# NivoTec®

Level monitoring system
**NT 2000 / 3500 series**
Selection list

## Table of contents

Subject to change.

All dimensions in mm (inches).

All prices in Euro (€) or USD ($), excluding VAT.

All EURO prices are EXW Betzigau, all USD prices are EXW Memphis, excluding packaging costs.

Valid: From 01.04.2021 until 31.03.2022, unless otherwise agreed.

By publishing this selection list all other lists become invalid.

We assume no liability for typing errors.

Different variations to those specified are possible.
Please contact our technical consultants.

**SOLUTIONS**

# NivoTec®

Level monitoring system
**NT 2000 / 3500 series**
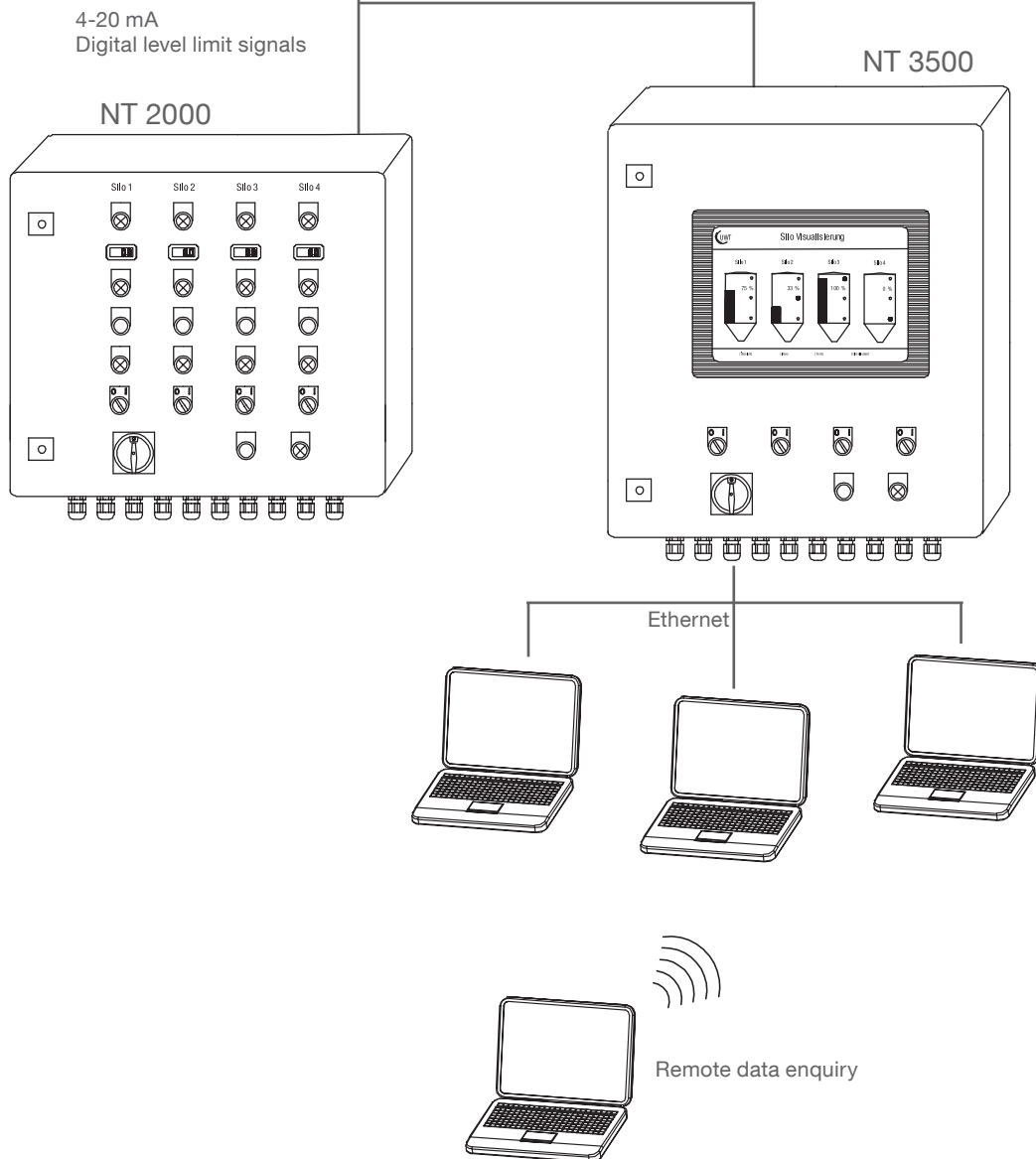Selection list

