit error rate.
- Operating Temperature:** 0 °C to 50 °C (-40 to +70 °C option for Multimode)
- Metal Enclosure:** 5.5 x 2.3 x 1.0 in (with flange) (13.97 x 5.84 x 2.54 cm) Panel or DIN rail mounting option
- Weight:** 0.4 lbs (182 grams)
- Input Power:** External with power supply (S.I. Tech #2121 - 110 VAC to 12 VDC)
- 230 Volt Version:** Use S.I.Tech 2122 power supply

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

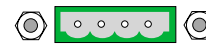
Specifications subject to change without notice.



RS - 422/485 CONNECTOR

| Pin No. | Description |
|---------|-------------|
| 1 | R+ (Input) |
| 2 | R- (Input) |
| 3 | T+ (Output) |
| 4 | T- (Output) |

RS - 422/485 CONNECTOR



Pin 1 2 3 4

OPERATING DISTANCE FOR FIBER OPTIC CABLE

| Fiber Size (Microns) | Attenuation dB/Km | Distance Meters* | Distance Feet* |
|----------------------|-------------------|------------------|----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 10 SM | 1.0 | 10000 | 33000 |

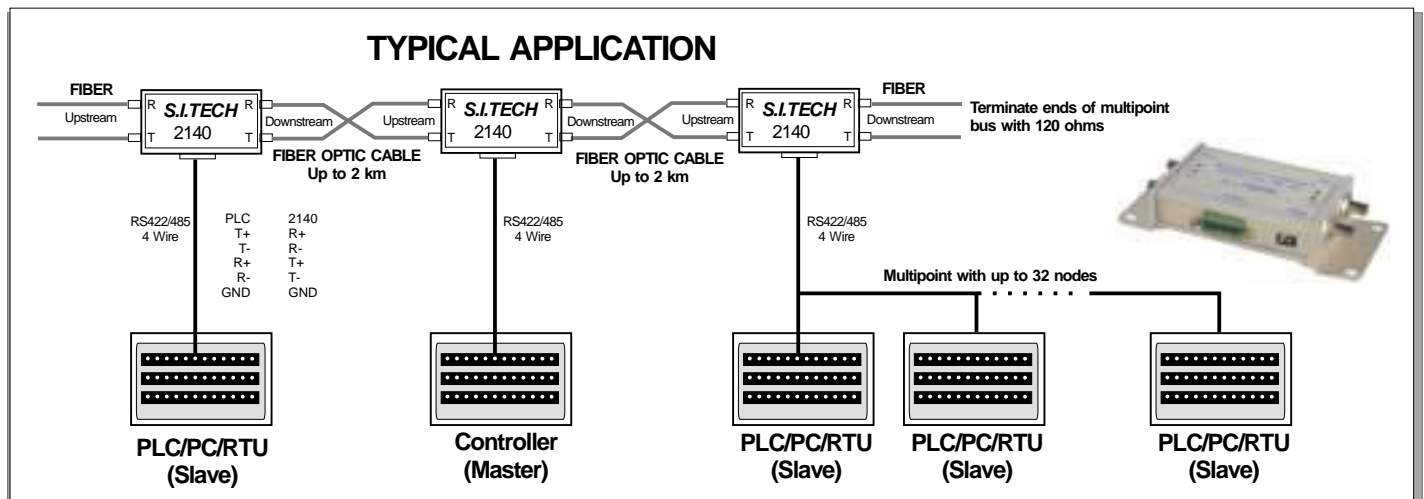
* High power option available

SM - Single Mode (1300nm). Temp: SM -20° to +60° C

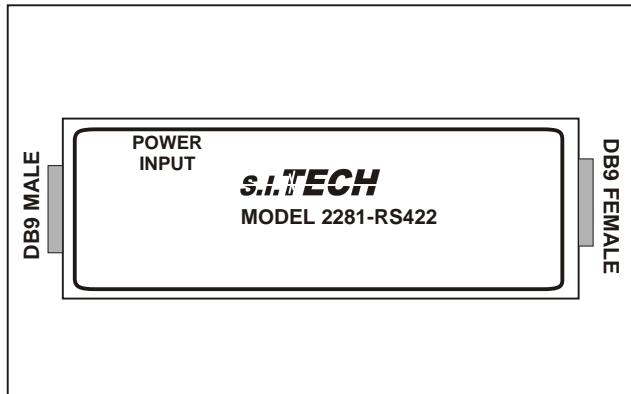
ORDERING INFORMATION

| Model Number | Description |
|--------------|--|
| 2140 | Multimode to Multimode, ST Connectors |
| 2140-MM-B | Multimode to One side blank, ST Connectors |
| 2140-MM-SM | Multimode to Single Mode, ST Connectors |
| 2140-SM-SM | Single Mode to Single Mode, ST Connectors |

TYPICAL APPLICATION



Asynchronous Metallic Isolated Bit-Driver



The S.I.Tech Model 2281 is an optically isolated RS422 to RS422 converter. It combines connector to connector compatibility with outstanding performance characteristics. It supports full duplex transmission between compatible EDP equipment at speeds up to 2.5 Mbps.

RS - 422 DB-9 CONNECTOR PINS UTILIZED BY 2281 BIT DRIVER

| Pin No | Function | Male | Female |
|--------|----------|--------|--------|
| 1 | TD1+ | Input | Output |
| 6 | TD1- | | |
| 2 | TD2+ | Input | Output |
| 7 | TD2- | | |
| 4 | RD1+ | Output | Input |
| 8 | RD1- | | |
| 5 | RD2+ | Output | Input |
| 9 | RD2- | | |
| 3 | GND | | |

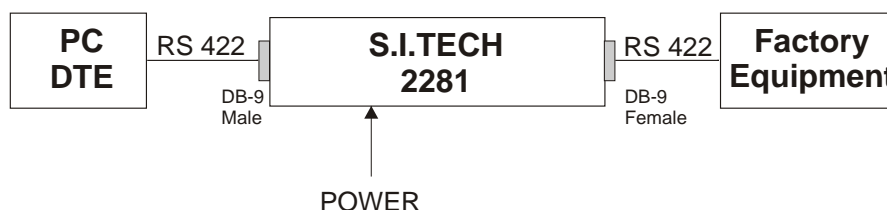
FEATURES and SPECIFICATIONS

- Interface: Two pair bidirectional RS422 4-wire interface
- Connectors: DCE DB9-P (male), DTE DB9-S (female)
- Data Rate: 0 to 2.5 Mbps.
- Cable: Shielded 100 - 200 twisted pairs. Using 24AWG with 52.5PF/m shunt capacitance cable length supported of 1200m at rates less than 90kbps and falling to 20m at rate of 2.5Mbps.
- Isolation: 1000VAC between the DTE port and the DCE and power ports
- Power: 10 to 15VDC or 8 to 13VAC, about 2 watts. (Use S.I.Tech #2121 external power supply)
- Temperature: 0 to 50°C

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.
 Specifications subject to change without notice.



