

Quick Guide
Firmware version V2.1
4.4.2008

KMR260

wireless hand-held meter



Nokeval

Description

KMR260 hand-held meter is easy to use and designed for demanding environment. The device is housed in a durable and splash-proof metal case that is also hygienic and easily to keep clean. KMR260 has a detachable connector for temperature sensor that enables changing sensors quickly and easily according to the measurement target. The display is a clear and bright OLED display that is also viewable in dark. In typical use the battery life of the internal Lithium-polymer battery is over two weeks.

To each measurement result the following additional information can be saved: date, time, measurer, measuring point and measuring target. Additionally high and low alarm levels can be defined to each target. Measurement results are sent via radio to computer running PromoLog data acquisition software.


Measured data is transmitted using license free 433.92 MHz frequency band (ISM) so KMR260 can be freely used, for example, almost in whole Europe.

Manufacturer

Nokeval Oy
Yrittäjätatu 12
FI-37100 Nokia
Finland

Tel: +358 3 3424800
Fax: +358 3 3422066
Web: www.nokeval.com

Startup

The device is powered up using the OK button .

The device's firmware version and calibration validity time is shown during startup.



Shutdown

The device is automatically shut down after three minutes if it is not used. Alternatively user can shut the meter down by selecting Menu > Shut down.

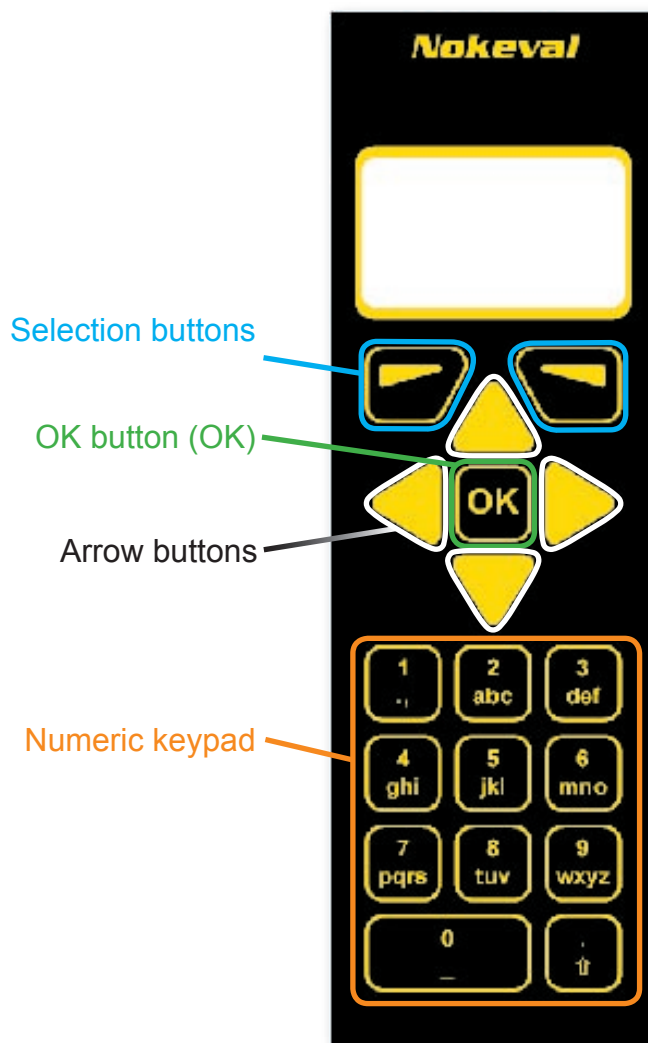
Keypad

Two selection buttons are located under the display. Press the selection button to perform the function shown above it on the display.

Use the arrow buttons to navigate in the menu and the OK button to enter a selection or perform the selected function.

The device has also a numeric keypad that can be used to type in text.

Numeric keypad is handy when browsing long lists to quickly locate the item wanted. Enter the first letters of the item, scroll to the item, and press the OK button.



