

User Manual

ADA-1010

Separator – Repeater RS-232



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1. GENERAL INFORMATION

Thank you for your purchase of **CEL-MAR Company** product. This product has been completely tested and is covered by a two year warranty on parts and operation from date of sale.

Any questions or detailed technical information about the use of this product can be obtained by contacting 'Technical Support' by telephone: +48 41 362-12-46 or email: support@cel-mar.pl.

1.1. WARRANTED INFORMATION

ADA-1010 repeater is covered by a two year warranty from date of sale. If the product malfunctions or does not operate in accordance with the instructions, it will be repair or replace at its discretion of **CEL-MAR Company**. The warranty does not cover damage caused from improper use, materials wear or any unauthorized changes.

All returns must be via paid transport and insurance (by the sender) to the **CEL-MAR Company**.

CEL-MAR Company under no circumstances is responsible for repairs arising from damage through improper use or as a result of lightning, flood, rising water, fire (electrical or other heat/radiation exposure) or like events.

CEL-MAR Company is not liable for damages and loss including but not limited to: loss of profits, loss of data, pecuniary losses ensuing from using or improper use of its product.

In specific cases, **CEL-MAR Company** will discontinue all warranty claims if it finds the device was used in a manner not described in the user manual and may refuse further claims of warranty by the user.

1.2. GENERAL CONDITIONS FOR SAFE USE

The device should be installed in a safe and stable place (e.g. electrical installation cabinet). Power and signal cables should be arranged so as not to be exposed to trampling, vandalism or unreasonable mechanical stress.

Do not put device on a wet surface or high humidity environment.

Do not connect devices to nondescript powering sources,

Do not damage or crush power wires.

Do not make connection with wet hands.

Do not modify, open or make holes to the enclosure of the device.

Do not immerse device in water or no other liquid.

Do not operate near fire or operate device near sources of heat such as: candles, oil lamps, heater, furnaces and like appliances.

Complete disable from the supply network is only after disconnecting the power supply circuit voltage.

Do not carry out the assembly or disassembly of the device if it is powered. This may result to short circuit and damage the device.

The device can not be used for applications that determine human life and health (eg. Medical).

1.3. CE LABEL



The CE symbol on the device CEL-MAR means compatibility with electromagnetic compatibility Electromagnetic Compatibility Directive **EMC 2014/30/WE**.

Declaration of Conformity is delivered with purchased converter.

1.4. ENVIRONMENTAL PRESERVATION



This sign on the device inform about putting expended device with other waste materials. Device should send to the recycling. (In accordance with the act about the Electronic Appliance Expended from day 29 of July 2005)

1.5. SERVICE AND MAINTENANCE

ADA-1010 repeater does not require the servicing and maintenance.

Technical support is available at number +48 41 362-12-46 in 8.00-16.00, from Monday to Friday or e-mail support@cel-mar.pl.

1.6. PACK CONTENTS

ADA-1010 converter, user manual, CE declaration.

2. PRODUCT INFORMATION

2.1. PROPERTIES

- RS232 interface extension of RX, TX, DTR, DSR, RTS, CTS signal channels for other 15m,
- Separation of RS232 port,
- RX, TX, RTS, CTS, DTR, DSR signals regeneration,
- Baud rate up to 230,4 kbps
- Transparent for all protocols: MODBUS, DNP, PROFIBUS and other,
- Any format of byte defined with the specification of RS232 interface,
- Power supply 10 – 30 VDC stable,
- 3000V= opto-isolation in signal channel between RS232 (IN) and RS232 (OUT) interface,
- 1000V= or 3000V= galvanic isolation between RS-232 interface and power supply,
- Screw terminal block connector for RS232 (OUT) interface and power supply,
- DB-9F connector for RS232 (IN),
- Protection against power supply reverse connection,
- DIN 43880 standard– mounting in typical electrical-installation unit,
- Rail mounting according to DIN35 / TS35 standard,
- Dimensions (W x D x H) 53mm x 62mm x 90mm.

2.2. DESCRIPTION

ADA-1010 repeater separates RS232 port of PC from operating device and amplifies signal of RS232 standard for other 15m without interfere in byte format. It can be used to communicate with other distant device such as: PC, controller or cash register.

