

## DEVICE USER MANUAL

### RM-470TL REMOTE DISPLAY

## 1. Introduction

RM-470TL remote display is designed to display measurement results transmitted by weighing terminals. The display operates in the automatic mode by default (see Autolearn) and in standard installations does not require prior configuration. For advanced options, it is necessary to adjust the settings via KAZEL WagSet software (from version v3.00), or through the user menu embedded in the device, or Web browser. KAZEL WagSet software is available for download at: <http://rgbtechnology.pl/soft/>.

KAZEL WagSet software enables advanced configuration of the device:

- precise defining of the communication protocol with any weighing terminal,
- precise setup of traffic lights, including arrows,
- determining the response of the display to the events reported by the weighing terminal (e.g. overload, underload, instability, etc.),
- entering and editing advertising text.

The detailed information concerning the configuration from a computer can be found in the manual supplied with KAZEL WagSet software<sup>1</sup>. The way of connecting the display to a PC is described in section 4 of this manual.

The embedded Web browser allows:

- selecting the communication protocol of the weighing indicator,
- selecting a pre-configured profile for traffic lights,
- changing settings for the displayed measurement unit,
- changing the network settings,
- checking the version of and updating the display software.

The user menu embedded in the device allows basic device configuration without using a PC:

- manual selection of a communication protocol from the list enabling operation with selected weighing terminals,
- restoring the factory settings, displaying the software version, displaying the saved communication protocol and the communication ports, displaying the IP address and the subnet mask.

## 2. Autolearn mode

The "Autolearn" mode is enabled by default (position #0 is set in the "proto" submenu). To disable it, the communication protocol should be selected manually using the embedded user menu or KAZEL WagSet software or the Web browser. When this mode is active, at each start-up, the device detects the parameters of communication with the weighing terminal and analyses the structure of the data frames which are sent to it. It then adjusts its settings to allow proper communication with the terminal. The whole operation lasts a few seconds, depending on the baud rate and time intervals between the consecutive frames. All communication interfaces are supported, i.e. RS-232, RS-485/RS-422, 0/20mA digital current loop and the Ethernet.

**The "Autolearn" procedure steps and their signaling are as follows:**

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

During the analysis of the protocol and its frame structure, the measurement unit is also recognized, if sent by indicator. The following tags are recognized - "kg", "k", "K", "tn", "TN", "T", "t", "LB", "lb", "L", "l", "OZ", "oz", "o", "O". In case the indicator does not send units or sends units that are not recognized by the "Autolearn" function, the default unit will be set. Depending on the purchased regional version, it is "kg" or "lb".

The "Autolearn" function also detects gross/net measurements if the following markers are sent in the frame:

- for the Net measurement: "N" from the ASCII table,
- for the Gross measurement: "G" from the ASCII table.

---

<sup>1</sup> Click on the Help tab > Help or use the F1 button.

In this case, the marker position will also be saved. If, during the operation of the device, the transmitted measurement marker changes, e.g. from "N" to "G", the indicator will change accordingly.

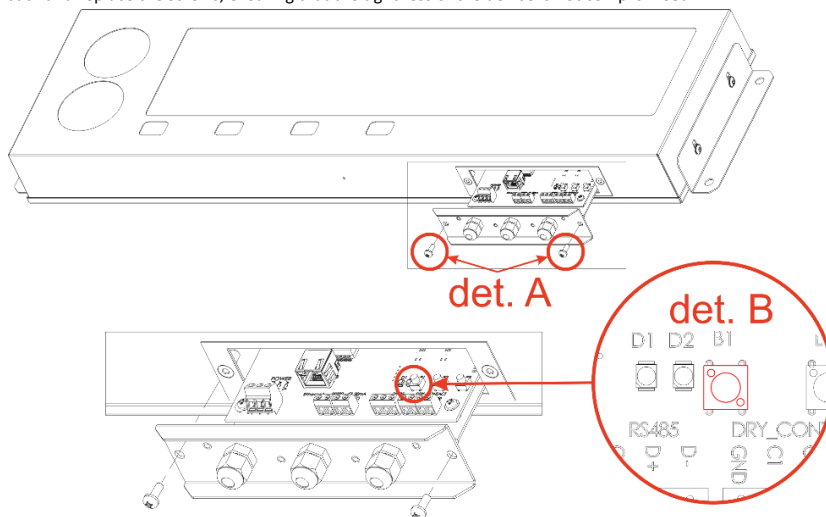
The "Autolearn" function supports the following transmission parameters:

**Table 1**

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

### 3. Embedded user menu

In order to activate the embedded user menu, use the micro button marked as det. B in Fig. 1. To access the button, you need to unscrew the slide-out drawer (det. A) where the controller board is located. When you have finished using the embedded menu, push the drawer back and replace the screws, ensuring that the tightness of the device is not compromised.


