Work Time Recorder with Camera

Installation manual

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This equipment has been designed and manufactured to conform to the following EC Standards:

EMC: EN55022:1998+A1:2000

EMC: EN55024:1998+A1:2001

Failure to use the equipment in the manner described in the product literature will invalidate the conformity. A “Declaration of Conformity” statement to the above is available on request.

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Introduction

The **RCPlus** recorder provides an easy way to record the working time and attendance of employees and guests and to keep track of staff on-site presence.

- ✓ Photo registration
- ✓ Fast
- ✓ Simple use
- ✓ Reliable
- ✓ Easy to integrate
- ✓ Water resistant
- ✓ Configurable, open architecture

It has been designed to enable **fast** (two separate in/out areas) and **reliable** (matching user-ID with a photo taken at the time of event) solution for **clocking in**.

It is built of two RFID readers (in/out), a 5-MPix wide angle camera used to authenticate the events, two touch buttons and 2-line, 16 chars alphanumerical display, enclosed in an IP65 rated box.

Display shows the date and time info and user_ID (if there is relevant data stored).

Recorder is IP64 rated. It can be equipped with additional features, such as IR diodes, WiFi module, GSM module, GPS receiver, barcode reader. It can utilize an exterior camera for taking additional photos.

Recorder runs on Raspbian, Linux based operating system, what provides for an easy integration with any time attendance and payroll system.

It can also be used as an access control terminal, with additional external RFID readers installed.

Installation

RCPlus recorder requires a 12V DC. Version with standard PoE power supply is also available. If there is no LAN connection, terminal requires optional WiFi or GSM module for data transfer to the server.

Terminal body consists of two parts – back and front, that are screwed together using 4 screws, hidden behind the latching covers. The back of the body does not have any installation holes due to the IP rating. During installation it is required to cut/drill a hole for the cabling in the back or side of the back of the body. Please see the fig below for the recommended location of the hole, to avoid possible damage to the PCB elements inside. Red dots mark the wall mounting screws' holes that need to be drilled in the mounting surface (wall, panel, pole, beam, etc).

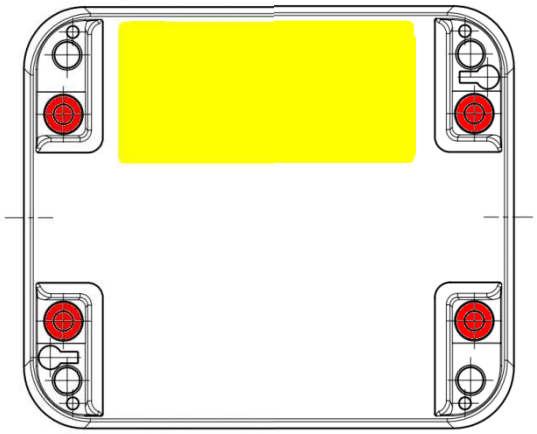


Fig. Recommended location for the cabling holes (yellow rectagle)