ADA-1010 does not require power supply from RS232 port, supports asynchronous data transitions rate up to 230,4 kbps. ADA-1010 is equipped with one female DB-9F for RS232 (IN) connection and terminal block for RS232 (OUT) connection and power supply. Connector DB-9F is made like DCE, it let connect repeater to PC using the extension cable RS232 (typical cable for modem connection) without crossing TX with RX, RTS with CTS, DTR with DSR. Separator uses signals: RX, TX, RTS, CTS, DTR, DSR and SG (signal ground). Other signal are not used.

You can use this repeater as:

- Separator of RS232 PC port getting galvanic isolation for electronics PC from connected device,
- Repeater – using three section of 9-wire shielded cable and two ADA-1010 separators You can connect two devices with RS232 interface together which are distance up to 45m (3 x 15m) Fig.6,
- Extender RS232 port using six pairs twisted cable and two ADA-1010 separators You can connect two devices with RS232 interface together which are distance up to 300m (3 x 15m) Fig.7.

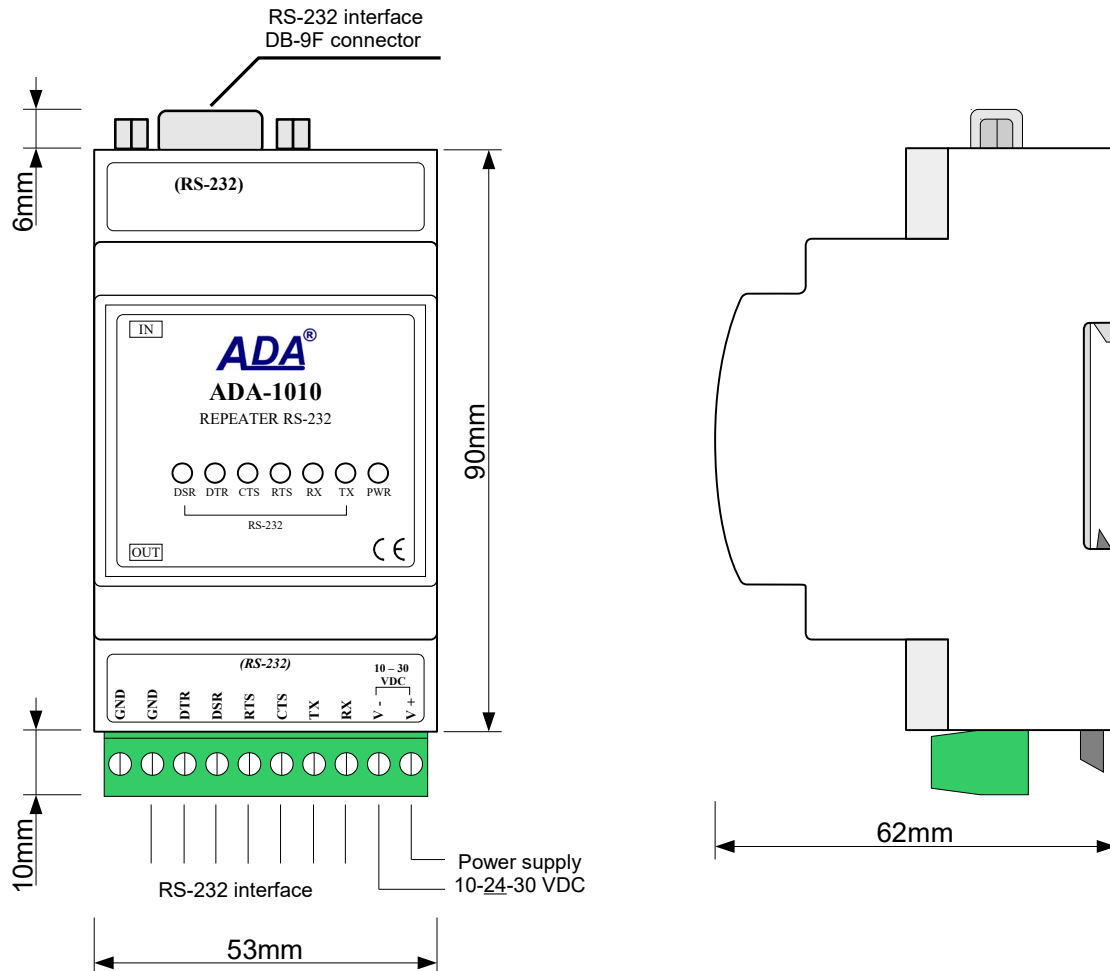


Fig 1. View.

