

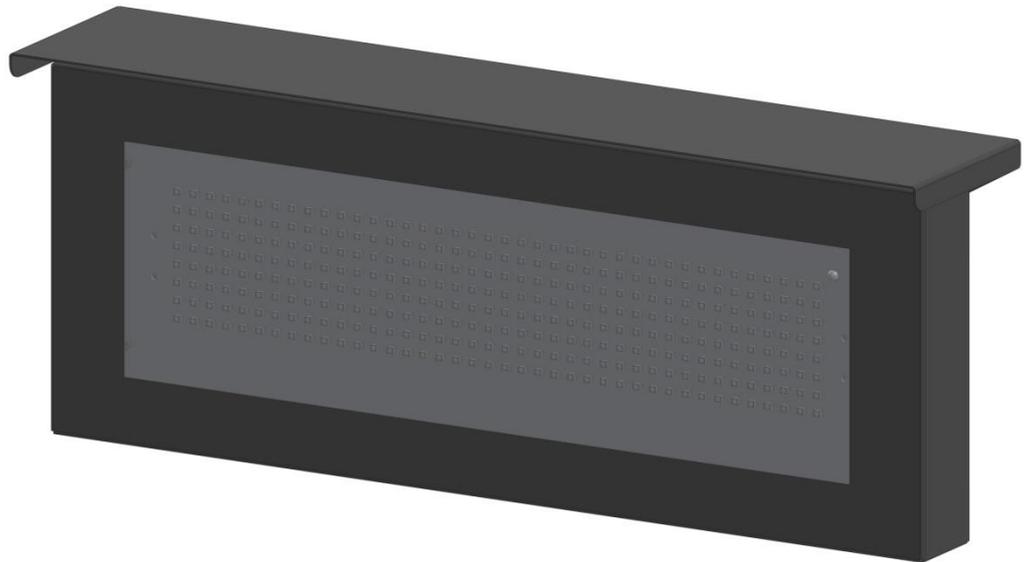


# OPERATION AND MAINTENANCE MANUAL

WA-1 OPTIMA

Product code:

314-04-01



\*Explanatory figure

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# 1. Specifications

## WA -1 OPTIMA weighing scale display

Dimensions <sup>1</sup> (WxHxD):	426mm x 164mm x 60mm / 16.8in x 6.5in x 2.4in
Digit height:	60mm / 2.4in
Acceptable input voltage range (long-term):	100 ÷ 240 VAC
Acceptable input voltage range (short-term):	85 ÷ 264 VAC
Acceptable input voltage frequency range:	47 ÷ 63 Hz
Operating temperature (ambient):	-25°C ÷ 45°C / -13°F ÷ 113°F
Operating temperature (device surface):	-25°C ÷ 70°C / -13°F ÷ 158°F
Average power consumption:	5W
Ingress protection rating <sup>2</sup> IP:	65
Weight:	3kg / 6.6lbs

## 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.

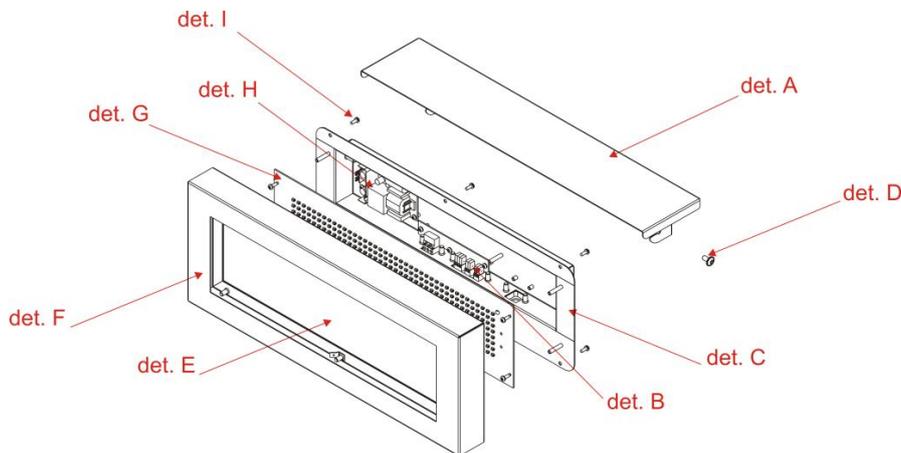
Due to protective packaging, the device should be stored in the temperature -20°C ÷ +60°C [-13°F ÷ 140°F] at the humidity below 99%RH.

## 3. Device construction

WA-1 Optima is cased in a powder-coated steel housing. The properly installed device meets the IP65 tightness requirements.

### 3.1 WA-1 Optima construction

The figure shows the WA-1 Optima<sup>3</sup> weighing scale display construction.



det. A - roof det. B – connector module; det. C - back cover; det. D - roof fixing screw; det. E - viewfinder; det. F - device front; det. G - LED module; det. H - power supply unit; det. I - back cover fixing screws;

Fig. 1

#### 3.1.1 List of the weighing scale display cables

- 1 Five-metre power lead (3x1mm<sup>2</sup> [3x17AWG], core markings: blue, brown, yellow-and-green), terminated with WAGO connectors on each core.
- 2 Five-metre signal cable (2x0.5mm<sup>2</sup> [2x18AWG], RS232 interface; core markings: white -> RA, green -> RK).

