

User Manual

ADA-101W

RS-232 to 1-WIRE Converter



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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.

If any questions or problems arise during installation or use of this product, please do not hesitate to contact Technical Support at +48 41 362-12-46 or e-mail support@cel-mar.pl.

1.1. WARRANTED INFORMATION

ADA-101W converter is covered by a two year warranty from date of sale. In case of being damaged it will be repair or the damaged component will be replace. The warranty does not cover damage caused from improper use, materials consumption or any unauthorized changes. If the product does not function (is damaged), or not operate in accordance with the instructions, will be repaired or replaced.

All warranty and no warranty repairs must be returned with paid transport and insuring to the **CEL-MAR Company**.

CEL-MAR Company under no circumstances won't be responsible for ensuing damage from improper using the product or as a result of random causes: the lightning discharge, the flood, the fire and the like.

CEL-MAR Company is not be held responsible for damages and loss including: loss of profits, loss of data, pecuniary losses ensuing from using or the impossibility of using this product.

In specific cases **CEL-MAR Company** discontinue all warranties and in particular do not follow the user manual and do not accept terms of warranty by the user.

1.2. GENERAL CONDITIONS FOR SAFE USE

The device should be installed in a safe and stable places (eg, electroinstallation cabinet), the powering cable should be arranged so as not to be exposed to trampling, attaching, or pulling out of the circuit.

Do not put device on the wet surface.

Do not connect devices for nondescript powering sources,

Do not damage or crush powering wires.

Do not make connection with wet hands.

Do not adapt, open or make holes in casings of the device!

Do not immerse device in water or no other liquid.

Do not put the fire opened on device sources: candles, an oil lamps and the like.

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

Do not carry out the assembly or dis-assembly of the device if it is enabled. 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-101W converter 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-101W converter, user manual, CE declaration.

2. PRODUCT INFORMATION

2.1. PROPERTIES

- RS-232 to 1-Wire conversion,
- Transmission of RX, TX,
- Possibility of operate on MicroLAN network,
- Possibility of programming EPROM memory on the 1-WIRE network (2-X-X version),
- RS-232 network baud rate [kbit/sec]: 9.6, 19.2, 57.6, 115.2,
- 1-WIRE network baud rate: Standard up to 16,3 kbps,
- 1-WIRE network baud rate: Overdrive up to 142 kbps
- Power supply 10 - 30 VDC stable
- 1kV= or 3kV= galvanic isolation between RS232 interface and power supply,
- ~3kV= optoisolation in signal channel between RS232 and 1-WIRE interface,
- Connection RS-232 interface via DB-9 female connector,
- Connection 1-Wire interface and power supply via screw terminal block,
- Implemented protection against power supply reverse connection,
- DIN 43880 standard– mounting in typical electro-installation unit,
- Rail mounting according to DIN35 / TS35 standard,
- Dimensions (W x D x H) 52,8mm x 62mm x 90mm.

2.2. DESCRIPTION

ADA-101W industrial converter RS-232 to 1-Wire is for general using. It lets to connect many circuits with 1-Wire interface for example: temperature measurement circuits, real-time clock, EPROM memory, converter A/C, to common 1-Wire bus. Circuit DS2480B and converter TTL to RS-232 provide transition from 1-Wire to RS-232 interface. It is possible to monitor and/or control 1-Wire circuit by RS-232 interface in PC (suitable software have to be installed) using ADA-101W. CEL-MAR make available example software to visualisation of temperature measurement - Lämpömittari made by Timo Sara-aho. This software works with temperature measurement e.g. DS18S20. It should be used DS9097U adapter in section MicroLAN of software Lämpömittari configuration.

ADA-101W is equipped with one female DB-9F connection to connect RS232 interface and terminal block for twisted pair connection of 1-Wire bus and power supply. Connector DB-9F RS232 interface is made like DCE, it let connect converter to other devices equipped with RS232 in use the extension cable RS232 (typical cable for modem connection) without crossing Tx with Rx. Converter uses signals Rx, Tx and GND for working, which are entered via DB-9F connector. ADA-101W should be powered from external sours of D/C, which value should be between 10V-30V and power min. 2W. Converter has implemented protection of opposite connecting powering.

