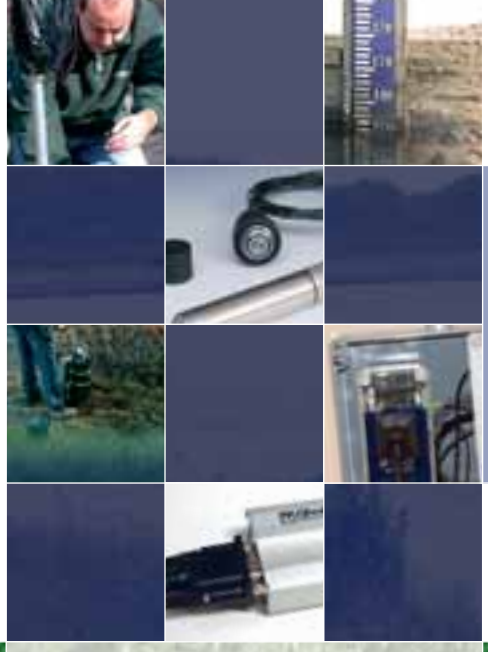


e+ WATER L®

from Eijkelkamp Agrisearch Equipment

All it takes for
environmental research

Eijkelkamp
Agrisearch Equipment

e+ WATER L®

The e+ WATER L (Level) sensor is an intelligent and accurate sensor for measuring and recording the levels and temperatures of surface water.

e+ WATER L properties

- Measures and records the level (0..200 cm) and temperature (–20..80 °C) of surface water.
- Constructed with very stable and accurate sensor that enables long-term uninterrupted measurements to be made in the field.
- Direct internal compensation for temperature-related variations in air pressure and water density, explicitly developed for taking measurements of surface water.
- The user determines the measurement frequency.
- The sensor is resistant to freezing and therefore can be used in outdoor set-ups problem-free throughout the year.
- Can be used as a stand-alone sensor or with an e-SENSE SMS modem (telemetry).
- If required, gives an alarm when limit values are passed, for both the 'level' and 'temperature' parameters.
- It is possible using an e-SENSE modem to link an e+ WATER L to other SCADA or software systems.
- Can optionally be installed using a robust and functional installation system that can be easily combined with existing level measuring systems.
- Has a CE mark, meets all EMC directives.

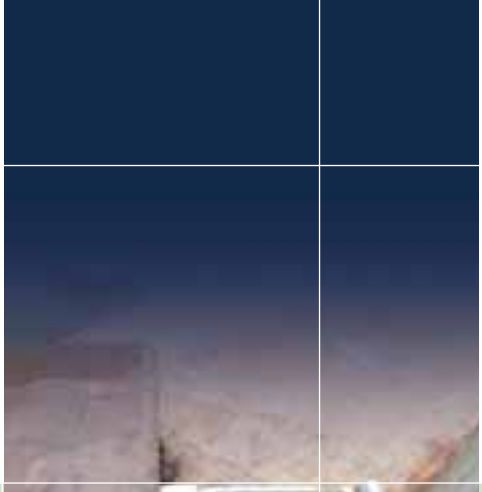
Reading out e+ WATER L

The e+ WATER L sensor can be configured and read in various ways:

- Using a universal readout unit; this readout unit is used when it is possible for the e+® sensor to be in the immediate vicinity of a PC (laptop).
- Via a Direct Data Cable (DDC), available in various lengths up to maximum 200 metres.
- Using an e-SENSE modem via e-SENSE direct or via e-SENSE direct Open Interface.

Application areas for e+ WATER L®

To give an idea of the possibilities offered by the e+ WATER L sensor, below we give several examples of application areas where the e+ WATER L can be applied:



Operational level management

The e+ WATER L is pre-eminently suited for monitoring the level of surface water. Continuous measuring in waters and waterways gains information about trends and monitoring levels, and the sensor provides support when interpreting complaints.

Improving the water systems

Detailed models are made to gain more insight into the water systems. The calibration of these models requires accurate, reliable and very frequent water level measurements to be made by the e+ WATER L.

