



LevelJET - ST english - add on



Operation area	3
Function mode	6
Supply	7
Assembly instructions	7
Pin assignment controller unit	8
Assembly instructions sensor	10
Assembly instructions cisterns	11
Control unit – Operation and function	12ff.
Special functions	19
Technical data	21

Operation area

LevelJET was developed for level measurement in cisterns, tanks, silos or similar containers.

Direct contact of fluids or aggressive steams with the sensor could destroy the sensor.

The device measures the existing level and is able to switch two outputs, depending on user programed settings.

Function mode

The distance between sensor and medium is measured once per second. The sensor transmits a short ultrasonic pulse which is reflected by the medium. The time between transmit and receive of this impulse is timed and the resulting distance is calculated.

With respect to the user stored tank settings the filling level is calculated and – if desired – an output could be switched on or off.

In scope of delivery of LevelJET are the following components:

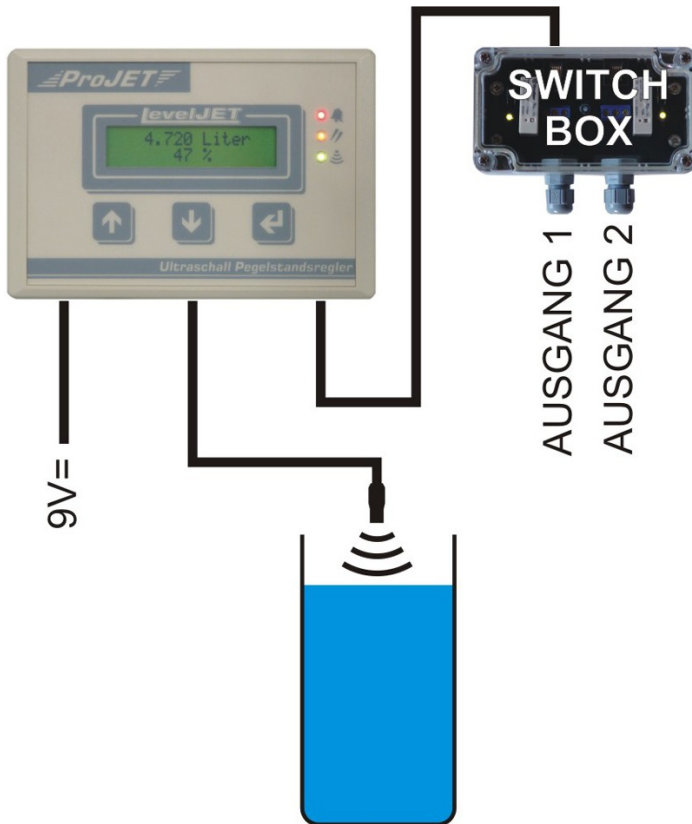
- Sensor head UNI-300 with 4m cable
- Controller unit
- 9V= Plug power supply
- Usermanual

Connection



1. Mount the sensor in tank
2. Connect the sensor to the display unit
3. Connect power supply

The device is now ready for operation and should display measured values like liters and measured distance.



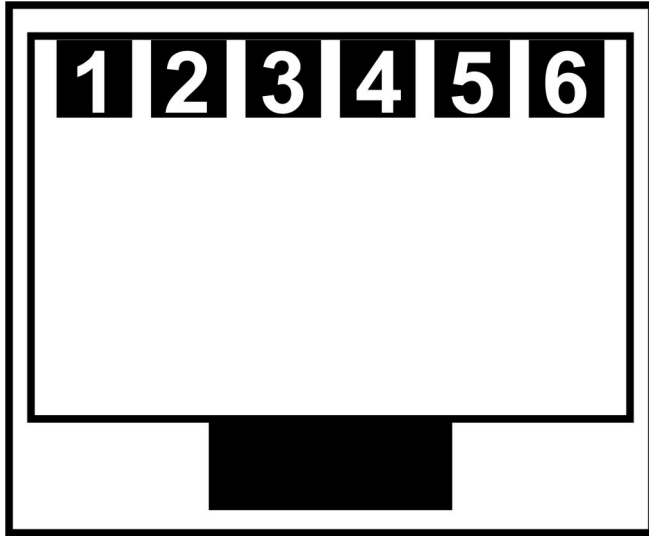
The display unit contains two outputs which could switch small loads like relays or LEDs.