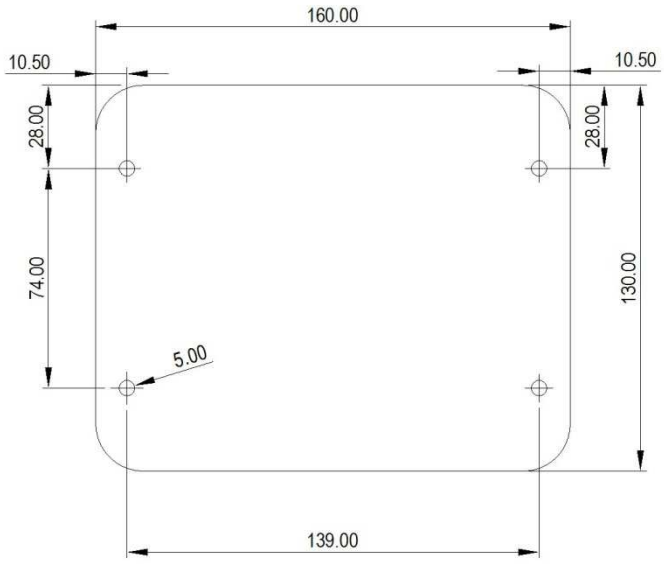


Fig. Dimensions of the terminal body and locations of the mounting holes

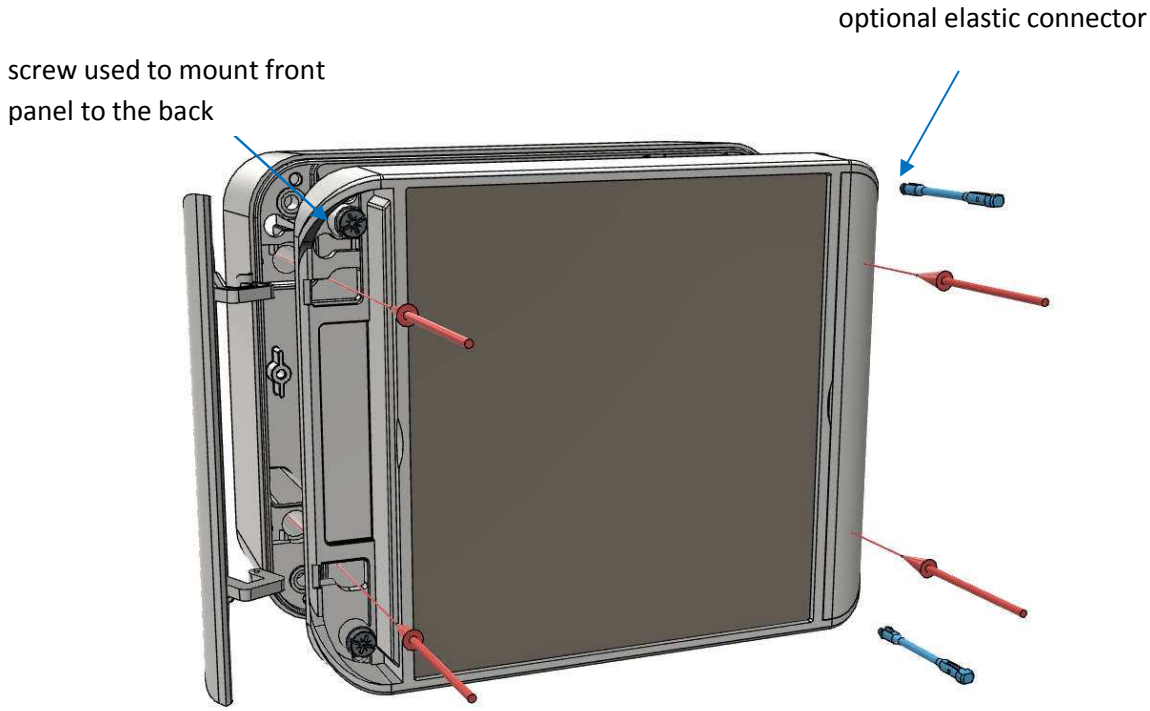
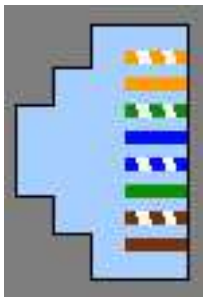


Fig 3. Exploded view with mounting screws

Feed the power (2x0.5mm^2) and Cat5e cables through the hole, secure the hole with proper filler/sealant. Prepare on-site wiring, according to the scheme below. RJ45 cable assures connectivity for LAN networks. For wireless connections additional modules are required. Leave enough wires to be able to operate the panel and connect the cables to the sockets.



TX+	white-orange
TX-	orange
RX+	white-green
---	blue
---	white-blue
RX-	green
---	white-brown
---	brown

Plug in the RJ45 plug into socket on the back of the front panel, connect the power cables to the orange connector, polarity is not relevant.

Open the side covers, screw in the mounting screws, chosen to fit the type of the surface used for installation. Do not over tighten the screws as this may damage the body of the terminal.

Close the plastic covers.

Configuration

Recorder is run on Raspbian OS, that is a version of the Debian Linux distribution. Configuration of the recorder is done by editing few files. You need to know the IP address of the terminal. To connect to the terminal, you need an application that enables SSH connections, i.e. putty. You can configure the recorder in your office or on the site, after installing it.

To locate the terminal use a software application RCPlusLoc (you can download it from our website). When you run it, you can check the IP address of the terminal. Default address is 192.168.0.99.

Run your SSH application and connect to the terminal, using the obtained IP address, port 22.

Login as 'admin', password 'rcp#admin'. You are presented with a prompt admin@rcplus:/#

Files used for configuration are as follows:

`/etc/hostname`

– file storing recorder name used i.e. for prompt, default value is 'rcplus.

`/usr/local/rcp/uvc.conf`

– config file for the uvc process, you can change the following variables:

- 'reader_id=rcplus' - is used as a variable for names of created files; change the value to what you need, max length is 20 chars, only use Latin chars and digits
- 'pic_per_event=2' – number of photos taken per one event, max value is 5 (due to practical reasons)
- 'working_dir=/workdir' – path and name of the directory used to store all the files; change the value to what you want

`/usr/local/rcp/synchro`

– configuration file for the synchronization of the data files stored in the Recorder with TAS, if default data-send procedure is used.

- ‘employees’ – name of the file providing the *user_ID <-> name* relation, described below
- ‘root@192.168.0.2:/var/www/test/’ – address of the Time Attendance Server (TAS) with destination path for the data files to be copied, if default data-send procedure is used.

`/usr/local/rcp/clean_dir_l`

– procedure used to remove old subdirectories.

- ‘SUBDIR_LIMIT=32’ – max number of directories in the /workdir directory, limit can be changed

NOTE: take into consideration free space on the Reader

`/workdir/employees`

- file storing the user_IDs and users’ names, used to display on the Recorder’s display the name of the user performing an action (in/out), max name string length is 16 chars, only use Latin chars and digits. If the Recorder does not recognize the card/token (there is no entry in the file for the user), it displays the card/token number instead of the name.

Sending data to the TAS by default is managed with ‘rsync’ application, based on the entry in cron daemon configuration (data-send is done every 2 minutes by default).

Camera configuration is stored in `/usr/local/rpc/pob.sh` file, documentation of the camera is available at the RaspberryPi website https://www.raspberrypi.org/documentation/raspbian/applications/camera.md

Technical data

Data storage capacity	min. 6GB
Image resolution	640 x 480 (configurable)
Average image size (KB)	40 kB (JPG)
Number of images taken at event	2 to 5 (configurable)
Minimal delay between consecutive photos	0,2 sec
Number of recorded events (2 photos per event)	est. 45.000
IP rating	IP 64
Working temperatures	-20ºC – +40ºC
Power supply	9 – 25 VDC,
Power consumption	~2W
Dimensions (w / h / d)	160mm / 130mm / 60mm