LOGI
LOGI-Command (VI-4)
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1 Overview

The LOGI-X system provides highly precise and continuous filling level measurements in up to 16 tanks. Simultaneously the product temperature and the water level at the bottom of the tank are measured.

The system includes:

- the LOGI-Command measurement evaluation unit
- the TORRIX SC filling level sensors for the level measurement
- LOGI-Input 8
- LOGI-Output 8

The sensors may be used in Ex zone 0.

1.1 In this manual ...

... you will be guided through the installation and commissioning of the LOGI-Command evaluation unit.

1.2 Requirements for service engineers

The entire LOGi-X system may only be installed by trained service technicians.

1.3 Safety information

The filling level and environmental sensors and the LOGI-Command evaluation unit were developed, manufactured, and tested in accordance with the state-of-the-art and accepted technical safety regulations. Nevertheless, hazards may arise from its use.

The following precautions must be observed in order to reduce the risk of injury, the risk of electric shocks, fire or damage to the equipment:

- Opening the cover of the housing for the LOGI-Command could expose you to the risk of an electric shock.
- Do not change or modify the system or add any equipment without the prior consent of the manufacturer.
- Only use original parts. These comply with the technical requirements specified by the manufacturer.
- The installation, operation, and maintenance of the sensors and the LOGI-Command may only be carried out by expert personnel.
- Operators, installers and service technicians must observe all applicable safety regulations. This also applies to any local safety and accident prevention regulations which are not stated in these operating instructions.
• The LOGI-Command evaluation unit is only suitable for wall mounting inside buildings and must not be installed in potentially explosive atmospheres.
• The type VP... measurement transducer and the type VI... interface must always be in a clean and undamaged condition.
• During normal operation, the cover for the housing of the LOGI-Command evaluation unit must always be kept closed.
• The product must always be supplied with the approved auxiliary power.

The safety instructions in this manual are marked as follows:

⚠ If you do not comply with the safety instructions, there is a risk of accident, or the LOGI-X system may be damaged.

✏ Useful instructions in this manual that should be observed are written in italics and identified by this symbol.
2 LOGI-Command

The LOGI-Command designation depends on the number of sensor connections or the transfer technology, e.g., the "LOGI-Command 8" has eight sensor connections.

2.1 Design and function

The LOGI-Command evaluation unit consists of a VI... interface and one or two VP... measurement transducers installed in a housing for wall mounting (IP20).

The LOGI-Command is equipped with 4, 8, or 16 sensor connectors depending on the version. For connecting the sensors one measurement transducer is installed in version LOGI-Command 4 or 8, while two measurement transducers VP... are installed in version LOGI-Command 16.

The LOGI-Command supplies power to the sensors. The LOGI-Command receives the measured values, places them in intermediate storage, and makes the data available to a superordinate system (e.g., a central processor). A serial interface, either an RS-232 or an RS-485, is used for communication. Various logs are available for transmitting the data to the service station computers.

In case of outdoor installation the terminal box / cable connector for the extension of the sensor cables must offer the casing protection class IP68.

2.2 Installation

The LOGI-Command evaluation unit must be installed inside a building and fixed to a wall.

⚠ The LOGI-Command evaluation unit is not suitable for installation outdoors.

2.3 Sensor connections

Connect the filling level and environmental sensors to the sensor terminal strip on the VP board (see following figure). For inserting the cable, please use the blue cable glands for intrinsically safe electric circuits.

⚠ The maximum external inductivity, including cable, must not exceed 40 mH, and the maximum capacity must not exceed 680 nF (see data sheet for the cable used).
The connection cable between the sensors and the LOGI-Command must have the following characteristics:

- 4-core unshielded cable
- Cable cross-section (4 x 0.5 mm² up to 100 m or 4 x 1.0 mm² up to 200 m)
- Colour blue or marked blue (cable for intrinsically safe power circuits)
- Maximum diameter 10 mm so that it can fit through the cable gland of the LOGI-Command.

Figure 1: LOGI-Command 8 with one VP board for 8 sensors
2.4 Interface connections

2.4.1 Connection to the VP card
Depending on the version, it is possible to connect up to 2 VP cards using the 10-pin connectors (VP1/VP2).