Normal mode



In normal operation mode the display is divided into three parts:

- Date, time and battery level indicator is shown in the topmost row
- The following three rows show the currently selected user, measuring point and the measuring target.
- The functions of the selection buttons are shown on the bottom of the screen

Selecting user, measuring point and measuring target

The selections of user, measuring point and measuring target are done from the normal operation mode. The selected item is highlighted using dark yellow color. Use up and down arrow buttons to navigate between user, measuring target and measuring point and change the value of the selected item using left and right arrow buttons. You can also press the OK button to change to the list view of the selected item.

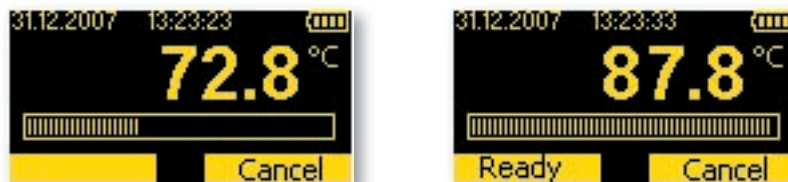


Scroll the list using up and down arrow buttons and press the Ok button to select the highlighted item. You can also enter few first letters of the item to speed up finding it from a long list.



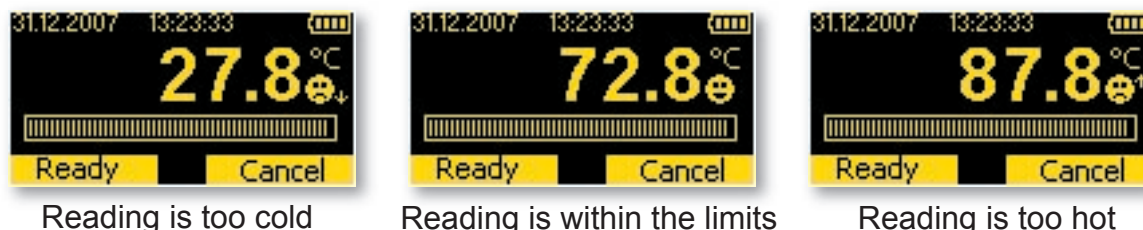
Measuring mode

Change to measuring mode from the normal mode by pressing the Measure button. In measuring mode the current reading and a bar display is shown. The bar display indicates visually when the temperature is sufficiently stabilized.

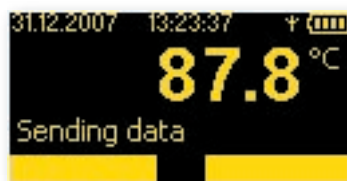


On the left-hand side picture the reading is still changing and therefore the bar is only partially full. On the right-hand side picture the reading is stabilized and bar is nearly full. Also the Ready and OK buttons can now be used to send and save the measurement.

High and low limits can be set to measuring targets using PromoLog data acquisition software. If the limits are set and the reading is within the limit values, a happy face is shown in the screen after the reading. Respectively, a sad face with arrow pointing up or down is shown if a limit is exceeded.



When the reading is sent via radio the text sending data and an antenna icon is shown on the screen. When the data is sent the device returns to normal operation mode.



KMR260 always saves the measurement data to its internal memory. The internal memory has space for over one thousand measurement results. This is useful in the case where the hand-held meter is used outside the coverage area of a radio receiver. The data from the internal memory is automatically transferred to PromoLog when the device is connected to a computer using a USB cable.

Main menu

Move to main menu from the normal operation mode by pressing the Menu button.



Shutdown

By selecting Shut down the device is shut down immediately. The device is also automatically shut down after it has been idle for three minutes.

Previous results

By selecting Previous results you can browse through the results saved in the device's internal memory.



The list shows the saved results ordered by date and time. You can see the measurement data of the highlighted item by pressing the Select button.