If you need to switch higher power consumption devices you can use the SwitchBox.

The SwitchBox contains two relays which are able to switch up to 220V/AC and 5 Amps.

The SwitchBox is only connected to the western jacks and directly ready to run.

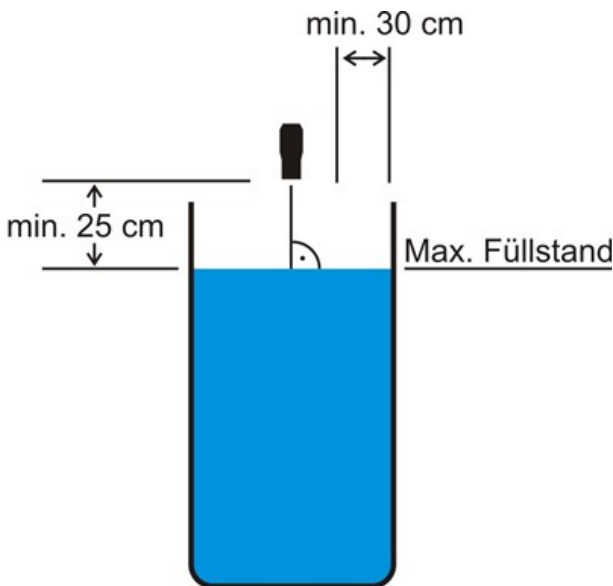
The control unit contains a western jack with 6 pins for the connection of a radio unit, Switch-Box or a PC. The output wiring for own applications is assigned as following. Please consider the maximum load of the open collector outputs !



- (1) RxD – Serial receiving line
 - (2) Ground
 - (3) Output 1 (Open collector)
 - (4) Output 2 (Open collector)
 - (5) +5V – regulated 5V/DC output
 - (6) TxD – Serial transmitting line
-

Ultrasonicsensor

- The sensor should be mounted perpendicularly to the surface of the measured medium - ideally the sensor should be arranged centrally in the tank
- The sensor has to be firmly mounted and must not be moved by wind or vibrations.
- Also at maximum filling level the sensor must not have contact to the medium. -> Destruction of the sensor
- The minimum distance to the maximum filling level is 15 cm.
- The distance of the sensor to the tank wall should amount at least 30 cm.
- Objects or pipes between the sensor and the surface can result in wrong reflections.
- The sensor must not be used in explosion-proof areas.



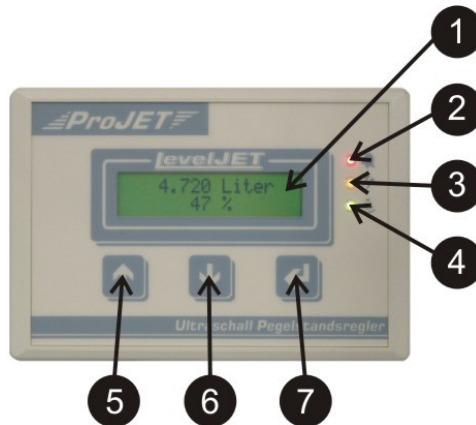
Assembly in water cisterns:

With help of small chain the sensor is hung up directly in the center of the water cistern. The lead is fastened simply by cable straps to the chain and aligned perpendicularly to the water surface. (Illustration 6.1).



Illustration 6.1





(1) LC-Display

Two-line, background-lit LC-display, in this display all parameters are indicated.