TYPICAL APPLICATION



Optical Asynchronous Ruggedized Mini Bit-Driver



Features:

- Up to 115 Kbps asynchronous operation on fiber optic cable, simplex or full duplex operation
- -40 °C to + 80 °C operating range**
- Metal ST connector receptacle (SMA option)
- LED indicators for power, transmit, and receive data
- Female DB25 connector
- Complies with IEEE C37.90.1
- IEC 801 Surge Protection
- Panel Mounting Brackets, two mounting locations
- Conformal coating
- See distance chart

Operation Mode: Asynchronous, simplex or full duplex

Input/Output Interface: RS-422, DB25F connector

Transmission Line Interface: Metal ST connector is standard for interfacing with fiber optic du plex cable (SMA option, SC and FC option for SM)

Transmission Distance: See Chart

Optical Power into a 62.5 Mic ron

Core Optical Fiber: 30 microwatts, 10 dB power budget @ 820 nanometers (1300 nm Option)

Receiver Sensitivity: 3 microwatts at less than 10⁻⁹ bit error rate

Operating Temperature: -40 °C to +80 °C for Multimode
-20 °C to +60 °C for Single mode

Humidity: 0 to 90% Non Condensing

Metal Enclosure: 7.25 X 2.28 X 1.3 in (18.4 X 5.8 X 3.3 cm)

Weight: 0.9 lb. (400 grams)

Input Power: 85 V to 265 VAC or DC (+24 VDC and -48 VDC Option)

Card Version: S.I.Tech #2361 with Series 3000 Rack

RS - 422 CONNECTOR PINS UTILIZED BY 2561 MINI BIT - DRIVER (FEMALE)

| Pin No. | Description | Symbol |
|---------|-------------------|-------------|
| 1 | Protective Ground | Chassis GND |
| 7 | Signal Ground | Sig. GND |
| 14 | Transmit Data + | T+ } Output |
| 15 | Transmit Data - | T- } |
| 21 | Receive Data + | R+ } Input |
| 22 | Receive Data - | R- } |

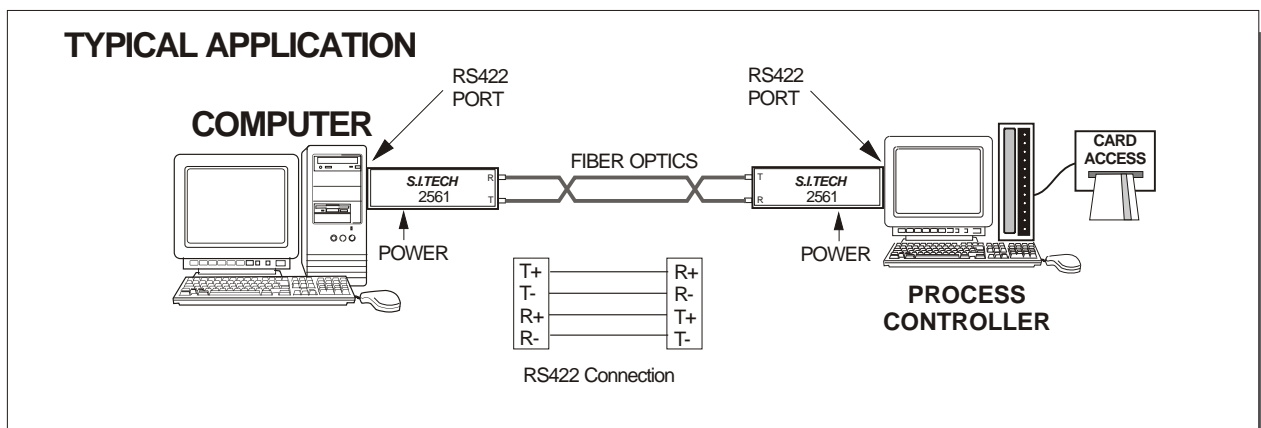
OPERATING DISTANCE FOR FIBER OPTIC CABLE

| Fiber Size (Microns) | Attenuation dB/Km | Distance* Meters | Distance* Feet |
|----------------------|-------------------|------------------|----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 10 SM** | 1.0 | 10000 | 33000 |

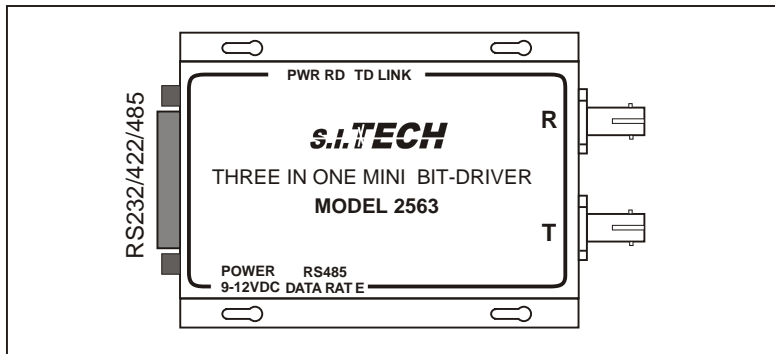
* High power option available. SM - Single mode (1300nm) option
Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.
** SM - Temperature Rating: -20 °C to +60 °C

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

Specifications subject to change without notice.



Optical Asynchronous (Three In One) Mini Bit-Driver



Features:

- Concurrent, fully-independent RS232, RS422, and RS485 communication channel over a one duplex fiber optic cable (data is multiplexed over fiber link)
- Up to 115kbps asynchronous operation
- Full duplex RS232 and RS422
 - Optional tri-state control for bus RS422 systems
- Half duplex RS485
 - Rotary switch sets the RS485 bit rate
- Metal ST connector receptacle (SMA option)
- Female DB25 connector RS232 wired as DCE device
- LED indicators for power, optical link status, transmit and receive data
- Optical link status pin
- Multimode or single mode
- DIN rail mounting option

S.I.Tech 2563 is a unique Bit-Driver allowing simultaneous communication using RS232, RS422, and RS485. Each electrical interface is totally independent and share a combined fiber link. This way equipment with different interfaces can be connected over the same fiber i.e. in a manufacturing plant.

Operation Mode: Asynchronous, simplex or full duplex

Input/Output Interface: Fully independent RS232/RS422/RS485, asynchronous concurrent. DB25 connector

Transmission Line Interface: Metal ST connector is standard for interfacing with fiber optic duplex cable (SMA option, SC and FC option for SM)

Transmission Distance: See Distance Chart

Optical Power into a 62.5 Micron

Core Optical Fiber: 20 microwatts, 10 dB power budget @ 820 nanometers (1300 nm Option)

Receiver Sensitivity: 2 microwatts at less than 10^{-9} bit error rate

Operating Temperature: 0 °C to 50 °C (Extended Temp. Option -20 °C to 70 °C)

Metal Enclosure: 3.6" X 2.3" X 1.2" (9.1 X 5.84 X 3.0 cm) Bracket Optional

Weight: 0.4 lb. (185 grams)

Input Power: 9 to 12VDC, 200mA

OPERATING DISTANCE FOR FIBER OPTIC CABLE

| Fiber Size (Microns) | Attenuation dB/Km | Distance* Meters | Distance* Feet |
|----------------------|-------------------|------------------|----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 10 SM | 1.0 | 5000 | 16000 |

* High power option available. SM - Single Mode option
Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