2.3. ISOLATION

ADA-1010 repeater has 2-way or 3-way galvanic isolation and also 1kV= or 3kV= galvanic isolation - depend on version.

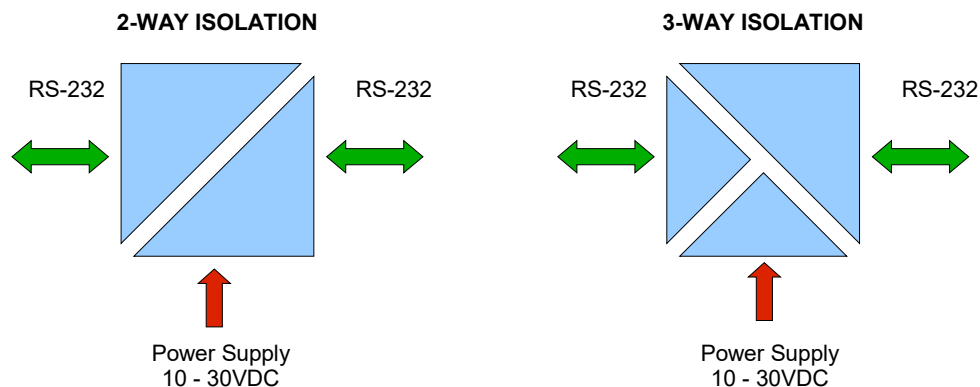


Fig 3. Isolation structure.

3. INSTALLATION

This chapter will show you how to properly connect repeater to RS232 interface and power supply and how to use. In order to minimize effects interference from the environment is recommended:

- use shielded cable – the shield can be connected to the ground on one end,
- arrange signal cables at a distance of not less than 25 cm away from power cables.

3.1. ASSEMBLING

The ADA-1010 enclosure is adapted to assembly on TS-35 (DIN35) rail. To install repeater you should mount device on the rail upper part of the enclosure then press bottom part to hear characteristic „Click” sound.

3.2. CONNECTION OF DEVICES WITH RS232 INTERFACE TO 'IN' PORT OF REPEATER

3.2.1. CONNECTION OF DEVICES WITH RS232 PORT - DTE TYPE (COMPUTER)

You need use the RS232 extension cable to connect ADA-1010 to RS232 computer port for example CAB-DB9F/DB9M-S-1,8m available in our offer. Connection example is shown below.

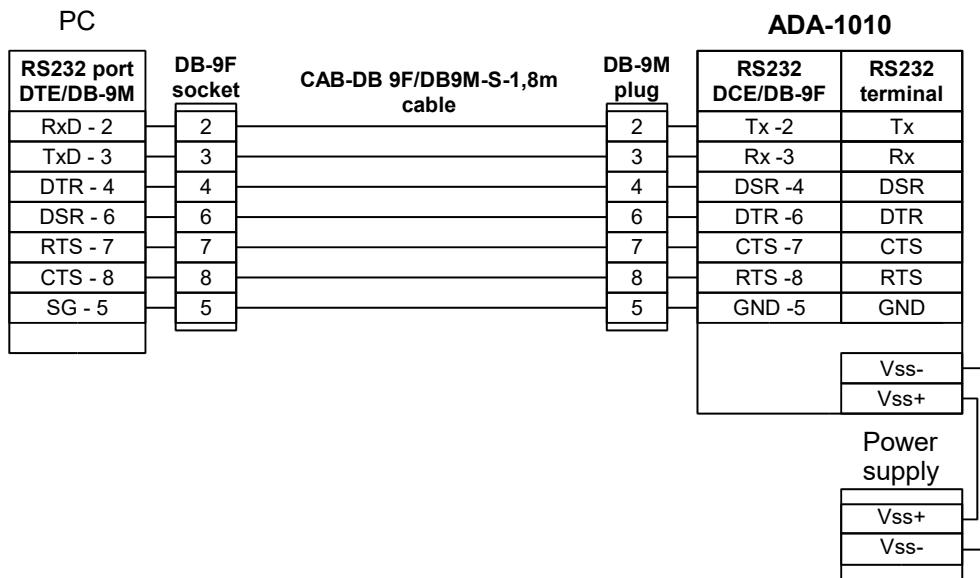


Fig 3. Example connection to RS-232 computer port.

