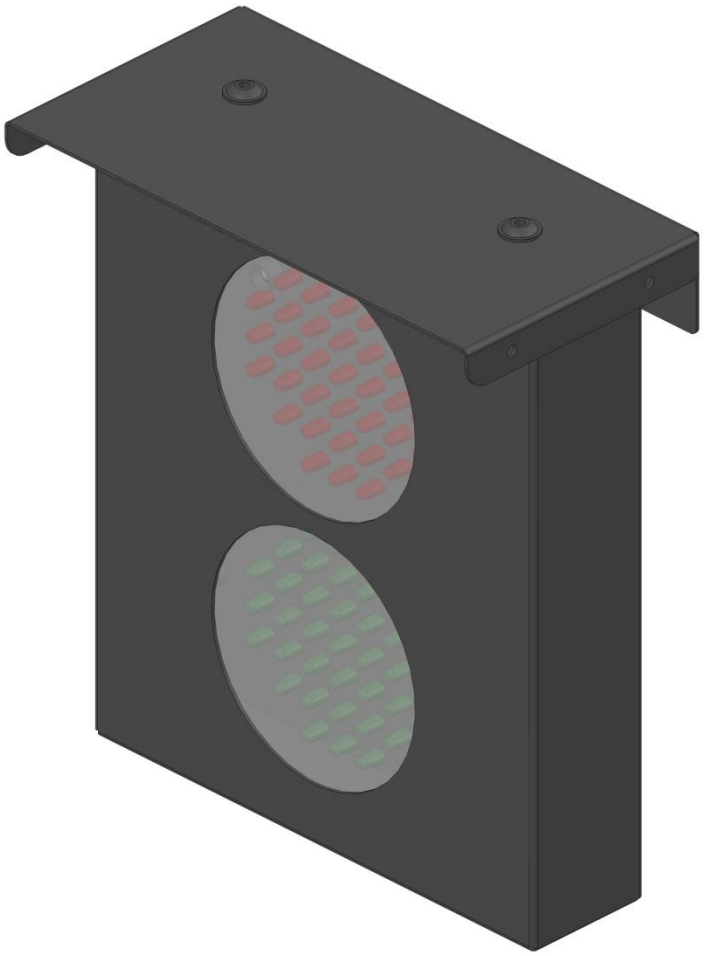
KAZEL®
by RGB Technology

OPERATION AND MAINTENANCE MANUAL

TL-70-2

Product code:

319-01-01



RoHS COMPLIANT

CE

*Explanatory figure

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1. Specifications

Dimensions (WxHxD)	168mm x 192mm x 86mm / 6.6in x 7.6in x 3.4in
Light field diameter:	70mm / 2.8in
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[1] IP:	65
Weight:	1.5kg / 3.3lbs

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.

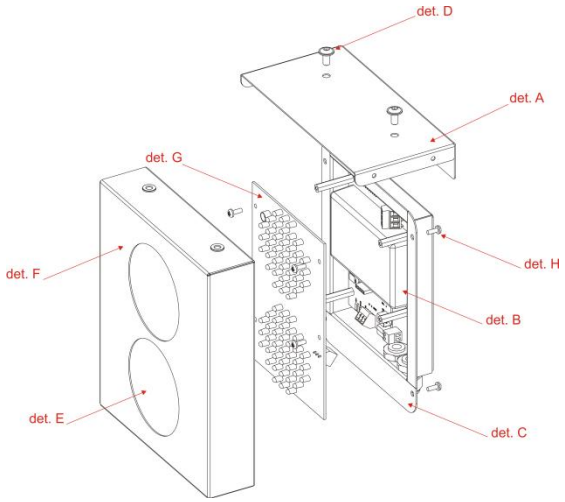
Due to protective packaging, the device should be stored in the temperature -25°C ÷ +60°C [-13°F ÷ 140°F] at the humidity below 99%RH.

3. Device construction

TL-70-2- is cased in a powder-coated steel housing. The properly installed device meets the IP65 tightness requirements.

