In hydraulics and lubrication technology the fill level of oil tanks needs to be monitored continuously. Here, modern factory automation requires compatible signals. Despite central system control, visualising the current level on the actual tanks is often desired. To minimise production costs and the space required on containers, it makes sense to use one monitor for both e.g. the fill level and oil temperature. The Nivotemp series meets virtually all requirements arising in this area of application.

**NT 64**
- Connecting flange as per DIN 24557 Part 2
- Wireless, adjustable level contacts
- Various plug options
- Up to 4 switching outputs for liquid level or 2 switching outputs for liquid level plus Pt100 or analog output for temperature
- Proven and tested highly dynamic float system
- 24 V DC standard, 230 V DC upon request

**NT 64D**
- LED display with status of switching outputs, 270° swivel
- Standard menu structure based on VDMA standard sheet 24574 ff.
- 2 wireless, adjustable level contacts
- Up to 4 programmable temperature switching outputs
- Alternatively, continuous temperature output signal plus one freely programmable switching output
- Characteristics of switching output configurable as window or hysteresis
- Two switching outputs configurable as frequency output (1-100 Hz)
- Min/max memory, logbook function
Technical Data NT 64

### Basic unit

<table>
<thead>
<tr>
<th>Version</th>
<th>MS</th>
<th>VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>max. 1 bar (14.5 psi)</td>
<td>max. 1 bar (14.5 psi)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C to +80 °C (-4 °F to 176 °F)</td>
<td>-20 °C to +80 °C (-4 °F to 176 °F)</td>
</tr>
<tr>
<td>Float</td>
<td>SK 610</td>
<td>SK 221</td>
</tr>
<tr>
<td>Min. fluid density</td>
<td>0.80 kg/dm³ (0.029 lb/in³)</td>
<td>0.85 kg/dm³ (0.031 lb/in³)</td>
</tr>
<tr>
<td>Lengths</td>
<td>280, 370, 500 mm (11, 14.6, 19.7 in) (standard)</td>
<td></td>
</tr>
</tbody>
</table>

### Material/Version

- Float: rigid PU (SK 610) 1.4571 (SK 221)
- Immersion tube: Brass 1.4571
- Flange (DIN 24557): PA

#### Weight
- At L=280 mm (11 in): approx. 200 g (0.4 lb) approx. 300 g (0.7 lb)
- Each 100 mm (3.9 in) add: approx. 30 g (0.07 lb) approx. 50 g (0.1 lb)

**Includes:**
Mounting screws (quantity 6) and rubberised cork seal.

### Options

- **Level switching output**
  - SK 610: K101-104
  - SK 221: W101/102
- **Function**
  - NO/NC*
  - Change-over contact
- **Max. number**
  - 4
  - 2
- **Voltage max.**
  - 30 V DC
  - 30 V DC
- **Switching current max.**
  - 0.5 A
  - 0.5 A
- **Contact load max.**
  - 10 VA
  - 20 VA
- **Min. contact spacing**
  - 40 mm (1.6 in)
  - 40 mm (1.6 in)

*NO= falling NC contact/NC = falling NO contact

### Optional temperature output

- **Temperature contact**
  - TK
- **Voltage max.**
  - 30 V DC
- **Switching current max.**
  - 2.5 A
- **Contact load max.**
  - 100 VA

#### Function

- **NO**
  - NC*
  - Change-over contact

*NC = NC contact/NO = NO contact, data for rising temperature

- **Switching point °C (°F)**
  - 50/60/70/80 (122/140/158/176)
  - 50/60/70/80 (122/140/158/176)

- **Switching point tolerance**
  - ± 3 K (± 5.4 °Ra)
  - ± 3 K (± 5.4 °Ra)

- **Hysteresis max.**
  - 10 K ± 3 K (18 ± 5.4 °Ra)
  - 10 K ± 3 K (18 ± 5.4 °Ra)

*NC = NC contact/NO = NO contact, data for rising temperature

- **Temperature sensor**
  - Pt 100 Class B, DIN EN 60 751
- **Tolerance**
  - ±0.8 °C (±1.4 °F)

