# OPERATION AND MAINTENANCE MANUAL

**WA-2 PROFESSIONAL**

**Product code:**

**314-02-01**



RoHS COMPLIANT

CE
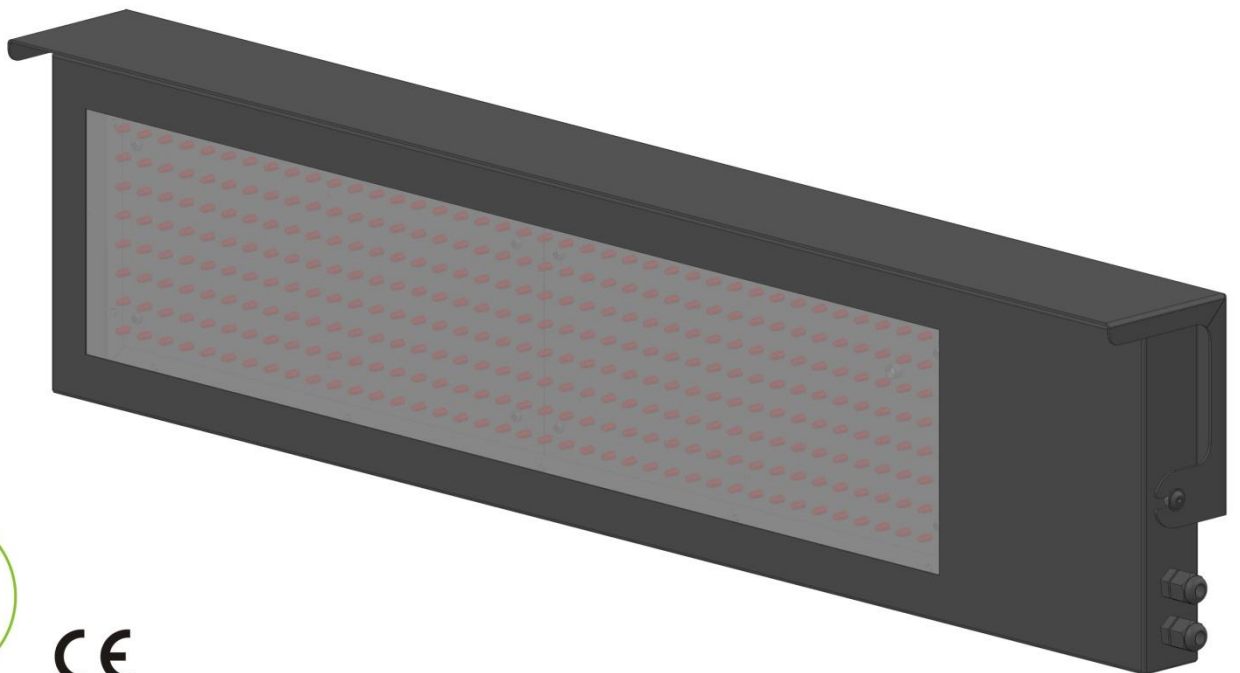
*Explanatory figure

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# 1. Specifications

**The display for weighing scales WA-2 PROFESSIONAL**

| | |
|---|---|
| Dimensions: [1] | 801mm x 180mm x 40mm / 36.1in x 7.1in x 1.6in |
| Digit height: | 120mm / 4.7in |
| Permissible input voltage range (long-term): | 100 ÷ 240 VAC |
| Permissible input voltage range (short-term): | 85 ÷ 264 VAC |
| Acceptable input voltage frequency range: | 47 ÷ 63 Hz |
| Device operation temperature (ambient): | -25°C ÷ 45°C / -13°F ÷ 113°F |
| Device operation temperature (device surface): | -25°C ÷ 70°C / -13°F ÷ 158°F |
| Average power consumption: | 8W |
| Casing tightness rating[2] IP: | 65 |
| Device weight: | 6kg / 13.2lbs |

# 2. Transport and storage

The device is sensitive to mechanical damages. Care should be taken to properly protect the device during transport so as to eliminate any damage. It is forbidden to transport the device components separately in a collective package – each component must be packed separately and cannot 'bump' during transportation.

