



Installation- and user manual

LCS-KD04 KIWA



LC-Products B.V.

tel. +31 (0)88 8111000

fax. +31 (0)88 8111009

email: info@lc-products.nl

website: www.lc-products.nl



LC-Products B.V.
Installation- and user manual
LCS-KD04 KIWA

Content

- 1 Introduction.....3**
 - 1.1 Operation LCS-KD04 KIWA unit.....3
 - 1.2 Connecting LCS-KIWA units.....3
 - 1.3 Communication.....3
- 2 User interface.....4**
 - 2.1 Display & Key.....5
 - 2.2 LED indicators.....6
- 3 Installation LCS-KD04 KIWA.....7**
 - 3.1 Tools and materials.....7
 - 3.2 Connection points of LCS-KD04 KIWA.....7
 - 3.2.1 Power.....8
 - 3.2.2 Contrast.....8
 - 3.2.3 Connecting sensors.....8
 - 3.2.4 Use of the potential free contacts to related relais.....10
 - 3.3 Relais output functions11
 - 3.4 Combine multiple LCS-KD04 KIWA units to 1 system.....12
 - 3.5 Wire connection to a PC/laptop.....13
 - 3.6 Use of a virtual com port.....13
- 4 LCS Configuration software KIWA.....14**
 - 4.1 LCS Configuration.....14
 - 4.1.1 Application.....14
 - 4.1.2 RS232 connection15
 - 4.2 Main screen.....16
 - 4.3 Settings and information.....17
 - 4.3.1 Tank/sensor number.....17
 - 4.3.2 Tank settings.....17
 - 4.3.3 Sensor type.....17
 - 4.3.4 Density.....18
 - 4.3.5 Alarm settings.....18
 - 4.3.6 General.....18
 - 4.3.7 LCS modem settings.....19
 - 4.3.8 Modem connection.....20
 - 4.3.9 Actual information.....20
 - 4.3.10 Actual barometer info.....21
 - 4.4 Tank overview.....21
- 5 Technical specifications LCS-KD04 KIWA.....25**
 - 5.1 LCS-KD04 KIWA25
 - 5.2 Configuration software.....25
 - 5.3 Extra hardware.....25
- 6 Declaration of confirmation.....26**

1 Introduction

The LCS-KD04 KIWA is an advanced and accurate system to measure fluid heights in storage tanks. The system can exist out of multiple units and every unit can accept a maximum of 4 sensors each.

This manual is based on the firmware version 3.09 servicenumber 16 and LCS Configurator KIWA version 4.09 servicenumber 16. New functionality is not mentioned in this manual.

1.1 Operation LCS-KD04 KIWA unit

The main functions of the waTch LCS-KD04 KIWA unit are:

- Monitor the fluid height (due serveral different sensors)
- Overfill protection according the BRL-K636 of Kiwa
- Leakage detection according the BRL-K910 of Kiwa

If an alarm is actuated (level, defect sensor, etc.) the unit can generate an alarm so the user is warned about the situation.

1.2 Connecting LCS-KIWA units

A maximum of 16 LCS-KD04 KIWA units can be connected together, to monitor 64 tanks. In chapter 3.4 is explained the procedure how to connect LCS-KD04 KIWA units into 1 total system.

1.3 Communication

Each unit can be connected to a pc. Directly by using the RS232 or serial connector, or wireless by using a modem.



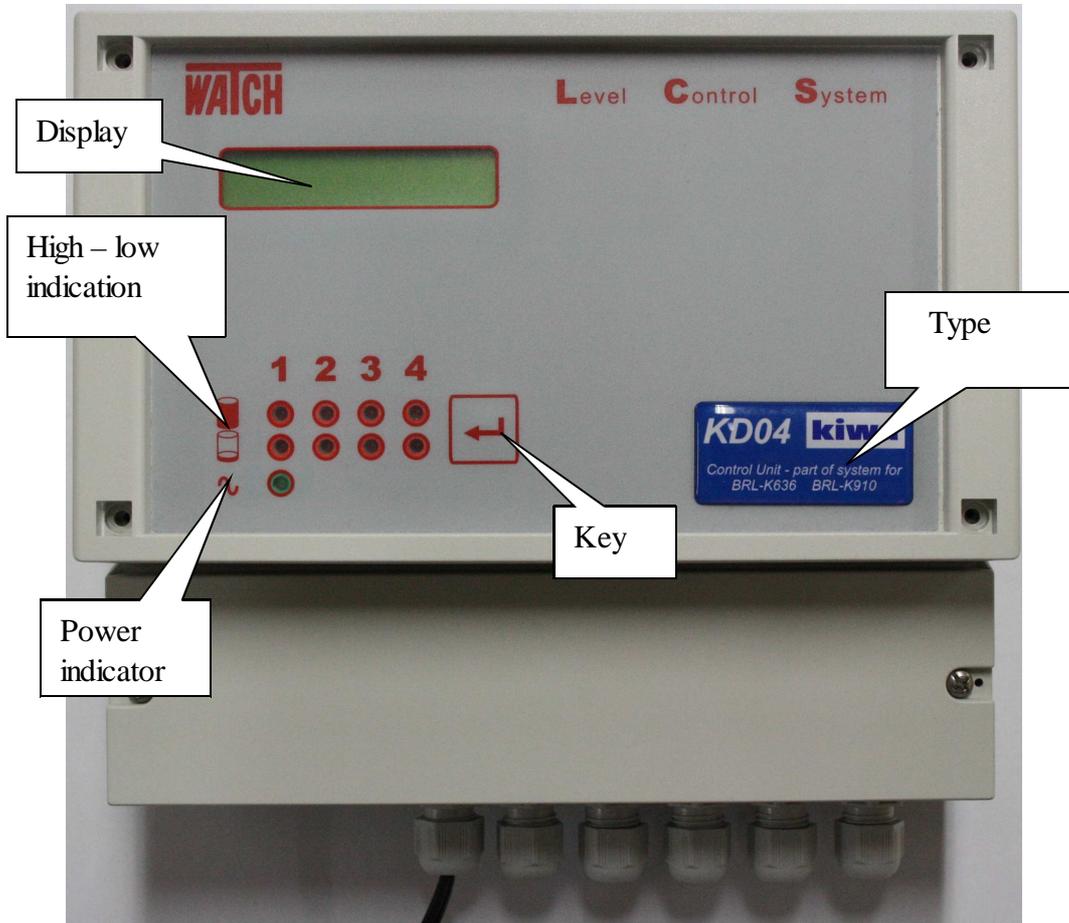
If multiple units are connected, they all must be connected to the master unit nr.1. The other units can be readressed with LCS Address KIWA configuration tool. Unit 2 will get Adress nr. 2, unit 3 will get Adress nr.3, etc.



