# yellobrik®

## OBD 1510 D

**LYNX | Centraal™** ✓   **yelloGUI** ✓
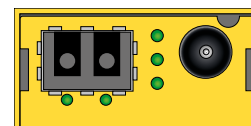
## Serial and GPI Bidirectional Fiber Transceiver



## Features

- Bidirectional send and receive over single fiber link
- Extend serial and GPI connections up to 10km
- Supports serial RS232 or RS422 or RS485
- 2x GPI connections
- Singlemode fiber up to 10km* (6.2 miles)
- LC/PC simplex fiber connections
- Switchable RX/TX crossover
- Automatic or manual data direction
- Switchable end of line termination
- 'Plug and Play' - No PC software drivers needed
- Supports all serial protocols (standard or proprietary)
- 300 - 460K Baud (auto sensing and auto adjusting)

## Description

The OBD 1510 D is a pair of multi-function modules which will extend the reach of serial RS232, RS422 or RS485 as well as two GPI (general purpose interface) up to 10km (6.2 miles) over a single bidirectional fiber link (WDM)

A single RJ45 electrical serial connection can be configured for RS232, RS422 or RS485 serial standards. A separate RJ45 connector is provided for two electrical GPI inputs and outputs. Serial communications and GPI are transmitted and extended over the same fiber link.

The OBD 1510 D is completely agnostic to the serial protocol used, and supports all standard protocols and proprietary protocols at data rates from 300 to 460K Baud (auto sensing and auto adjusting).

The integrated dip switch provides precise control over the serial mode of operation with selections for the serial standard, serial termination, RX/TX crossover and RS422/485 data direction (automatic or manual). Data activity LEDs are provided for the serial port and the GPI port under the respective RJ45 connectors.

The OBD 1510 D also supports mixing and matching of serial standards. For example: the transmitting module can have a RS232 input, and the receiving module can be set for RS422 output.

**Note:** This system used WDM optical multiplexing and should only be used in point to point applications. This solution cannot be integrated into a CWDM multiplexed system.
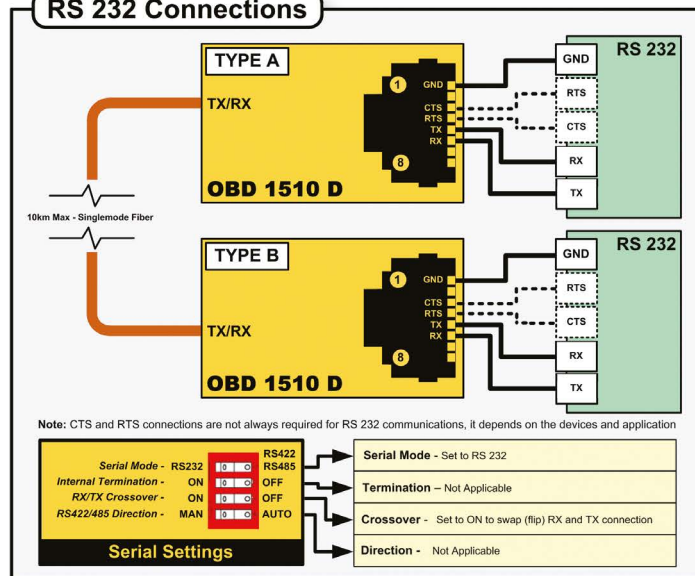
*Distance is an approximation. Actual distances achieved can be longer or shorter depending on the type of cable. Determine link losses and perform optical budget calculations to ensure correct operation.
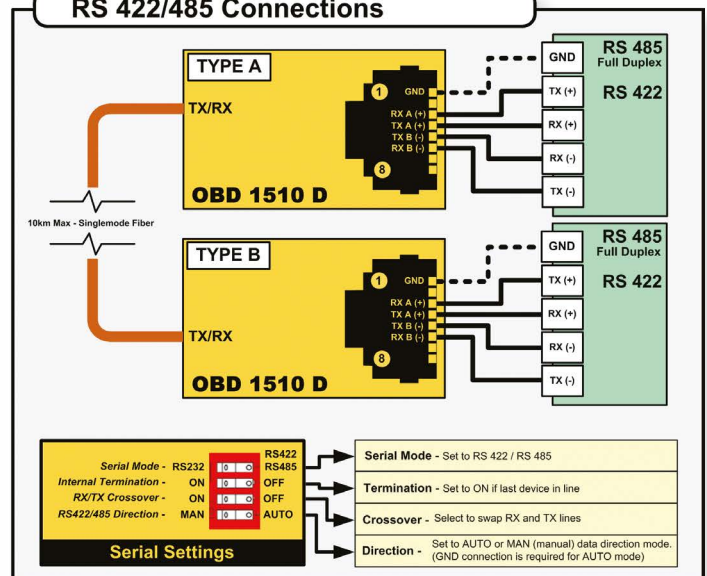
## Technical Specifications