**Fig. 1**

The user menu has the following options:

- info,
- proto,
- custm,
- lights,
- reset.

To activate a specific option, hold the micro button down until the description of this option appears ("info", "proto", "custm" or "reset" message). The option is selected after releasing the micro button when its name is being displayed. If the button is released when the screen is blank between two consecutive options, the display will return to its normal operation.

The "info" option allows you to display the device software version and the network settings (IP address, network mask, communication port for KAZEL WagSet program and communication port for the weighing terminal).

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

The "custm" option allows you to select a dedicated communication protocol to work with weighing terminals of selected clients. These protocols have special, custom settings required by those clients. 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 micro button (until the message "Saved" appears), while exiting the "custm" option happens automatically after 30 seconds of the user inactivity.

The "lights" option allows you to choose the configuration of the traffic lights. Three profiles are available:

- 1 – lights: if there is no communication for more than 0.5 second, the red light will show,
- 2 – lights: if there is no communication for more than 3 seconds, the "X" characters will be displayed on both red and green light,
- 3 – lights: if there is no communication, the status of the traffic light will not change.

Switching between the individual profiles is done by pressing the "B1" micro button. Saving the selected profile is accomplished by long holding down the "B1" micro button, until the message "Saved" appears. Exiting the "lights" option comes after 30 seconds of the user inactivity.

The "reset" option allows you to restore the remote display to its default settings, activate the Autolearn mode and restore the network layer settings (IP address, network mask, communication port). Hold the button down until the message "reset" starts blinking 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 determined parameters. Uploading new network settings is possible using KAZEL WagSet software and through the Web browser.

**Table 2. List of the supported protocols.**

SEQ. NO.	TERMINAL NAME	PROTOCOL	SEQ. NO.	TERMINAL NAME	PROTOCOL
0	Autolearn mode		28	CAS NTS70A	
1	Rhewa 83 Plus		29	Cardinal 825	
2	Radwag		30	Cardinal 204 225 748P	
3	HBM WE2108		31	AMCS Group	
4	HBM WE2110		32	A&D AD4329 AD4401	
5	Rinstrum 320 420	Auto1	33	Ian Fellows SGO	
6	SysTec / Pronova		34	Ian Fellows SGO Status	
7	SysTec		35	Zemic	
8	Precia Molen	Master D	36	Pfister DWT800	
9	Precia Molen I300 Slave A+		37	Pfister DWT410	
10	Precia Molen I300 Master A+		38	Axis Long	
11	Dini Argeo	Standard String	39	Avery L225	
12	Mettler Toledo Standard		40	T – Scale U8	
13	Fawag	P2	41	Rice Lake 480 920i	
14	Leon Engineering	W-OUT	42	Vishay VT300	
15	Soehnle 3010 3011 3015	13	43	Belt Way	
16	Eurobil Balance Iscale	Continua	44	Axtec	
17	Compatible with the SMA protocol	SMA	45	GSE 460 465	
18	Sartorius	Remote Control	46	GSE 250	AUTO1
19	Sensocar		47	STB-22	
20	Flintec		48	Utilicell Matrix II	Format1
21	Schenck	Disomat B	49	Precia Molen i35	Master A+
22	Schenck Opus Serial		50	Precia Molen i35	Master D
23	Gravex GX25S		51	SMART SWIFT	
24	Gravex GX18		52	Epelsa: BC, BI, Dexal, Cyber, Orion, Orion Plus, Cyber Plus, V-36	Epelsa Cada LetraB1
25	IHG TMI LP7510		53	B-tek String – Bold Font	Serial String
26	Arpege MasterK		54	B-Tek String – Normal Font	Serial String
27	Bilanciali D410				

## 4. Connecting the display to a computer for configuration purposes

### 4.1 KAZEL WagSet<sup>2</sup>

Before configuring the display through KAZEL WagSet program, connect it to a computer. The display should be connected to the RS-232 computer port as shown in Fig. 2. The location of the remote display RxD and GND connectors is shown in section 5 of this manual.



Fig. 2

### 4.2 Web browser

RM-470TL remote display is equipped with a network communication module (the Ethernet module). It allows intuitive configuration through the embedded website - Web browser. In order to configure the network connection, please follow the "Network Card Configuration Instruction" available for download at: <http://rgbtechnology.pl/soft/>.