Wireless connection by modem should be done by using an *analogue modem* (GSM or GPRS).

2 User interface

This chapter will describe the user interface of the LCS-KD04 KIWA.



Picture 1: LCS-KD04 KIWA frontview

2.1 Display & Key

The display shows information about the tankcontent off the (connected) tanks and the relais positions.

1. In standard mode the actual information (content in % or switch position) is shown for all 4 tanks in once. Behind the sensornumber the relais position is shown.
– = relais closed, / = relais open.



1 - 0% 2 / 45%
3 - 100% 4 / _ / _

2. By pressing the key, information of the next group of 4 sensors is shown (if present, sensor 5,6,7,8). The relais position is not mentioned in this mode. Only the : sign so you know it's information of the next LCS-KD04 KIWA unit connected in the system.



5: 9% 6: 89%
7: 99% 8: 43%

3. By double click the key, more detailed information is provided of tank 1 (tanknumber, relais position, content in liters, content in %, alarm if set and fluid height in mm). Press again the key to show the same information for tank 2, etc. After tank 4 the unit will go back to the original mode.



1 - 13 L 0%
LOW 5mm

4. Using the double click for the next 4 tanks will display the same information as mentioned in step 3. Instead of the relais position you will see : so you know you have information of an other LCS-KD04 KIWA in the system.



5 : 120 L 9%
70 mm

5. When the LCS-KD04 KIWA is equipped with a modem, you can press the key till you see the information of the provider and the signal strength. The * sign will pop up if there is connection by modem with the unit. Reprising the key or a time lap of 1 minute is enough to go back to the standard mode setting.



KPN *
92

When an alarm level is reached (high- or low level) the buzzer can go off if set. Pressing the key will stop the buzzer.

2.2 LED indicators

The LCS-KD04 KIWA is provided with 9 led indicators.

Power (green led):

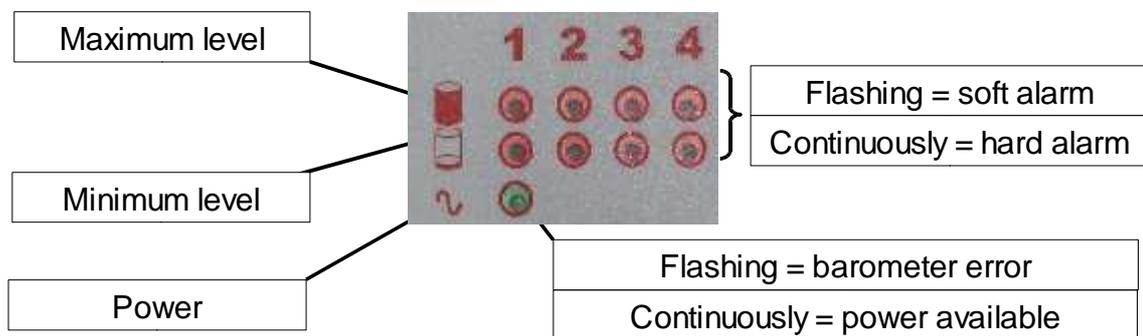
When power is available the green led is shining. A flashing green led means the barometer is in error.

Level indication (red leds):

Every tank can be configured with minimum and maximum levels (soft-alarm and hard-alarm levels).

When a setted soft-alarm (prewarning) value is reached, the red led will flash. Lower led is minimum level, upper led is maximum level.

When a setted hard-alarm (warning) value is reached, the red led will shine continuously. Lower led is minimum level, upper led is maximum level.



Picture 2: determination leds



When both red leds are flashing a sensor error is indicated. Sensor is defect or incorrect connected.

3 Installation LCS-KD04 KIWA

This chapter will describe the installation of the LCS-KD04 KIWA. Also building a system out of multiple units is mentioned and how to connect a sensor to a unit.

3.1 Tools and materials

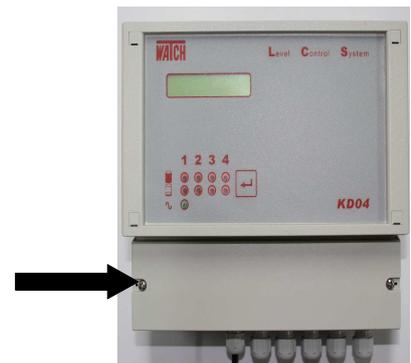
For using a LCS-KD04 KIWA you need at least the following materials and software:

- Sensor
- Probe
- Configuration software with RS232 cable

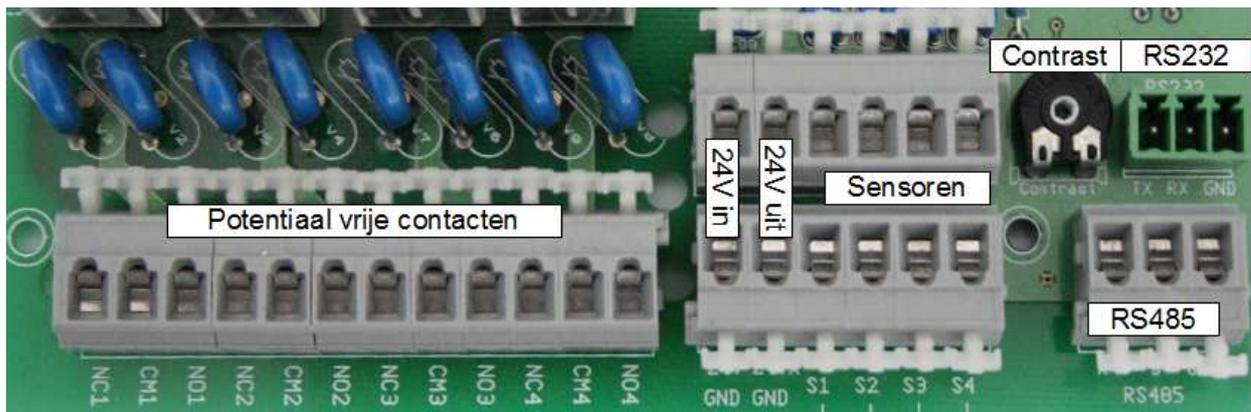
3.2 Connection points of LCS-KD04 KIWA

Removing the access cover (picture 3) will reveal all connection points.