2.4.2 Service interface
The RS-232 serial interface (9-pin D-sub socket) can be used for the connection of three different applications. The corresponding settings are carried out with the DIP switch S1:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>Configuration of the LOGI-Command using the LOGI setup software</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>LOGI-Quick log (FAFNIR log) (standard)</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>Auxiliary measurement system</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>no function</td>
</tr>
</tbody>
</table>

Table 1: DIP switch S1 configuration

The RxD service LED (green) displays incoming data of the service interface.
The TxD service LED (green) displays outgoing data of the service interface.

⚠️ The service interface is used to connect the VI-4 interface module to the LOGI-display.
2.4.3 Host interface and extension interface
These interfaces are not needed to operate the LOGI-X system.

2.5 Connection of the supply voltage
The supply of auxiliary power (electrical connection) requires a fixed wiring arrangement (no plugging) and is fed through the bottom right cable entry.
Connect the power supply to the provided terminal blocks (see figure 1).

2.6 Status display
After switching on or resetting the VI... interface, the firmware version of the interface will then be displayed. This is presented by three numbers which appear consecutively on the display, e.g. 1 – 2 – 0 – 0 in accordance with Version 1.2.0.0.
If no sensor has been configured yet, the display will show 99 continually.
However, if sensors have been configured, all the connections configured for the measurement transducer VP... are displayed as a symbol in sequence, with the connection number being displayed first and then the sensor type (see following figure):

TORRIX SC installed in the tank

Figure 3: Sensor symbols

Finally, the status of each sensor is displayed by a code (number) (see next section).

2.6.1 Status messages
When configuration with LOGI setup is complete, you can monitor the operation of the sensors on the status display for the VI... interface. The display shows the connection number for a sensor, a symbol, and then the relevant status in sequence (e.g."5 ☐ ☐ 0" means "VP board connection no. 5 to TORRIX SC in operation"). In this case, one sensor after another is then scanned in an endless loop.

<table>
<thead>
<tr>
<th>Code</th>
<th>Message Description</th>
<th>Possible cause</th>
<th>Required action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Probe running</td>
<td>☑ No measures required.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Probe not running</td>
<td>☑ If this status is displayed permanently, it must be assumed that the sensor is defective.</td>
<td>☑ The sensor must be replaced.</td>
</tr>
</tbody>
</table>

The measured values are no longer being recorded and are set to “0” by the evaluation unit.
<table>
<thead>
<tr>
<th>Code</th>
<th>Message Description</th>
<th>Possible cause</th>
<th>Required action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><strong>Probe cannot determine temperature</strong>&lt;br&gt;The temperature is no longer being recorded&lt;br&gt;by the evaluation unit and its value is set to 0.0 °C. The temperature compensation of the filling volume is no longer being carried out. The product and water level will continue to be processed.</td>
<td>▶ If this status is displayed permanently, it must be assumed that the sensor is defective.&lt;br&gt;☑ The sensor must be replaced.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>Probe cannot determine filling level</strong>&lt;br&gt;The product level and water level are set to “0” by the evaluation unit, the temperature will continue to be transmitted.</td>
<td>▶ If this status is displayed permanently, it must be assumed that the sensor is defective.&lt;br&gt;☑ The sensor must be replaced.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><strong>Reduced measuring accuracy</strong>&lt;br&gt;All measured values are being processed normally. However it must be assumed that total measurement accuracy is not being achieved.</td>
<td>▶ Powerful fluid movements prevent a fully accurate measurement. This may be the case during fuel deliveries, for example.&lt;br&gt;☑ No measures required.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Irrelevant for LOGI-Command</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Irrelevant for LOGI-Command</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><strong>Checksum error:</strong>&lt;br&gt;<strong>Probe – Control unit</strong>&lt;br&gt;The measurement evaluation unit displays an error message when communicating with the sensor.</td>
<td>▶ In the case of wired operation, the cable connection (also connectors and terminals) to the sensor is loose, dirty, or damaged, or there is severe interference.&lt;br&gt;☑ Check cables, plug-in connections and terminal connections.&lt;br&gt;☑ In wired mode, replace sensor, VP… measurement transducer, VI… interface.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><strong>No communication with probe</strong>&lt;br&gt;The evaluation unit is no longer able to establish data communication with the sensor. The measured values are not being captured and are set to “0” by the evaluation unit.</td>
<td>▶ Sensor not connected / not available / defective, wiring incorrect, incorrect serial number configured for the sensor, measurement evaluation unit (VI interface VI… or VP… measurement transducer) defective&lt;br&gt;☑ Take the necessary measures as appropriate to the possible causes.</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Message Description</td>
<td>Possible cause</td>
<td>Required action</td>
</tr>
<tr>
<td>------</td>
<td>---------------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>12</td>
<td>Incompatible data</td>
<td>The sensor or the particular version of the sensor is not supported by the measurement evaluation unit.</td>
<td>Ask the manufacturer whether the sensor and the measurement evaluation unit are compatible, and whether any updates are available. When doing so, please have the type and version number of the measurement evaluation unit, and the type, serial number and/or version number and possibly the model of the sensor (e.g. number of floats or density measurements installed) to hand.</td>
</tr>
<tr>
<td>13</td>
<td>Irrelevant for LOGI-Command</td>
<td></td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>Probe not configured</td>
<td>When the measurement evaluation unit is delivered, all the connected sensors/tanks show this status initially. In order to set up communication with a sensor via a connection point, the serial number of the sensor and the product quality must be input. If this status is displayed, either one or both of these items of data have not been input.</td>
<td>The measurement evaluation unit must be configured using the LOGI-Setup.</td>
</tr>
<tr>
<td>--</td>
<td>Reset control unit</td>
<td>The measurement evaluation unit is reset by switching or pressing the reset button. If this status is displayed permanently even after the reset button is pressed it must be assumed that the measurement evaluation unit (VI... interface) is defective.</td>
<td>Replace the VI... interface inside the evaluation unit.</td>
</tr>
</tbody>
</table>