#### 4.2.1 Connection with the device

The connection with RM-470TL display is established through the Ethernet interface; the integrated website is operated via a web browser (recommended browser: Mozilla Firefox version 16.0.2 or later).

To connect to the device, enter the IP address assigned to the device into the browser (by default **192.168.0.11**).

Then, the device will ask you to enter the username and the password (by default User: **admin**, Password: **dbps**).

**NOTICE!** If several RM-470TL remote displays are connected to the same network, the devices should be connected sequentially, giving them unique IP addresses, to avoid the conflict of addresses (initially, they all have the same default address).

#### 4.2.2 Description of the Web browser tabs

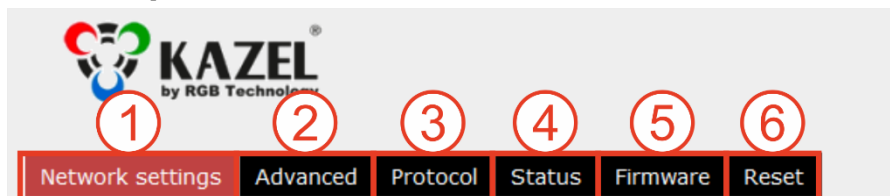


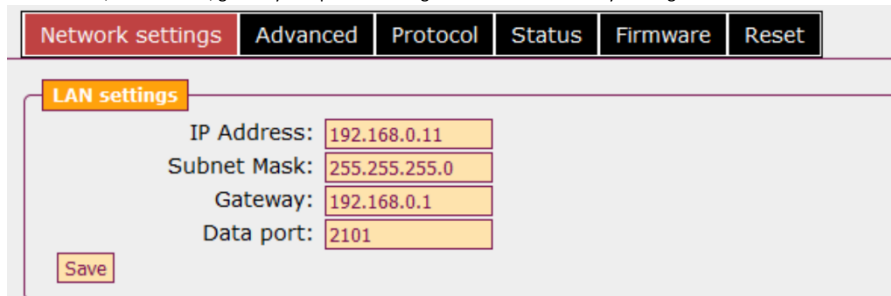
Fig. 3

The Web browser is divided into six main tabs:

- 1) Network settings,
- 2) Advanced,
- 3) Protocol,
- 4) Status,
- 5) Firmware,
- 6) Reset.

<sup>2</sup> The software compatible only with the Windows operating system.

1) **Network settings** - allows you to set parameters for connecting with the device via the Ethernet. This tab allows you to change the IP address, subnet mask, gateway and port. All changes must be confirmed by clicking on the "Save" button.



Network settings	Advanced	Protocol	Status	Firmware	Reset
------------------	----------	----------	--------	----------	-------

**LAN settings**

IP Address:

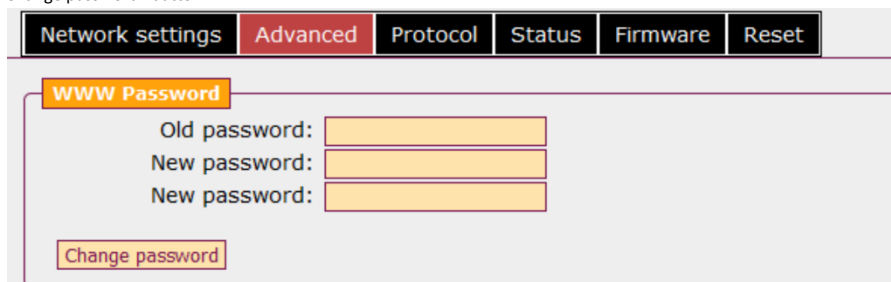
Subnet Mask:

Gateway:

Data port:

Fig. 4

2) **Advanced** - allows you to change the Web browser access password. To do this, enter the current password in the "Old password" field, and enter a new password in the "New password" field. All changes must be confirmed by clicking on the "Change password" button.