3.2.2. CONNECTION OF DEVICES WITH RS232 PORT - DCE TYPE (MODEM)

You need use the RS232 cable to connect ADA-1010 to RS232 port (DCE type) eg. CAB-DB9M/DB9M-C-1,8m available in our offer. Connection example is shown below.

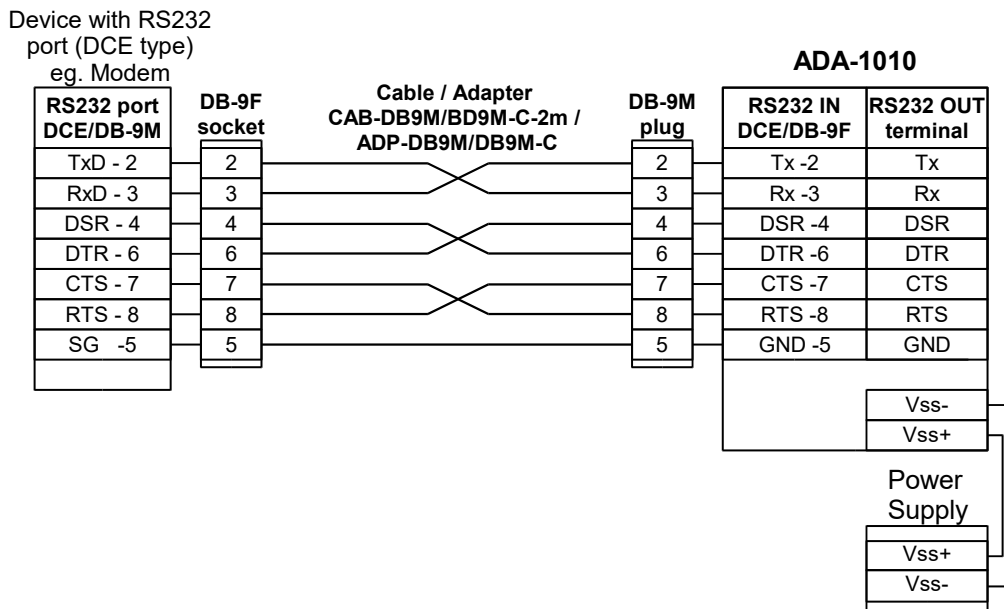


Fig 4. DCE type connection of device with RS232 interface (eg. modem)

3.3. EXAMPLE CONNECTIONS OF DEVICES TO ADA-1010 REPEATER

Using ADA-1010 it is possible to separate RS232 computer port from the connected device. This type of connection is shown on Fig 5.

Repeater can be used also to extension the RS232 interface for next segments 15 m. Example connection of RS232 interface extension for 45m is shown on Fig 6.

It is possible to extend RS232 port (eg. Computer) for 300m using ADA-1010 and multicore twisted cable. This connection is shown on Fig 7.