### Temperature transmitter

- **Temperature sensor**
  - Pt 100 Class B, DIN EN 60 751
- **Measuring range**
  - 0 °C to +100 °C (32 °F to 212 °F)
- **Supply voltage (U_b)**
  - 10 - 30 V DC
- **Output**
  - 4 - 20 mA
  - 0.02 A
- **Burden Ω max.**
  - (U_b - 7.5 V) / 0.02 A
- **Accuracy**
  - ± 1 % from end value

Other measuring ranges available upon request
**Nivotemp NT 64, NT 64D**

**Ordering instructions NT 64**

**Model key**

<table>
<thead>
<tr>
<th>Model designation</th>
<th>Version</th>
<th>MS</th>
<th>Brass</th>
<th>VA float / VA immersion tube</th>
<th>Plug connector</th>
<th>M3</th>
<th>S6</th>
<th>M12</th>
<th>2M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT 64-MS-S6-500-2K-TK80NC</td>
<td>L1=100 NC, L2=420 NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Length in mm (inch)**

- 280 (11)
- 370 (14.6)
- 500 (19.7)

**Level measurement**

1-4 Number of contacts

**Level contacts**

K NC/NO W change-over contact

**Temperature signal**

<table>
<thead>
<tr>
<th>TK...</th>
<th>NC contact</th>
<th>NO contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>TK50NC</td>
<td>TK50NO = 50 °C (122 °F)</td>
<td></td>
</tr>
<tr>
<td>TK60NC</td>
<td>TK60NO = 60 °C (140 °F)</td>
<td></td>
</tr>
<tr>
<td>TK70NC</td>
<td>TK70NO = 70 °C (158 °F)</td>
<td></td>
</tr>
<tr>
<td>TK80NC</td>
<td>TK80NO = 80 °C (176 °F)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pt100</th>
<th>Temperature sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>KT</td>
<td>Temperature transmitter</td>
</tr>
</tbody>
</table>

**Accessories**

<table>
<thead>
<tr>
<th>Item no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9144 05 0010</td>
<td>Connecting cable M12x1, 4-pin, 1.5 m (4.9 ft), angular coupling and straight plug</td>
</tr>
<tr>
<td>9144 05 0046</td>
<td>Connecting cable M12x1, 4-pin, 3.0 m (9.8 ft), angular coupling and straight plug</td>
</tr>
<tr>
<td>9144 05 0047</td>
<td>Connecting cable M12x1, 4-pin, 5.0 m (16.4 ft), angular coupling and strands</td>
</tr>
</tbody>
</table>

**Ordering example**

You require: Level switch with flange, brass, plug connector S6, length L = 500 mm (19.7 in), 2 level contacts and temperature contact TK 80 as NC contact, 1st contact 100 mm (3.9 in) NC, 2nd contact 420 mm (16.5 in) NO

Order: NT 64-MS-S6-500-2K-TK80NC, L1=100 NC, L2=420 NO

**Standard pin assignment NT 64**

**Plug connection**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>M3</th>
<th>S6</th>
<th>M12 (base)</th>
<th>2M12 (base)</th>
</tr>
</thead>
</table>

**Number of pins**

- 3-pin + PE
- 6-pin + PE
- 4-pin
- 4-pin / 4-pin

**DIN EN**

- 175301-803
- 175201-804
- 61076-2-101
- 61076-2-101

**Voltage max.**

- 30 V AC / V DC
- 30 V AC / V DC
- 30 V DC
- 30 V DC

**Contact load max.**

- 0.5 A per output
- 0.5 A per output
- 0.5 A per output
- 0.5 A per output

**Degree of protection**

- IP65
- IP65
- IP67*
- IP67*

**Cable fitting**

- PG11
- M20x1.5

**Max. number of contacts**

**Level/temp. contacts**

- 1 x K101 / 1 x TK
- 3 x K101-104 / 1 x TK
- 1 x K101 / 1 x TK
- 3 x K101-104 / 1 x TK
- 4 x K101-104
- 2 x W101/102
- 4 x K101-104
- 2 x W101

**Level contacts only**

- 2 x K101-102
- 1 x W101
- 4 x K101-104
- 2 x W101/102
- 4 x K101-104
- 2 x W101
- 4 x K101-104
- 1 x W101/102

* With moulded cable box. Other plug connections available upon request

DA100209 + 12/2019   We reserve the right to amend specification.  Buhler Technologies LLC
Nivotemp NT 64, NT 64D