Table 2: Status messages

### 2.7 Reset button

This button can be pressed to reset the VI... interface. All stored settings remain preserved.
3  Configuration

When it has been installed, the LOGI-Command must be configured using the LOGI control software.

4  Replacing components

VI… interface and VP… measurement transducer can be replaced each as complete assembly units. The boards are mounted on a support rail from which they can be easily detached using a screwdriver.

5  Technical data

5.1  VP… measurement transducer

<table>
<thead>
<tr>
<th><strong>Explosion protection</strong></th>
<th>II (1) G [Ex ia Ga] IIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EC Type Examination Certificate</strong></td>
<td>TÜV 98 ATEX 1380</td>
</tr>
<tr>
<td><strong>Approved ambient temperature</strong></td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td><strong>Auxiliary power (Terminals L, N, PE)</strong></td>
<td>Alternating voltage 230 V ±10%; approx. 2 VA, $U_m = 253$ V</td>
</tr>
<tr>
<td><strong>Sensor circuits (Terminals + A B -)</strong></td>
<td>Intrinsic safety ignition protection class [Ex ia Ga] IIC (linear output characteristic)</td>
</tr>
<tr>
<td></td>
<td>Maximum values $U_0 = 14.3$, $I_0 = 28$, $P_0 = 98$</td>
</tr>
<tr>
<td></td>
<td>Maximum permitted external inductance 40 mH</td>
</tr>
<tr>
<td></td>
<td>Maximum permitted external capacitance 680 nF</td>
</tr>
<tr>
<td><strong>Measurement and control circuits (Plug connector S1)</strong></td>
<td>Interface electric circuit $U_N = 5$ V</td>
</tr>
<tr>
<td></td>
<td>Maximum voltage for safety reasons $U_m = 100$ V</td>
</tr>
</tbody>
</table>

Table 3: Technical data for VP… measurement transducer

☞  The intrinsically safe sensor circuits are safely galvanically isolated from the supply circuit (power supply) up to a peak rated voltage value of 375 V. The measurement and control circuits are safely galvanically isolated up to a peak rated voltage value of 190 V.
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EU-Konformitätserklärung  
EU Declaration of Conformity  
Déclaration UE de Conformité

FAFNIR GmbH  
Schnackenburgallee 149 c  
22525 Hamburg / Germany

erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt  
declares as manufacturer under sole responsibility that the product  
déclare sous sa seule responsabilité en qualité de fabricant que le produit

Messauswertung  
Evaluation Unit  
Unité d'analyse

LOGI-Command ...

den Vorschriften der europäischen Richtlinien  
complies with the regulations of the European directives  
est conforme aux réglementations des directives européennes suivantes