Monitoring flow rates

The e+ WATER L is equipped with a long-lasting, very accurate pressure sensor. In addition, it directly internally compensates for temperature-related variations in air pressure and water density. In part because of the combination of these properties, the e+ WATER L is suitable for monitoring flow rates at weirs.

Nature management and nature development

The sensor is perfectly suited for nature management and nature development purposes, for instance in the execution of parching or re-wetting projects. Another example is the application of the e+ WATER L in ecological corridor zones.

Technical specifications of e+ WATER L®

General

Diameter of instrument	: 22 mm
Total length of instrument	: type dependent (from 85 to 235 cm)
Total weight of instrument	: type dependent (from 1.0 to 2.2 kg)
Working temperature range	: -20 - +80°C
Relative humidity range	: 0-100%
Housing	: stainless steel 316L

e+ WATER L logger

Number of channels	: 2
Storage capacity	: 2 x 30,000 readings
Measurement interval	: 1...60 seconds 1...60 minutes 1...24 hours
Clock accuracy	: <1 sec. per day
Alarm functions	: low and/or high alarm throughout the entire measurement range of both parameters
Battery status (indication)	: 0-100%

e+ WATER L sensor

Range of level measurement	: 0-200 cm watercolomn, type dependent
Accuracy of level	: 3 mm
Resolution of level	: 0.1 cm
Working temperature range	: -20...+80 °C
Temperature accuracy	: 0.5 °C
Temperature resolution	: 0.01 °C

Power supply

Battery	: 3.6 V / 2.3 Ah Lithium (interchangeable)
Battery life	: 6 years (typically for a sampling interval of 10 minutes)

Types of e+ WATER L

11.41.53 e+ WATER L with a measurement range up to 50 cm water fluctuation
11.41.54 e+ WATER L with a measurement range up to 100 cm water fluctuation
11.41.55 e+ WATER L with a measurement range up to 150 cm water fluctuation
11.41.56 e+ WATER L with a measurement range up to 200 cm water fluctuation

Communication

Universal readout unit
Direct Data Cable (DDC)
e-SENSE SMS-modem (telemetry)

Optional installation systeem

Material	: stainless steel 304
Dimensions	: type dependent (from 102 to 240 x 3.5 x 3.5 cm)
Total weight	: type dependent (from 2.5 to 5.5 kg)

For guarantee conditions we refer to the user-manual

Installation system for the e+ WATER L®

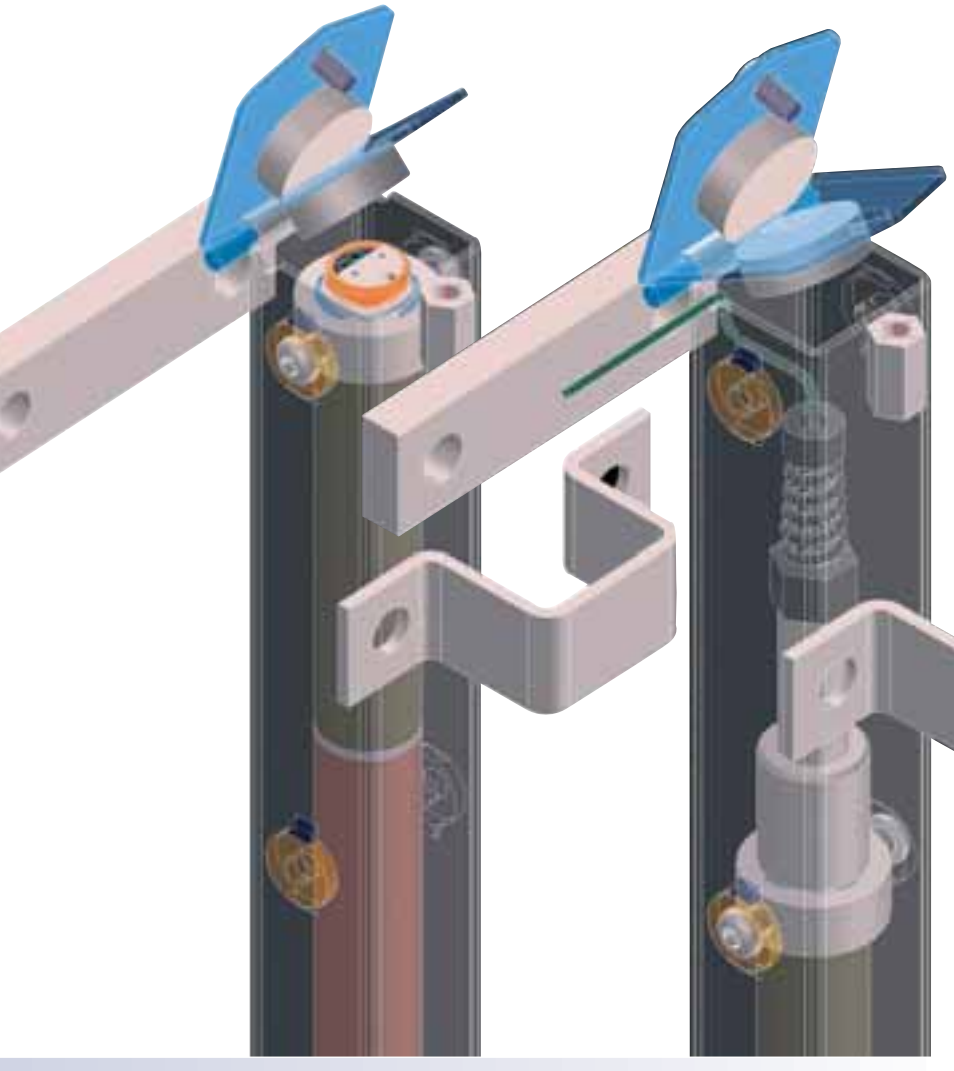
The e+ WATER L sensors can be installed at the measurement location in a robust and functional stainless steel installation system. This is constructed in a way that makes it easy to combine it with existing level indicators.