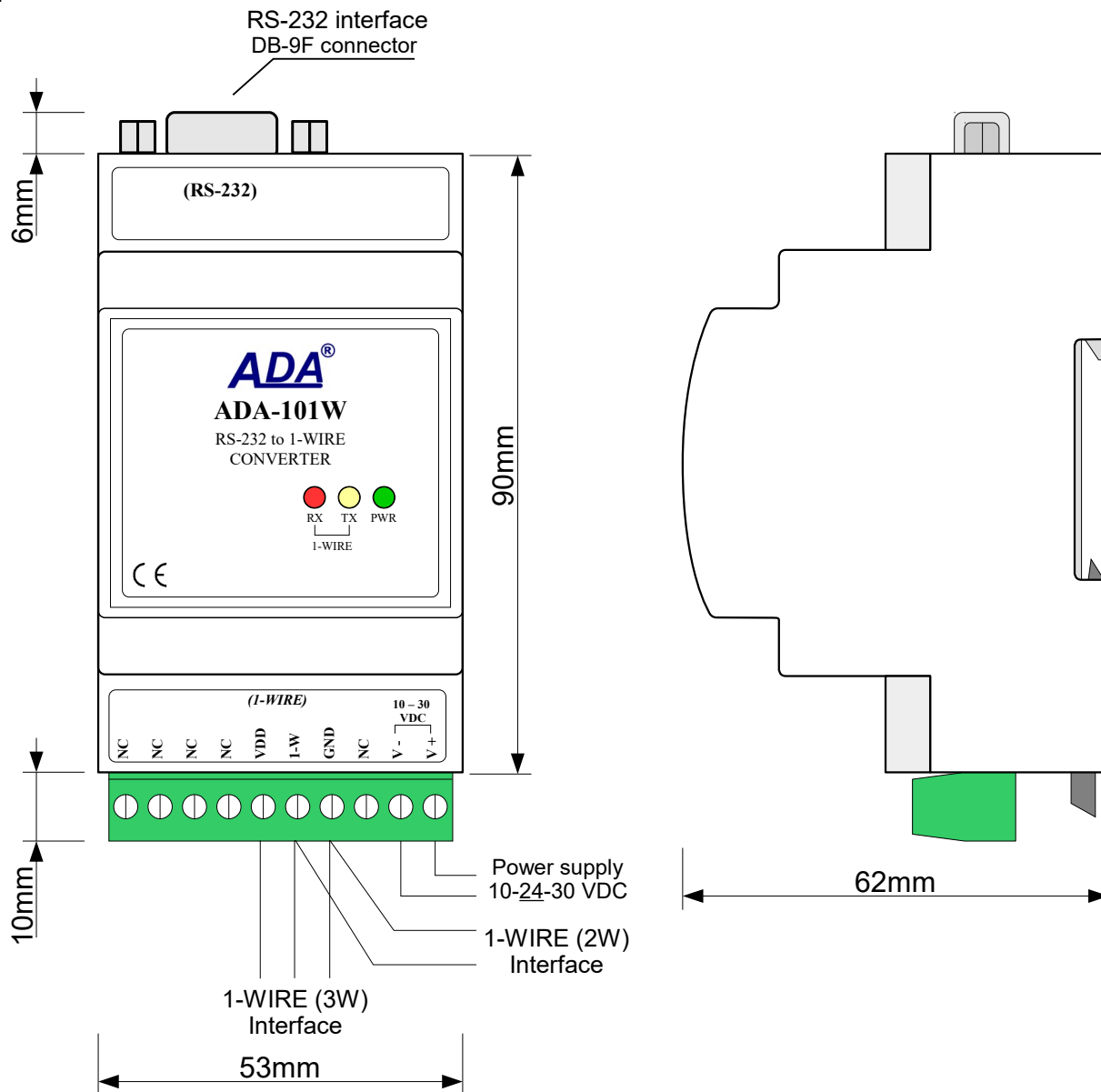


Fig. 1. ADA-101W view

2.3. APPLYING

ADA-101W converter can be used in all kind of local systems based on MicroLAN networks such as: access control, work control of air conditioning and heating, remote control in alarm and fire-fighting systems. MicroLAN is being used to connect sensors to alarms exchange in used only 3 wires instead of many. In such used MicroLAN prevents errors of alarms system come from shorting or line cutting. This network gives easiness of automatic configuration and reconfiguration during work of alarm system. The testing procedures are easier than in standard solutions, which help to eliminate non-operational part of alarm systems.

2.4. EPROM MEMORY PROGRAMMING

There is a possibility of programming EPROM memory connected to MicroLAN network by using ADA-101W in version 2-x-x. The switch on the front panel should be set to "PROG" mode, and connect to the bus programmable circuit and make the programming. If on the bus are circuits non-programmable the switch should be set on "NORMAL" mode.