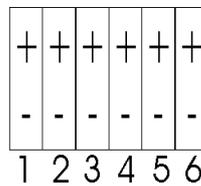
A sticker inside the access cover is showing important information. see below the schematic details:



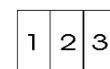
Picture 3: access cover



- | | |
|----------------------|-----------------------|
| 1 = relais T1 NClose | 7 = relais T3 NClose |
| 2 = relais T1 comm | 8 = relais T3 comm |
| 3 = relais T1 NOpen | 9 = relais T3 NOpen |
| 4 = relais T2 NClose | 10 = relais T4 Nclose |
| 5 = relais T2 comm | 11 = relais T4 comm |
| 6 = relais T2 NOpen | 12 = relais T4 NOpen |



- | |
|---------------|
| 1 = power in |
| 2 = power uit |
| 3 = sensor T1 |
| 4 = sensor T2 |
| 5 = sensor T3 |
| 6 = sensor T4 |



- PC RS 232
- | |
|---------|
| 1 = TX |
| 2 = RX |
| 3 = GND |



- RS 485
- | |
|-----------|
| 1 = 485 A |
| 2 = 485 B |
| 3 = GND |

Picture 4: connection scheme



Make sure the LCS-KD04 KIWA is powerless before connecting sensors or other equipment. So remove the adapter from the power supply before making a connection.

3.2.1 Power

The LCS-KD04 KIWA is powered by an adapter 230VAC/24VDC. This adapter is supplied with the LCS-KD04 KIWA. The adapter is connected to the 24V/GND connector.

3.2.2 Contrast

Turning the potentiometer ("contrast" picture 4) will adjust the contrast of the display.

3.2.3 Connecting sensors

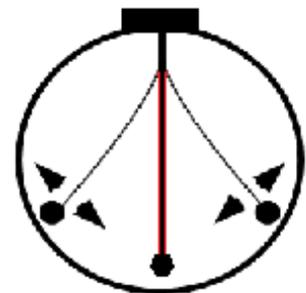
You can connect 4 sensors per LCS-KD04 KIWA unit.

The following types of sensors can be connected:

- Analogue pressure sensor: measuring the content level due pressure
- Digital pressure sensor: measuring the content level due pressure (digital interface is needed)
- Vacuum sensor: measuring the vacuum (space between outer shell-inner shell tank or piping)
- Floatswitch: switch contact on a set level



Pressure sensors must always be fixated due a probe supplied by LC-Products. Without this probe no guarantee is granted.



Explanation of different sensor types:

3.2.3.1 No sensor

Sensor type	Led status	Description
No sensor	Deactivated	No sensor is connected

3.2.3.2 Analogue pressure sensor

Sensor type	Led status	Description
Absolute pressure 4..20mA	Activated while alarm	Absolute analogue pressure sensor

3.2.3.3 Digital pressure sensor

Digital sensors must be connected to a RS485 sensor interface, see paragraph 3.2.3.6 . RS485 sensor interface (partnumber 5.14.006).

Sensor type	Led status	Description
Keller Serie30 pressure (rs485#1)	Activated while alarm	Absolute digital pressure sensor, connected to #1 of the RS485 sensor interface. Measuring also for compensating pressure of other absolute digital pressure sensor
Keller Serie30 pressure (rs485#2)	Activated while alarm	Absolute digital pressure sensor, connected to #2 of the RS485 sensor interface. Measuring also for compensating pressure of other absolute digital pressure sensor



The temperature sensor of digital sensors can not be used.

3.2.3.4 Vacuum sensor

Sensor type	Led status	Description
Vacuum 4..20mA	Activated while alarm	Analogue sensor for vacuum measuring, leakage detection

3.2.3.5 Switch

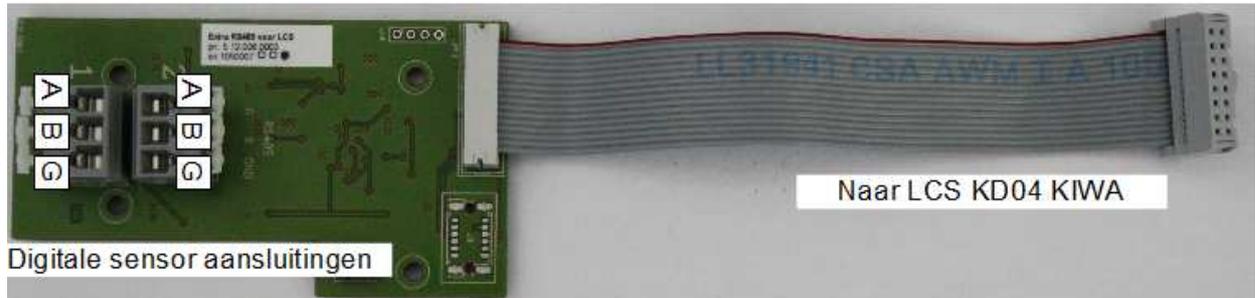
Remark:

If a switch is used, only one level can be detected. If a second level detection is needed than you have to connect a second switch to a second connection.

Sensor type	Led status	Description
Switch Normally Open → Relais	Activated while alarm	Floatswitch type normally open. With this setting an equal relais function is activated

3.2.3.6 RS485 sensor interface (partnumber 5.14.006)

Digital pressure sensors can be connected to the LCS-KD04 KIWA by using a RS485 sensor interface. This interface has a flat cable which fits to the controller (below the front panel). The RS485 interface can only be mounted in a LCS-KD04 KIWA with unitaddress 2 or higher and without a modem. If your LCS-KD04 KIWA has a modem, please use a second LCS-KD04 KIWA to connect the digital sensors and interface.



Picture 5: waTch LCS RS485 sensor interface

Picture 5 shows a RS485 interface. Two connectors (input #1 & input #2) for digital sensors, with 3 contactpoints: A, B and ground. A&B is used for data communication. GND is not used.

Mount the interface according picture 6.