<sup>1</sup> Dimensions without the roof

<sup>2</sup> Ingress protection rating defined according to the EN 60529 standard.

<sup>3</sup> Explanatory figure

## 3.2 WA-1 Optima dimensions

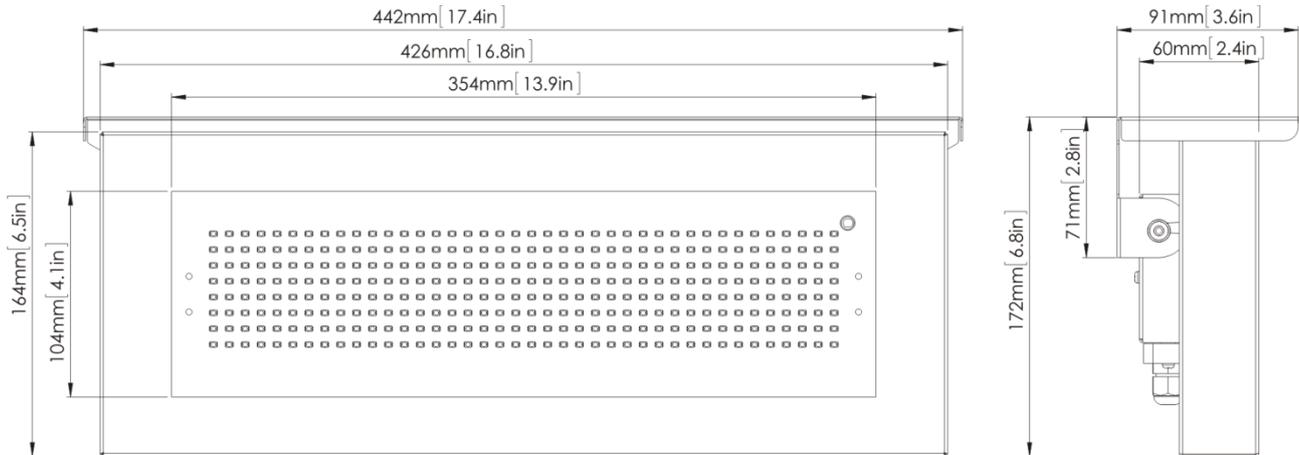


Fig. 2

## 3.3 Mounting the weighing scale display

### 3.3.1 Mounting bracket

The roof functions as a mounting bracket (Fig. 3).

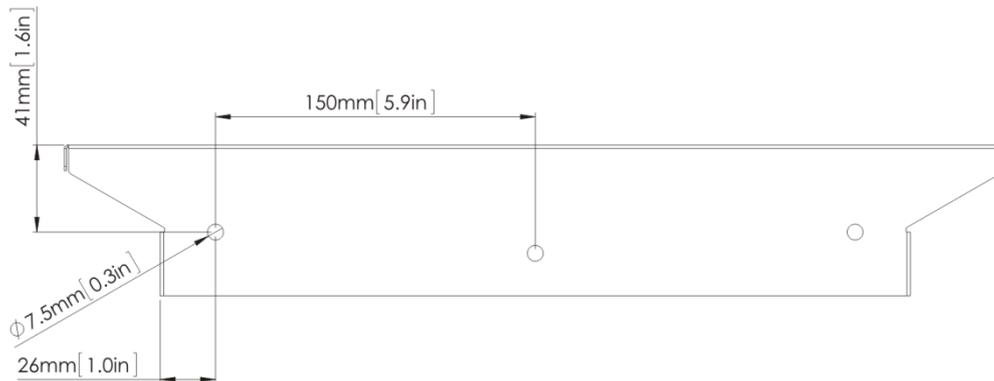


Fig. 3

## 4. Device installation

Correct installation consists in mounting the device on a flat surface with the wires facing down. Only the correct installation of the device ensures its proper operation and the maintenance of the device parameters, like, among others, the housing tightness rating satisfying the required 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 electric shock! In addition, failure to comply with the manufacturer's instructions may void the warranty.

### NOTICE!

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

## 4.1 WA- 1 Optima 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)<sup>4</sup>.

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

## 4.3 WA-1 Optima manual configuration

The configuration of the device using RGB WagSet 2 allows:

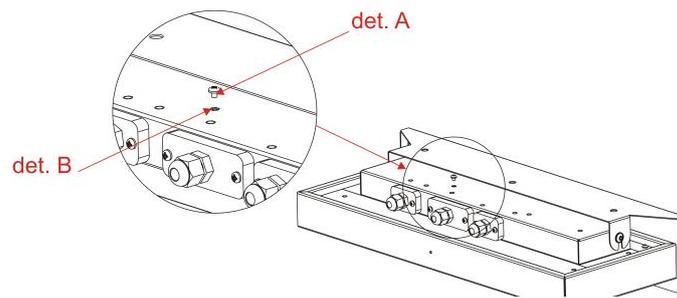
1. Precise defining of the communication protocol with any weighing terminal;
2. Determining the response to the events reported by the weighing terminal (e.g. overloading, underloading, instability, etc.);
3. Entering advertising text;

### 4.3.1 Defining communication protocols

#### 4.3.1.1 Embedded user menu ("DEF" microbutton)

The user menu embedded in the device allows you to select a communication protocol, display the information about the software version, reset to the default settings. The "DEF" microbutton, used to operate the menu, is located inside the display. However, after unscrewing the lock screw (Fig. 4, det. A), it is accessible through a technological hole (Fig. 4, det. B) without opening the device. The button is at a depth of approx. 30mm.