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Directive</th>
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<tbody>
<tr>
<td>2011/65/EU</td>
<td>Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten</td>
<td>RoHS</td>
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<tr>
<td>2011/65/EU</td>
<td>Restriction of the use of certain hazardous substances in electrical and electronic equipment</td>
<td>RoHS</td>
</tr>
<tr>
<td>2011/65/EU</td>
<td>Limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques</td>
<td>RoHS</td>
</tr>
<tr>
<td>2014/30/EU</td>
<td>Elektromagnetische Verträglichkeit</td>
<td>EMV</td>
</tr>
<tr>
<td>2014/30/EU</td>
<td>Electromagnetic compatibility</td>
<td>EMC</td>
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<td>2014/30/EU</td>
<td>Compatibilité électromagnétique</td>
<td>CEM</td>
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<tr>
<td>2014/34/EU</td>
<td>Geräte und Schutzsysteme zur bestimmmungsgemäßen Verwendung in explosionsgefährdeten Bereichen</td>
<td>ATEX</td>
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<td>Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles</td>
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<tr>
<td>2014/35/EU</td>
<td>Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt</td>
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<tr>
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<td>LVD</td>
</tr>
<tr>
<td>2014/35/EU</td>
<td>Mise à disposition sur le marché du matériel électrique destiné à être employé dans certaines limites de tension</td>
<td>DBT</td>
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<tr>
<td>2014/53/EU</td>
<td>Bereitstellung von Funkanlagen auf dem Markt und zur Aufhebung der Richtlinie 1999/5/EG</td>
<td>FAR</td>
</tr>
<tr>
<td>2014/53/EU</td>
<td>Mise à disposition sur le marché d'équipements radioélectriques et abrogeant la directive 1999/5/CE</td>
<td>DER</td>
</tr>
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</table>

durch die Anwendung folgender harmonisierter Normen entspricht  
by applying the harmonised standards  
par l'application des normes

RoHS / RoHS / RoHS  
EMV / EMC / CEM

EN 50581:2012  
EN 55022:2010  
EN 55024:2010  
EN 61000-3-3:2008  
EN 61000-6-2:2005  
EN 61326-1:2013  
ETSI EN 300 220-1 V2.4.1  
EN 60079-0:2009  
EN 60079-11:2007  
EN 60079-14:2014  
EN 60079-26:2007  
EN 61010-1:2010  
ETSI EN 300 220-2 V2.4.1
Das Produkt ist bestimmt als Elektro- und Elektronikgerät der RoHS-
The product is determined as electrical and electronic equipment of RoHS
Le produit est déterminé comme des équipements électriques et électroniques de RoHS

Kategorie / Category / Catégorie

Das Produkt entspricht den EMV-Anforderungen
The product complies with the EMC requirements
Le produit est conforme aux exigences CEM

Störaussendung / Emission / Émission
Störfestigkeit / Immunity / D’immunité

Empfänger / Receiver / Récepteur (LOGI-Command RF)

Die notifizierte Stelle TÜV NORD CERT GmbH, 0044 hat eine EG-Baumusterprüfung durchgeführt und folgende Bescheinigung ausgestellt
The notified body TÜV NORD CERT GmbH, 0044 performed a EC-type examination and issued the certificate
L’organisme notifié TÜV NORD CERT GmbH, 0044 a effectué examen CE de type et a établi l’attestation

VP-...

TÜV 98 ATEX 1380

Das Produkt entspricht dem NSRL-Konformitätsbewertungsverfahren
The product complies with the LVD conformity assessment procedure
Le produit est conforme avec la procédure d’évaluation DBT de la conformité

VISY-Command ...

Modul A / Module A / Module A

Das Produkt entspricht dem FAR-Konformitätsbewertungsverfahren
The product complies with the RED conformity assessment procedure
Le produit est conforme avec la procédure d’évaluation DER de la conformité

VISY-Command RF ...