(2) ALERT

The red alarm LED is switched on or off depending upon programming and serves as optical alarm display

(3) ERROR

The yellow error LED shows a malfunction or defective connection of the sensor

(4) RECEIPT

The green data LED indicates the reception of a measurement

(5) ↑-KEY

With the UP-key parameters can be increased and the menu can be scrolled up

(6) ↓-KEY

With the DOWN-key parameters can be decreased and the menu can be scrolled down

(7) □ -KEY

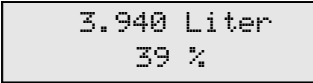
With □ .KEY values are permanently stored and submenus can be selected. The □ -KEY serves likewise for switching the level or distance display.

After turning on a short message appears

A rectangular box containing two lines of text: "LevelJET V4.30" on the top line and "(C)2012 ProJET" on the bottom line.

LevelJET V4.30
(C)2012 ProJET

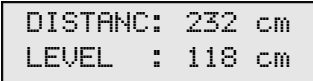
Status display I

A rectangular box containing two lines of text: "3.940 Liter" on the top line and "39 %" on the bottom line.

3.940 Liter
39 %

The display shows the existing liters and the resulting level in percent.
With ▢ -key can be switched to display II.

Status display II

A rectangular box containing two lines of text: "DISTANC: 232 cm" on the top line and "LEVEL : 118 cm" on the bottom line.

DISTANC: 232 cm
LEVEL : 118 cm

The display shows measured distance and resulting tank level in cm.

Menu

To enter the menu press ↑ und ▢ -key at the same time

A rectangular box containing two lines of text: "▶TANK DATA" on the top line and "▣PROGRAMM" on the bottom line.

▶TANK DATA
▣PROGRAMM

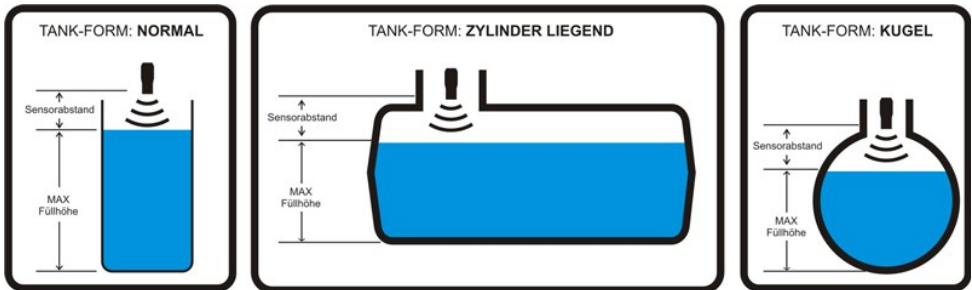
Main menu is shown.

Move the arrow to the right menu with ↑ ↓ - key

▶ TANK DATA

In menu 1 are entered all needed data for level calculation

- Contents of the tank in liters
- Tank form
- Maximum filling level
- Distance between sensor and maximum filling level



Approach:

```
▶ TANK DATA
  PROGRAMM
```

▣ -Taste drücken

```
▶ TANK CONTENTS
  TANK FORM
```

▣ -Taste drücken

```
TANK CONTENTS:
± 10.000 Liter
```

Adjust the value you need with ↑ need.

▣ -KEY -> Value store.

TANK CONTENT
TANK FORM

Adjust the right tank form With ↑ ↓

Following kinds can be adjusted:

Normal:	Tanksystems with basin form (III..)
Cylinder lying:	Horizontal inserted cylinder tanks (III..)
Ball:	Spherically Tanks (III..)

▣ -Key -> Value store

MAX Level:
± 300 cm

Adjust the max. Level with ↑ ↓.

▣ -Key -> Value store

SENSORDISTANCE:
± 50 cm

Adjust the sensor distance to the max. level with ↑ ↓.

▣ -Key -> Value store

☞ ready

All needed adjustments are done !