Due to protective packaging, the device should be stored in the temperature -25°C ÷ +60°C [-13°F ÷ 140°F] at the humidity below 99%RH.

# 3. Device construction

WA-2 Professional is enclosed in a powder-coated metal housing. The properly assembled device meets the IP65 tightness requirements.

## 3.1 WA-2 Professional construction

The figure shows display for weighing scales WA-2 Professional[3].
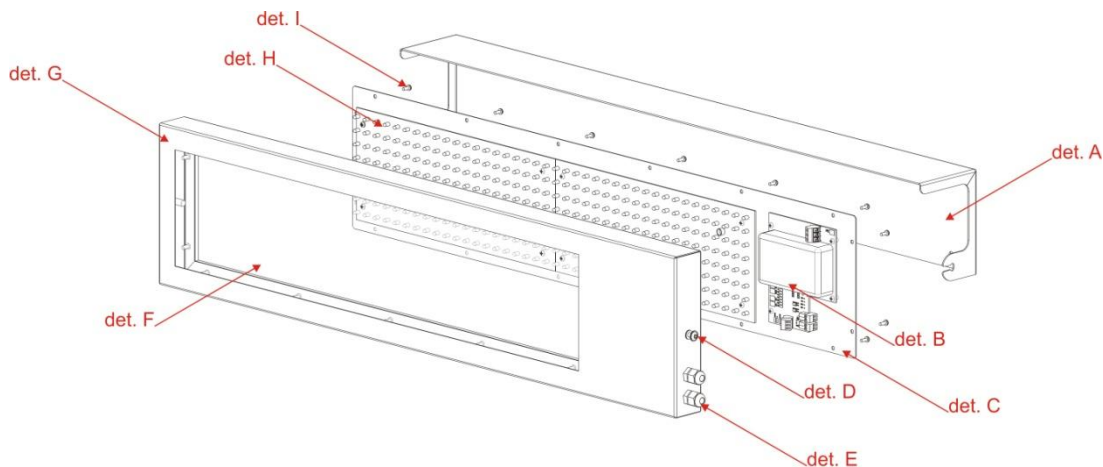


det. A – roof; det. B – controller; det. C – back cover; det. D – roof fixing screw; det. E – cable gland; det. F – viewfinder; det. G – front of the device; det. H – LED modules; det. D – back cover fixing screws;

Fig. 1

### 3.1.1 List of weighing scale display cables

1. Five-metre power cord (3 x 1mm² [3x17AWG], core markings: blue, brown, yellow and green), terminated with WAGO 222-412 connectors on each core.
2. Five-metre signal cable (2 x 0.5mm² [2x18AWG], RS232 interface; core markings: white -> RA, green -> RK).

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[1] Dimensions without roof.
[2] Specified on the basis of EN 60529.
[3] Explanatory figure.

## 3.2 WA-2 Professional dimensions

### 3.2.1 Dimensions without a roof



Fig. 2

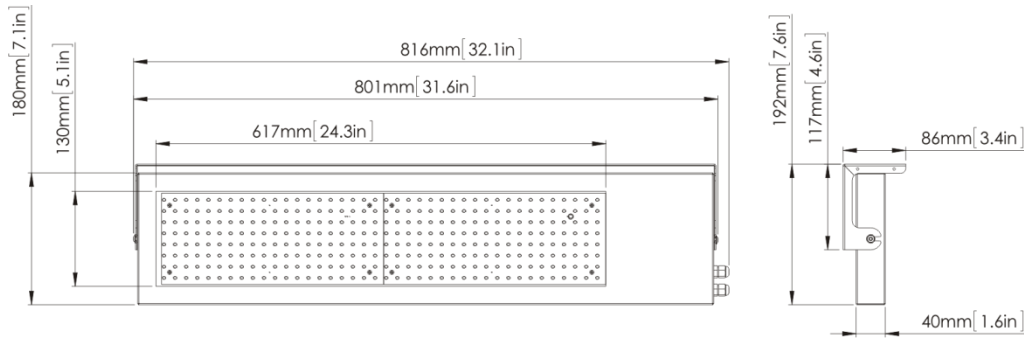## 3.3 Mounting the display for weighing scales