DB25 Female Connector Pinout

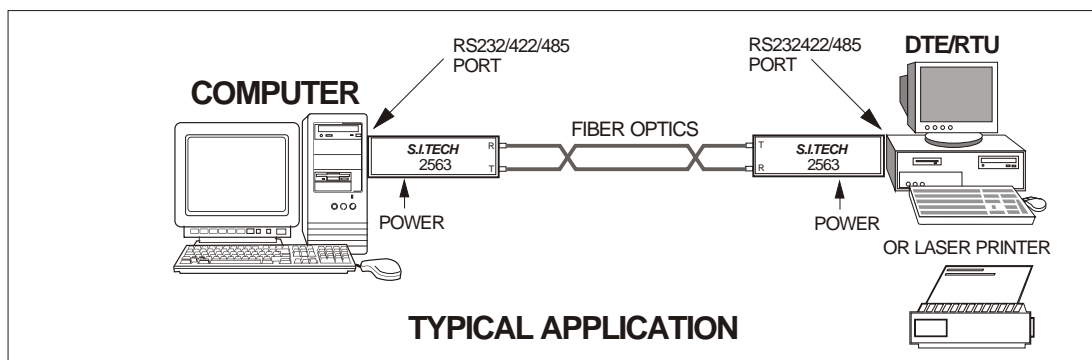
| Pin No. | Description | Direction |
|---------|---------------------|-----------|
| 1 | Chassis GND | |
| 2 | RS232 TXD | Input |
| 3 | RS232 RXD | Output |
| 4 | RTS | |
| 5 | CTS | |
| 6 | DSR | |
| 7 | Signal GND | |
| 8 | Link Optical Detect | Output |
| 10 | RS485 D+ | Bidir |
| 11 | Signal GND | |
| 12 | RS422 TX+ | Input |
| 13 | RS422 RX+ | Output |
| 20 | DTR | |
| 22 | RS485 D- | Bidir |
| 23 | Chassis GND | |
| 24 | RS422 TX- | Input |
| 25 | RS422 RX- | Output |

4-5 connected together

6-20 connected together

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

Specifications subject to change without notice.



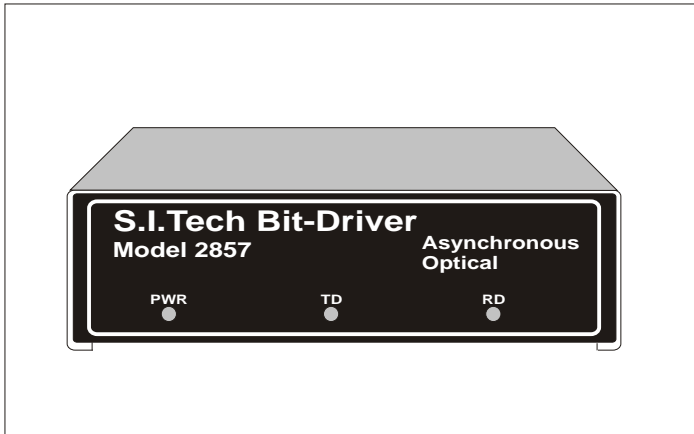
RS485 Data Rate

| | |
|---|------------|
| 0 | 1200 bps |
| 1 | 2400 bps |
| 2 | 4800 bps |
| 3 | 9600 bps |
| 4 | 19.2 Kbps |
| 5 | 38.4 Kbps |
| 6 | 76.8 Kbps |
| 7 | 115.2 Kbps |

Model 2857



RS-422 to Fiber Optic Bit-Driver



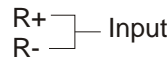
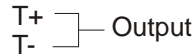
The S.I.Tech Model 2857 is designed for high speed RS-422 data communication using fiber. This system uses 4 wire RS-422.

Status Indicators:

PWR: Power On

TD: Optical Transmitter On

RD: Optical Port Receiving Data



- Operation Mode:** Asynchronous, simplex or full duplex, 20 Mbps
- Input/Output Interface:** RS-422, 4 wire terminal block
- Transmission Line Interface:** 2 ST fiber optic receptacles (SMA option)
- Transmission Distance:** See distance chart
- Transmitter Output Power:** 30 microwatts into 50 micron fiber
- System Wavelength:** 820 nanometers (1300 nm option)
- Minimum Sensitivity:** 3 microwatts @ 820 nanometers at less than 10^{-9} bit error rate
- Operating Temperature:** 0 °C to 50 °C
- Input Power:** 110 VAC 60 Hz
- Metal Enclosure:** 7.5" x 7" x 3" (19 x 17.8 x 7.6 cm)
- 1U 19" Rack:** 17"W x 1.75"H x 7.5"D (43.2 x 4.3 x 19.0 cm)
- Weight:** 3 lbs. (1.36 kg)
- 230 Volt Version:** 2857V

Operating Distance for Fiber Optic Cable

| Fiber Size (Microns) | Attenuation (dB/Km) | | | Distance (Meters) | | | Distance (Feet) | | |
|----------------------|---------------------|------|------|-------------------|-------|-------|-----------------|-------|-------|
| | Wavelength (nm) | | | Wavelength (nm) | | | Wavelength (nm) | | |
| | 850 | 1300 | 1550 | 850 | 1300 | 1550 | 850 | 1300 | 1550 |
| 50 | 3.0 | 1.0 | - | 2000 | 6000 | - | 6600 | 20000 | - |
| 62.5 | 4.0 | 1.0 | - | 2000 | 6000 | - | 6600 | 20000 | - |
| 10 SM* | - | 0.35 | 0.25 | - | 10000 | 12000 | - | 33000 | 40000 |

* Single mode (1300nm) option

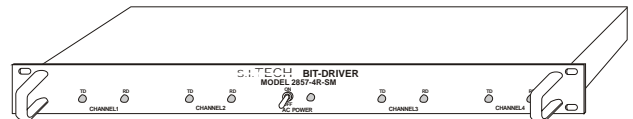
Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Meets FCC Requirements of Class A, Part 15 Computing Device Standard. UL listed.
Specifications subject to change without notice.

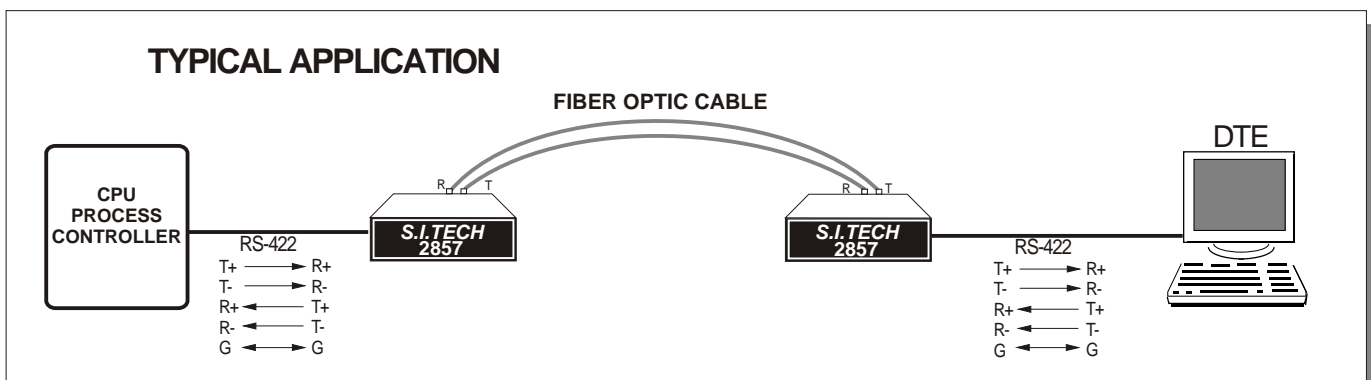
Related Products

Model Numbers

- 2857 RS422 to Fiber, Multimode, 110VAC, ST
- 2857-V RS422 to Fiber, Multimode, 230VAC, ST
- 2857-SM RS422 to Fiber, Single Mode, 110VAC, ST
- 2857-2R RS422 to Fiber, 2 Ch Rack Mounted, 110VAC, ST
- 2857-4R RS422 to Fiber, 4 Ch Rack Mounted, 110VAC, ST
- 2857-4R-SM RS422 to Fiber, 4 Ch Rck Mnt, Single mode, 110VAC, ST