Modul A / Module A / Module A

Hamburg, 13.06.2016
Ort, Datum / Place, Date / Lieu, Date

Geschäftsführer / Managing Director / Gérant: René Albrecht

Seite / Page / Page 2/2

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EU-Konformitätserklärung
EU Declaration of Conformity
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erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt
declares as manufacturer under sole responsibility that the product
declare sous sa seule responsabilité en qualité de fabricant que le produit

den Vorschriften der europäischen Richtlinien
complies with the regulations of the European directives
est conforme aux réglementations des directives européennes suivantes

durch die Anwendung folgender harmonisierter Normen entspricht
by applying the harmonised standards
par l’application des normes

<table>
<thead>
<tr>
<th>RoHS/EMV/NSRL</th>
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<tbody>
<tr>
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The product is determined as electrical and electronic equipment of RoHS
Le produit est déterminé comme des équipements électriques et électroniques de RoHS

<table>
<thead>
<tr>
<th>Kategorie / Category / Catégorie</th>
<th>Überwachungs- und Kontrollinstrumenten in der Industrie / Industrial Monitoring and Control Instruments / Instruments de contrôle et de surveillance industriels</th>
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<td></td>
<td>Das Produkt entspricht den EMV-Anforderungen</td>
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<td>The product complies with the EMC requirements</td>
</tr>
<tr>
<td></td>
<td>Le produit est conforme aux exigences CEM</td>
</tr>
</tbody>
</table>

Ort, Datum / Place, Date / Lieu, Date

Geschäftsführer / Managing Director / Gérant: Rene Albrecht
EU-Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de Conformité

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22765 Hamburg / Germany

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Spannungsversorgung
Power Supply
Tension d’alimentation

VP-....

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est conforme aux réglementations des directives européennes suivantes

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| 2014/34/EU | Equipment and protective systems intended for use in potentially explosive atmospheres | ATEX |
| 2014/34/UE | Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles | ATEX |

durch die Anwendung folgender harmonisierter Normen entspricht
by applying the harmonised standards
par l'application des normes
RoHS / RoHS / RoHS
EMV / EMC / CEM
ATEX / ATEX / ATEX
EN 50581:2012
EN 61326-1:2013
EN 60079-0:2009
EN 60079-11:2007
EN 60079-26:2007

Das Produkt ist bestimmt als Elektro- und Elektronikgerät der RoHS-
The product is determined as electrical and electronic equipment of RoHS
Le produit est déterminé comme des équipements électriques et électroniques de RoHS

Kategorie / Category / Catégorie
Überwachungs- und Kontrollinstrumenten in der Industrie /
Industrial Monitoring and Control Instruments /
Instruments de contrôle et de surveillance industriels

Das Produkt entspricht den EMV-Anforderungen
The product complies with the EMC requirements
Le produit est conforme aux exigences CEM

Störaussendung / Emission / Émission
Störfestigkeit / Immunity / D’immunité
Klasse B / Class B / Classe B
Industrielle elektromagnetische Umgebung /
Industrial electromagnetic environment /
Environnement électromagnétique Industriel

Die notizierte Stelle TÜV NORD CERT GmbH, 0044 hat eine EG-Baumusterprüfung durchgeführt und folgende Bescheinigung ausgestellt
The notified body TÜV NORD CERT GmbH, 0044 performed a EC-type examination and issued the certificate
L’organisme notifié TÜV NORD CERT GmbH, 0044 a effectué examen CE de type et a établi l’attestation

VP-....

TÜV 98 ATEX 1380

Ort, Datum / Place, Date / Lieu, Date

Geschäftsführer / Managing Director / Gérant: René Albrecht

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FAFNIR GmbH • Bahrenfelder Str. 19 • 22765 Hamburg • Telefon: +49 / (0) 40 / 39 82 07-0 • Telefax: +49 / (0) 40 / 39 63 39
Translation

EC TYPE-EXAMINATION CERTIFICATE

(1) Equipment or Protective System intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number

TÜV 98 ATEX 1380

(4) Equipment: Measuring Transmitter for Tank Level Measuring Devices

(5) Manufacturer: Fafnir GmbH

(6) Address: Bahrenfelder Strasse 19
D – 22765 Hamburg

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report N° 98/PX31280.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014: 1997
EN 50 020: 1994

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design and construction of the specified equipment or protective system according to Directive 94/9/EC. Further requirements of this Directive apply to the manufacturer and placing on the market of this equipment or protective system.

(12) The marking of the equipment or protective system must include the following:

Ex II (1) G [Ex ia] IIC

Hanover, 15.12.1998

Head of the Certification Body
(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 98 ATEX 1380**

(15) **Description of equipment**

The measuring transmitter is an associated apparatus which is used for the transmission of electrical signals of up to eight sensors from the hazardous explosive area to the non hazardous explosive area. It is designed as a module of a tank level measuring system.