### 3.3.1 Mounting bracket

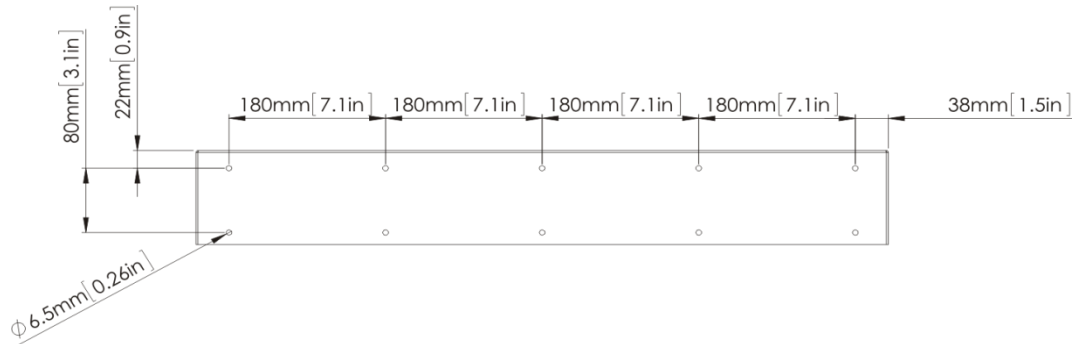The roof functions as a mounting bracket (Fig. 4).



Fig. 3

### 3.3.2 Roof as a stand of the device

The appropriately mounted roof may function as a stand. The standard configuration of the mounting bracket functions as a roof, but after its relocation, it may also serve as a stand with an adjustable angle (Fig. 4).
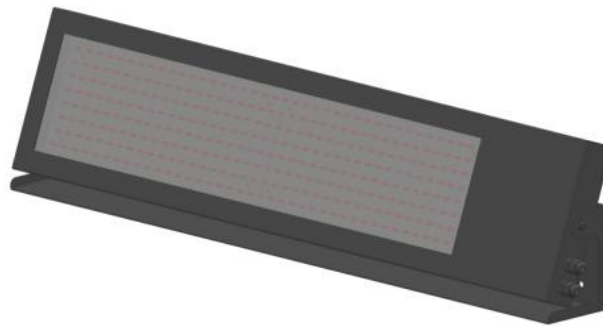


Fig. 4

# 4. Mounting the device

Correct mounting consists in installing the device on a flat surface or by using the roof as a stand (Fig. 4). Only the proper mounting of the device ensures its proper operation and the maintenance of the device parameters, like, among others, the housing tightness rating to satisfy the IP code.

**NOTICE!**

Before any installation or maintenance operations refer to the manual supplied by the manufacturer. Improper connection to the mains power supply, incautious device installation, or improper use may cause the property damage, loss of health or death from electrical shock! In addition, any failure to follow the manufacturer's instructions may void your warranty.

**NOTICE!**

It is forbidden to make any additional mounting points or any holes in the device assembly components.

## 4.1 WA-2 Professional application

The devices of the WA series are designed to display measurement results transmitted by weighing terminals. The displays operate in the automatic mode by default (see Autolearn) and in typical cases do not require prior configuration. In special situations, it may be necessary to adjust the settings by means of the RGB WagSet 2 software or through the user menu embedded in the device.

## 4.2 Autolearn function

The Autolearn mode is enabled by default (position no. 0 is set in the 'proto' submenu). In order to disable it, the communication protocol must be set manually using the embedded user menu or the RGB WagSet 2 software.

When this mode is active, each time the device is started, it detects the parameters of the communication with the weighing terminal and analyses the structure of the data frames it sends. Then it adjusts the remote display's settings to enable correct communication with the terminal. The whole operation lasts several seconds, depending on the baud rate and the time intervals between consecutive frames. All remote display's communication interfaces are supported, i.e. RS232/RS485/CL and the Ethernet (optional interface)[4].

The Autolearn procedure is as follows:

1. Baud rate detection - dot 1 flashing on the display
2. Baud rate verification - dot 1 solid, dot 2 flashing
3. Analysis of the protocol and its frame structure - dots 1 and 2 solid, dot 3 flashing

During the analysis of the protocol and its frame structure, the measurement unit sent is also recognised. The following tags are recognised - "kg" 'K' " t" 'T' 't' " g" "gr" 'G' 'g' "lb" 'L' 'l' "oz" 'o' 'O'. In case the terminal does not send a unit or sends a unit that is not recognised by the Autolearn function, the default unit will be set. Depending on the purchased regional version, it is "kg" or "lb".

