# LABOR – ASTER

**INDUSTRIAL AUTOMATION**

AC 083
QMS

## TRANSMISSION LINES SEPARATOR
## ST-RS485/RS485, ST-RS422/RS485 and ST-RS422/RS422

- **Separates transmissions:**
  **- RS485 ⇔ RS485**
  **- RS422 ⇔ RS422**
  **- RS485 ⇔ RS422**
- **Full compliance with transmission standards: RS485 and RS422**
- **RS422 – correction of line YZ occupancy**
- **Transmission speed 300 … 115200 bd**
- **Smart control of transmission direction**
- **Full galvanic separation of the circuits**
- **Internal lines terminators**
- **LED indication of power supply, transmission and line damage**


### APPLICATION:

The separator is designed to galvanically separate two transmission lines operating in RS422 or RS485 standard. It allows the transmission lines to be extended beyond 1200 meters, eliminates transmission disturbances due to the large number of receivers and transmitters in the line or potential differences and corrects the occupancy of the RS422 line enabling parallel connection of the YZ lines. The transmission separator also protects connected devices against overvoltage.

One of three types of transmission is possible depending on version: RS485/RS485, RS485/RS422, RS422/RS422. All RS485 and RS422 transmission parameters are met.

The separator is equipped with internal terminators matching the wave resistance of the line (switched by jumpers on terminals **B_, Y_, T_, )**.

### BASIC TECHNICAL PARAMETERS:

| | | |
|---|---|---|
| Receiver sensitivity | - | ±0.2V |
| Transmission signal | - | min. ±2V/R≥100Ω |
| Transmission line length | - | max. 1200m |
| Transmission speed | - | 300…115200 bd |
| Minimal distance between packages | | length of 1 chary |
| Switching time of changing line direction | | <150 ns |
| Bit distortion | | <100 ns |
| Phase shift of a bit | - | <500 ns |
| Terminator resistance | - | factory 300Ω |
| Number of devices operating on the line | - | max 32 |
| Power supply indication | - | lighting of LED PWR (when flashing indicates continuous state “0” on one of the lines) |
| Transmission indication | - | lighting of LED RS |
| Power supply | - | |
| - rail housing | | 20...28Vdc/60mA |
| - wall housing | | 230Vac/2VA |
| Galvanically separation | - | both transmission circuits and power supply circuit mutually separated |
| Isolation voltage test | - | 2kV 50Hz |
| Operation conditions | | |
| ambient temperature | - | 0...55°C |
| relative humidity | - | up to 90% |
| Housing | | |
| rail L | - | IP20 106,7 x 79 22,5mm |
| wall P | - | IP65 120 x 120 x 57mm |
| Safety requirements | - | PN-EN 61010-1:2002 |
| EMC requirements | - | PN-EN 61000-6-1 |
| | - | PN-EN 61000-6-3 |

## OPERATION DESCRIPTION:

Scheme block are shown below. The separator "sniffs" state of the two transmission lines and in case of detection of low "START bit" accordingly controls the flow direction and then in the event of silence longer than one character returns to "sniffing".

**LED indications:**

- Led **PWR** – is ON after switching on the power supply or flashes when the separator detects a "low" state lasting longer than 20ms (which most often indicates wrong polarity of the transmission line).
- Led **RS –** is ON when there is transmission on one the two lines.

**Rules for connecting terminators**

The separator can operate as both a terminal device or a middle device of transmission line. If the separator is an end device it is recommended to close the line with a terminator by closing the terminal **B_** with terminal **T_**. The terminator value (depending on the line length, number of devices, cable quality) can be selected by connecting an additional external resistor between terminals (**A_ and B_)** and **(Y_ and Z_)**.

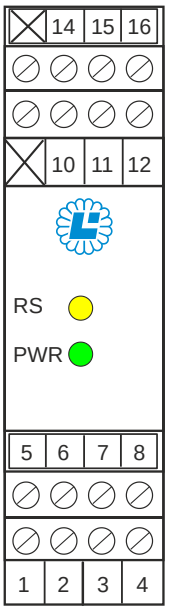


Fig.1 Layout of the terminals

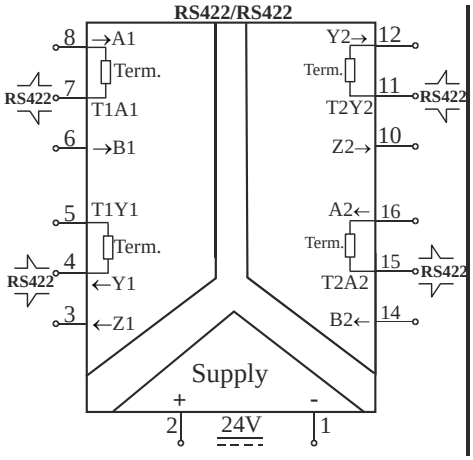


Fig.2 Separator **RS422/RS422**. Transmission halfduplex **(H)** with line protection or fullduplex **(F)** without protection.

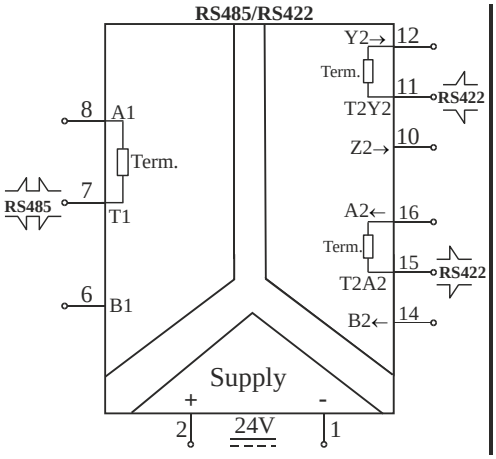


Fig.3 Separator **RS485/RS422**. RS422 operates with halfduplex.

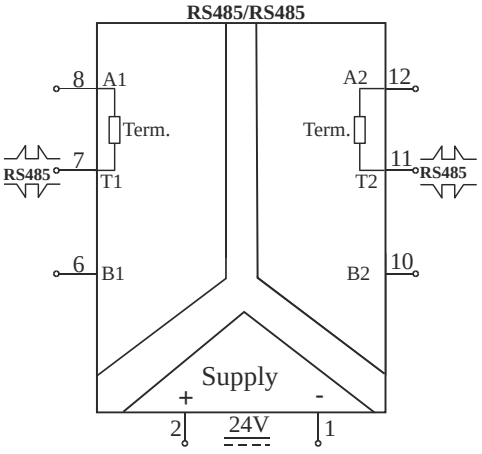


Fig.4 Separator **RS485/RS485**. Two-way transmission on both sides (halfduplex).

Separator in version RS422 halfduplex can be converted by user to separator RS485 by shorting the A-Y and B-Z in each direction.

## HOW TO ORDER:

Tranmission lines separator type ST - X - X

Separator version : **RS485/RS485**
**RS422/RS485**
**RS422/RS422H**
**RS422/RS422F**

Housing type : **Rail - L**
**Wall - P**

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