2.5. COMMUNICATION WITH 1-WIRE

On account of the enough complicated 1-WIRE protocol the ADA-101W was equipped with the DS2480B system which access to 1-WIRE is facilitating from the level of the ordinary RS-232 serial port. The communication with the system connected to 1-WIRE is limiting itself in this case for send/receiving appropriate commands by the RS-232 interface. A thorough description of all commands and way of the communication is described in a specification sheet of the arrangement accessible to DS2480B on the side of producer at the http://www.maxim-ic.com/quick_view2.cfm/qv_pk/2923

2.6. COMMUNICATION VIA RS-232 INTERFACE

ADA-101W use transmission line RX, TX and GND for communication with PC or other devices equipped with RS232 interface and doesn't require powering from the RS-232 port. Baud rate with ADA-101W can be: 9600 bp/s (speed set after powering) or other 19200 bp/s, 57600 bp/s, 115200 bp/s. - steted by master software (e.g. PC)

Communication frame consist of

- start bit,
- 8 data bits,
- non even parity bit,
- 1 stop bit.

2.7. ISOLATION

Converter ADA-101W has 2-way or 3-way galvanic isolation, described in section VERSIONS.

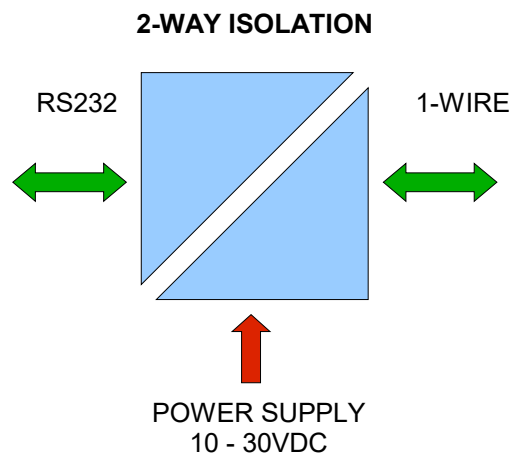


Fig 2. Insulation structure

3. INSTALLATION

This chapter will show how to connect ADA- 101W to networks 1-WIRE, RS232 and power supply.

In the purpose of minimization of disruptions from environment is being recommended to:

- apply multipair type shielded cables, which shield can be connected to the earthing on one end of the cable,
- arrange signal cables in the distance not shorter than 25 cm from powering cables.
- apply cable of adequate cross-section due to voltage drops for converter powering,
- not supply converter from power circuit device that generates large impulse interference such as transmitters, contactors,

3.1. ASSEMBLING

ADA-101W case is adapted to assembly on TS-35 (DIN35) rail. To install converter should mount device on the rail upper part of the case then press bottom part to hearing characteristic „Click” sound.

3.2. CONNECTION TO RS232 COMPUTER PORT

ADA-101W can be connected to RS232 port PC by the use of example CAB-DB9F/DB9M-S-1,8m - available in our offer. Example connection is shown below.