Network settings	Advanced	Protocol	Status	Firmware	Reset
------------------	----------	----------	--------	----------	-------

**WWW Password**

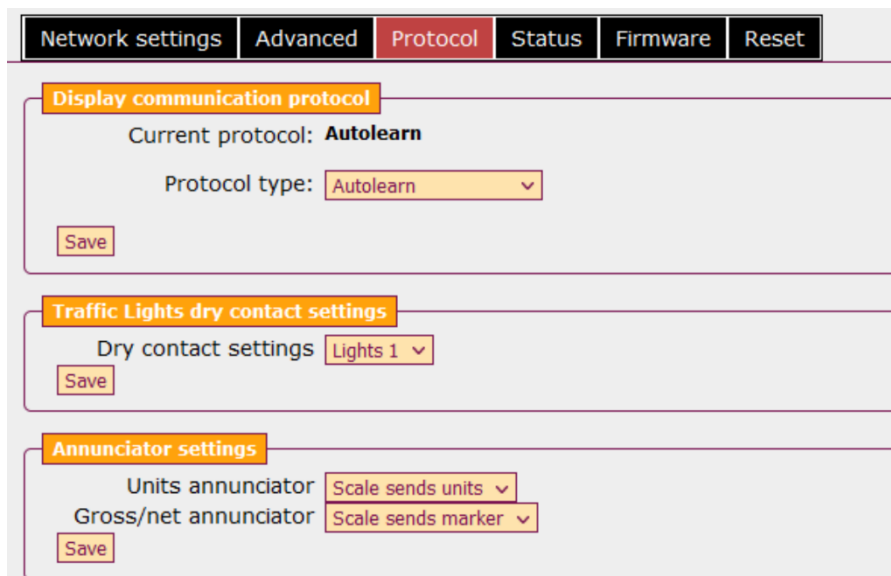
Old password:

New password:

New password:

Fig. 5

3) **Protocol** - displays the currently selected protocol with its parameters, and allows you to select another protocol from the list of the ones saved in the device. This tab allows you to choose a pre-configured profile for traffic lights. In the lower part of the tab, you can choose the weight unit and the weighing mode (net/gross). All changes must be confirmed by clicking on the "Save" button.

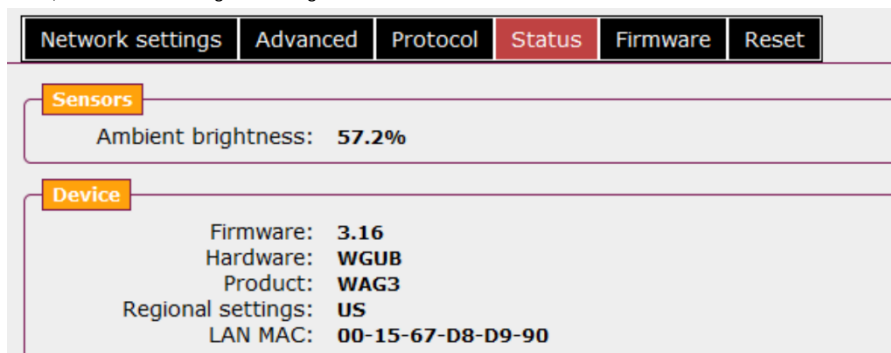


The screenshot shows the 'Protocol' tab selected in a navigation bar. Below the navigation bar, there are three sections:

- Display communication protocol:** Shows 'Current protocol: Autolearn' and 'Protocol type: Autolearn' with a dropdown arrow. A 'Save' button is below.
- Traffic Lights dry contact settings:** Shows 'Dry contact settings Lights 1' with a dropdown arrow. A 'Save' button is below.
- Annunciator settings:** Shows 'Units annunciator Scale sends units' and 'Gross/net annunciator Scale sends marker', both with dropdown arrows. A 'Save' button is below.

Fig. 6

4) **Status** - displays information about the current brightness level, and general information about the device, such as software version, MAC address and regional settings.



The screenshot shows the 'Status' tab selected in a navigation bar. Below the navigation bar, there are two sections:

- Sensors:** Shows 'Ambient brightness: 57.2%'.
- Device:** Shows 'Firmware: 3.16', 'Hardware: WGUB', 'Product: WAG3', 'Regional settings: US', and 'LAN MAC: 00-15-67-D8-D9-90'.

Fig. 7

5) **Firmware** - displays the current software version and the possibility to update the software. The configuration file is required to update the software. The software update procedure is as follows:

1. Select the "Switch to update mode" button and confirm your choice in the pop up window.
2. Wait 10 seconds for the page to refresh.
3. After refreshing, the page should look like presented in Fig. 8.