Picture 6: mounting position interface into LCS-KD04 KIWA

3.2.4 Use of the potential free contacts to related relays

Every tank (sensor) input has 1 related relais output. This potential free output can be used in 2 different ways: normally open (NO) or normally closed (NC). (see the scheme according picture 4 on page 7).

Attention: the standard relais position is when the system is powerless. Equal to an alarmlevel is reached (high or low level, depending on set relais function).

A more detailed description of relais functions is mentioned in paragraph 3.3.

The alarm levels and the relais functions can be configurated with our configuration software (see chapter 4).

3.3 Relais output functions

Daily provision tank:

The relais functionality (can not be changed): ON: Lower min, OFF: higher max.

This tank is geconfigured with one of the predefined sensors.

The related output (tank 1 = relais 1, etc.) will switch as follows:

- Measured level is below the minimum hard alarm level, the relais is switched to NO.
- Measured level is above the maximum hard alarm level, the relais is switched to NC.

The maximum hard alarm level is always a default setting (95% volume in liters).

The minimum hard alarm level is free to set but must be lower than 95% volume in liters.



The overfill protection valve must be connected in such a way that the valve will be closed when the relais is off. Therefore use the CM and NO connections.



The alarm levels, configured with our LCS Configuration software (see paragraph 4.3.5), are only used to activate the buzzer, send a sms by modem, etc. The relais function will not be defined by these levels. In case of the overfill protection function the relais functions are strictly defined.

Overfill protection by valve:

- When the LCS system is off, the relais is off (valve is closed)
- When the sensor is defect, the relais is switched off (valve is closed)
- When the level is less than 95% volume in litres the relais is on (valve is open)
- If the level is over 95% the following cycle will start:
 - Relais will switch off (valve closed)
 - After 10 seconds the relais switch on (valve open)
 - After 120 seconds the relais switch to off again (valve closed)
 - When during the time period of 120 seconds the level exceed 98% the relais is switched directly off (valve closed)
 - Relais will remain in off position till the level is lower than 80% (valve open)

Overfill protection by pump (waste oil):

- When the LCS system is off, the relais is off (pump is off)
- When the sensor is defect, the relais is switched off (pump is off)
- When the level is less than 95% in liters the relais is on (pump is on)
- If the level is over 95% the following cycle will start:
 - Relais will switch off (pump off)
 - Relais will remain in off position till the level is lower than 80% (pump on)

Leakage detection by vacuum:

When a double shelled tank or a double shelled piping is configured with a vacuum pressure sensor the related relays will switch as follows (sensor 1 = relays 1):

- Measured pressure is inbetween the minimum pressure hard alarm and maximum pressure hard alarm, the relays is on
- Measured pressure is below the minimum pressure hard alarm, the relays is off
- Measured pressure is above the maximum pressure hard alarm, the relays is off

3.4 Combine multiple LCS-KD04 KIWA units to 1 system

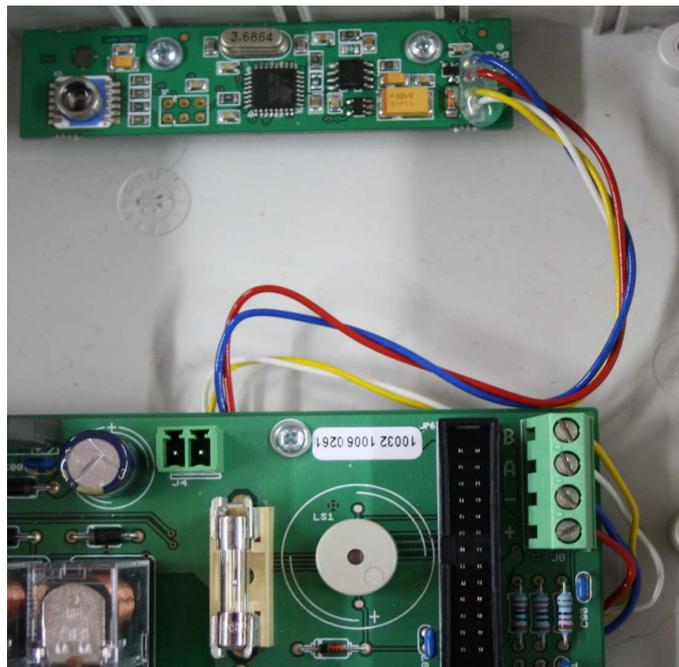
In total 16 LCS-KD04 KIWA units can be combined to 1 system. Communication of all data is through the master LCS-KD04 KIWA (always unit 1). Data is available from a distance by serial or modem connection.

LCS-KD04 KIWA units can be connected together by using the RS485 connector. Connect the A-pole of the 1st unit to the A-pole of the 2nd unit. Also connect the B-pole of the 1st unit to the B-pole of the 2nd unit. The ground (GND) is not used.

Every unit has to have a unique unit number before realize the physical connection. The unit numbers can be set by using LCS Adress KIWA config-software. Also only unit 1 can have an active barometer. Therefore you have to disconnect the barometers from unit 2,3,4, etc. to avoid conflicts. This can be done by disconnecting the wires from the controllerboard. The LCS Adress KIWA software is available on our website: www.lc-products.nl

After installing the software on your computer you can make a connection with the unit by using the RS232 interface cable. In the software you select: change unit address, for making connection press "connect". The unit address number and also the firmware version- / productnumber will pop up.

This unit address number can be changed from 1-16. After clicking "enter" the new address number is saved in the LCS-KD04 KIWA.



Picture 7: Barometer



The USB-key is required to configure the LCS-KD04 KIWA

3.5 Wire connection to a PC/laptop

A wired connection between PC/laptop can be realised by using the RS232 connector. You need to use a special cable (partnumber 6.04.009).

When the PC/laptop has no serial entry, than use an additional RS232-USB convertor (partnumber N0.00.020).

3.6 Use of a virtual com port

LC-Products delivers also RS232-TCP/IP converters, for serial communication with your local network. (ethernet, TCP/IP). Doing this virtual com-ports will be created on the PC. For more details please check our Installation manual of the Nport (partnumber 9.06.006 waTch TCP/IP module).

To use this converter you connect it to a standard computer cable from your local network.

Between the TCP/IP converter and the LCS-KD04 KIWA unit you can use the RS232 cable (see paragraph 3.5).