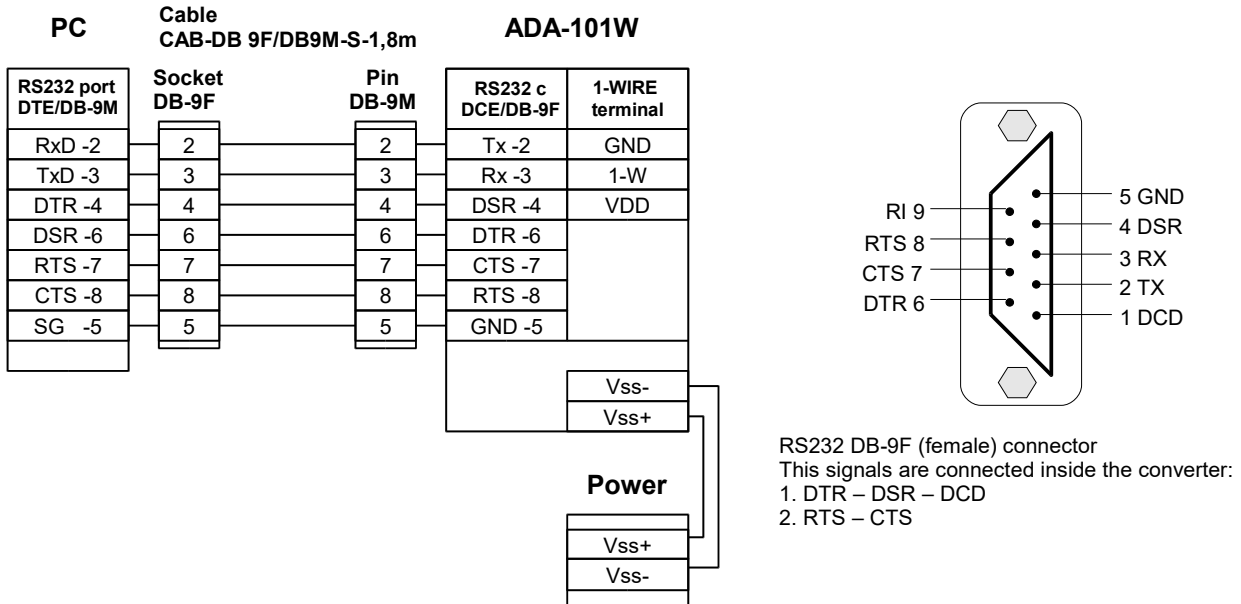


Fig 3. Example connection to RS-232 port of computer.

3.3. 1-WIRE SENSORS CONNECTION

Connection of 1-Wire temperature sensor to ADA-101W converter is shown below.

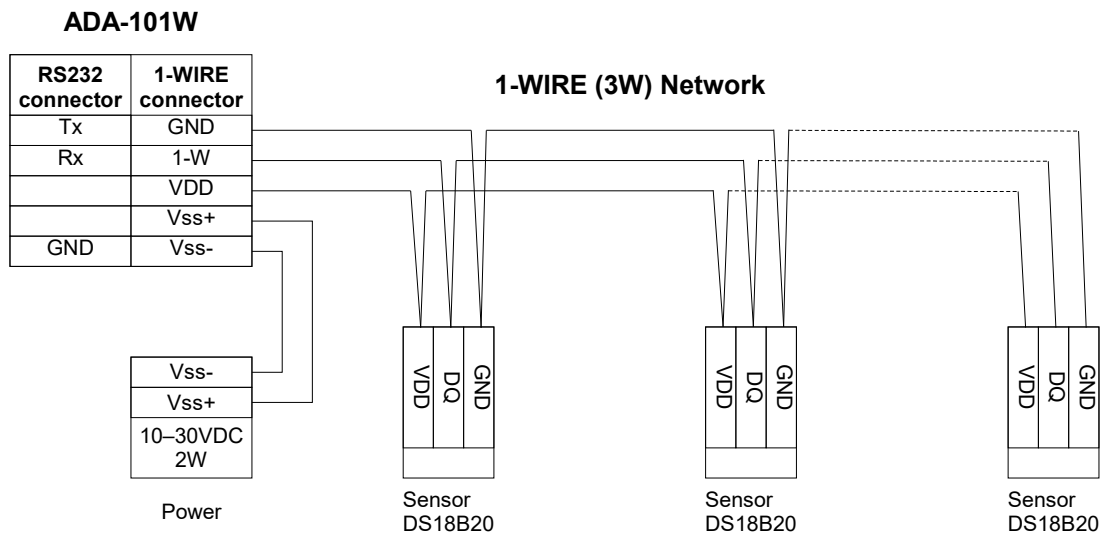


Fig 4. Sensors connection in use 1-WIRE network 3-wires

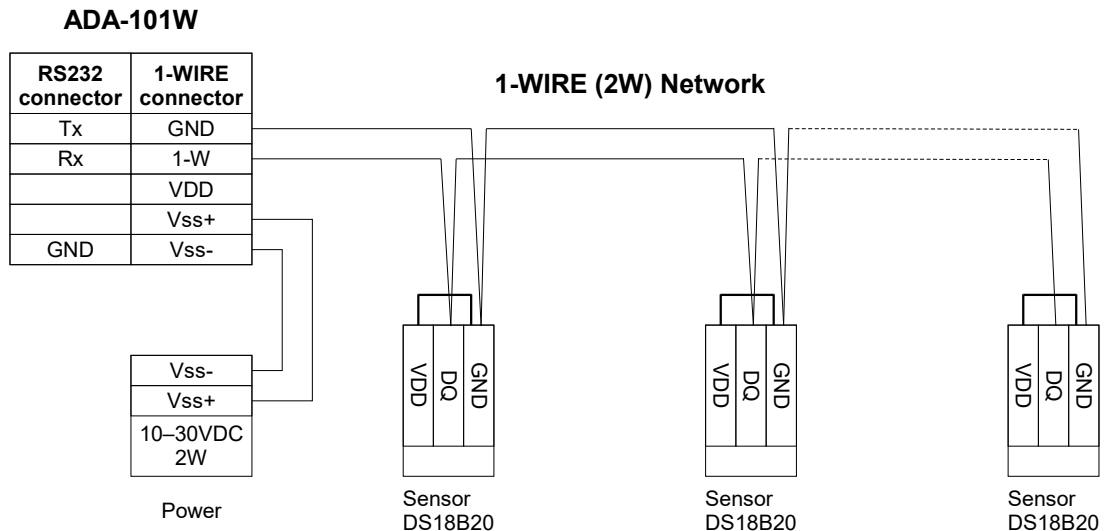


Fig 5. Sensors connection in use 1-WIRE network 2-wires

3.4. POWER SUPPLY

The power supply to ADA-101W should be DC (regulated) from the scope 10 V= to 30V= and nominal power more than 3W eg. HDR-15-24. The power cable from DC power supplies to the device must not be longer than 3m. Observe the polarity, connect positive (+) of DC power supplies to V + and negative (-) end to V - terminal.