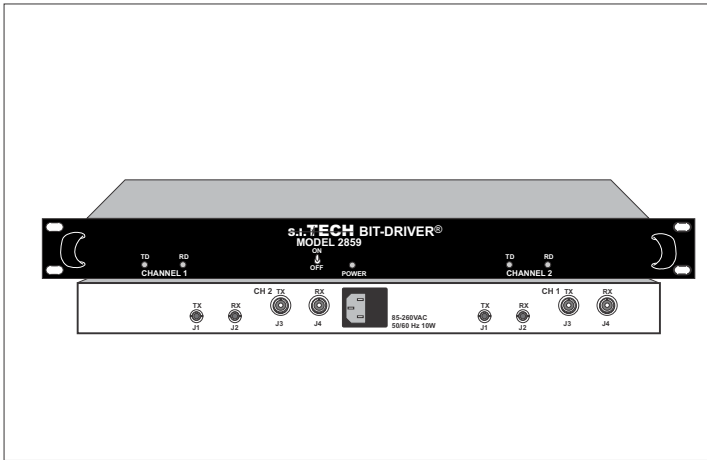
TYPICAL APPLICATION



Model 2859



RS-422 to Fiber Optic Bit-Driver[®]



The S.I.Tech Model 2859 is designed for high speed RS-422 data communication using fiber. This system uses triax connectors for interfacing to high speed network. The model 2859 provides 2 independent channels for data, clock, etc.



T+ — Input (J3)
T- —

R+ — Output (J4)
R- —

- Operation Mode:** Asynchronous, simplex or full duplex, 20 Mbps
- Input/Output Interface:** RS-422, 2 channel system, 4 Triax connectors
- Transmission Line Interface:** 4 ST connector fiber optic receptacles (SMA option)
- Transmission Distance:** 2 Km - 6600 ft. (5 Km option)
- Transmitter Output Power:** 30 microwatts into 50 micron fiber
- System Wavelength:** 820 nanometers (1300 nm option)
- Minimum Sensitivity:** 3 microwatts @ 820 nanometers at less than 10^{-9} bit error rate
- Operating Temperature:** 0 °C to +50 °C
- Storage Temperature:** -40 °C to +80 °C
- Humidity Non-Condensing:** 0 to 95% (Storage & Operational)
- Input Power:** 85 to 260VAC 50/60Hz 10W
- Metal Enclosure:** 1U 19" rack
17"W X 1.75"H X 7.5"D
(43.2 X 4.3 X 19.0 CM)
- Weight:** 5 lbs. (2.3 kg)

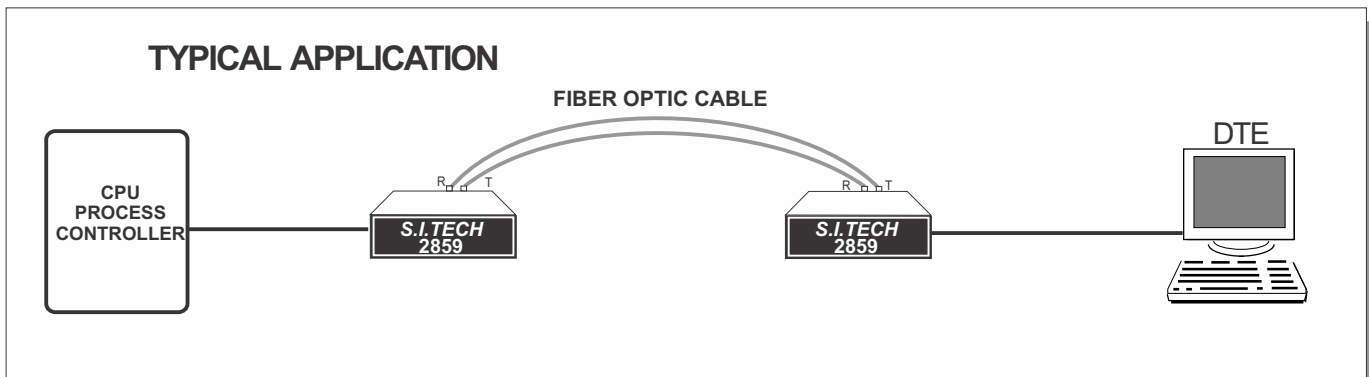
Operating Distance for Fiber Optic Cable

| Fiber Size (Microns) | Attenuation dB/Km | Distance Meters | Distance Feet |
|----------------------|-------------------|-----------------|---------------|
| 62.5 | 4.0 | 2000 | 6600 |
| 50 | 3.0 | 2000 | 6600 |
| 10SM** | 1.0 | 10000 | 33000 |

** Single mode (1300nm) option (SC, ST, or FC)

Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

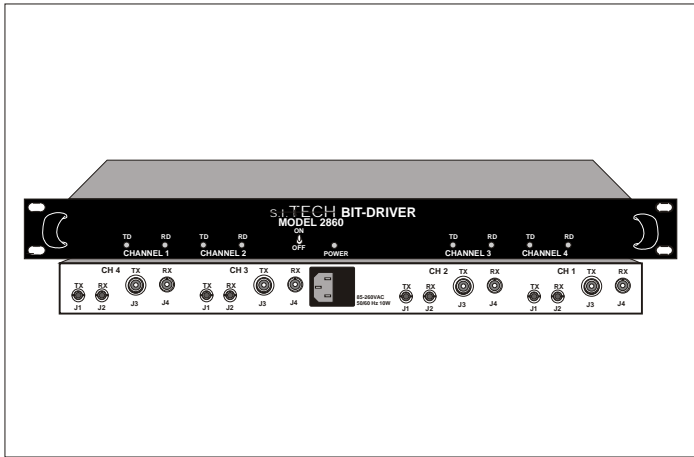
Meets FCC Requirements of Class A, Part 15 Computing Device Standard. UL listed.
Specifications subject to change without notice.



Model 2860

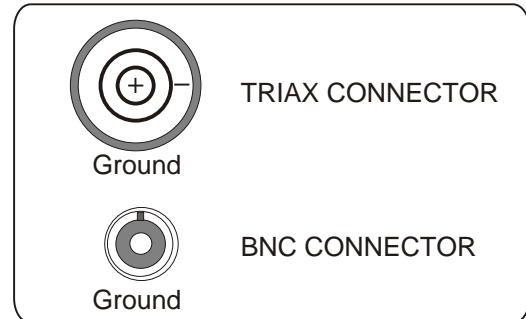


RS-422 and TTL to Fiber Optic Bit-Driver



The S.I.Tech Model 2860 is designed for high speed RS-422 and TTL data communication using fiber. This system uses TRIAX and BNC connectors for interfacing to high speed network. The model 2860 provides 4 independent channels for data, clock, etc.