**Electrical data**

Supply circuit (terminals L, N and SL)  
alternating voltage: 230 V ± 10 %; about 2 VA, $U_m = 253$ V resp.

alternating voltage: 24 V ± 10 %; about 2 VA, $U_m = 33$ V

Sensor circuit(s)  
in type of protection „Intrinsic Safety“ EEEx ia IIC

(terminals  
1A, 1B, 1+ and 1- resp.  
2A, 2B, 2+ and 2- resp.  
3A, 3B, 3+ and 3- resp.  
4A, 4B, 4+ and 4- resp.  
5A, 5B, 5+ and 5- resp.  
6A, 6B, 6+ and 6- resp.  
7A, 7B, 7+ and 7- resp.  
8A, 8B, 8+ and 8-)  
maximum values: $U_o = 14.3$ V  
$I_o = 28$ mA  
$P_o = 98$ mW

characteristic line: linear

The effective internal inductances and capacitances are negligibly small.

maximum effective external inductance 40 mH  
maximum effective external capacitance 0.68 μF

Measuring- and control circuits  
$U \leq 100$ V, $U_m = 100$ V

(16) Test documents consisting of description (7 sheets) and drawings (4 sheets) are listed in the test report.

(17) **Special conditions for safe use**

none

(18) **Essential Health and Safety Requirements**

no additional ones
Translation

1. SUPPLEMENT to

EC-Type Examination Certificate No. TÜV 98 ATEX 1380

of the company: FAFNIR GmbH
Bahrenfelder Strasse 19
D-22765 Hamburg

In the future, the Measuring Transmitter for Tank Level Measuring Devices type VP-* may also be manufactured in the following variations

- type VP-1 (maximal 8 sensors)
- type VP-2 (maximal 2 sensors)
- type VP-4 (maximal 4 sensors)

according to the test documents listed in the test report. The modifications refer to the inner structure of the device. The variations differ in the number of maximal sensors.

Electrical data

The intrinsically safe sensor circuits are safely galvanically separated from the supply circuit (terminals L, N, SL) up to a peak crest value of the voltage of 375 V and from the measuring- and control circuits (connector S1) up to a peak crest value of the voltage of 190 V.

All other data and details apply unchanged.

Test documents are listed in the test report No. 01YEX144312.

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 21.12.2001

Head of the Certification Body
Translation

2. SUPPLEMENT to

EC-Type Examination Certificate No. TÜV 98 ATEX 1380

of the company: FAFNIR GmbH
Bahrenfelder Strasse 19
D-22765 Hamburg

In the future, the Measuring Transmitter for Tank Level Measuring Devices type VP-1, VP-2 resp. VP-4 may also be manufactured according to the test documents listed in the test report. The modifications refer to the supply circuit of the Measuring Transmitter, which can also supplied with a alternating voltage of 115V / 50-60Hz.

Electrical data

Supply circuit (terminals L, N and SL)   alternating voltage: 230 V ± 10 %; about 2 VA, $U_m = 253$ V

resp.

alternating voltage: 115 V ± 10 %; about 2 VA, $U_m = 126.5$ V

resp.

alternating voltage: 24 V ± 10 %; about 2 VA, $U_m = 33$ V

The intrinsically safe sensor circuits are safely galvanically separated from the supply circuit (terminals L, N, SL) up to a peak crest value of the voltage of 375 V and from the measuring- and control circuits (connector S1) up to a peak crest value of the voltage of 190 V.

All other data and details apply unchanged.

Test documents are listed in the test report No. 02YEX170887.

TÜV NORD CERT GmbH & Co. KG
TÜV-CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hannover, 30.05.2002

Head of the Certification Body
Translation

3. SUPPLEMENT

to Certificate No. TÜV 98 ATEX 1380

Equipment: Measuring Transmitter for Tank Level
            Measuring Devices type VP-1, VP-2 resp. VP-4

Manufacturer: FAFNIR GmbH

Address: Bahrenfelder Straße 19
         22765 Hamburg
         Germany

Order number: 8000392110

Date of issue: 2011-02-03

Amendments:

In the future, the Measuring Transmitter for Tank Level Measuring Devices type VP-1, VP-2 resp.
VP-4 may also be manufactured according to the test documents listed in the test report.
The permissible ambient temperature range was modified and will be -20 °C to +60 °C in the future.
Furthermore the equipment was evaluated according to the newest standards.