UWT
LEVEL CONTROL

## Overview

Silo plant with continuous level measurement technology, level limit sensors and shut off valves in the filling pipes.
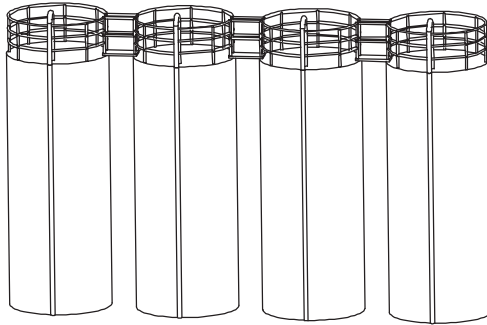
Truck module
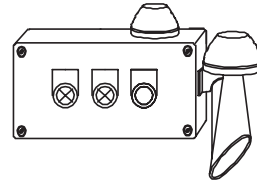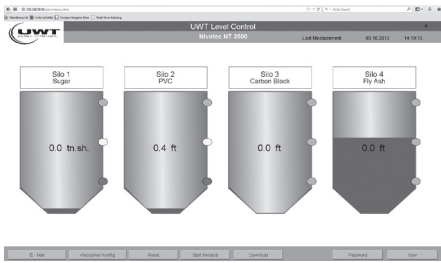
Modbus RTU
4-20 mA/ HART or countig pulses from UWT-lead systems
Digital level limit signals

4-20 mA
Digital level limit signals

NT 3500

NT 2000

Ethernet

Remote data enquiry

SOLUTIONS

# NivoTec®

Level monitoring system
**NT 2000 / 3500 series**
Selection list

UWT LEVEL CONTROL

## Overview

| | NT 2000 | NT 3500 |
|---|---|---|
| |  |  |
| **System** | Control cabinet system for display and monitoring of contents with digital instrumentation and LEDs for level limits. | Control cabinet system for display and monitoring of contents and levels. The self contained system works with visualisation software on a web server. |
| **Number of silos** | Max. 10 (more are possible on request) | Max. 50 (more are possible on request) |
| **Software** | Not available | Licence free visualisation software in HTML form. Password-protected access on alle Ethernet PCs. |
| **Control cabinet** | Standard equipment | Standard equipment or pre-mounted on cap rail |
| **Input signal** | Analogue inputs (4-20 mA) | - Modbus RTU of Nivobob® 3000<br>- Analogue inputs (4-20 mA)<br>- Counting inputs (from electromechanical lead systems)<br>- Profibus available on request |
| **Alarm signal Silo-„full"** | Optional<br>- Full signal available as a flashing light with buzzer | Optional<br>- Full signal available as a buzzer |
| **Display in the control cabinet door** | - Digital display for silo level<br>- LED for full and empty signal | - Touch panel 10", 4" or 15"<br>- Digital display for silo level<br>- LED for full and empty signal |
| **Remote data request** | Not available | Via Internet (VPN tunnel) or GSM Modem |
| **Trend data** | Not available | The recording of the level data is made internal as a ring buffer. These can be exported and processed as .csv. |
| **Truck module** | Optional<br>- Silo Mounting<br>- Display Silo "full" via LED and flashing light with buzzer<br>- Reset by push button | Optional<br>- Silo Mounting equipment<br>- Display Silo "full" via LED and flashing light with buzzer<br>- Reset by push button |
| **Pinch valve control** | Not available | Optional<br>- Automatic in case of silo full detection<br>- Release via key switch/ PC/ Touchpanel |
| **Interfaces** | Not available | - Modbus RTU<br>- Ethernet<br>- Profibus on request |