- Ruggedized for Field Application (Option)
- Conformal Coated (Option)



Operation Mode: Asynchronous, simplex or full duplex, 20 Mbps

Input/Output Interface: RS-422/TTL, 4 channel system, 4 Triax & 4 BNC connectors

Transmission Line Interface: 8 ST connector fiber optic receptacles (SMA option)

Transmission Distance: 2 Km - 6600 ft. (5 Km option)

Transmitter Output Power: 30 microwatts into 50 micron fiber

System Wavelength: 820 nanometers (1300 nm option)

Minimum Sensitivity: 3 microwatts @ 820 nanometers at less than 10^{-9} bit error rate

Operating Temperature: 0 °C to 50 °C (-20 to +60°C for SM)

Input Power: 110 VAC 60 Hz (18 to 36VDC Option)

Metal Enclosure: 1U 19" rack
17"W X 1.75"H X 7.5"D
(43.2 X 4.3 X 19.0 CM)

Weight: 5 lbs. (2.3 kg)

230 Volt Version: 2860V

Operating Distance for Fiber Optic Cable

| Fiber Size (Microns) | Attenuation dB/Km | Distance Meters | Distance Feet |
|----------------------|-------------------|-----------------|---------------|
| 62.5 | 4.0 | 2000 | 6600 |
| 50 | 3.0 | 2000 | 6600 |
| 10SM* | 1.0 | 10000 | 33000 |

* Single mode (1300nm) option (SC, ST, or FC)

Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Note:

2860-4R-SM: 4 CH, Single Mode

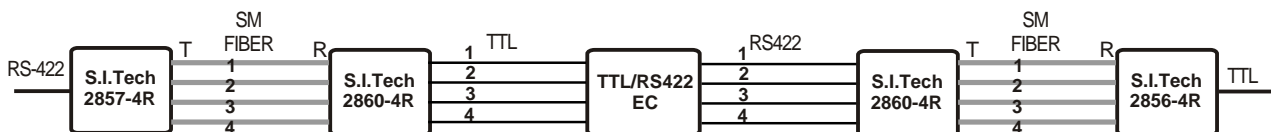
J3: RS422 Input

J4: TTL Output

Meets FCC Requirements of Class A, Part 15 Computing Device Standard. UL listed.

Specifications subject to change without notice.

TYPICAL APPLICATION



Model 2861

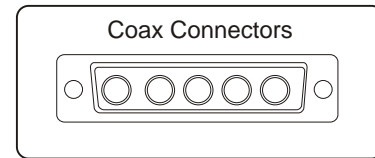


RS-422 and TTL to Fiber Optic Bit-Driver



The S.I.Tech Model 2861 is designed for high speed RS-422 and TTL data communication using fiber. This system uses special 5 coax connectors for interfacing to high speed network. Model 2861 provides 5 independent channels for data, clock, etc.

- Ruggedized for Field Application (Option)
- Conformal Coated (Option)
- Unit has Isolated Filtered Power Supply and Isolated Grounds



Operation Mode: Asynchronous, simplex or full duplex, 20 Mbps

Input/Output Interface: RS-422/TTL, 5 channel system, 5 special coax connectors

Transmission Line Interface: 10 ST connector fiber optic receptacles (SMA option)

Transmission Distance: 2 Km - 6600 ft. (5 Km option)

Transmitter Output Power: 30 microwatts into 50 micron fiber

System Wavelength: 820 nanometers (1300 nm option)

Minimum Sensitivity: 3 microwatts @ 820 nanometers at less than 10^{-9} bit error rate

Operating Temperature: 0 °C to 50 °C (-20 to +60°C for SM)

Input Power: 110 VAC 60 Hz (18 to 36VDC Option)

Metal Enclosure: 1U 19" rack
17"W X 1.75"H X 7.5"D
(43.2 X 4.3 X 19.0 CM)

Weight: 5 lbs. (2.3 kg)

230 Volt Version: 2861V

Operating Distance for Fiber Optic Cable

| Fiber Size (Microns) | Attenuation dB/Km | Distance Meters | Distance Feet |
|----------------------|-------------------|-----------------|---------------|
| 62.5 | 4.0 | 2000 | 6600 |
| 50 | 3.0 | 2000 | 6600 |
| 10SM* | 1.0 | 10000 | 33000 |

* Single mode (1300nm) option (SC, ST, or FC)

Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Note:

2861-5R-SM: 5 CH, Single Mode

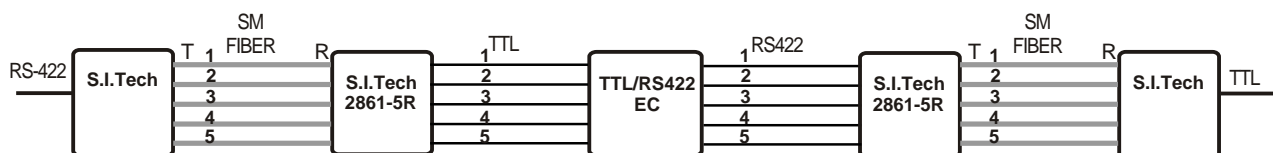
J3: RS422 Input

J4: TTL Output

Meets FCC Requirements of Class A, Part 15 Computing Device Standard. UL listed.

Specifications subject to change without notice.

TYPICAL APPLICATION



Fiber Optic Transmitter/Receiver Pair



TRANSMISSION LINE INTERFACE

Operating distance is dependent upon optical fiber core diameter and the cable's optical attenuation. The table below indicates three cables that may be used at any data rate. These cables are available in connectorized assemblies to meet the exact configuration of your application.

S.I.Tech offers complete links including fiber optic cable, connectors, cable assemblies, and Bit-Drivers®.

Note: 2866-5-CC option is RS422 T/R multimode, 5VDC power, conformal coated and 2866-SM-5-CC option is the single mode version.

SYSTEM

Transmission: Up to 6500 ft. (2 Km) with suitable graded index fiber optic cable

Typical Bit Error Rate: Better than 10^{-9}

ELECTRICAL SIGNAL INPUT/OUTPUT FOR TRANSMITTER AND RECEIVER

Format: RS422

Duty Cycle: 0 to 100%

Minimum Pulse Width: 50 nanoseconds

Data Rate: 2400 bps to 20 Mbps

Input Impedance: Selectable 120 Ω or Hi impedance

Output Impedance: Standard RS422

OPTICAL TRANSMITTER

Transmitter Output: 20 microwatts (-20 dBm) into 50 micron fiber

Wavelength: 820 nanometers (1300 nm option)

Emitter Type: LED (lensed)

Optical Connector: ST or SMA compatible metal receptacle

OPTICAL RECEIVER

Wavelength: 820 to 900 nanometers (1300 nm option)

Minimum Sensitivity: (BER $\leq 10^{-9}$) 2 microwatts (-30 dBm) @ 820 nanometers

Maximum Sensitivity: 20 microwatts

Optical Connector: ST or SMA compatible metal receptacle

Operating Temperature: 0 °C to 85 °C

PCB Size: 3.0 x 3.0 in. (7.6 x 7.6 cm)

Weight: 0.12 lbs (60 grams)

Stand Alone Version: 2857

Option: Conformal Coat (JH75004)

Relative Humidity: 100%

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

Specifications subject to change without notice.