| | |
|---|---|
| **Serial I/O** | EIA/ETA RS232C / RS422 / RS485 (selectable) |
| | Connector - RJ45 |
| | Baud rate - Auto sense and auto adjust from 300 to 460k |
| | Serial setting dip switch provides settings for:<br>• Select RS232 / RS422 / RS485 modes<br>• Select serial termination (for end of line)<br>• RX/TX crossover to flip the RX and TX if needed<br>• Set RS422/485 data direction to automatic or manual if needed |
| | LED status indicators (under RJ45 connector)<br>Serial TX activity + Serial RX activity |
| | RS422/485 Max number of electrical nodes = 25 |
| | ESD protection for up to 26kV |
| **GPI I/O** | 2x general purpose inputs + 2x general purpose outputs |
| | Connector RJ45 |
| | GPI Inputs:<br>• External passive closure between pins (short) to trigger<br>• Max input switching frequency 25Hz (50 operations / second)<br>• Input insulation 3.75kV |
| | GPI Outputs:<br>• Internal contact closure (relay)<br>• Max switching frequency 25Hz (50 operations / second)<br>• Max switching power 220VDC / 0.25A or 250VAC / 0.25A<br>• Output insulation 3.75kV |
| | LED status indicators (under RJ45 connector)<br>GPI Input 1 activity / GPI Input 2 activity<br>GPI Output 1 activity / GPI Output 2 activity |
| **Fiber Optic** | 1 x Fiber optic I/O port (bidirection)<br>Simplex (singlemode using LC/PC connection |
| | WDM using 1310nm and 1550nm wavelengths<br>Optical budget = 18dB |
| | Maximum distance approx. 10km (6.2 miles) |
| | RX and TX activity LEDs on side of module next to fiber I/O |
| **Power** | +12V DC @ 2.0W nominal  for each module - ( supports 7 - 15V DC input range ) |
| **Physical**<br>(each module) | Size: 120mm x 42mm x 22mm (4.73" x 1.65" x 0.86") incl. connectors<br>Weight: 125g (4.4oz) |
| **Ambient** | 5 - 40ºC (41 - 104ºF)  90% Humidity (non condensing) |
| **Model #** | OBD 1510 D - ( EAN# 4250479319103 ) |
| **Includes** | 2x OBD 1510 D modules (Type A and B), 2x AC power supplies |

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**OBD 1510 D**

## Connection Diagrams

### RS 232 Connections



**TYPE A**

TX/RX

OBD 1510 D

GND
CTS
RTS
TX
RX

RS 232

GND
RTS
CTS
RX
TX

**TYPE B**

TX/RX

OBD 1510 D

GND
CTS
RTS
TX
RX

RS 232

GND
RTS
CTS
RX
TX

10km Max - Singlemode Fiber

**Note:** CTS and RTS connections are not always required for RS 232 communications, it depends on the devices and application

**Serial Settings**

| | | RS422 / RS485 |
|---|---|---|
| Serial Mode - | RS232 | RS422 RS485 |
| Internal Termination - | ON | OFF |
| RX/TX Crossover - | ON | OFF |
| RS422/485 Direction - | MAN | AUTO |

- **Serial Mode** - Set to RS 232
- **Termination** – Not Applicable
- **Crossover** - Set to ON to swap (flip) RX and TX connection
- **Direction** - Not Applicable

### RS 422/485 Connections



**TYPE A**

TX/RX

OBD 1510 D

GND
RX A (+)
TX A (+)
TX B (-)
RX B (-)

RS 485 Full Duplex

GND
TX (+)
RX (+)
RX (-)
TX (-)

RS 422

**TYPE B**

TX/RX

OBD 1510 D

GND
RX A (+)
TX A (+)
TX B (-)
RX B (-)

RS 485 Full Duplex

GND
TX (+)
RX (+)
RX (-)
TX (-)

RS 422

10km Max - Singlemode Fiber

**Serial Settings**

| | | RS422 / RS485 |
|---|---|---|
| Serial Mode - | RS232 | RS422 RS485 |
| Internal Termination - | ON | OFF |
| RX/TX Crossover - | ON | OFF |
| RS422/485 Direction - | MAN | AUTO |