### Technical data

| | |
|---|---|
| Dimensions | Depending on the number of silos |
| Material , degree of protection, ambient temperature | Control cabinet: steel plate, IP54, 0 .. 50°C<br>Truck module: steel plate, IP65, -25 .. +60°C<br>Terminal box NT50: steel plate, IP65, -25 .. +60°C |
| Supply voltage | 230 V 50 Hz |
| Supply power | Depending on the number of silos and connected sensors |

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## NT 2000

## Features

- Fill level indication on an LED display in percentage, height, volume or weight
- Simple and easy handling of the various display elements
- Evaluation of the analogue 4-20 mA signals of any sensors
- Fill control via full alarm signal
- Separate truck module for comfortable monitoring during silo filling

## NT 2000 control cabinet

The NT 2000 offers the level indication modules and monitoring functions integrated in a control cabinet.
The fill level is displayed via the NivoTec® NT 4900 digital display, the level limits via full and empty LEDs. 4-20 mA signals are evaluated. It is possible to integrate an alarm signal with a buzzer which signals when the silo becomes full during filling. The buzzer can be mounted directly on the silo. The NT 2000 is a complete system which also provides the supply voltage for the sensors. It is delivered with project specific electrical plans.



UWT electro mechanical lead system: measurement start and indication "upper stop position"
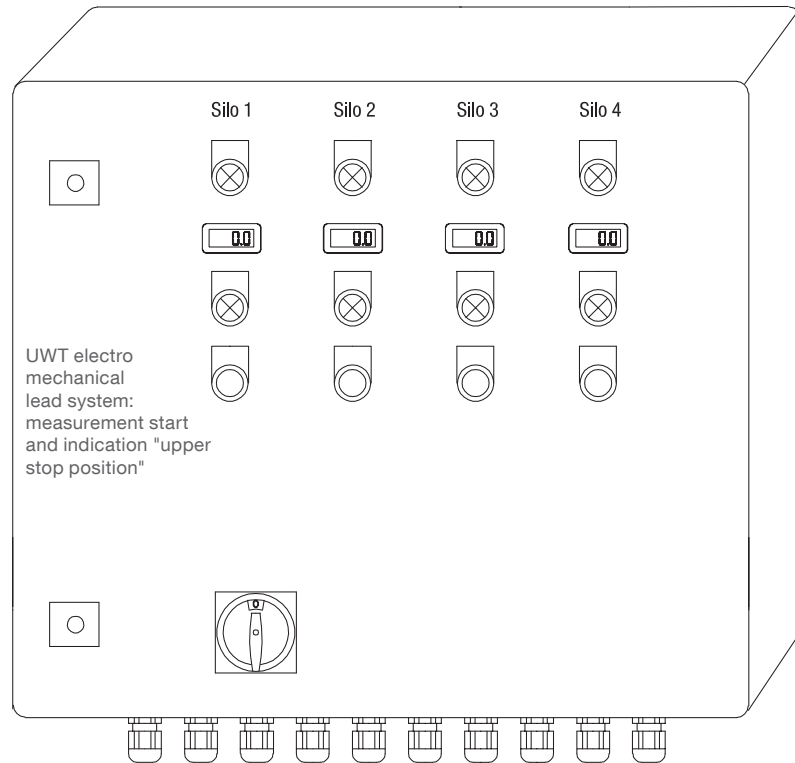
## Truck module

For use with one silo.
Mounting directly on the silo frame.
Indication of empty and full level with LEDs.
Reset of alarm "Silo full".
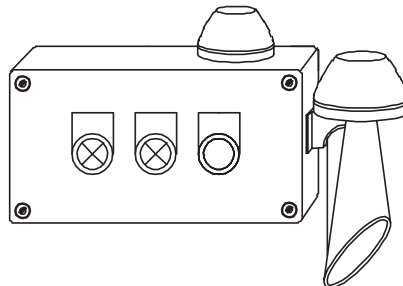


Example: Truck module with full/empty LEDs, push button for reset of alarm "Silo full"