4 LCS Configuration software KIWA

This chapter is explaining how the unit must be configured. The configuration software is available on our website: www.lc-products.nl

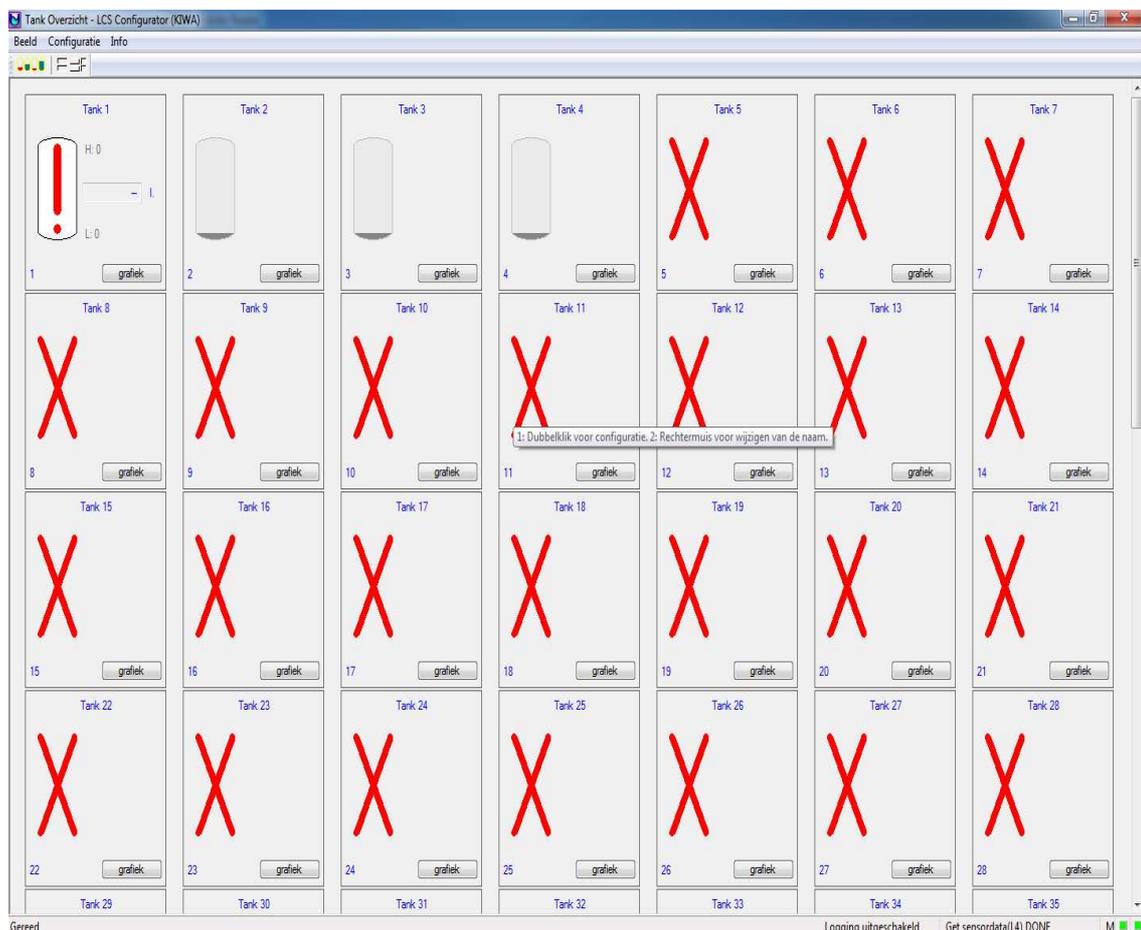
4.1 LCS Configuration

4.1.1 Application

LCS configurator KIWA software is available on our website: www.lc-products.nl Software is self-installing and ready for use. After starting the application the tank overview will pop up of all 64 tanks/sensors.



The USB-key is required to configure the LCS-KD04 KIWA



Picture 8: Overview tanks LCS-configurator KIWA

Double clicking on a tank or on the icon  you will enter the configuration page to adjust the tankparameters (see paragraph: 4.2).

4.1.2 RS232 connection

Effectuate a connection with the LCS-KD04 KIWA. Either a direct connection (RS232) or by modem. The connector on the PCA (printed circuit assembly) is marked with the label "RS232" (see paragraph 3.2 , picture 4).

To ensure a correct coupling, the related com-port is to be set in the LCS configuration KIWA software.

- Select <configuration> and than <settings>
- Select <communication>
- Select the correct com-port to be used.