4. ACTIVATION

Converter can be powered after proper connection according to step above. If connection was made properly green LED PWR on front panel of converter should light, if not check correctness of power connection. ADA-101W has the protection against power supply reverse connection. During correctness data transition via the converter the LEDs Tx and Rx should blinking.

4.1. DESCRIPTION OF SIGNALLING LEDS

LED	Description
PWR	Signalling of Power Supply
RX	Signalling of data receiving through ADA-101W converter from 1-WIRE port.
TX	Signalling of data transmitting from ADA-101W converter through 1-WIRE port.

ATTENTION!

At baud rate above 19200 bps the LED's Tx, Rx will light weakly during data transmission

4.2. TROUBLESHOOTING

Problem	Solutions
PWR LED is not lights	Check polarization and parameters of connected power supply.
	Disconnect 1-WIRE network, and if PWR LED is ON, it means there is short circuit on the network.
Rx LED lights continuously	Possible damage to the 1-WIRE network controller.
No transmission, Tx LED is NOT blinking	Check the correctness connection of converter to computer.

5. RS232 INTERFACE – PIN DESCRIPTION OF DSUB-9F-DCE SOCKET.

Pin	Signal	Description	ADA-101W
1	(DCD)	Level of receiver signal	Connected with DSR in ADA-101W
2	(TxD)	Data transmission via ADA-101W	Transmitter
3	(RxD)	Data receiving via ADA-101W	Receiver
4	(DSR)	Readiness of device to data receiving/ transmission from ADA-101W	Connected with DTR in ADA-101W.
5	(SG)	Signal ground	GND
6	(DTR)	Readiness of ADA-1040 to data receiving/ transmission	Connected with DSR in ADA-101W.
7	(CTS)	Device confirm of receiving RTS signal from ADA-101W	Connected with RTS in ADA-101W
8	(RTS)	ADA-101W reports to device readiness to receiving data	Connected with CTS in ADA-101W
9	(RI)	Call rate	Not connected

6. VERSIONS

	ADA-101W -	-	-	
Electronic Version:				
Without possibility of programming the memory of 1-WIRE interface		1		
With possibility of programming the memory of 1-WIRE interface		2		
Galvanic isolation:				
1kV=			2	
3kV=			3	
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-101W-1-2-3**

1 – without possibility of programming the memory of 1-WIRE interface,

2 – galvanic isolation 1kV=,

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

7. SPECIFICATION

TECHNICAL DATA

Transmission Parameters

Interface	RS-232	1-WIRE
Connector	DSUB-9 Female	Screw terminal block - max. Ø 2,5mm ²
Max. Line length	Up to 15 m	Up to 400 m – for sensors DS1820
Max. number of connected device	1	100
Max. baud rate	9.6, 19.2, 57.6, 115.2 [kbit/sek]	standard: 0 do 16,3 kbps, overdrive: 0 do 142 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).	1-pair or 2-pair twisted cable, UTP Cat.5e, shield inside large interferences STP Cat.5e
Standards	EIA-232, CCITT V.24.	TTL signal,
Transmission type	1-WIRE - half duplex (transmitting and receiving on the same wire)	
Optical Signalization	<ul style="list-style-type: none"> • PWD – green LED power supply, • RX - red LED data receiving via 1-WIRE interface, • TX - yellow LED data transmission via 1-WIRE interface. 	

Electrical Parameters

Power requirements	10 - 24 – 30 V DC
Power Cable	Recommended length of power cable – do 3m
Power	<2W
Protection from reverse power polarization	YES
Galvanic Isolation	1kV DC or 3kV DC - between power circuit and RS-232 signal line
Optoisolation	~3kV - between signals lines 1-WIRE and RS-232
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	53 x 90 x 62mm,
Material	PC/ABS
Degree of casing protection	IP40
Degree of terminal protection	IP20
Weight	0,10 kg
According to standards	DIN EN50022, DIN 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-101W converter**. We also wish to inform you 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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