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# NivoTec®

Level monitoring system
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UWT LEVEL CONTROL

## NT 2000

# Level monitoring system
### NivoTec® NT 2000

|  | Price including monitoring of the first silo | Extra price for each additional silo monitoring |
|---|---|---|

**pos.1  Basic configuration**

**NT 2000** ....................................................................................................................... • •

    **pos.2  Measurement technology**
With use of electro mechanical lead systems: supply voltage lead system 230 V AC
A  4-20 mA (active or passive)  ................................................................................ • •
B  4-20 mA from NB 3000/ NB4000
   incl. start button for measurement, display "upper stop position" and "failure" ...... • •
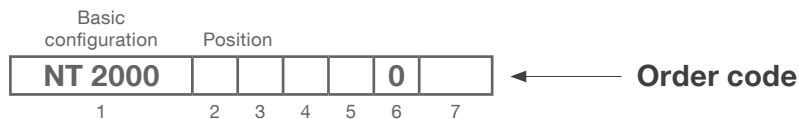
    **pos.3  Integration of level limit sensors**
LED display in control cabinet
Level limit sensor supply/ signal output as follows:
0  without ................................................................................................................ • •
1  Full level sensor           (230 V AC/ floating) ........................................... • •
2  Full and empty level sensor  (230 V AC/ floating) ........................................... • •
3  Full level sensor           (24 V DC/ floating or PNP) ................................. • •
4  Full and empty level sensor  (24 V DC/ floating or PNP) ................................. • •

    **pos.4  Alarm "silo full"**
1x buzzer, 1x reset button Alarm "silo full" (for outside mounting):
with pos.5 0  buzzer delivery in loose parts (reset button inside a surface mounting housing)
with pos.5 L buzzer delivery in loose parts (reset button mounted in the truck module)
0  without ................................................................................................................ • •
A  with ..................................................................................................................... • •

    **pos.5  Truck module** (only with pos.4 A)
Delivery of one separate truck module per silo
0  without ................................................................................................................ • •
L  with ..................................................................................................................... • •

    **pos.7  Number of vessels/ silos** (max. 10, more are possible on request)

| Basic configuration | Position | | | | | |
|---|---|---|---|---|---|---|
| **NT 2000** | | | | | 0 | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

← **Order code**

# NivoTec®

Level monitoring system
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UWT
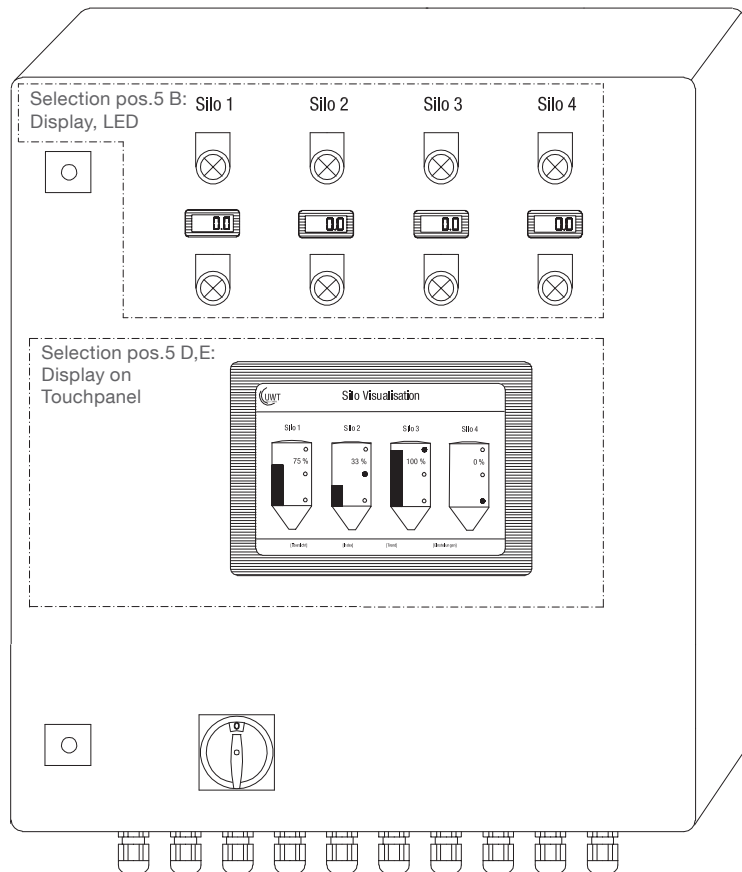LEVEL CONTROL