PROGRAMM

```
▶ALARM LED
  ALARM BUZZER
```

At the controller unit a red ALERT-LED is integrated. In this menu you can adjust, with which level the led is switched on.

- ▣ -KEY -> Enter menu

```
Swichting point:
  ⚡ 30%
```

With ⬆ ⬇ adjust the value,, when the led should switched on.

- ▣ -KEY-> Value store.

```
HYSTERESIS:
  ⚡ 2 %
```

The hysteresis prevents constant switching on an off (flutter) with reaching the trigger level.

For example the trigger level on 30% is exceeds and hysteresis is adjusted to 2%, then the led is switched on at 30% and switched off only again with 28%. A figurative explanation follows further down.

With ⬆ ⬇ adjust the right Hysteresis (min. 1%)

- ▣ -KEY-> Value store

```
EXCEED/FALL BE:
  ⚡ FALL BELOW
```

In this menu can be adjusted whether the led is swichted on when over or falling below the respective level. A descriptive example takes place far down with EXIT 1/2

- ▣ -KEY-> Value store

ALARM BUZZER

The controller box contains a sound signal giver, which can be programmed similar to the LED signal.

EXIT 1

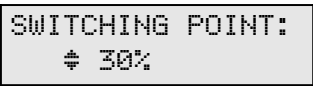
see (6) EXIT 2 SWITCHING POINT.

EXIT 2

The Controller unit has two 5V/150mA exits, which scolded relays can. Likewise the connection of our Switch-Box is possible

The exits serve for it over eg. when falling below the water level of a cistern to activate a raw water pump or to switch on a overflow valve when a level exceeds.

▫ -Key -> Value store



SWITCHING POINT:
± 30%

Adjust the level with   when the right exit to be switched is

▫ -Key -> Value store



HYSTERESIS:
± 2 %

The hysteresis prevents constant switching on an off (flutter) with reaching the trigger level.

For example the trigger level on 30% is exceeds and hysteresis is adjusted to 2%, then the led is switched on at 30% and switched off only again with 28%. A figurative explanation follows further down.

With   adjust the right hysteresis (min 1%)

▣ -KEY-> Value store



EXCEED/FALL BE:
± EXCEED

In this menu can be adjustet whether the exit is switched on when over or falling below the respective level.

▣ -KEY -> Value store

EXAMPLE:

EXIT 1 should activate a water pump when falling below 25% filling level to fill the cistern again. The hysteresis is adjusted with 2%.

Programm::

- EXIT 1 SWITCHING POINT : 25%
- HYSTERESIS: 2%

- Switch on: FALL BELOW

Expiration:

As soon as the level falls below under 25% scolded itself the fresh water supply. The pump is switched off by the hysteresis of 2% only again when reachin 27%. The procedure repeats itself when the level falling below 25%.

3 EXIT TEST

With this menu the exits can be switched on and/or off by hand for function control.

- ↑↓ -Key -> choose exit
- ▣ -key -> switch exit

The starting position remain up to the automatic change-over by the controller unit.

4 CONFIGURATION

In this menu can be made adjustments for the sensor. Changes shouldn't made without instruction. Malfunctions can developed.

Special function

Sensor Signal data

Press the ▣ -Taste and switch on the unit

```
DISTANCE: 50 cm
TIME      : 1500 uS
```

The first row shows the distance and the second one the running time. To get into the normal enterprise restart the unit.

RESET

For resetting the device to factory settings press the ↑ ↓ at power on.

Sensor head UNI-300

Power supply	9V=
Range	15-250 cm
Accuracy	+/- 1 cm
Max. length of lead	25 m
Enclosure	IP-67 waterproof
Dimension	ca. Ø 35 x H 46 mm

Control Unit

Power supply	9V=/35mA
Capacity	max. 2.0 VA
Output	2 x 5V, Open Kollektor max. 150 mA
Serial interface	RS232, 4800/8/N/1, TTL-level
Enclosure	not protected
Dimension	about 135 x 95 x 25 mm