All other data apply unchanged for this supplement.

The device will then be labeled as follows:

Ex II (1) G [Ex ia Ga] IIC

The equipment incl. of this supplement meets the requirements of these standards:


(16) Test documents are listed in the test report No. 11 203 077325.

(17) Special conditions for safe use

none
(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

Schwedt

Hanover office, Am TÜV 1, 30519 Hannover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590
Instructions

Measuring Transmitter VP-...

I  Range of application
The accompanying apparatus VP-... may only be used outside the potentially explosive area. The purpose of the VP-... transducer is to supply electronic filling level sensors with power and forward measuring data to a higher-level analysis system.

II  Standards
See EC-Type Examination Certificate.

III  Instructions for safe ...

III.a  ... use
The transducer VP-1 has eight, the VP-2 has two and the VP-4 has four intrinsically safe sensor connectors. Each level sensor is connected by four terminal clamps. Two clamps are provided for the intrinsically safe power supply whilst the other two are for the transmission of measurement data. At the same time, the transducer serves to safely separate intrinsically safe and non-intrinsically safe circuits. All sensor connections are galvanically connected to one another.

The non-intrinsically safe communication interface (S1) is linked to a ten-pin connector. This connector establishes the connection to a higher-level data processing system.

The intrinsically safe sensor circuits of the transducer, the communication interface and the power supply circuit are all isolated galvanically from one another.

III.b  ... mounting
The transducer must be installed in a case with a protection class of at least IP20. It is important to ensure that non-intrinsically safe wiring connections are located at a clearance of at least 50 mm (tight string length) to the intrinsically safe sensor terminals. This can also be achieved through appropriate separation plates.

III.c  ... installation
All wiring operations must solely be carried out with the power disconnected. The specific EN directives or the local installation regulations including EN 60079-14 are to be observed. The wiring from the sensor to the control unit shall be carried out using a 4-wire cable (preferably blue). The terminals +, A, B and - on the measuring sensors must be connected to the same terminals on the transducer.

III.d  ... adjustment
For operating the equipment there is no need of safety adjustments.

III.e  ... putting into service
Before putting into service all devices must be checked of right connection and fitting. Die electrical power supply has to be checked also from peripheral equipment.

III.f  ... maintenance, overhaul and repair
In general, the apparatus is maintenance free. Defective apparatus has to send back to FAFNIR or one of his representations.
IV  Equipment marking
1 Manufacturer: FAFNIR GmbH
2 Type designation: VP-…
3 Serial number: Ser. N°: …
4 Certificate number: TÜV 98 ATEX 1380
5 Ex marking: Ex II (1) G [Ex ia Ga] IIC
6 Electrical data:
   \[U_o \leq 14,3 \text{ V}\]
   \[I_o \leq 28 \text{ mA}\]
   \[P_o \leq 98 \text{ mW}\]
   \[L_o \leq 40 \text{ mH}\]
   \[C_o \leq 680 \text{ nF}\]

V  Technical data
The power supply is connected to the terminals PE, N and L. Depending on the design of this module, the power supply is
\[U = 24 \text{ V a.c., } 115 \text{ V a.c., or } 230 \text{ V a.c., } \pm 10 \%, 40 \ldots 60 \text{ Hz, } \sim 2 \text{ VA.}\]

The maximum safety voltage is
\[U_m = 33 \text{ V at } 24 \text{ V a.c., resp.}\]
\[U_m = 126,5 \text{ V at } 115 \text{ V a.c., resp.}\]
\[U_m = 253 \text{ V at } 230 \text{ V a.c.}\]

The safety maximum voltage on the communication interface (S1) of the control unit, which is separated by optocouplers from the intrinsically safe sensor circuits, is
\[U_m = 100 \text{ V}\]

The sensor circuits are designed in the ignition protection intrinsic safety class [Ex ia Ga] IIC with a linear output characteristic. The terminals are numbered with 1 ... 8 and the additions +, A, B and -. The output values are:
\[U_o \leq 14,3 \text{ V}\]
\[I_o \leq 28 \text{ mA}\]
\[P_o \leq 98 \text{ mW}\]
\[C_o \leq 680 \text{ nF}\]
\[L_o \leq 40 \text{ mH}\]

VI  Specific conditions of use
None.
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