The main properties of the installation system for the e+ WATER L:

- Universal, robust field support
- Lockable
- Sealing of the e+ logger to prevent contamination
- Resistant to theft and vandalism
- Provides wave protection
- Simple installation at two heights (stand-alone / telemetry)

The installation system is available in various lengths:

11.41.95.00 Installation system for e+ WATER L 50 cm
11.41.95.01 Installation system for e+ WATER L 100 cm
11.41.95.02 Installation system for e+ WATER L 150 cm
11.41.95.03 Installation system for e+ WATER L 200 cm



e+ WATER L using e-SENSE

Measuring and managing equipment is increasingly occurring from a (considerable) distance. Setting parameters, reading out measurements and if necessary taking action from a location of choice are options that are nowadays standard requirements.
Using the e-SENSE® measurement system, in which measurement data are collected by intelligent sensors such as the e+® sensors or the Diver®, from *Schlumberger Water Services,* you do a lot more than just take measurements. Intelligent sensors independently take measurements in the field and store them internally. Via the connection to the e-SENSE field modem, your measurement data or alarm signals are then sent via the GSM network to a database in your own PC (e-SENSE direct).

The e-SENSE telemetry system is available in two versions:
- e-SENSE direct
- e-SENSE direct Open Interface

e-SENSE direct

e-SENSE direct is easy to install (plug & play), to manage and to maintain. Using e-SENSE direct, you manage and communicate with your sensors from your PC. You have insight into the entire system and can change all of the settings. The measurement data can be imported into the Logger Data Manager (LDM) e+ software, after which they can be processed, for instance into graphical displays and reports. In addition, you can export the data to your own personal database.

e-SENSE direct Open Interface

Because a modern standardised SQL database system is used, e-SENSE direct has an Open Interface that ensures that the system can be easily and economically (using standard components) linked to other software systems such as SCADA. This means that these systems can use all of the unique facilities of e-SENSE direct, such as plug and play, when changing configurations in the field. In addition, it is also possible to activate the e-SENSE direct user interface for specific functions that have not been chosen for integration in the SCADA systems.

e-SENSE in 7 steps

1 PC-modem

To enable communication between your PC and the e-SENSE field modem, you need the PC-modem set for communication via e-SENSE direct. The complete set consists of a modem, power supply (100 – 240 Vac), antenna, communication cable and software.