3.1 TL-70-2 construction

The figure shows the TL-70-2 light signalling device[2].



det. A -roof; det. B - controller; det. C - back cover; det. D - roof fixing screw; det. E - light field; det. F - device front; det. G - LED module; det. H - back cover fixing screws;

Fig. 1

3.1.1 List of the signalling device cables

1 Five-metre power lead (3 x 1mm² [17AWG], core markings: blue, brown, yellow-and-green), terminated with WAGO connectors on each core.

2 Five-metre signal cable (3 x 0.25mm² [24AWG], core markings: black - GND, red - red button/switching on red light, orange - green button/switching on green light), terminated with WAGO connectors on each core.

[1] Ingress protection rating defined according to the EN 60529 standard.

[2] Explanatory figure

3.2 TL-70-2 dimensions

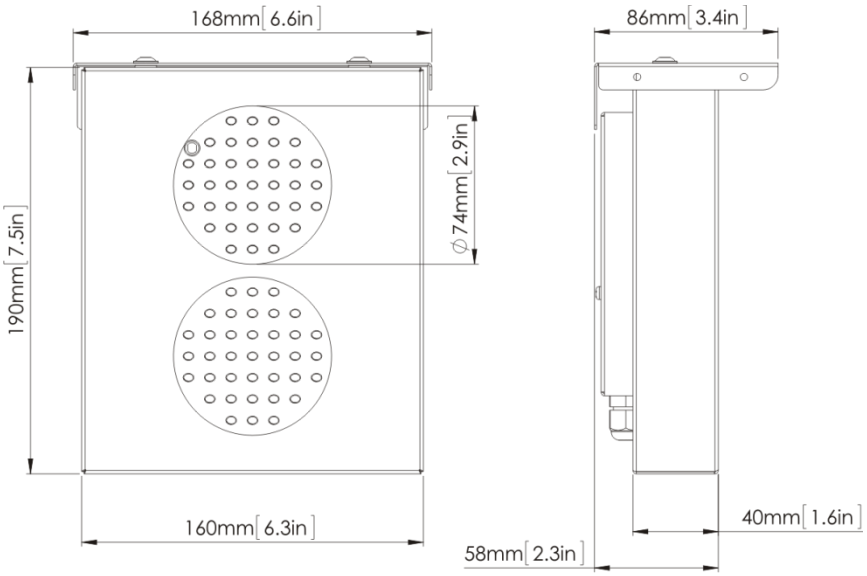


Fig. 2

3.3 Mounting the light signalling device

3.3.1 Mounting bracket

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

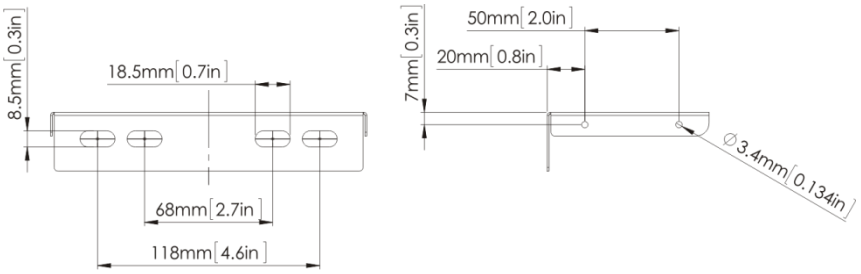


Fig. 3

4. Device installation

Correct installation consists in mounting the device in a standard way, namely, on a flat surface or using one of the alternative methods allowed by the manufacturer. In both cases, the device must be mounted 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 Alternative mounting options

The roof construction allows you to mount the signalling device on posts with diameters of 50÷70mm [2÷2.8in] and 100÷120mm [3.9÷4.7in], using a U-bolt with a rod diameter of 8mm [0.7in] (Fig. 4), or on the WA-2 Professional weighing scale display housing, using the mounting holes on the roof side (Fig. 5).