<sup>4</sup> 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).



det. A - lock screw; det. B - technological hole

Fig. 4

The user menu is called up by pressing and holding down the "DEF" microbutton and releasing it when the desired option is displayed. Regardless the option, you can exit the user menu by pressing the microbutton and releasing it when switching between the options (while switching between the options, the display is not displaying 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](http://www.kazel-displays.com)

#### 4.3.1.2 Interface transmission and communication speed parameters

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

Table 1

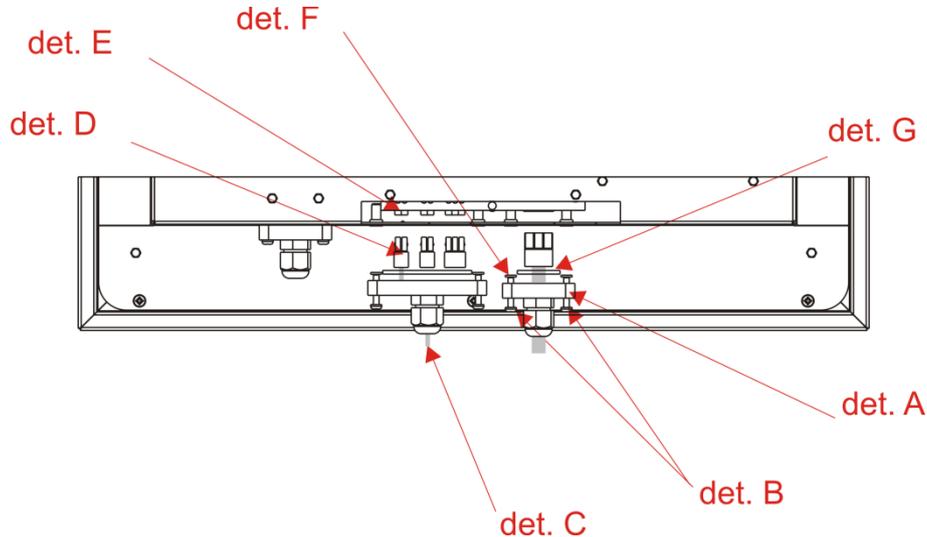
#### 4.3.1.3 RGB WagSet 2 software

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

## 5. OPTIMA hermetic connectors

The device has a series of hermetic connectors that enable its communication with the peripheral devices. The connectors are hidden under the permanent, sealed casing, which protects them from damage and against water. The construction enables a convenient access to the device ports without the need for its disassembly.

### 5.1 Hermetic connector construction<sup>5</sup>



det. A – connector casing; det. B – fixing screws; det. C – cable; det. D – plug; det. E – socket; det. F – security pad; det. G – seal;

Fig. 5

### 5.2 List of the WA-1 Optima connectors

Table 2 contains the description of the WA-1 Optima signal connectors. The connectors are accessible after the disassembly of the connector casing (det. A, Fig. 5) by unscrewing its fixing screws (det. B, Fig. 5). The diagram of the connector arrangement is displayed on the sticker (Fig. 6) placed on the back of the device.



Fig. 6

	Interface / Function	Connector markings	Notes
STANDARD	RS-232	RA	RXD line of the RS-232 interface. The line should be connected with the weighing terminal TXD 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 TXD 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 interfaces for use at risk of the occurrence of a significant difference in the potentials of the display mass and the weighing terminal mass	

Table 2

<sup>5</sup> Explanatory figure, to show the sockets in the connector modules, a part of the housing has been "removed"

### 5.2.1 RS-232 connector :

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

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

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

### 5.2.3 0/20mA digital current loop

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

## 6. Automatic brightness control of the weighing scale display

### 6.1 Lighting sensor

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

## 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 correct orientation,

Step 3 Connect the device to the mains power supply,

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 weighing results.

## 8. Disposal and recycling

### 8.1 Packaging material recycling

The packaging elements must be segregated and, then, recycled in accordance with the local executive regulations on waste disposal.

### 8.2 Device disposal

The device must not be disposed of as urban waste!

In accordance with the directive 2002/96/EC (WEEE), if the repair of the device is not economically justified, the user must take the damaged or destroyed equipment to a special waste disposal centre.

## 9. Most common installation errors

- 1 Invalid configuration uploaded to the weighing scale display.
- 2 Drilling additional mounting holes or other holes in the junction boxes.

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