Compact User Interface CI

Instruction Manual
Document/Revision No. IM-EN-CI/1.06
Effective: February 18, 2019
General safety considerations

Warning! If this device is used against manufacturer’s instructions, user safety may be compromised.

Warranty

All K-Patents products are guaranteed to be free of material or workmanship defects. K-Patents provides a limited warranty that covers the repair or replacement, without charge, of any defected product or part that occurs within two (2) years from the date of delivery. The repair can only be done by nearest authorized K-Patents repair facility. Warranty does not cover normal wear and tear of the product over time, or any products that are handled, installed or used against manufacturer’s guidance.

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Disposal

When wishing to dispose of an obsolete instrument or any parts of an instrument, please observe local and national regulations and requirements for the disposal of electrical and electronic equipment.
Symbols and terms used in this manual:

⚠️ This indicates a **warning**. It provides safety precaution information needed to avoid injury while operating the refractometer system.

❗️ This indicates that something is **important** for the operation of the refractometer system.

**Note.** Notes contain additional information and hints.
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1 Description

The Compact user interface CI is a compact, light-weight display for monitoring and operating a K-Patents refractometer. It is ideal for applications where prism wash and additional inputs/outputs are not needed. CI is operated by the touch-screen display. It is mainly intended for control room environment. There is a protective cover available for industrial environment. CI has IP66 rating. An epoxy coated version of the CI is recommended for field installations.

![Figure 1.1 Compact user interface CI](image-url)
2 Mounting

The Compact user interface CI can be mounted on a wall with a wall mounting adapter or on a VESA 200x100 wall mounting arm, or on a table with a table stand. It also has a panel mounting option. The mounting location should be easily accessible.

![Figure 2.1 Table stand](image)

If the Compact user interface is installed in an industrial environment instead of a control room, a protective display shield is recommended. To mount the display shield, first screw two M5x12 DIN912 A2 screws in upper two holes of the CI frame. Then install the hinges and shield to lower M5 holes with M5x12 ISO 14581 TX A2 screws.
Figure 2.2  VESA wall mounting adapter
Panel mounting dimensions.

**Figure 2.3** Panel mounting option
Figure 2.4  Display shield installation

Figure 2.5  Opening the display shield
2.1 Connections

Figure 2.6 CI connections
2.1.1 Refractometer cable connection

The refractometer is connected to the CI with a Platform 4 cable PR-8430, a M12 male-female 8 pins A-coded cable. Refractometer connection can be made while the CI is powered. The maximum length of the PR-8430 cable is 90 meters (295 ft), but with a Platform 4 cable extender PR-8660 another max. 90 meters long Platform 4 cable can be added, bringing the maximum total length to 180 meters (590 ft).

2.1.2 Ethernet cable connection

If you wish to connect the CI with e.g. a laptop, K-Patents offers an interconnecting cable PR-8330 with a M12-4-pin connector in one end and a RJ-45 connector in the other end. The ethernet connection is used to get access to the CI web pages.
3 Use

Power up the CI. A startup display shows briefly, then the CI goes into the Main display. The CI is operated by tapping the touch screen. If you find that the touch screen is difficult to use with fingers, try tapping it with e.g. the blunt end of a pen or use your nail instead of the whole fingertip. The screen works even when you are wearing gloves.

![Compact user interface displays](image)

**Figure 3.1** Compact user interface displays
3.1 Refractometer connection

Refractometer’s connection to the CI is configured under the title *Instrument* in the *Settings > Network* menu. By default the refractometer’s IP address is configured via BOOTP server running on the CI. To reconnect a refractometer you can just replug its cable to the CI – the IP address is configured automatically. Refractometer connection can be made while the CI is powered.

3.2 Activating and removing apps

The Main display may be empty even when a refractometer is connected to the CI. This means that an application must be activated. Go to *Settings > Applications*, tap on the empty application slot and select the app type and source for that slot. After choosing settings for the app, tap *Done* to exit the setup.

**Note:** Activating Recipe app is not possible in the Compact user interface CI. Recipe app requires external inputs provided by the Multichannel user interface MI.
The empty application slot may contain an earlier app configuration. In that case a dialog will open during app activation and the earlier app configuration can be re-enabled. If necessary the app can also be removed. Go to Settings > Applications and tap Remove on the application slot. Accept the removal by tapping Ok. The removed app’s configuration will be saved until another kind of application is added to the same slot.

![Image of empty application slot]

**Figure 3.3** Empty Main display. Tap Settings to activate an app
3 Use

Figure 3.4  Selecting an empty application slot to activate the app

Figure 3.5  Selecting a source to activate the app, here application type Ref is already selected
**Figure 3.6** Selecting and empty application slot that contains old refractometer app configuration

**Figure 3.7** The earlier app configuration can be re-enabled
3.3 Configuring mA output

To set the mA output values tap anywhere in the application window and then select "Calibration > Sensor". In the list, tap the parameter you want to change, type the new numbers with the number pad and approve the change by tapping "Done". Minimum and maximum values set the measurement range. If your measurement unit is CONC% and you want to measure the range 15–25 CONC%, the output signal for minimum 15 will be 4 mA and for maximum 25 it’ll be 20 mA. Default mA sets an mA default output value that the refractometer returns to in certain situations. The value can be set to a low or high mA value, e.g. 3.0 mA or 22 mA.
Figure 3.9  Select Sensor on Calibration display to configure mA output

Figure 3.10  Configure the mA output parameters
3.4 Managing users

Some functions of the CI, e.g. calibration, are only available to a user who is logged into the system. The **master user password is written on the delivery data sheet** that is shipped with the CI. However, K-Patents recommends that a user name and a password is set separately for every user who needs to have frequent access to the restricted functions. Go to **Settings**, then select **Users** to add and remove users. To add a new user, tap **+ Add user**. To remove a user, tap the name of that user, then **Remove user**.