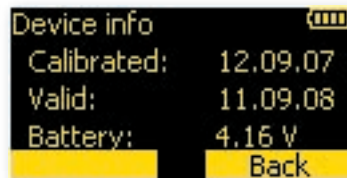
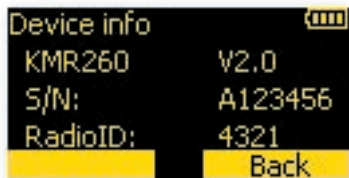


Use up and down arrow button to scroll the measurement data. The time of the measurement, temperature, measuring point, measuring target and measurer is saved from every measurement.

Device info

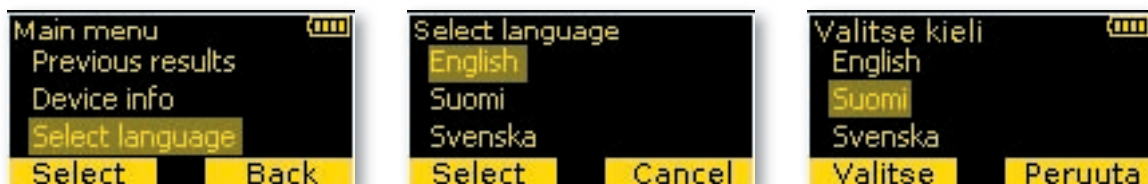
This submenu contains the following technical information about the device.

- Firmware version
- Radio ID number
- Calibration validity time
- Serial number
- Latest calibration time
- Battery voltage



Language selection

To set the language used on the device's display, select Menu in the normal operation mode and after that choose Select language from the main menu. Now you can choose the language you want using up and down arrow buttons and then press the Select button to use the highlighted language.



Recharging the battery

The device is powered by a rechargeable lithium-polymer battery. Recharge the battery by connecting the device to a computer using a USB cable. The battery is always charged when the KMR260 is connected to a computer that is on.

The bars in the battery level indicator are moving when the battery is recharging. Note that when the device is switched off the display is blank but the battery is still being recharged. It takes approximately three hours to fully recharge the battery.



Technical specifications

Inputs

Pt100

- Sensor: Pt100 sensor, 3- or 4-wire
- Range: $-100\dots+650^{\circ}\text{C}$
- Accuracy: $\pm 0.5^{\circ}\text{C}$ in range
 $-30\dots+100^{\circ}\text{C}$

Thermocouples

Type	Range	Lin. error
J	$-160\dots950^{\circ}\text{C}$	± 1
K	$-150\dots1370^{\circ}\text{C}$	± 0.5

- Cold junction: $\pm 0.75^{\circ}\text{C}$ ($0\dots40^{\circ}\text{C}$)
- Thermal drift $0.02^{\circ}\text{C} / ^{\circ}\text{C}$ (ref 25°C)
- Accuracy 0.05% rdg + 0.75°C +
lin. error + thermal drift

Battery

- Li-polymer battery 3.7 V 1000 mAh,
Recharging using USB connection
max. recharge current 450 mA

Case

- Dimensions: 191 x 57 x 32 mm,
without accessories
- Weight: 270 g, without sensor
- Material: aluminium

Environment

- Protection class: IP65
- Operation temperature: $0\dots+40^{\circ}\text{C}$
- Storage temperature: $-20\dots+60^{\circ}\text{C}$

Display

- 128x64 pixel yellow dot matrix OLED display

Keypad

- 18 buttons membrane keyboard

Memory

- 512 kilobytes for users, measuring points
and measuring targets
- over one thousand latest measurements

Compatible radio receivers

- Nokeval's MTR, RTR, FTR and DPR series receivers

Radio transmitter

- Antenna connector: 50 Ω female BNC connector
- Standard antenna: Quarter-wave whip antenna
- Frequency range: License free 433.92MHz subband f according to ERC/REC/70-03

Coverage area

- Open space: up to 500 m
- Indoors: 50-100 m (typically)

Regulations

EMC directive

- EMC immunity EN 61326
- EMC emissions EN 61326, class B

R&TTE directive

- EN 300 220 class 3,
Transmitter power class 8 (10 mW)
- EN 301 489
- EN 300 339

Commission regulation (EC) No 37/2005

- EN 13485
- EN 13486
- EN 12830