2 Field modems

Field modems are available in four different types:
- e-SENSE field modem set, 2 ports
- e-SENSE field modem set, 8 ports
- e-SENSE field modem set, long-life power supply, 2 ports
- e-SENSE field modem set, long-life power supply, 8 ports

The e-SENSE field modem is fitted with a display that shows the status during the installation process. One of the functions of the e-SENSE modem is to determine in the first place the best set up for good GSM reception. The next step is to connect the sensors using watertight connections. The e-SENSE modem checks whether the connected sensors work correctly.

The configuration of the measurement set up is sent to the database in coded SMS messages. The database processes the messages and sends a confirmation of receipt to the measurement units.
The e-SENSE modem indicates that everything is working correctly and the user can confidently close the watertight, fraud-resistant field housing.

3 Housings

There are two types of housing available:
- An underground housing in which the e-SENSE field modem and the power supply unit can be installed. Resistant to water and vandalism, lockable. Including mounting bracket for the SMS modem and the batteries. Dimensions 200 x 310 x 520 mm.
- An aboveground housing in which the e-SENSE field modem and the power supply unit can be installed. Including vandalism-proof mounting brackets for mounting to a pole or protective tube for a monitoring well with a diameter of 50 – 270 mm. Dimensions 120 x 255 x 250 mm.

4 e+ Sensors

The e-SENSE modem is ready for use. The sensors that can be connected to it include:
- e+ RAIN
- e+ SOIL MCT
- **e+ WATER L**
- MicroDiver, MiniDiver, CeraDiver and CTD Diver

These can be connected to the e-SENSE modem in any desired combination. Sensors for measuring other parameters are being developed.

5 Cables

There are various types of e-SENSE cable:
- Communication cables to connect e+ sensors to the SMS modem, varying in length from 1 to 200 metres, with an IP68 connector for watertight connections.
- Communication cables to connect Divers to the SMS modem, varying in length from 1 to 200 metres, with an IP68 connector for watertight connections.

6 Reading

Information concerning reading out e+ sensors and Divers can be found on page 2 of this brochure and in the section ‘Reading out e+ WATER L’.

7 Optional accessories

Finally there are various optional accessories available, such as field supports, installation auger kits, etc. for the installation of e-SENSE products.

All of the information in this brochure is of a provisional nature. We retain the right to change equipment, procedures and specifications.

Information request form

Personal details:

Company name : .....
Contact person : Mr/Mrs .....
Address : .....
Town/City : .....
Country : .....
Telephone : .....
Fax : .....
E-mail : .....

Please send me information about:

❑	11.41.53 thru. 11.41.56	**e+ WATER L**
❑	11.41.95.00 thru. 11.41.95.03	Installation system for **e+ WATER L**
❑	11.51.10	e-SENSE direct (software)
❑	11.51.15	e-SENSE direct Open Interface (software)
❑	11.31.12	e-SENSE field modem with 2 ports
❑	11.31.18	e-SENSE field modem with 8 ports
❑	11.11.14	LDM e+ software for integrated data management
❑	11.31.00	Underground housing
❑	11.31.01	Aboveground housing
❑	11.11.10.03	Readout unit, universal
❑	11.31.81.00 thru. 11.31.81.08	e-SENSE cables (for e+ sensors)
❑	11.31.82.00 thru. 11.31.82.08	e-SENSE cables (for Divers)
❑	11.41.21	e+ RAIN
❑	11.41.11 thru. 11.41.17	e+ SOIL MCT
❑	11.41.70	e+ OVERFLOW
❑	11.11.01.02 thru. 11.11.03.08	Divers (MiniDiver, MicroDiver, CeraDiver)
❑	11.11.58.01 thru. 11.11.58.03	CTD Diver

❑ Please send me the complete Eijkelkamp catalogue in English / German / Dutch

Signature: Date:

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Eijkelkamp
Agrisearch Equipment

Nijverheidsstraat 30,
6987 EM Giesbeek, The Netherlands

T +31 (0) 313 88 02 00
F +31 (0) 313 88 02 99

E info@eijkelkamp.com
I www.eijkelkamp.com

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