The Autolearn mode supports the following transmission parameters:

| | |
|---|---|
| Baud rate: | 2400, 4800, 9600, 19200 |
| Transmission parameters (data bits, parity, stop bits): | 8N1, 7E1, 7O1 |

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[4] If first the data is sent via the Ethernet to the display and then one of the other interfaces, i.e. RS232 / RS485 / CL is connected - the Autolearn procedure will be carried out again in order to determine the UART parameters and the protocol (the protocol for serial interfaces may differ from the Ethernet protocol).

## 4.3  WA-2 Professional manual configuration

The configuration of the device using RGB WagSet 2 enables:

1)  Precise defining the communication protocol with any weighing terminal,

2)  Defining the reaction to the events reported by the weighing terminal (eg. overloading, underloading, instability, etc.),

3)  Entering advertising text.

### 4.3.1    Defining communication protocols

#### 4.3.1.1   Embedded user menu (micro switch)

The user menu embedded in the device allows you to select the communication protocol, display the information about the software version, reset the device to the default settings. The micro switch, used to operate the menu, is located inside the display housing, however, after unscrewing the lock screw (fig. 5, det. A) micro switch is available through the thru-hole (fig. 5, det. B) without opening the device.
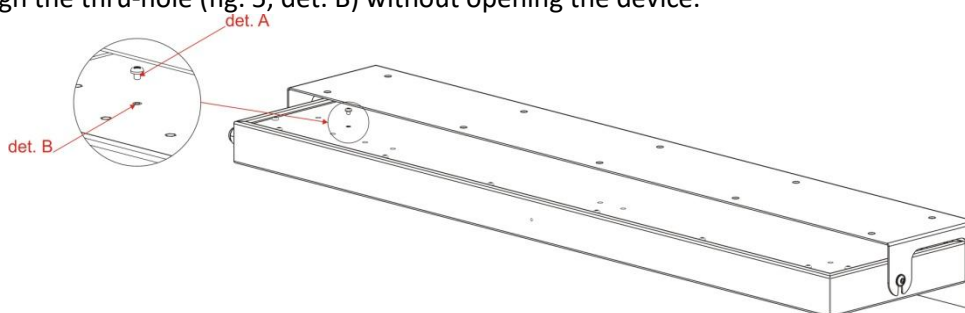


det. A – lock screw; det. B – thru-hole

rys. 5

The user menu is called up by pressing and holding the "DEF" micro switch and releasing it when the desired option is displayed. Regardless of the option, you can exit the user menu by pressing the micro switch and releasing it when switching between the options (when switching between the options, the display does not display any information)

The user menu has the following options:

1)  info - This option allows you to display the device software version. For the displays with the Ethernet interface, the network layer settings are additionally provided (an IP address, a network mask, a communication port for the RGB WagSet 2 software and a communication port for the weighing terminal). Exiting the info option happens automatically after displaying the information.

2)  proto - This option allows you to select the display communication protocol to work with the selected weighing terminals (Tab. 1). You can change the protocol by short pressing the microbutton. Saving the selected protocol is accomplished by long holding down the microbutton (until the message "Saved" appears). Exiting the "proto" option happens automatically after 30 seconds of user inactivity.

3)  custm - The "custm" option allows you to select the display communication protocol to work with the weighing terminals of the selected clients. These protocols have special, custom settings needed for the given client. Setting the protocol is done in the same way as in the case of the "proto" option - saving the selected protocol is accomplished by long holding down the microbutton (until the message "Saved" appears), while exiting the "custm" option happens automatically after 30 seconds of user inactivity.