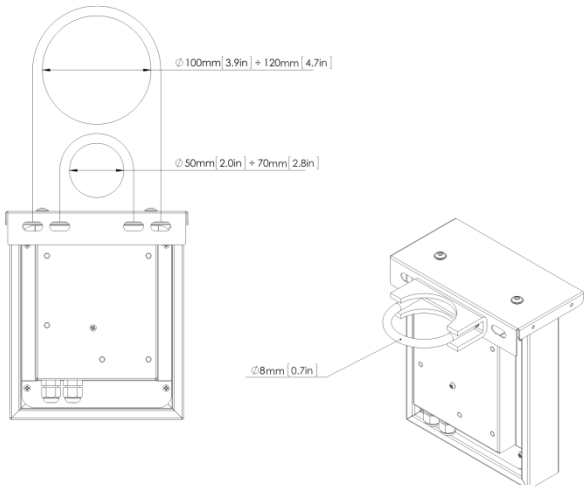


Fig. 4

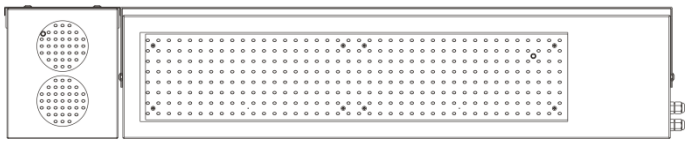


Fig. 5

4.2 TL-70-2 application

The device is designed for traffic control. It allows you to signal the driving possibility or the traffic ban and to determine the driving direction. The signalling device can also be used to present the industrial machinery status. For the proper operation of the device, it necessary to pre-configure it using the embedded user menu.

4.3 TL-70-2 configuration

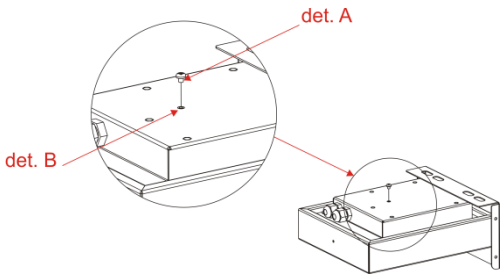
The configuration of the device using the menu allows:

1 Choice of a communication protocol with a control module, such as a weighing terminal, an operator panel
2 Determining the response to the events reported by the control module

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, display the set protocol, reset to the default settings. The DEF microbutton, used to operate the menu, is located inside the signalling device. However, after unscrewing the lock screw it is accessible through the technological hole without opening the device.



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

Fig. 6

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) i (info) - This option allows you to display the software version and returns the information about the set communication protocol. Exiting the info option is done automatically after displaying the information.
2) P (proto) - This option allows you to select a signalling device communication protocol to work with the given control modules uploaded to the device memory. You can change a protocol by pressing the microbutton. Accepting the selected protocol is accomplished by long holding down the microbutton (until the inscription "Ok" appears). Exiting the "proto" option comes after 30 seconds of the user inactivity.
3) C (custom) - The "custom" option allows you to select a dedicated signalling device communication protocol to work with the control modules of selected clients. The protocols have special, custom settings needed for a given customer. Setting a protocol is done in the same way as in the case of the "proto" option - accepting the selected protocol is accomplished by long holding down the microbutton (until the inscription "Ok" appears), while exiting the "custom" option comes automatically after 30 seconds of the user inactivity.
4) R (reset) - This option allows you to reset the default light signalling device protocol. 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, and the communication port for the control module). To restore the default settings you should, during the normal operation of the device, press the microbutton and hold it down until the inscription "R" appears. Hold the button down until the inscription "R" starts flashing and do not release it until the information "default" is displayed. Releasing the button before the inscription "default" appears will result in interrupting the process of restoring the default settings and the display will continue working according to the previously accepted parameters.