![Figure 3.11 Users display](image)

3.5 Ethernet connection

The CI has a built-in web server with a home page. The CI home page allows you to browse files or upload an update or a license file. To access the CI web page use IP address found under the title **Ethernet** in the **Settings > Network** menu.

The default **IP address mode** setting for the CI is **Auto**. In this mode the CI gets the IP address from an external DHCP server. If that fails the IP address will fall back to a static IP setting. Alternatively **IP address mode: Static** configures the CI to use a static IP address only. After choosing settings for the network, tap **Apply** to save all settings.

After factory reset the default IP address of the CI is 192.168.1.11.
Figure 3.12  To access the CI web page use the IP address found in the Settings > Network menu

Figure 3.13  Steps to configure a static IP address for CI
4 Maintenance

4.1 Battery replacement

A small Lithium battery keeps time in the Compact user interface CI when it isn’t powered. K-Patents recommends that this battery is replaced every five years.

**Note:** Only instrument timekeeping is affected by the battery, i.e. trends, log and verification may get wrong times if the CI has been powered off with an empty battery. Measurement is not affected.

To replace the battery, you need a Lithium CR2032, 3V battery and a Torx TX20 screwdriver.

1. Place the CI on a table face down.
2. Open the screws in the four corners of the backplate.
3. Carefully move the backplate away from you to expose the battery.
4. Replace the battery. + sign comes on top.
5. Move the backplate back in place. Make sure that all the cables are inside the backplate, then screw on the backplate.
6. Turn on the CI, check time and adjust as needed in the instrument settings.
Figure 4.1  Battery replacement
Figure 4.2 Compact user interface CI parts

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<tr>
<th>Item No.</th>
<th>Part Number</th>
<th>Description</th>
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<td>3117</td>
<td>MI Processor card PR-50018</td>
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<td>MI Display adapter card PR-50029</td>
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<td>DIN 7985 TX A2 M4x25 Screw</td>
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<td>3603</td>
<td>MI flat sticker</td>
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<td>3461</td>
<td>MI PCB spacer</td>
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<td></td>
<td>(Optional) Spacer M3x3.1mm</td>
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<td>9</td>
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<td>MI door back sealing</td>
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<td>10</td>
<td>3655</td>
<td>LI connector card PR-50042</td>
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<td></td>
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<td>including FPM O-ring (3pcs)</td>
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<tr>
<td>11</td>
<td>2895</td>
<td>MI door frame</td>
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<td>3116</td>
<td>MI door middle frame</td>
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<td>3987</td>
<td>M16 grounding nut</td>
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<tr>
<td>17</td>
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<td>Battery CR2032</td>
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## 5 Specifications

![CI nameplate](image)

**Model:** Compact User Interface  
**Product code:** CI-AA  
**S/N:** CI00102  
**Tag:**  
24V DC, 40 W  
Made by K-PATENTS Oy, Vantaa, Finland

### Display:
- 10" color touch screen display 1024x768, 4-wire resistive

### Power:
- +24VDC±10%, Max 10W

### Electrical classification:
- General purpose, ordinary locations

### Connections:
- 1xM12-4pin, D-coded, F (External Ethernet)  
- 1xM12-8pin, A-coded, F (Refractometer)  
- (1xM12-4pin A-coded, M(24VDC, (mA)))

### Inputs/outputs:
- Power, Ethernet (Instruments and external)

### Dimensions:
- H 242mm x W 312mm x D 49mm

### Materials:
- Aluminum frame

### IP classification:
- IP66, Type 4X

### Weight:
- 5 kg (11 lbs)

### Mounting:
- Panel mounting: 8pcs M5 screw  
- VESA 200x100: 4pcs M6 screws

### Cables:
- PR-8430 Platform 4 cable M12-8pin, A-coded, F+M Ethernet, length max. 90 m

### Regulatory compliance:
Figure 5.2  Panel dimensions
5.1 Connector specifications

![Pin order diagram](image)

### M12 - 4 pin A code

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<tr>
<th>Pairs</th>
<th>J5 - power</th>
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<th>Pin</th>
<th>Colour</th>
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<td></td>
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<td>6</td>
<td>wh/og</td>
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<td></td>
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<td>Eth TX-</td>
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<td></td>
<td>x</td>
<td>3</td>
<td>bn</td>
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</tbody>
</table>

**Pairs for this one are optional**

### M12 - 4 pin D code

**Figure 5.4** Cable pinout for the different connection types
A EU declaration of conformity

K-PATENTS
PROCESS INSTRUMENTS

July 22, 2017

DECLARATION OF CONFORMITY

Manufacturer: K-Patents Oy
Elannontie 5, FI-01510 Vantaa
FINLAND

declares, that the product
Compact User Interface CI
conforms to the following Product Specifications:

1. EMC: EN 61326-1:2013 / IEC 61326-1:2012

The product herewith complies with the requirements of the EMC Directive 2014/30/EU and the RoHS 2 Directive 2011/65/EU and carries the CE-marking accordingly. This declaration of conformity is issued under the sole responsibility of the manufacturer.

K-Patents Oy
Arto Hämäläinen
Director, Production & Supply Chain

CE

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