Picture 9: LCS configuration – communication settings

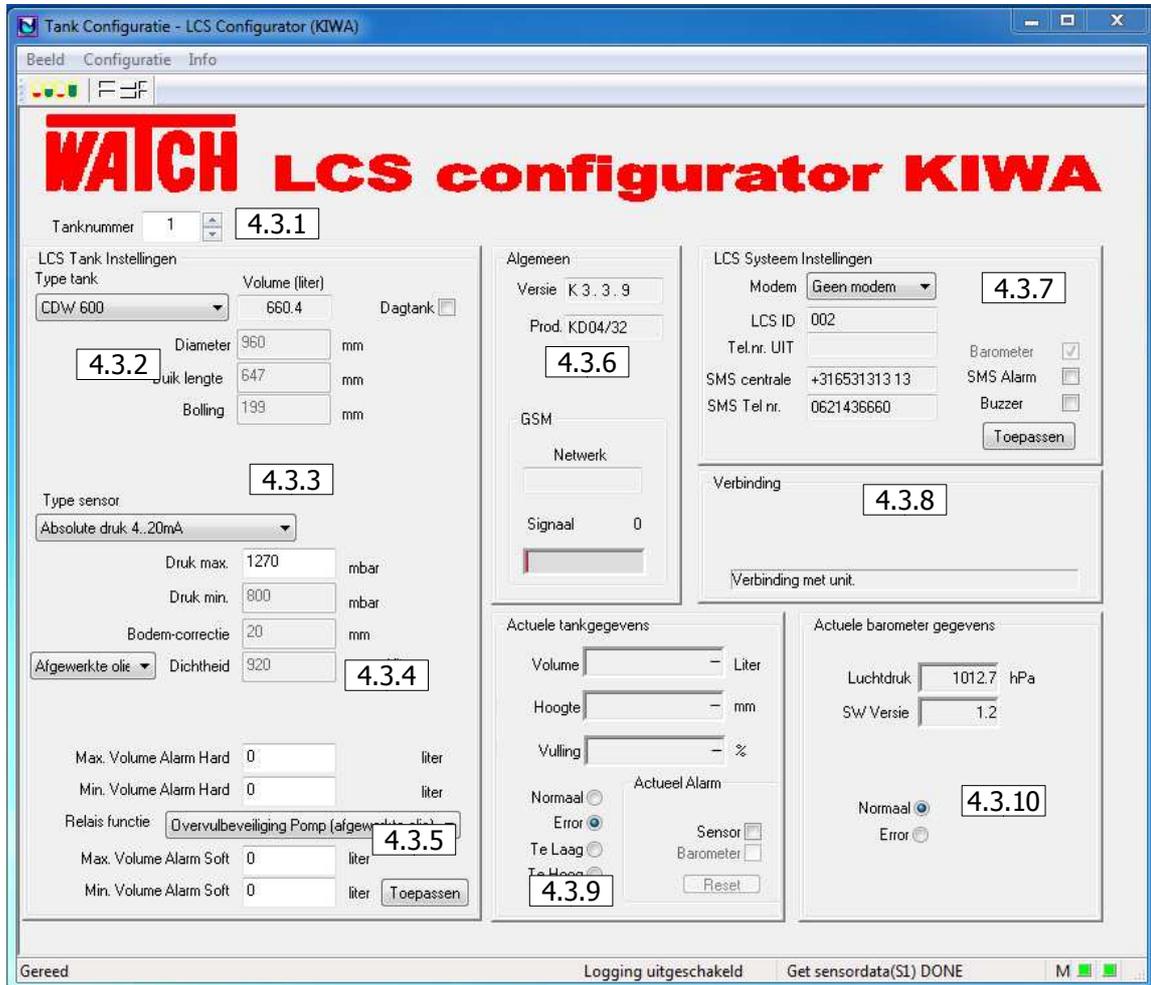
To achieve a modem-connection click the box "use modem". How to fill in the cellphone number of the M2M simcard is explained in paragraph 4.3.8 .

In the right bottom corner 2 squares are visible. The right square refers to the com-port setting and the left square to the connection with the unit. If the squares turn from red into green you have online connection with the LCS-KD04 KIWA unit.



Picture 10: Status connection

4.2 Main screen



Picture 11: Configuration screen

In picture 11 you see 10 numbered fields. In paragraph 4.3 you will find the explanation with more detailed information.

4.3 Settings and information

4.3.1 Tank/sensor number

In this box you can select the tank/sensor to configure (1 – 64).



Picture 12:
Tank/sensorselection

4.3.2 Tank settings

Only predefined tanks can be selected from a dropdown list. The according tank dimensions will pop up as default values.



Picture 13: Tank settings

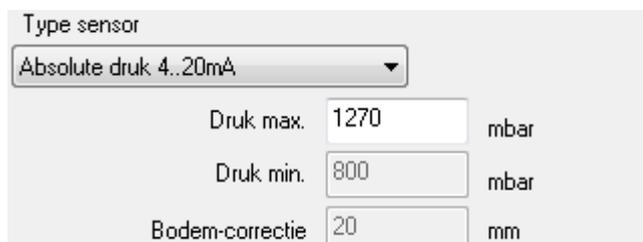
Do you need a new predefined tank? Please contact LC-products. Fill in a tankdefinition apply and we will produce a new dropdownlist.

When the daily provision tank is selected, a special relais function will be activated. It is default and can not be changed. More information about different relais functions please see paragraph: 3.3 Relais output functions .

4.3.3 Sensor type

Multiple sensors can be connected to a LCS-KD04 KIWA unit:

- 1 Absolute pressure sensor for measuring levels heights
- 2 Vacuum pressure sensor to guard the vacuum between the double shelled tank or piping
- 3 Digital pressure sensor for measuring level heights



Picture 14: Sensor type

For information about different types of sensors please see paragraph 3.2.3 .

Information table for sensor parameters:

Sensor type	Parameters
No sensor	– Non
Absolute pressure 4..20 mA	– Pressure max. and pressure min. (in mBar) – Density (Gasoline, diesel, motor oil, etc)
Schakelaar Normaal Open → Relais	– Non: Relais will switch when connected switch is activated
Vacuum 4..20mA	– Druk max. (in mBar) – Druk min. (in mBar)
Keller Serie30 pressure (RS485 #1)	– Density (Gasoline, diesel, motor oil, etc)
Keller Serie30 pressure (RS485 #2)	– Density (Gasoline, diesel, motor oil, etc)

4.3.4 Density

For a correct measuring of the level the density must be set. Densities of different fuels en oils are stored in the dropdown list. You can select the fluid which will be stored in the tank and the density will appear as default setting.



Picture 15: Select density

Would you like to add a new density to the dropdown list, please contact LC-Products.

4.3.5 Alarm settings

2 types of alarm can be set in the LCS-KD04 KIWA: soft alarm and hard alarm.

The soft alarm is a prewarning (led will flash), meaning that a undesirable situation will coming up (hard alarm).

The hard alarm (led burns continuously) is activating the buzzer if set, or will send a sms by modem.



Picture 16: Alarm settings



Attention: the relais will only be activated on the configured hard alarm levels. With a pressure sensor the overfill protection is always active (see paragraph 3.3)

4.3.6 General

In this field information is given about the firmware release and product number. The firmware release exist out of a letter (picture 18: K...) which reflects the type of modem. See below table:

	No GPRS	GPRS
No modem	K	k
Modem type 1	L	l
Modem type 2	M	m
Modem type 3	N	n



Picture 17: General

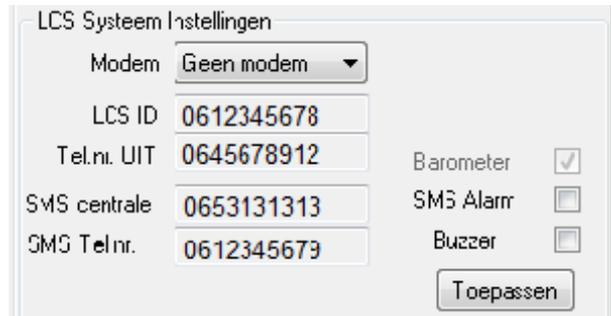
After the letter a number will follow (picture 17: .. 3.3.9). 3 = to the KD04 KIWA (2= KD04). 3.9 = to the firmware release.