4.3.1.2 Interface transmission and communication speed parameters

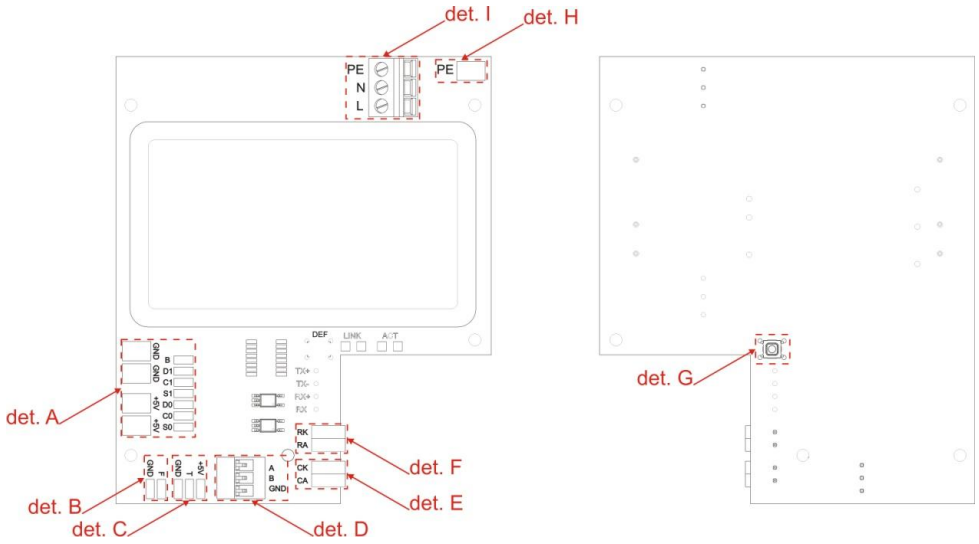
Interface	Transmission parameters	Communication speed
RS232, RS485, RS422, CL	Data bits: 7, Parity: Odd, Even Data bits: 8, Parity: None, Odd, Even Stop bits: 1	300, 600, 1200, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, 115200, 230400

Table 1

5. Controller

The controller is a device responsible for the process of displaying the content by the light signalling device.

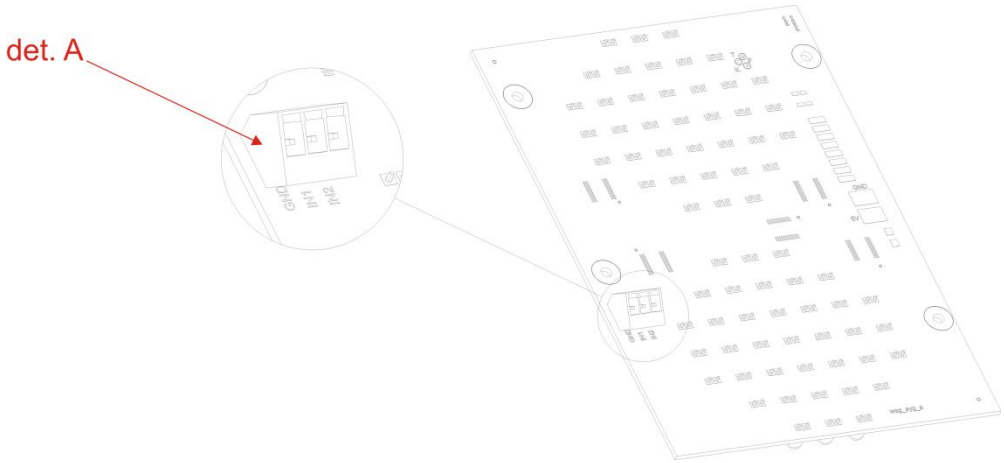
5.1 Controller connectors



det. A, det. B, det. C – LED module connectors; det. D – RS-485/RS-422 connector; det. E – 0/20mA digital current loop; det. F – RS-232 connector; det. G – *DEF* microbutton; det. H – housing earthing soldering point; det. I – network power supply connector