- **Serial Mode** - Set to RS 422 / RS 485
- **Termination** - Set to ON if last device in line
- **Crossover** - Select to swap RX and TX lines
- **Direction** - Set to AUTO or MAN (manual) data direction mode. (GND connection is required for AUTO mode)

### GPI Connections



**TYPE A**

TX/RX

OBD 1510 D

IN 2- GND
IN 2- SENSE
OUT 2 - A
OUT 1 - B
OUT 1 - A
OUT 2 - B
IN 1- GND
IN 1- SENSE

GPI 2 — A
GPO 2 (Contact Closure) — C
GPO 1 (Contact Closure) — D
GPI 1 — B

10km Max - Singlemode Fiber

**TYPE B**

TX/RX

OBD 1510 D

IN 2- GND
IN 2- SENSE
OUT 2 - A
OUT 1 - A
OUT 1 - B
OUT 2 - B
IN 1- GND
IN 1- SENSE

GPI 2 — C
GPO 2 (Contact Closure) — A
GPO 1 (Contact Closure) — B
GPI 1 — D

### RS 485 Connections – Half Duplex



**TYPE A**

TX/RX

OBD 1510 D

GND
TX A (+)
TX B (-)

RS 485 Half Duplex

GND
D+
D-

Leave Open (no connections)

**TYPE B**

TX/RX

OBD 1510 D

GND
RX A (+)
RX B (-)

RS 485 Half Duplex

GND
D+
D-

Leave Open (no connections)

10km Max - Singlemode Fiber

**Serial Settings**

| | | RS422 / RS485 |
|---|---|---|
| Serial Mode - | RS232 | RS422 RS485 |
| Internal Termination - | ON | OFF |
| RX/TX Crossover - | ON | OFF |
| RS422/485 Direction - | MAN | AUTO |

- **Serial Mode** - Set to RS 422 / RS 485
- **Termination** - Set to ON if last device in line
- **Crossover** - Not Applicable
- **Direction** - Set to AUTO

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## Optional Accessories

### Rack Frames

This yellobrik can be placed in a rack frame along others to build increasingly complex systems, all monitored and controlled with a rack controller (RCT 1012) and server module (SRV 1000) via a PC or MAC using LynxCentraal.

The RFR 1200 offers additional power redundancy with GPI alert. It automatically closes a connection between the A and B terminals on power failure.

The RPS A100 is a 100W power supply, which can be mounted at the rear end of the RFR 1200 with an RXT 1001 power supply holder for rack frames.



**RFR 1200:** yellobrik Rack Frame



**RPS A100:** 100W Power supply



**RXT 1001:** Power Supply Holder

### Power Adapter Options

The power requirements of this yellobrik allow for the usage of P-Tap or XLR connection based power sources.

**Note:** This does not replace the included power supply.



**P-TAP 1000**
Use with a standard battery P-TAP power source.



**XLR 1000**
Use with a standard 4 pin XLR camera battery power source.
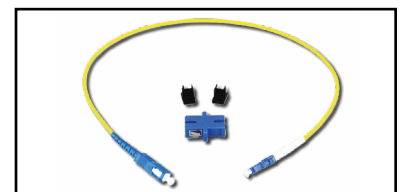
### Fiber Adapter Cables

While some of our products offer LC, ST and SC fiber connectors, most SFPs in our product range offer LC fiber connectors.

To still allow the necessary flexibility in a professional setting we offer patch cables to convert LC to ST or SC fiber connections. These patch cables' insertion less and return loss are manually checked for each individual cable to allow for maximum precision when calculating the optical budget
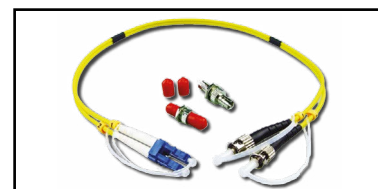
Besides the selection here we offer LC/FC and LC/LC patch cables.
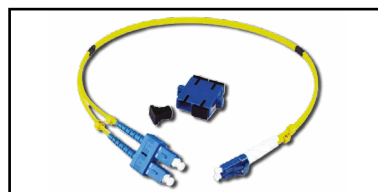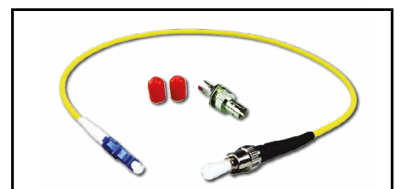


**LC/SC Dup:** LC/SC Duplex adapter cable



**LC/SC Sim:** LC/SC Simplex adapter cable



**LC/ST Dup:** LC/ST Duplex adapter cable



**LC/ST Sim:** LC/ST Simplex adapter cable