If a GSM/GPRS modem is mounted, and the simcard is placed, information about the provider (name) and the GSM/GPRS signal strength will be shown (0-100%).

4.3.7 LCS modem settings

Modem: The modem type of the LCS-KD04 KIWA, can be set in 4 modes when the simcard is installed:

- No modem
- Analogue modem
- GSM modem
- GSM/GPRS modem



Picture 18: Modem settings

LCS ID: Identification of the LCS-KD04 KIWA. Normally the cellphone number is used to identify the unit.

Tel.nr. OUT / Server IP: Telephone number to communicate with when a hard low alarm is reached. (the modem will make a call to this number). To achieve and receive this call a special application is needed and can be applied by LC-Products. When a data modem is used the IP address of the server can be added to achieve a communication.

SMS centrale: Fill in the cellphone number of the SMS service station of your provider. Without this number SMS messages can not be send when a hard alarm occurs.

- KPN = +31653131313
- Vodafone = +316540881000
- T-Mobile = +31624000000
- Ben = +31624000000
- Telfort = +31626000230

SMS Tel.nr.: Fill in the cellphone number of the receiver of the sms message.

Barometer: The barometer is always activated. When the barometer is defect, a SMS message will be send when this square is selected. (see 4.3.10).

SMS Alarm: Selecting this square will send a SMS message when a hard alarm level is reached (see SMS Tel.nr.). When the SMS service station + SMS tel nr. are filled in correctly a SMS message will be send, independent if the "SMS" alarm is selected or not, when a **sensor is defect**. The LCS-KD04 KIWA will send out this warning for security reasons only.

Buzzer: Selecting this square will activate the buzzer when a hard alarm level is reached.



Settings in the LCS-KD04 KIWA configurator will be activated and stored after clicking <apply> (Toepassen). The set values will disappear for a short period of time, and than appear again on your screen. All settings are saved now in the LCS-KD04 KIWA.

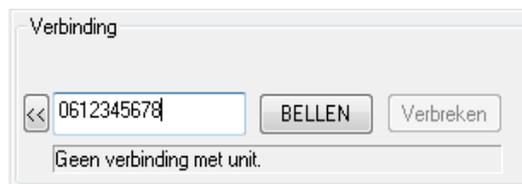


Attention: for using the GSM modem, always deactivate the PIN code of the GSM/GPRS sim-card!!

4.3.8 Modem connection

Actual information about the connection with the LCS-KD04 KIWA is shown. A text will appear when there is a good connection with the LCS-KD04 KIWA.

For wireless configuration the square "modem" is to be selected in the communication settings. In the config screen fill in the cellphone number of the LCS-KD04 KIWA. You can also select a cellphone number out of the telephone book (use '<<'). The cellphone numbers are stored in your PC. Not in the LCS-KD04 KIWA.



Picture 19: status connection

The connection will be established after selecting "calling" <BELLEN>.

The connection will be disabled after selecting "break" <Verbreken>.

4.3.9 Actual information

Actual information depends on the selected type of sensor. So the textblock name can change in: actual tankinformation, actual switch positions or actual temperature:

Actual tankinformation

Indication of the present content in litres, fluid level in mm and content in percentage or pressure in millibar.

Actual switch position

With switch positions only alarm and errors are shown as: normal, error, to low and to high.

The error and alarm indications are always visible and are:

- Normal:** normal level
- Error:** sensor error
- To low:** level to low (below the hard alarm setting)
- To high:** level to high (above the hard alarm setting)

Actual alarm

When a sensor or barometer generates an alarm, both can be resetted by clicking the square and press reset.



Picture 20: actual tankinfo

4.3.10 Actual barometer info

The barometer will compensate the local airpressure to achieve an accurate measuring.

This box shows the local airpressure and the software release of the barometer. Evenso the use of a absolute pressure sensor is possible.

Normal: barometer controller is operating correctly.

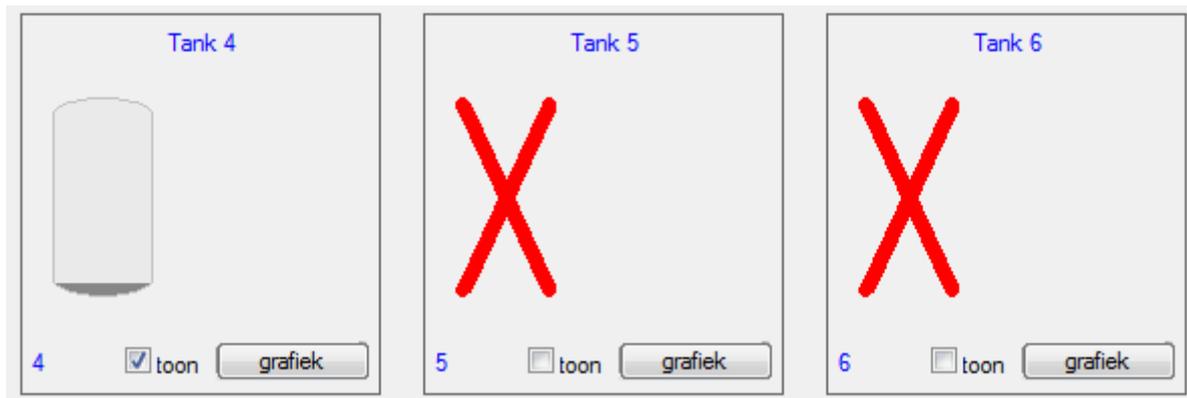
Error: barometer controller is not active or defect. The green power led will flash when this occurs.