Fig. 7

5.2 List of the LED module conectors

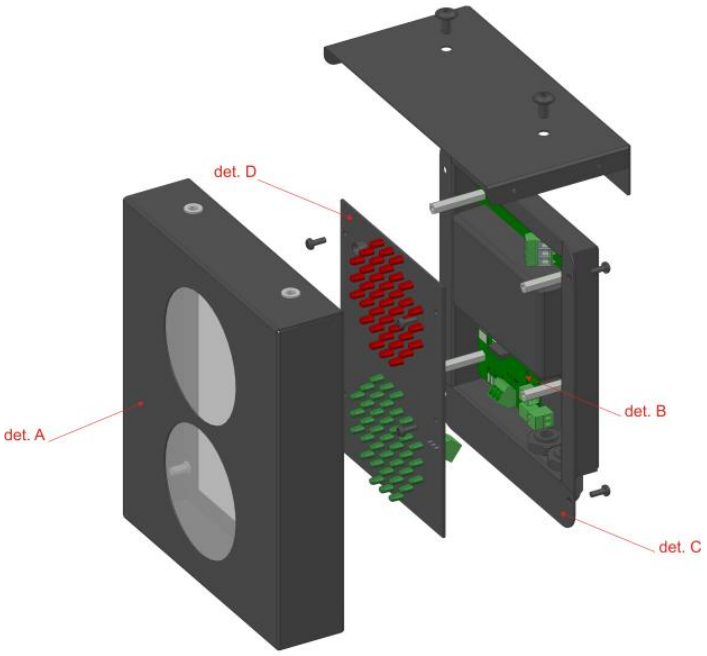


det. A, – operator panel connector (dry contact)

Fig. 8

5.3 List of the signalling device connectors

Table 2 contains the description of the connectors in the light signalling device. The connectors are accessible after the disassembly of the back cover and the LED module mounted on this cover.



,

det. A – device front; det. B – controller; det. C – back cover; det. D – LED module;

Fig. 9

NOTICE!

The housing should be disassembled with the disconnected power supply.

	Interface / Function	Connector markings	Notes
STANDARD[3]	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 inverting line
		B	RS-485 and RS-422 interface non-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
	Operator panel (dry contact)	GND	GND line of the operator panel
		IN1	Signal switching on the green light
		IN2	Signal switching on the red light

Table 2

5.3.1 RS-232 connector :

For the communication purposes, the user connects with the controller via the RS-232 connector (Fig. 7) using the control module

5.3.2 RS-485 / RS-422 connector:

For the communication purposes, the user connects with the controller via the RS-485 or RS-422 connector (Fig. 7) using the control module.

5.3.3 0/20mA digital current loop

For the communication purposes, the user connects with the controller via the digital current loop connector, (Fig. 7) using the control module.

5.3.4 Operator panel (dry contact)

For the control purposes, the user manipulates the operator panel or relay contacts.

6. Automatic brightness control of the light signalling device

6.1 Lighting sensor

In the standard version, the controller has a lighting sensor included, which is placed on the LED panel. The device, in response to the ambient brightness, adjusts the light signalling device 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 The properly connected system will display the symbols "-" in the light fields, followed by the hard space symbol (_) in the bottom field . It means that the device is working according to the default protocol. In 7 seconds, the signalling device will go into the default display state.

[3] All the connectors available as standard are located on the controller PCB. However, in the standard version, only the cable connected to the operator panel is led out .

8. Additional options

8.1 Operator panel

The operator panel is a separately offered accessory (additional option) which, among others, can work with the device. On the panel, there are two monostable buttons that allow you to change the information displayed by the signalling device. An example of the panel is shown in Fig. 9[4]

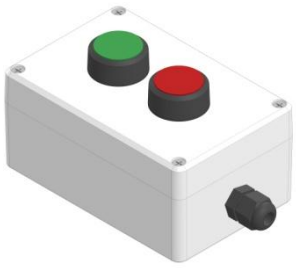


Fig. 10

9. Disposal and recycling

9.1 Packaging material recycling

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

9.2 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.

10. Most common installation errors

1 Invalid configuration uploaded to the light signalling device.
2 Drilling additional mounting holes.
3 Installation not in accordance with the manual, that is wires facing up.

[4] Explanatory figure, the supplied panel may differ from the presented one