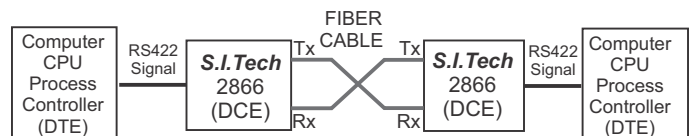
OPERATING DISTANCE FOR FIBER OPTIC CABLE

| Fiber Size (Microns) | Attenuation dB/Km | Distance Meters | Distance Feet |
|----------------------|-------------------|-----------------|---------------|
| 100 | 5.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 50 | 3.0 | 2000 | 6600 |
| 10 SM* | 1.0 | 7000 | 23000 |

* Single mode, 1300 nm option

Optical unit connection: Connect the optical transmission line to the Tx and Rx receptacles. Note which cable channel goes to Tx or Rx by noting cable imprint. On the other end, reverse the connection.

TYPICAL APPLICATION



DTE: Data Terminal Equipment
DCE: Data Communication Equipment

Pin Assignment - Transmitter/Receiver Board

| Connector | Pin No. (Left to Right) | Description |
|-----------|-------------------------|----------------|
| 5-Pin* | 5 | RS-422 Input- |
| | 4 | RS-422 Input+ |
| | 3 | Ground |
| | 2 | RS-422 Output- |
| | 1 | RS-422 Output+ |
| 3-Pin** | 3 | Ground |
| | 2 | No Connect |
| | 1 | Power Input |

* ITW PANCON CE56 F20-5-C or Equivalent

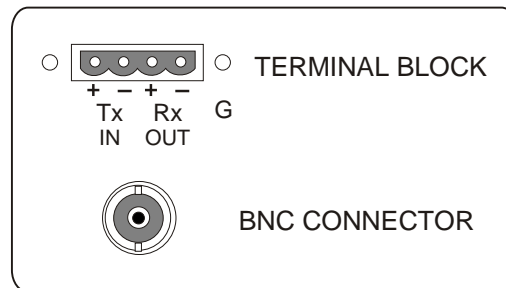
** ITW PANCON CE156 F20-3-C or Equivalent

Power Input: Optional +5VDC or +12VDC operation at 200mA maximum.

RS-422 and TTL to Fiber Optic Bit-Driver



The S.I.Tech Model 2867 is designed for high speed RS-422 and TTL data communication using fiber. This system uses Terminal block and BNC connectors for interfacing to high speed network. The model 2867 provides 3 independent channels for data, clock, etc.



- Operation Mode:** Asynchronous, simplex or full duplex, 20 Mbps
- Input/Output Interface:** RS-422/TTL, 3 channel system, 3 terminal blocks & 6 BNC connectors
- Transmission Line Interface:** 6 ST connector fiber optic receptacles (FC Option-SM)
- Transmission Distance:** See table
- Transmitter Output Power:** 30 microwatts into 50 micron fiber
- System Wavelength:** 820 nanometers (1300 nm option)
- Minimum Sensitivity:** 3 microwatts @ 820 nanometers at less than 10^{-9} bit error rate
- Operating Temperature:** 0 °C to 50 °C
- Input Power:** 85-260VAC, 50/60Hz, 10W
- Metal Enclosure:** 1U 19" rack
17"W X 1.75"H X 7.5"D
(43.2 X 4.3 X 19.0 CM)
- Weight:** 5 lbs. (2.3 kg)

Operating Distance for Fiber Optic Cable

| Fiber Size (Microns) | Attenuation dB/Km (1300nm) | Distance Meters | Distance Feet |
|----------------------|----------------------------|-----------------|---------------|
| 62.5 | 1.0 | 5000 | 16000 |
| 50 | 1.0 | 5000 | 16000 |
| 10SM* | 0.35 | 20000 | 65000 |

* Single mode (1300nm)

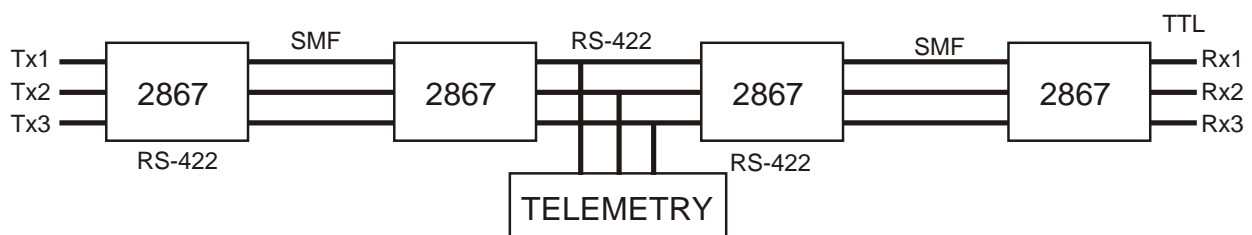
Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Note:

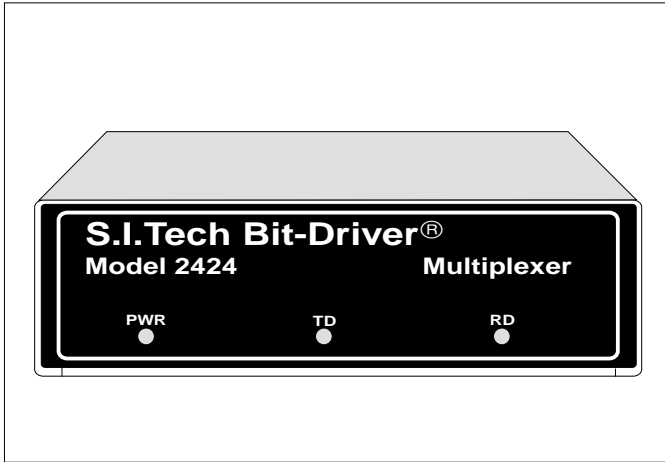
2867-3R-SM: 3 CH, Single Mode
2867 has built in switches for switching channel between TTL and RS-422 inputs.

*Meets FCC Requirements of Class A, Part 15 Computing Device Standard. UL listed. RoHS compliance.
Specifications subject to change without notice.*

TYPICAL APPLICATION



Asynchronous Time Division Multiplexer



Model 2424/2454 is a 4 channel communication system providing 4 Bit-Driver links using one optical cable interface.

The 2424 provides 4 full duplex RS422 channels for any data rate on any channel(s) up to 76.8 Kbps.

The 2454 provides 4 half duplex RS485 channels. The data rate must be set at the factory for data rate up to 76.8 Kbps.