<table>
<thead>
<tr>
<th></th>
<th>M3</th>
<th>S6</th>
<th>M12 (base)</th>
<th>2 x M12 (base)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection schematic</strong></td>
<td>![Diagram M3]</td>
<td>![Diagram S6]</td>
<td>![Diagram M12]</td>
<td>![Diagram 2 x M12]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>K101-104</strong></th>
<th>![Diagram K101-104]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level contact(s)</strong></td>
<td>+1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>W101/102</strong></th>
<th>![Diagram W101/102]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level contact(s)</strong></td>
<td>+1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>K101-104</strong></th>
<th>![Diagram K101-104]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level contact(s) and Pt100</strong></td>
<td>+1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>W101/102</strong></th>
<th>![Diagram W101/102]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level- and temperature contact(s)</strong></td>
<td>+1</td>
</tr>
</tbody>
</table>

The standard assignment specified here applies to the max. number of contacts possible and contact function NO.
## Technical Data NT 64D

### Basic unit

<table>
<thead>
<tr>
<th>Version</th>
<th>MS</th>
<th>VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>max. 1 bar (14.5 psi)</td>
<td>max. 1 bar (14.5 psi)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C to +80 °C (-4 °F to 176 °F)</td>
<td>-20 °C to +80 °C (-4 °F to 176 °F)</td>
</tr>
<tr>
<td>Float</td>
<td>SK 610</td>
<td>SK 221</td>
</tr>
<tr>
<td>Min. fluid density</td>
<td>0.80 kg/dm³ (0.029 lb/in³) with float</td>
<td>0.85 kg/dm³ (0.031 lb/in³) with float</td>
</tr>
<tr>
<td>Lengths</td>
<td>280, 370, 500 mm (11, 14.6, 19.7 in) (standard)</td>
<td></td>
</tr>
</tbody>
</table>

### Material/Version

| Display housing | PA | PA |
| Float | rigid PU | 1.4571 |
| Immersion tube | Brass | 1.4571 |
| Flange (DIN 24557) | PA | PA |
| Weight at L=280 mm (11 in) | approx. 300 g (0.7 lb) | approx. 400 g (0.9 lb) |
| Each 100 mm (3.9 in) add | approx. 30 g (0.07 lb) | approx. 50 g (0.1 lb) |
| Degree of protection | IP65 | IP65 |

### Includes:
- Mounting screws (quantity 6) and rubberised cork seal.

### Options

- Stilling tube (SSR) | Brass | VA

### Temperature display electronics

- Display | 4 character 7 segment LED |
- Operation | Via 3 keys |
- Memory | Min. / Max. Data memory |
- Starting current input | approx. 100 mA for 100 ms |
- Current input during operation | approx. 50 mA (without current- and switching outputs) |
- Supply voltage \( (U_{B}) \) | 10 – 30 V DC (nominal voltage 24 V DC) |
- Ambient temperature | -20 °C to +70°C (-4 °F to 158 °F) |
- Display units | Temperature °C / °F |
- Display range | -20 °C to +120 °C (-4 °F to 248 °F) |
- Alarm setting range | 0 °C to 100 °C (32 °F to 212 °F) |
- Display accuracy | ± 1 % from end value |

### Temperature sensor

- Pt100 Class B, Din EN 60751

### Level switching output

- K10
- Max. number | 2 |
- Function | NC / NC* |
- Voltage max. | 30 V DC |
- Switching current max. | 0.5 A |
- Contact load max. | 10 VA |
- Min. contact spacing | 40 mm (1.6 in) |

*NO= falling NC contact / NC = falling NO contact
Temperature outputs
Choose from the following temperature outputs