3.3.1. SEPARATION OF RS232 COMPUTER PORT

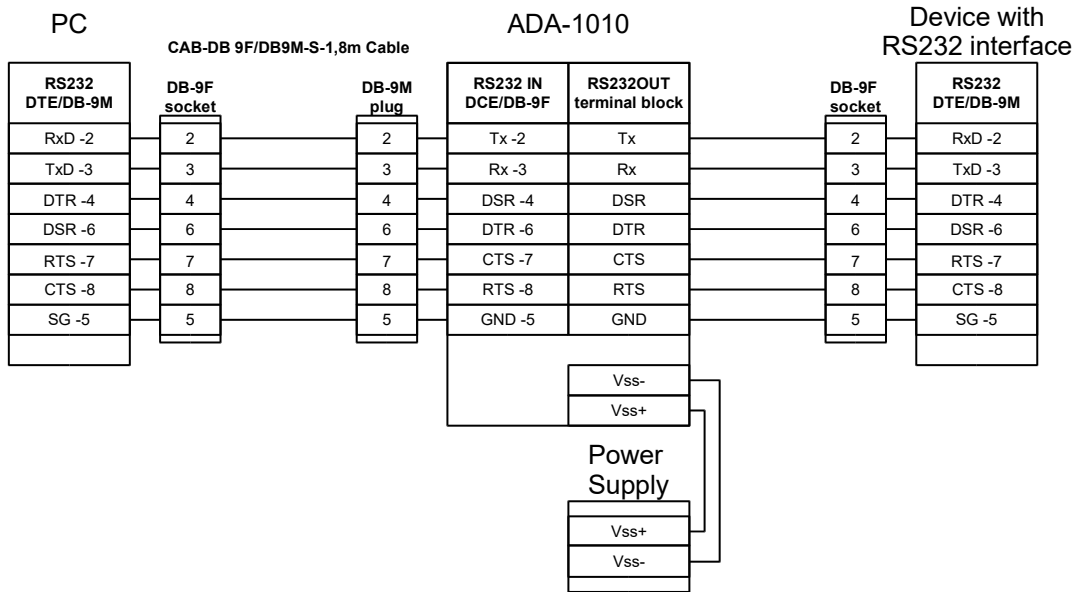


Fig 5. Connection for operation as RS232 PC port separator.

3.3.2. RS232 PORT EXTENSION UP TO 45M

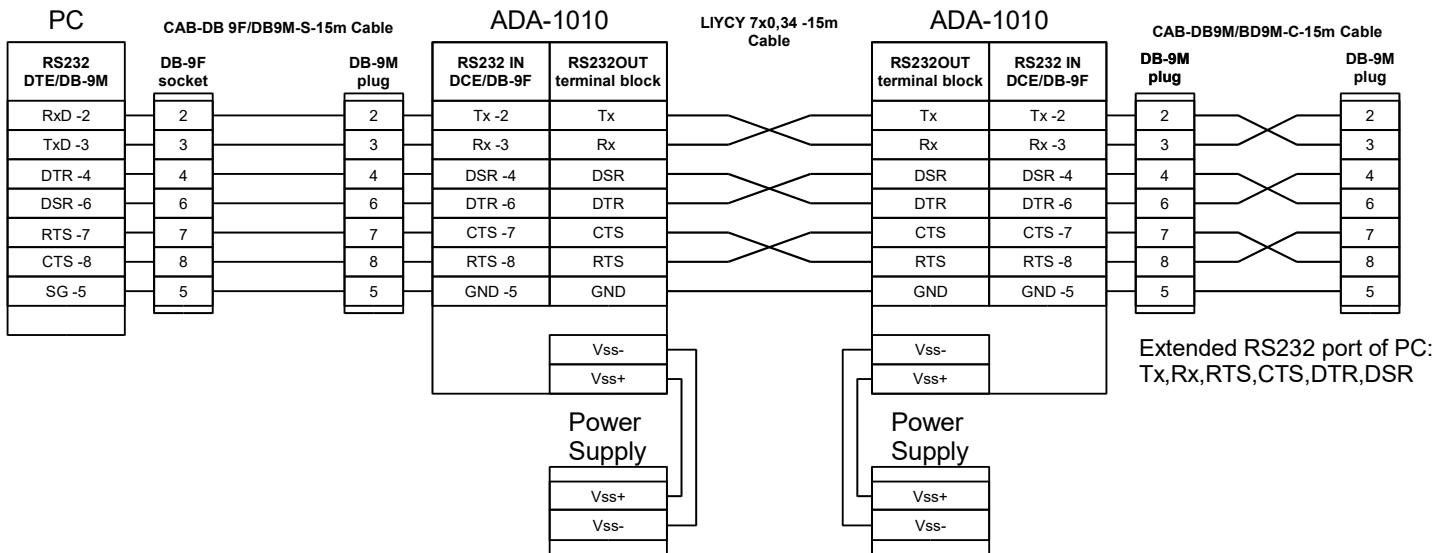


Fig 6. Connection for operation as extender RS232 PC port up to 45m. (3x15m)

3.3.3. RS232 PORT EXTENSION UP TO 300m

You can extend RS232 port of computer/device to a distance of 300m using ADA-1010 separators. In this case you should make the wiring as below using multicore cable UTP 4x2x0,5 (connect one wire of pair to signal ground SG).