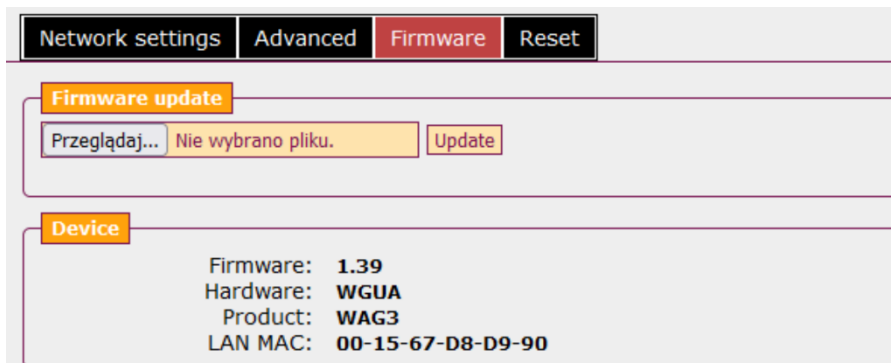


Fig. 8

4. In the "Firmware update" field, choose the file with the new software.
5. Select the "Update" button and confirm your choice in the pop up window.
6. Wait for the update process to complete and for the page to refresh again.

6) **Reset** - gives the possibility to restore the device factory settings (all changes and network settings will be removed) or to reset it.

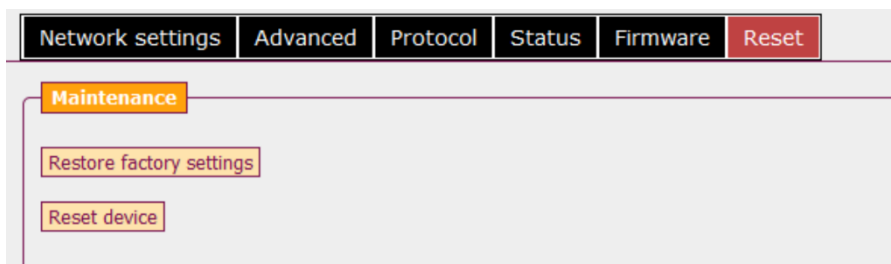


Fig. 9

## 5. List of the remote display connectors

Table 3 lists the controller connectors in RM-470TL remote display. The connectors can be accessed by pulling out the controller board drawer (Fig. 1), without opening the entire device, or removing any connections or parts.

**NOTICE!** The controller board should be accessed only when the power supply is disconnected. Take special care when doing this because of the danger of an electric shock.

Table 2 List of RM-470TL remote display connectors

Interface / Function	Connector marking	Notes
RS-232	RxD	RxD line of the RS-232 interface. The line should be connected with the weighing terminal TXD output.
	GND	GND line of the RS-232 interface.
0/20mA (CL) digital current loop	CL+	CL line of the current loop. The line should be connected with the weighing terminal TXD output.
	CL-	GND line of the current loop interface.
RS-485 RS-422	D+	RS-485 and RS-422 interface non-inverting line.
	D-	RS-485 and RS-422 interface inverting line.
	GND	GND line of the RS-485 and RS-422 interfaces for use at risk of a significant difference in the potentials of the display and the weighing terminal.
Dry-contact	GND	GND line of the operator panel.
	C1	Signal line activating the red light.
	C2	Signal line activating the green light.
	5V	- not used -
Ethernet	Ethernet	RJ-45 socket.
Power supply 110 ÷ 230 VAC	L	Phase conductor.
	N	Neutral conductor.
	PE	Protective conductor.

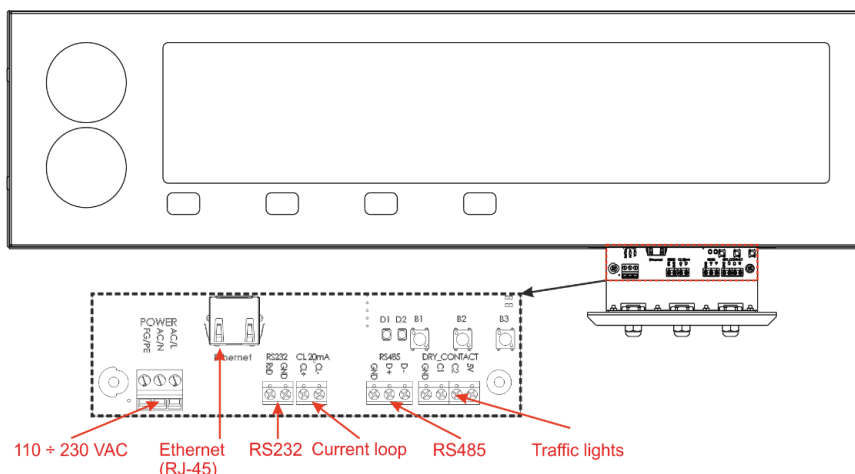


Fig. 10