Picture 21: Barometer info

4.4 Tank overview

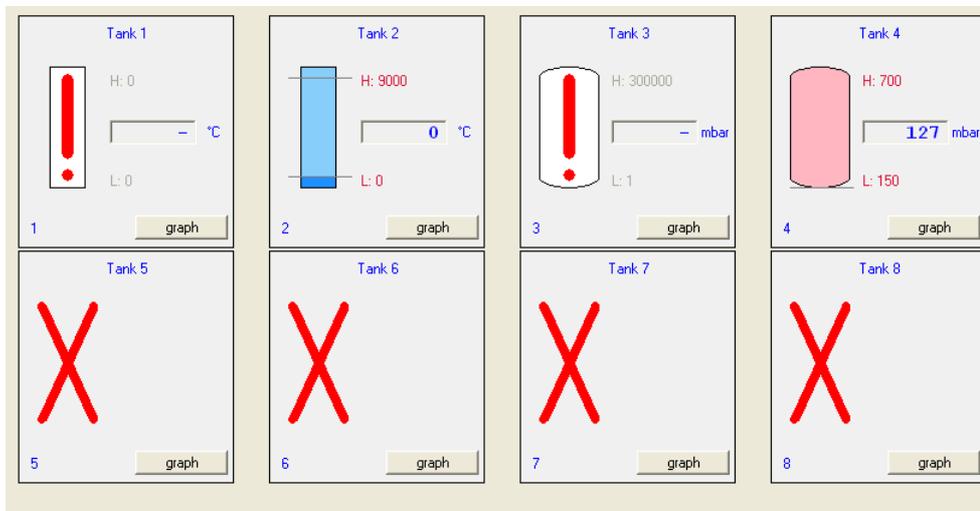
Press  this button and the tank overview screen will start up. This is an overview of all tanks or sensors. Names of tanks can be alternated by clicking the right mouse button when you point the cursor on a tank. In the pop up you can change the name.



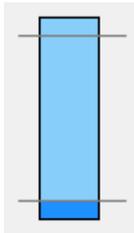
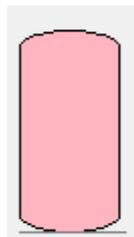
Picture 22: Select tanks

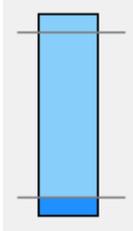
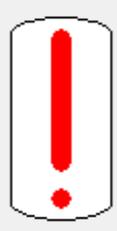
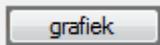
- 1) Image → Present all tanks: all tanks are tagged and shown.
- 2) Image → Deselect all: all tanks are de-tagged. Now you can select those tanks you want to view as standard.
- 3) Image → Present all tanks with a tag: only the tagged tanks will appear.

Extra explanation about the tankoverview in the LCS configurator.



Picture 23: Tankoverview LCS-configurator

Symbol	Description
 <p>Horizontal beam</p>	Temperature or pressure value
 <p>Vertical cylindrical tank</p>	Measuring contents
 <p>H: <value></p>	High alarm level (hard)

 <p>L: <value></p>	<p>Low alarm level(hard)</p>
 <p>Coloured Blue</p>	<p>Actual value, normal situation</p>
 <p>Coloured Red</p>	<p>Actual value, alarming situation</p>
 <p>Exclamation mark</p>	<p>Sensor error</p>
 <p>Cross</p>	<p>Sensor is not defined or unit of the sensor is not present</p>
	

Graph

By selecting "graph" an extra program will start up. This program shows a detailed graphic overview of the contents history.

To use this feature you have to create a database.

1. For this go to settings in the LCS Configurator KIWA and select a database directory. The frequency of datastacking can be set.
2. Start the program again for actualisation of the settings.
3. The data from the sensors is stacked now in the database.
4. By clicking the "graph" button the stored info is visualised in a graph.

5 Technical specifications LCS-KD04 KIWA

5.1 LCS-KD04 KIWA

- Power LCS-KD04 KIWA: adapter 230 VAC 50/60Hz in, 24 VDC out , 6 Watt.
- Operational temperature: 0-55 °C.
- Humidity: 0-90% relative humidity, not condensating.
- Inputs:
 - 4-20mA sensor (pressure, vacuum).
 - Switch (on/off).
- Accuracy:
 - Analogue pressure sensor and vacuum sensor: 0,5% of the full scale.
 - Digital pressure sensor: 0.1% of the full scale.
- User interface:
 - 2 red leds for every sensor; flasing means soft alarm, continuously means hard alarm.
 - Green led is power indication, flashing means barometer error.
 - 2 x 16 characters LCD.
- Output:
 - 4x potential free contacts, max. 5A/230VAC; functionality depends on settings.
- Outside dimensions: 215 x 210 x 95 mm.
- Protection class: IP54.

5.2 Configuration software

- Min. system requirements: depends on Windows operating system. Pentium-II, minimal 64 Mb RAM, minimal 10 Mb free hard disk space.
- Operating system: Windows 95/98®, Windows NT4®, Windows 2000®, Windows Server 2003®, Windows XP®, Windows VISTA®, Windows 7®.
- PC-link: free RS-232 port, USB-RS232 convertor; for local network a TCP/IP module is used.
- Modem communication: based on a analogue modem. Phonenumber or wireless (GSM/GPRS).

5.3 Extra hardware

A LCS-KD04 KIWA system can be extended with the following modules:

- waTch Extern display: this module shows the fluid height in mm of 1 sensor.
- waTch Connection box Fuelpos: this module is interfacing with a Fuelpos system of Tokheim.
- waTch Connection box 4-20 mA: this module will generate the fluid height % into a 4-20 mA signal. 4mA = 0%, 20mA = 100%.

For more information about these modules please contact LC-Products or visit our site www.lc-products.nl.

	LC-Products B.V.
	Installation- and user manual
	LCS-KD04 KIWA

6 Declaration of confirmation

Declaration of confirmation 89/392/CEE

Name::	LC-Products B.V. Bedrijvenpark Twente 30 7602 KB Almelo Netherlands
Telephone:	+31 (0)88 8111000
Fax:	+31 (0)88 8111009
Email:	info@lc-products.nl

Declares that this product:

Product name:	waTch LCS-KD04 KIWA
Product number(s):	9.01.038 LCS-KD04 KIWA, basic unit (equiped with relais and barometer) 9.01.039 LCS-KD04 KIWA, basic unit (equiped with a GSM/GPRS modem)
Poweradapater:	Model GSU15E-6

Is produced according the following standardss:

EMC and safety	EN 61000-6-3 (2001) EN 61000-6-2 (2001) EN 61000-3-2 (1995) + A1 (1998) + A2 (1998) EN 61000-3-3 (1995)
----------------	--

We declare with all accountability the product is produced according the directive 89/392/CEE and the subsequent directions.

Almelo, 2013