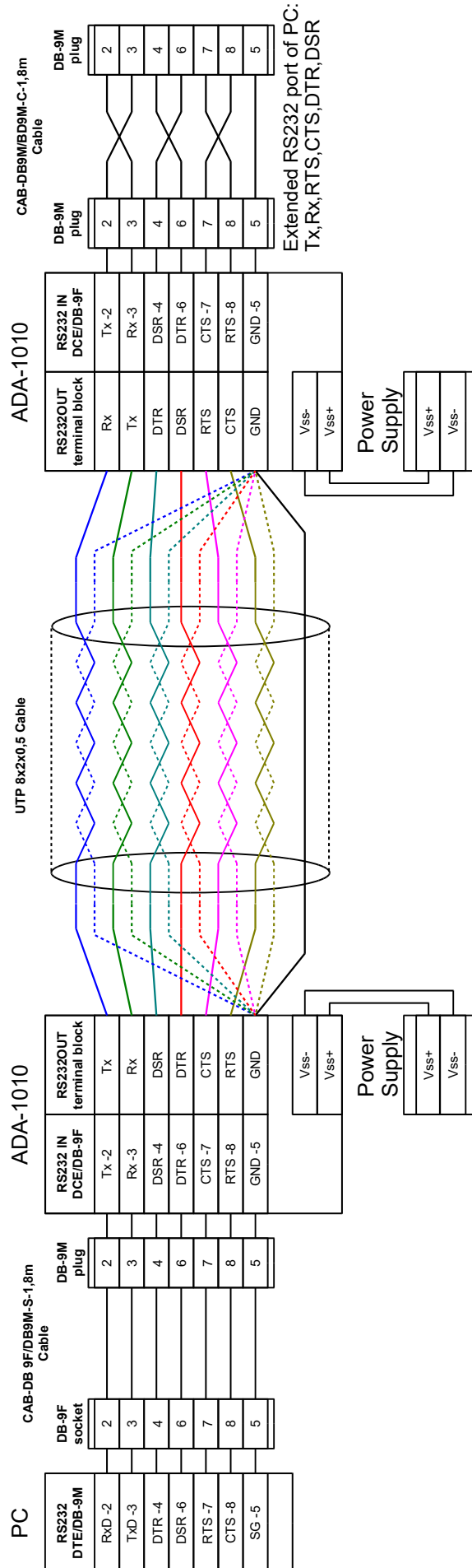


Fig 7. Connection for operation as extender RS232 PC port up to 300m.

3.4. POWER SUPPLY CONNECTION

To connect power supply to repeater you should have DC power supplies (regulated) output voltage from 10 V= to 30V=, min. nominal power 2W, e.g. HDR-15-24. Power cable from DC power supplies to device can not be longer than 3m. You should connect positive (+) end of DC power supplies to V+ device terminal and negative (-) end to V- on terminal block. ADA-1010 has protection against power supply reverse connection and if after connection power supply on front panel will not lighting green led PWR, you should check correctness of power supply connecting (polarization).

4. ACTIVATION

LEDs on front panel should blinking during data transmission through the separator. Those LEDs indicate:

LED	Description
PWR	Signalization of Power Supply
TX	Signalization of data transmitting via RS-232 (OUT) port
RX	Signalization of of data receiving on RS-232 (OUT) port
RTS	Signalization of RTS status line on RS-232 (OUT) port
CTS	Signalization of CTS status line on RS-232 (OUT) port
DTR	Signalization of DTR status line on RS-232 (OUT) port
DSR	Signalization of DSR status line on RS-232 (OUT) port

ATTENTION!