<table>
<thead>
<tr>
<th></th>
<th>-2T</th>
<th>-1T-KT</th>
<th>-4T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug (base)</td>
<td>2 x M12 – 4-pin</td>
<td>2 x M12 – 4-pin</td>
<td>1 x M12 – 4-pin</td>
</tr>
<tr>
<td>Switching outputs</td>
<td>2 x freely programmable*</td>
<td>1 x freely programmable*</td>
<td>4 x freely programmable</td>
</tr>
<tr>
<td>max. switching current**</td>
<td>0.5 A per output continuous short-circuit protected</td>
<td>0.5 A per output continuous short-circuit protected</td>
<td>0.5 A per output continuous short-circuit protected</td>
</tr>
<tr>
<td>Contact load</td>
<td>max. 1 A total</td>
<td>max. 1 A total</td>
<td>max. 1 A total</td>
</tr>
<tr>
<td>Analogue output</td>
<td>1 x 4 – 20 mA, 2-10 V</td>
<td>0-10 V, 0-5 V</td>
<td>1 x 4 – 20 mA, 2-10 V</td>
</tr>
<tr>
<td>Max. burden Ω as current output</td>
<td>(U_b - 8 V) / 0.02 A</td>
<td>(U_b - 8 V) / 0.02 A</td>
<td>(U_b - 8 V) / 0.02 A</td>
</tr>
<tr>
<td>Min. input load as voltage output</td>
<td>10 kΩ</td>
<td>10 kΩ</td>
<td>10 kΩ</td>
</tr>
<tr>
<td>Options</td>
<td>Stilling tube (SSR)</td>
<td>Same material as immersion tube</td>
<td></td>
</tr>
</tbody>
</table>

*also programmable as frequency output
**Output 1 max. 0.2 A.

Ordering instructions NT 64D

Model key

Type drawing, with display
NT 64D
Version
2T 2x PNP switching output
4T 4x PNP switching output
1T-KT 1x PNP switching output 1x analogue output

Switching function 2nd contact
NO falling NC contact
NC falling NO contact

2nd level contact
nn Please specify installation dimensions (L2 in mm)

Switching function 1st contact
NO falling NC contact
NC falling NO contact

1st level contact
nn Please specify installation dimensions (L1 in mm)

Accessories

<table>
<thead>
<tr>
<th>Item no. 4-pin</th>
<th>Item no. 8-pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9144 05 0010</td>
<td>9144 05 0048</td>
<td>Connecting cable M12x1, 1.5 m (4,92 ft), angular coupling and straight plug</td>
</tr>
<tr>
<td>9144 05 0046</td>
<td>9144 05 0049</td>
<td>Connecting cable M12x1, 3.0 m (9,84 ft), angular coupling and straight plug</td>
</tr>
<tr>
<td>9144 05 0047</td>
<td>9144 05 0033</td>
<td>Connecting cable M12x1, 5.0 m (16,40 ft), angular coupling and strands</td>
</tr>
</tbody>
</table>

Ordering example

You require: Level switch with flange, brass, plug connector S6, length L = 500 mm (19.7 in), 2 level contacts and temperature contact TK 80 as NC contact, 1st contact 100 mm (3.9 in) NC, 2nd contact 420 mm (16.5 in) NO, with temperature display and 2 x programmable temperature output

Order: NT 64D-MS-2M12/500-2K-100NC-420NO-2T
## Nivotemp NT 64, NT 64D

### Standard pin assignment NT 64D

#### Plug connection

<table>
<thead>
<tr>
<th>Panel plug</th>
<th>2 x M12 (base)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection schematic</strong></td>
<td><strong>Plugs</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Plug A</strong></td>
</tr>
<tr>
<td></td>
<td>(level)</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Connection schematic" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2T</strong></th>
<th><strong>Pin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x temperature output</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TT-KT</strong></th>
<th><strong>Pin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x Temperature output</td>
<td>1</td>
</tr>
<tr>
<td>1 x Analogue output</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Connection schematic</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>4T</strong></th>
<th><strong>Pin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4 x Temperature output</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
Using adjustable level contacts allows the use of standardised immersion tube lengths for different size and shape oil tanks. The switching points can always be configured to the specific system requirements without first having to purchase a specific level switch.

This aids original equipment manufacturers and operators with project planning and logistics.

Since the level contacts are electric components, they require a connection to the respective circuits. This is typically achieved using cables which however, particularly in the case of multiple contacts, makes adjustments more difficult.

The Easy Just System is based on a wireless contact arrangement.

These are enclosed by different coloured housings and are arranged on a carrier board with gold contact points.

The different colours aid with coding the various contacts and ensure the terminal configuration matches the connectors.

The switching function of the contacts (NO or NC) is determined by turning the contact sleeve 180° on the carrier board.

Depending on the option selected, a fixed temperature switch (bi-metal, NO or NC), Pt 100 or 4-20 mA transmitter will be fixed to the bottom end of the board for temperature monitoring.