4)  reset - This option allows you to restore the default settings of the remote display and to activate the Autolearn mode. In addition, in the devices with the Ethernet interface, you can restore the default network layer settings (IP address: 192.168.0.11, network mask: 255.255.255.0, configuration port for the RGB WagSet 2 software: 2101, communication port for the weighing terminal: 2102). To restore the default settings you should, during the normal operation of the device, press the microbutton and hold it down until the message "reset" appears. Hold the button down until the message "reset" starts flashing and do not release it until the message "default" is displayed. Releasing the button before the message "default" appears will result in interrupting the process of restoring the default settings and the display will continue working according to the previously set parameters. Uploading new network settings is only possible using the RGB WagSet 2 software  available at www.kazel-displays.com

#### 4.3.1.2 Interface transmission parameters and communication speed

| Interface | Transmission parameters | Communication speed |
|---|---|---|
| RS232, RS485, RS422, CL | Data bits: 7, Parity: Odd, Even<br>Data bits: 8, Parity: None, Odd, Even<br>Stop bits: 1 | 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, 115200, 230400 |

Table 1

#### 4.3.1.3 RGB WagSet 2 software

Using the WagSet 2 software, you can perform the advanced configuration of the device. The program allows you to change, among others: the parameters of displaying the weighing result, entering and editing advertising text, the display response to special situations such as: exceeded measurement range, etc. The detailed information on the configuration from your computer can be found in the manual supplied with the RGB WagSet 2 program.

## 5. Weighing scale controller

The weighing scale controller is a device responsible for displaying the measurement result transmitted by the weighing terminal.

### 5.1 Weighing scale controller connectors
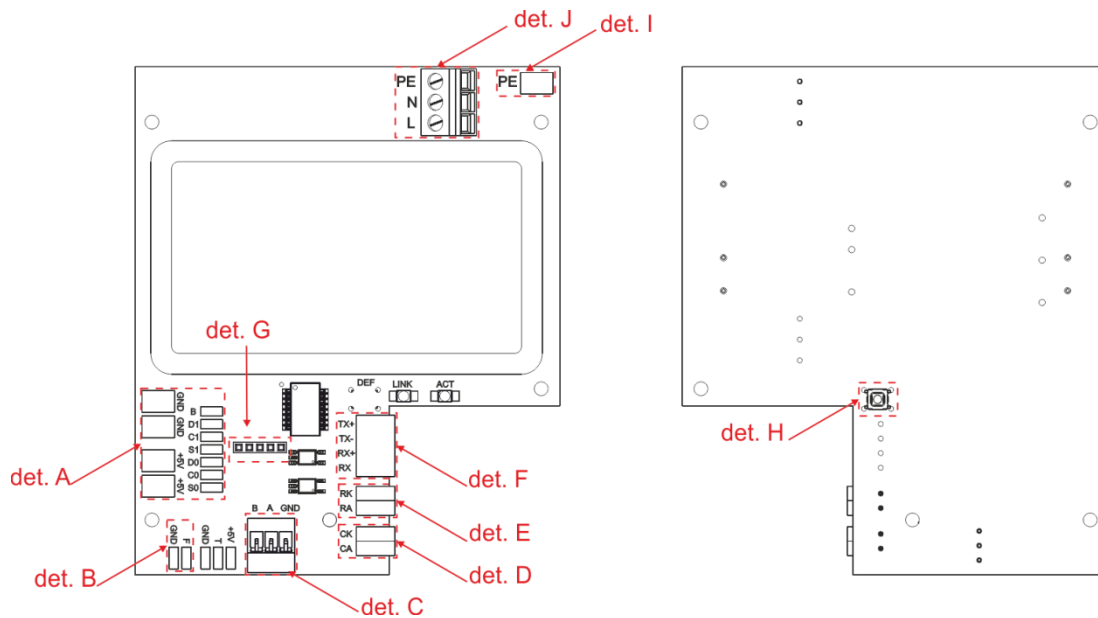


det. A – LED modules connector; det. B – lighting sensor connector;; det. C – RS-485/RS-422 connector; det. E – 0/20mA digital current loop; det. F – RS-232 connector; det. G – ISORS connector; det. H – micro switch *DEF*; det. I – soldering point of the earthing; det. J – mains power supply connector;