PIN ASSIGNMENT FOR THE DB37 CONNECTOR

| FUNCTION RS422 | CHANNEL NUMBER | | | |
|-------------------|-----------------|----|----|----|
| | 1 | 2 | 3 | 4 |
| TX+ | 37 | 35 | 33 | 31 |
| TX- | 19 | 17 | 15 | 13 |
| RX+ | 36 | 34 | 32 | 30 |
| RX- | 18 | 16 | 14 | 12 |
| Signal Ground | 1, 2, 3, 20, 21 | | | |

| FUNCTION RS485 | CHANNEL NUMBER | | | |
|-------------------|-----------------|----|----|----|
| | 1 | 2 | 3 | 4 |
| Data+ | 37 | 35 | 33 | 31 |
| Data- | 19 | 17 | 15 | 13 |
| Signal Ground | 1, 2, 3, 20, 21 | | | |

Note: Order 4-to-1 RS422/RS485 Cable #7024 or 7054

- Operation Mode:** Asynchronous, RS422 simplex or full duplex. RS485 half duplex.
- Input/Output Interface:** RS422/RS485 up to 76.8 Kbps
- Input/Output Connector:** 37 pin female (DB37)
- Phase Distortion:** Less than 10%
- Optical Connector:** ST standard (SMA option)
- Transmission Distance:** 6600 ft. (2 Km, 5 Km option)
- Optical Power into a 62.5/125 micron Fiber:** 10 μ W (50 μ W option)
- Receiver Sensitivity:** 0.5 Microwatt @ 10^{-9} BER
- System Wavelength:** 850 nm (1300 nm option)
- Bit Error Rate:** 10^{-9}
- Operating Temperature:** 0 $^{\circ}$ C to 50 $^{\circ}$ C
- Metal Enclosure:** 7.5" X 7" X 3" (19 X 17.8 X 7.6 cm)
- Weight:** 3 lbs.(1.36 kg)/Rack 6 lbs.(2.72kg)
- Input Power:** 105 to 130 VAC 60 Hz
- 230 Volt Version:** 2424V/2454V

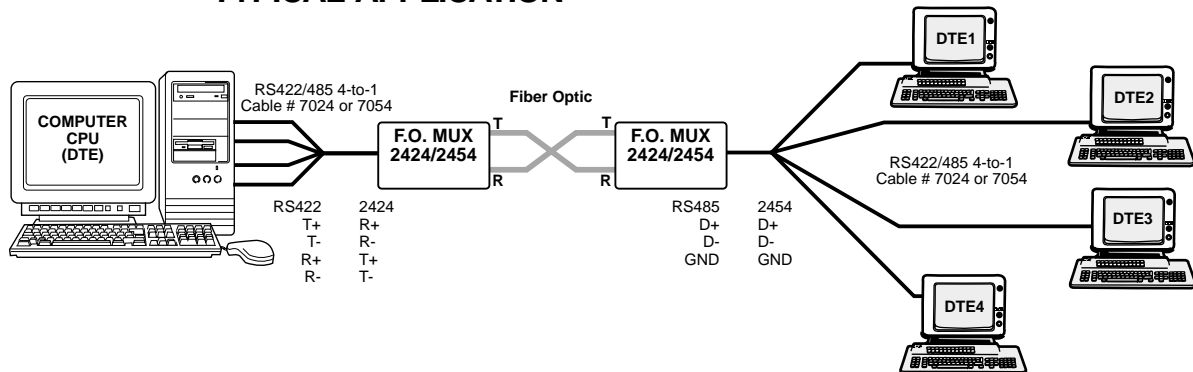
Operating Distance for Fiber Optic Cable

| Fiber Size (Microns) | Attenuation dB/Km | Distance (Meters) | Distance (Feet) |
|----------------------|-------------------|-------------------|-----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 100 | 5.0 | 2000 | 6600 |
| 10 SM* | 1.0 | 7000 | 23000 |

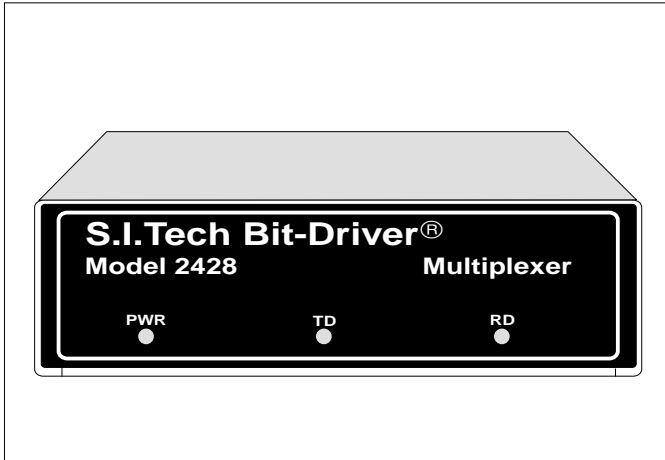
* Single mode (1300nm) option
(High power option available for longer distance)

UL & CSA listed. Meets FCC requirements of Class A, Part 15 Computing Devices Standard.
Specifications subject to change without notice.

TYPICAL APPLICATION



Asynchronous Time Division Multiplexer



Model 2428/2458 is an 8 channel communication system providing 8 Bit-Driver links using one optical cable interface.

The 2428 provides 8 full duplex RS422 channels for any data rate on any channel(s) up to 76.8 Kbps.

The 2458 provides 8 half duplex RS485 channels. The data rate must be set at the factory for data rate up to 76.8 Kbps.

PIN ASSIGNMENT FOR THE DB37 CONNECTOR

| FUNCTION RS422 | CHANNEL NUMBER | | | | | | | |
|-------------------|-----------------|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| TX+ | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| TX- | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 5 |
| RX+ | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| RX- | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 |
| Signal Ground | 1, 2, 3, 20, 21 | | | | | | | |

| FUNCTION RS485 | CHANNEL NUMBER | | | | | | | |
|-------------------|-----------------|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Data+ | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| Data- | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 5 |
| Signal Ground | 1, 2, 3, 20, 21 | | | | | | | |