## NT 3500

## Features

- Fill level visualisation via HTTP-web server
- Visualisation via standard Internet browser software on all Ethernet PCs
- Password protected
- Worldwide remote enquiry of the level password protected - on request
- Software operation addtional via a touch panel in the control cabinet or via fill level LEDs
- Data in percentage, height, volume or weight
- Trend display, data storage, export via .csv
- Evaluation of the analogue 4-20 mA signals of any sensors, as well as Modbus RTU of the UWT-systems
- Different input signals within the same system is possible
- Fill control via full alarm signals and shut off valves
- Separate truck module for safe and comfortable monitoring during silo filling

## NT 3500 control cabinet

The heart of the NT 3500 is a web server module, which the visualisation software uses. All fill level control and display functions can be operated via the visualisation on a PC or a Touch panel with backlight. An Ethernet interface ensures that the visualisation can be simultaneously operated from all PCs which are connected to the interface. Access is password protected. Additionally the control cabinet can be equipped with operating and display elements. Either the 10.4" or 15" touch panel or the digital level display with full and empty LEDs can be choosen. The electromechanical lead system can be started by the visualisation or by a push button. A buzzer for alarm "silo full" can be mounted directly on the silo. Control for pinch valves to stop the filling is available. The NT 3500 is a complete system which also provides the supply voltage for the sensors. The system is delivered with project specific electrical plans.

**Functionality of alarm"silo full" and control of the pinch valves:**
1. The filling (opening of the pinch valve) is enabled eihter via the hose coupling when connecting the filing hose, via a key switch on the cabinet or on the truck module or via PC/ Touch panel.
2. In case of an alarm "silo full" the pinch valve closes, the LED "silo full" and the buzzer is switched on, the reset button is blinking. After reset of the alarm the pinch valve opens for ca. 5 min to enable the expulsion of the filling pipe, then it is closed again. Independend from this control the pinch valve can be opened or closed by an authorized user at any time.



Selection pos.5 B: Display, LED

Silo 1    Silo 2    Silo 3    Silo 4

Selection pos.5 D,E: Display on Touchpanel

Silo Visualisation

Silo 1    Silo 2    Silo 3    Silo 4
75 %      33 %      100 %     0 %

## Truck module

- One module for a defined number of silos (depending on the project)
- Mounting directly at the silo frame
- Display silo full/ empty and pinch valve status with LEDs
- Reset of alarm "silo full"
- Key switch for pinch valve control