Fig. 6

### 5.2 List of weighing scale controller connectors

Table 2 presents the description of the WEIGHING SCALES controller connectors (Fig. 8, det. B) in the WA-2 Professional display for weighing scales. The connectors are accessible after the disassembly of the back cover (Fig. 8, det. C) by removing the front of the device (Fig. 8, det. A). Moreover, on the back cover, LED modules are also fixed (Fig. 8, det. D).
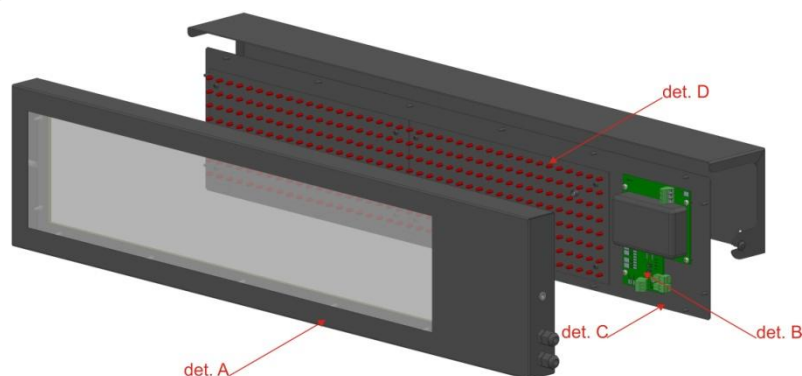


det. A – front of the device; det. B – controller; det. C – back cover; det. D – LED modules

Fig. 7

**NOTICE!**

The disassembly of the housing must be made with the disconnected power supply.

| | Interface/ Function | Connector symbols | Notes |
|---|---|---|---|
| STANDRAD[5] | RS-232 | RA | RXD line of the RS-232 interface. The line should be connected with the weighing terminal output. |
| | | RK | GND line of the RS-232 interface |
| | 0/20mA (CL) digital current loop | CA | CL line of the current loop. The line should be connected with the weighing terminal TDX output |
| | | CK | GND line of the current loop interface |
| | RS-485  RS-422 | A | RS-485 and RS-422 interface non-inverting line |
| | | B | RS-485 and RS-422 interface inverting line |
| | | GND | GND line of the RS-485 and RS-232 interface for use at risk of a significant difference in the potentials of the display mass and the weighing terminal mass |

Table 2

### 5.2.1  RS-232 connector:

For configuration purposes, the user connects with the display for weighing scales via the RS-232 connector (Fig. 6), using the computer with the RGB WagSet 2 software installed.

### 5.2.2  RS-485 / RS-422 connector:

For configuration purposes, the user connects with the display for weighing scales via the RS-485 or RS-422 connector (Fig. 6), using the computer with the RGB WagSet 2 software installed.

### 5.2.3  0/20mA digital current loop:

For communication purposes, the user connects with the display for weighing scales via the digital current loop connector (Fig. 6), using the computer with the RGB WagSet 2 software installed.

## 6.  Automatic brightness control of the display for weighing scales

## 6.1  Lighting sensor

In the standard version, the display for weighing scales has a lighting sensor included, which is placed on the LED panel. The device, in response to the intensity of daylight, adjusts the brightness of the display for weighing scales.

## 7.  Initial start-up

Step 1:  Make sure that all cables are properly connected,
Step 2:  Make sure that all components have been installed in the correct orientation,
Step 3:  Connect the device to the mains power source,
Step 4:  If properly connected, the system will display moving arrows (<<<<), followed by the symbol of a hard space (_) shown in the bottom right corner, which means that the user has 7 seconds to send the configuration to the display for weighing scales. If the user does not enter the configuration, the display will start the Autolearn procedure. If the process is successful  the "Ready" text is shown and then the unit is ready to show weighting results.

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[5] On the PCB controller there are located all connectors available as standard, however, only the RS-232 interface cable (without a tip) is led out.

# 8. Disposal and recycling

## 8.1 Recycling of packing materials

The packaging materials must be segregated , then recycled in accordance with local regulations for waste disposal regulations.

## 8.2 Disposal of the device

The device can not be disposed with regular household waste!

According to Directive 2002 / 96 / EC ( WEEE ) , when repair is not economically reasonable, user is obligated to hand over damaged or destroyed device to an appropriate disposal facility .

# 9. Most common errors during the installation

1    Incorrect configuration uploaded to the display for weighing scales.
2    Drilling additional mounting holes or holes in junction boxes.

**Because the product is constantly developed, presented data is subject to change without notice.**