Note: Order 8-to-1 RS422/RS485 Cable #7028 or 7058

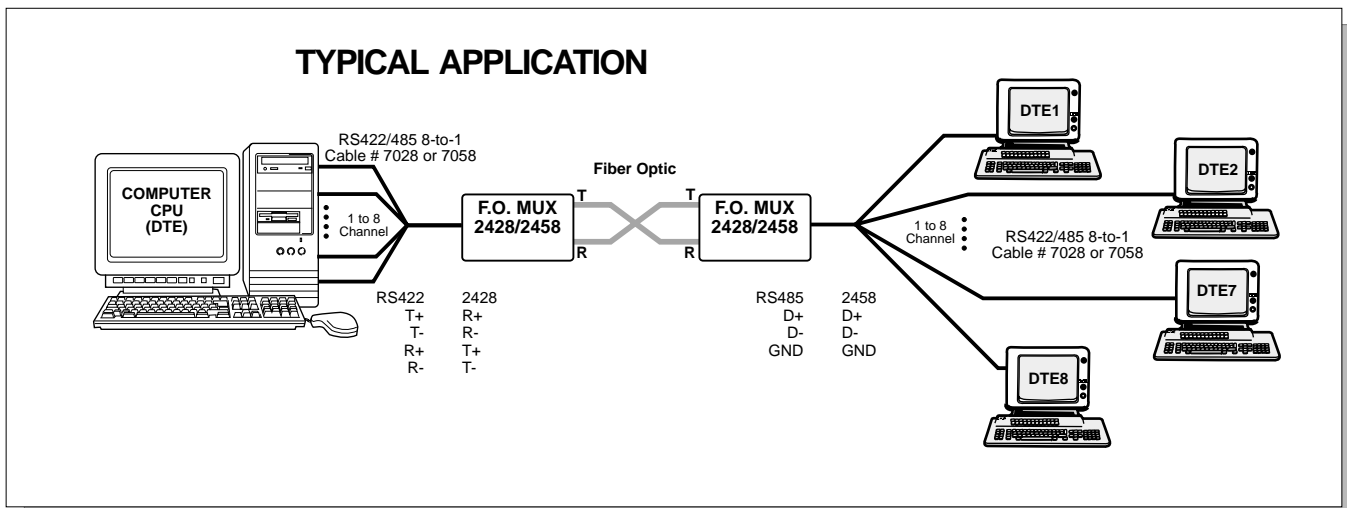
- Operation Mode:** Asynchronous, RS422 simplex or full duplex. RS485 half duplex.
- Input/Output Interface:** RS422/RS485 up to 76.8 Kbps
- Input/Output Connector:** 37 pin female (DB37)
- Phase Distortion:** Less than 10%
- Optical Connector:** ST standard (SMA option)
- Transmission Distance:** 6600 ft. (2 Km, 5 Km option)
- Optical Power into a 62.5/125 micron Fiber:** 10 μ W (50 μ W option)
- Receiver Sensitivity:** 0.5 Microwatt @ 10⁻⁹ BER
- System Wavelength:** 850 nm, (1300 nm option)
- Bit Error Rate:** 10⁻⁹
- Operating Temperature:** 0 °C to 50 °C
- Metal Enclosure:** 7.5" X 7" X 3" (19 X 17.8 X 7.6 cm)
- Weight:** 3 lbs.(1.36 kg)/Rack 6 lbs.(2.72kg)
- Input Power:** 105 to 130 VAC 60 Hz
- 230 Volt Version:** 2428V/2458V

Operating Distance for Fiber Optic Cable

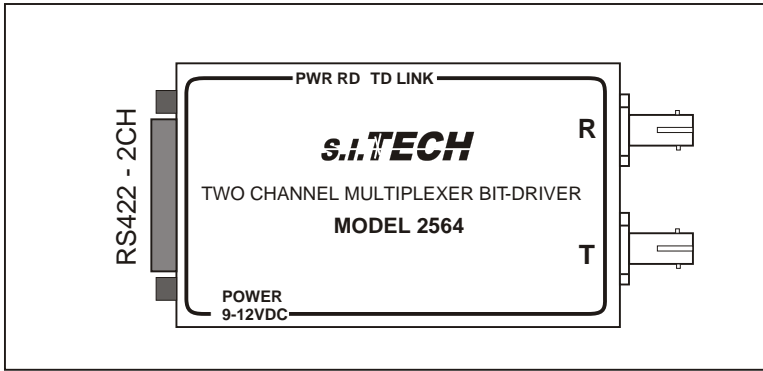
| Fiber Size (Microns) | Attenuation dB/Km | Distance (Meters) | Distance (Feet) |
|----------------------|-------------------|-------------------|-----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 100 | 5.0 | 2000 | 6600 |
| 10 SM* | 1.0 | 7000 | 23000 |

* Single mode (1300nm) option
(High power option available for longer distance)

UL & CSA listed. Meets FCC requirements of Class A, Part 15 Computing Devices Standard.
Specifications subject to change without notice.



Optical Asynchronous Multiplexer



Features:

- 2 Channel RS422 Multiplexer
- Up to 180 Kbps asynchronous operation, each channel
- Full duplex RS422
- Metal ST connector receptacle (SMA option)
- LED indicators for power, optical link status, transmit and receive data
- Multimode or single mode
- DIN rail or panel mounting option

S.I.Tech 2564 is a unique Bit-Driver. The two channel RS422 electrical interfaces are totally independent and share combined fiber link.

- Operation Mode:** Asynchronous, simplex or full duplex
- Input/Output Interface:** 2 CH RS422 Multiplexer DB25 connector
- Transmission Line Interface:** Metal ST connector is standard for interfacing with fiber optic duplex cable (SMA option, FC option for SM)
- Transmission Distance:** See Distance Chart
- Optical Power into a 62.5 Micron Core Optical Fiber:** 20 microwatts, 10 dB power budget @ 820 nanometers (1300 nm Option)
- Receiver Sensitivity:** 2 microwatts at less than 10^{-9} bit error rate
- Operating Temperature:** -40 °C to 85 °C (-20 °C to 60 °C Single Mode)
- Metal Enclosure:** 3.6" X 2.3" X 1.2" (9.1 X 5.84 X 3.0 cm)
- Weight:** 0.4 lb. (185 grams)
- Input Power:** 9 to 12VDC, 200mA

DB25 Female Connector Pinout

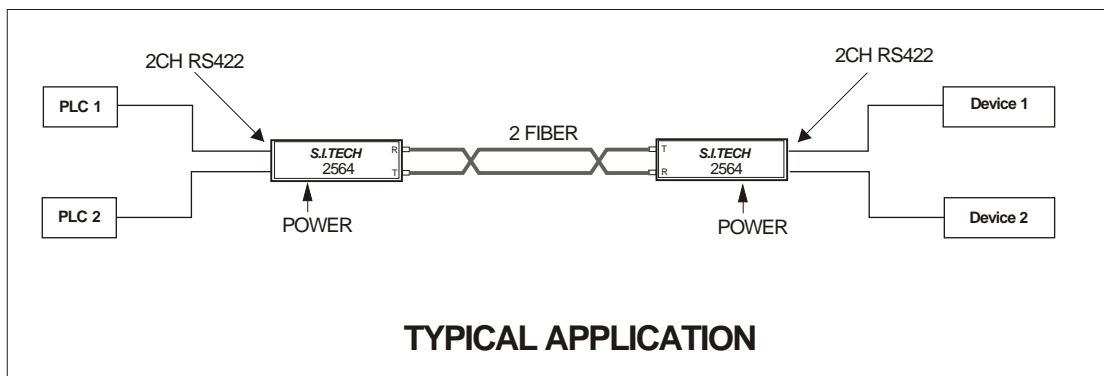
| Pin No. | Description | |
|---------|---------------|-----------------|
| 1,7 | Signal Ground | |
| 2 | Rx1+ | Ch1 Output |
| 3 | Rx1- | |
| 4 | Tx1+ | Ch1 Input |
| 5 | Tx1- | |
| 16 | Term1+ | Ch1 Termination |
| 17 | Term1- | |
| 14 | Rx2+ | Ch2 Output |
| 15 | Rx2- | |
| 21 | Tx2+ | Ch2 Input |
| 22 | Tx2- | |
| 6 | Term2+ | Ch2 Termination |
| 20 | Term2- | |
| Shell | Chassis | |

OPERATING DISTANCE FOR FIBER OPTIC CABLE

| Fiber Size (Microns) | Attenuation dB/Km | Distance* Meters | Distance* Feet |
|----------------------|-------------------|------------------|----------------|
| 50 | 3.0 | 2000 | 6600 |
| 62.5 | 4.0 | 2000 | 6600 |
| 10 SM | 1.0 | 5000 | 16000 |

* High power option available. SM - Single Mode option
 Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

*Meets FCC requirements of Class A, Part 15 Computing Devices Standard.
 Specifications subject to change without notice.*



TYPICAL APPLICATION