At baud rate above 38.4 kbps the LED's Tx, Rx will light weakly during data transmission

5. PIN DESCRIPTION OF DSUB-9F-DCE SOCKET

Pin	Signal	Description	ADA-1010
1	(DCD)	Level of receiver signal	Not connected
2	(TxD)	Transmitted Data	Transmitter
3	(RxD)	Received Data	Receiver
4	(DSR)	Data Set Ready	Receiver
5	(SG)	Signal ground	GND
6	(DTR)	Data Terminal Ready	Transmitter
7	(CTS)	Clear To Send	Receiver
8	(RTS)	Request To Send	Transmitter
9	(RI)	Call rate	Not connected

6. DESCRIPTION OF SCREW TERMINAL BLOCK

Terminal	Signal	Description	ADA-1010
TX	(TD)	Transmitted Data	Transmitter
RX	(RD)	Received Data	Receiver
RTS	(RTS)	Request To Send	Transmitter
CTS	(CTS)	Clear To Send	Receiver
DTR	(DTR)	Data Terminal Ready	Transmitter
DSR	(DSR)	Data Set Ready	Receiver
GND	(SG)	Signal ground	GND

7. VERSIONS

ADA-1010 -		-	
Galvanic isolation:			
1kV=, 2-WAY		2	
1kV=, 3-WAY		22	
3kV=, 2-WAY		3	
3kV=, 3-WAY		33	
Terminal & Terminal Cover:			
Cover without inlets, screw terminal block			1
Cover with inlets, screw terminal block			2
Cover without inlets, plug-in screw terminal block			3

Order example:

Product Symbol: **ADA-1010-23-3**

23 – 3-way galvanic isolation 1kV=,

3 – cover without inlets, plug-in screw terminal block,

8. SPECIFICATION

TECHNICAL DATA

Transmission Parameters

Interface	RS-232 IN	RS-232 OUT
Connector	DSUB-9 Female	Screw terminal block - max. Ø 2,5mm2
Line length	Up to 15m – connection using cable RS232 extender type, baud rate up to 230,4 kbps. Up to 300m - connection using multicore twisted cable, baud rate up to 56,0 kbps.	
Max. number of connected device	2	
Maximum baud rate	230,4 kbps	
Transmission line	DB9F/DB9M multicore cable 9x0,34 shielded or 9-pair twisted cable, UTP 9x2x0,5 (24AWG) shield inside large interferences STP 9x2x0,5 (24AWG).	
Transmission type	Asynchronous full duplex, half duplex.	
Standards	EIA-232, CCITT V.24,	
Optical Signalization	PWR- green LED power supply, RX- red LED data receiving through RS232(OUT), TX- yellow LED data transmission through RS232(OUT), RTS- yellow LED data transmission through RS232(OUT), CTS- red LED data receiving through RS232(OUT), DTR- yellow LED data transmission through RS232(OUT), DSR- red LED data receiving through RS232(OUT),	

Electrical Parameters

Power requirements	10 - 24 – 30 V DC
Power Cable	Recommended length of power cable – up to 3m
Power	<2W
Protection from reverse power polarization	YES
Galvanic Isolation	1kV or 3kV DC and 2-way or 3-way (between power circuit and signal line RS232 IN)
Optoisolation	3kV (between signal lines RS-232(IN) and RS-232 (OUT))
Electromagnetic compatibility	Resistance to disruptions according to the standard PN-EN 55024. Emission of disruptions according to the standard PN-EN 55022.
Safety requiring	According to the PN-EN60950 norm.
Environment	Commercial and light industrial.

Environmental Parameters

Operating temperature	-30 ÷ 60°C
Humidity	5 ÷ 95% - non-condensing
Storage temperature	-40 ÷ 70°C

Casing	
Dimensions	53mm x 90mm x 62 mm
Material	PC/ABS
Degree of casing protection	IP40
Degree of terminal protection	IP20
Weight	0.10 kg
According to standard	DINAS EN50022, DINAS EN43880
Location during work	Free
Mounting method	On the rail compliant with DIN35 / TS35 standard.

Dear Customer,

Thank you for purchasing **CEL-MAR Company** products.

We hope that this user manual helped connect and start up the **ADA-1010 separator-repeater**. We also wish to inform that we are a manufacturer of the widest selections of data communications products in the world such as: data transmission converters with interface RS232, RS485, RS422, USB, Current Loop, Fibre-Optic Converters and Ethernet or Wi-Fi.

Please contact us to tell how you like our products and how we can satisfy you present and future expectation.

CEL-MAR sp.j.

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