Example: Truck module

**SOLUTIONS**
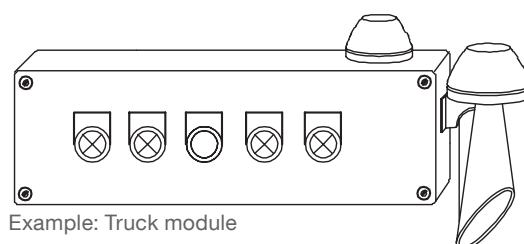
## NT 3500

# Level monitoring system
## NivoTec® NT 3500

| | | | | Price for the first silo | Extra price for each additional silo |
|---|---|---|---|:---:|:---:|
| **NT 3500** | | | ........................................................................ | • | • |
| **pos.1** | | **Visualisation system - HTTP web server** | | | |
| | | incl. 24 V DC power supply (used also for supply of the level limit sensors) | | | |
| | A | Completely wired in a control cabinet | max. 25 silos/ vessels ..................... | • | • |
| | B | No control cabinet, pre-wired on a top hat rail | max. 25 silos/ vessels ..................... | • | • |
| | C | Completely wired in a control cabinet | max. 50 silos/ vessels ..................... | • | • |
| | D | No control cabinet, pre-wired on a top hat rail | max. 50 silos/ vessels ..................... | • | • |
| **pos.2** | | **Input signals of level sensors** | | | |
| | | With use of NB 3000/ NB4000: supply voltage of NB 3000/ NB4000= 230 V AC | | | |
| | 1 | Modbus RTU (NB 3000/ NB4000) ........................................ | | • | • |
| | 2 | 4-20 mA active (NB 3000/ NB4000) ..................................... | | • | • |
| | 3 | Counting pulses (NB 3000) ................................................ | | • | • |
| | 4 | 4-20 mA/ 2-wire (NivoRadar NR 3000) ............................... | | • | • |
| **pos.3** | | **Integration of level limit switches incl. alarm "silo full"** | | | |
| | | 1x buzzer, 1x reset button alarm "silo full" (for outside mounting): | | | |
| | | with pos.4 0 buzzer delivery in loose parts, reset button inside a surface mounting housing | | | |
| | | with pos.4 1 buzzer delivery in loose parts, reset button mounted in the truck module | | | |
| | | Level limit sensor supply/ signal output as follows: | | | |
| | 0 | without ................................................ | | • | • |
| | A | Full level sensor | (230 V AC/ floating) wired on NB/ Modbus ................... | • | • |
| | B | Full level sensor | (24 V DC/ floating or PNP) ...................... | • | • |
| | C | Full and empty level sensor | (24 V DC/ floating or PNP) ...................... | • | • |
| | D | Full level sensor | (230 V AC/ floating) ............................ | • | • |
| | E | Full and empty level sensor | (230 V AC/ floating) ............................ | • | • |
| **pos.4** | | **Truck module** | | | |
| | 0 | without ................................................ | | • | • |
| | 1 | with ................................................ | | • | • |
| **pos.5** | | **Visualisation at control cabinet** | | | |
| | | only with pos.1 A, C | | | |
| | 0 | without ................................................ | | • | • |
| | B | Digital level display and LED full or full/ empty (only with pos.2. 4) ............................... | | • | • |
| | C | Digital level display and LED full or full/ empty (only with pos.2. 2) | | | |
| | | for NB 3000/ NB4000, incl. start button, display "upper stop position" and "failure" ............... | | • | • |
| | D | 10.4" 800 x 600 Touch panel ....................................... | | • | • |
| | E | 15" 1024 x 768 Touch panel ....................................... | | • | • |
| **pos.6** | | **Pinch valve control** (only with pos.4 1) | | | |
| | | Shut off in case of silo full detection, possibility of expulsion of the filing pipes | | | |
| | | Display and operating elements located on the truck module | | | |
| | 0 | without ................................................ | | • | • |
| | 1 | Filling enabled via mouse click on the PC and on Touch panel ............................... | | • | • |
| | 2 | Filling enable by key switch on the truck module ............................... | | • | • |
| | 3 | Filling enable by key switch on the cabinet ............................... | | • | • |
| **pos.7/ 8** | | **Number of vessels/ silos** (max. 25/ 50) | | | |
| **pos.9** | | **Remote enquiry** | | | |
| | A | via Internet (with furnished VPN tunnel) ............................... | | • | • |
| | B | via GSM Modem ................................................ on request | | | |
| **pos.10** | | **Hose coupling switch** | | | |
| | 0 | not present ................................................ | | • | • |
| | 1 | connected to NB 3000/ NB4000 (terminal 24/ 26) ............................... | | • | • |
| | 2 | connected to NivoTec® ................................................ | | • | • |

Basic configuration     Position

| **NT 3500** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7/8 | 9 | 10 |

◄── **Order code**

**SOLUTIONS**

## Further options (on request)

Ethernet gateway      Connection with only one Ethernet line between silo areas which are far located from each other.

Radio-relay system      Connection by radio communication between silo areas which are far located from each other (max. 1800 m).

Minimum order value for separate orders of spare parts or accessories is 75 €.