Technical Documentation

VISY-X

VISY-TD Display Ex d

Edition: 2020-04
Version: 1
Article no.: 350190

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FAFNIR™

Contents

1 Safety instructions

The VISY-TD Display Ex d is used to display the ullage determined by the VISY-X system in the tank up to the maximum filling level (capacity). In addition, the current volume is also displayed. Use the display for this purpose only. The manufacturer accepts no liability for any form of damage resulting from improper use.

The display has been developed, manufactured, and tested in accordance with the latest safety engineering practices and generally accepted safety standards. Nevertheless, hazards may arise from its use.

For this reason, the following safety instructions must be observed:

- Do not change or modify the display or add any equipment without the prior consent of the manufacturer.
- The installation of the display may only be carried out by expert personnel. Specialised knowledge must be acquired by regular training.
- Installers and operators must comply with all applicable safety regulations. This also applies to any local safety and accident prevention regulations which are not stated in this manual.

The safety instructions in this manual are marked as follows:

If these safety instructions are not observed, it may result in the risk of accident or damage to the VISY-TD Display Ex d.

Useful information designed to ensure correct operation of the VISY-TD Display Ex d or helpful advice to make your work easier

2 Overview

The VISY-TD Display Ex d is an optional part of the VISY-X system. With the VISY-X system (volume information system), highly precise, continuous filling level measurements in up to 16 tanks are carried out.

The VISY-TD Display Ex d is used for displaying tank information which is important for a fuel truck driver and displays the ullage of one configured tank as well as warnings. It is connected with the VISY-Command central unit via an RS-232/485 converter, from which the measured values are transmitted to the VISY-TD Display Ex d and displayed there.

Typically, the VISY-TD Display Ex d is placed near the filling valve.

3 Scope of delivery

VISY-TD Display Ex d
with magnet

RS-232/485 converter kit includes:

- RS-232/485 converter
- 2 m RS-232 cable
- Plug-in power supply with 2 m connection cable

RS-232 adapter

4 Function and operation

The VISY-TD Display Ex d is supplied with power via the RS-232/485 converter and is operating continuously.

In case of a power failure, only the measured values transmitted last are stored and the VISY-TD Display Ex d is supplied with power via the internal battery. After switching on the display with the magnet, these last measured values are displayed.

⚠ *After a power failure the measured values displayed may not correspond to the actual values.*

The VISY-TD Display Ex d is operated with the help of the internal reed contact and the external magnet fitted to a chain.

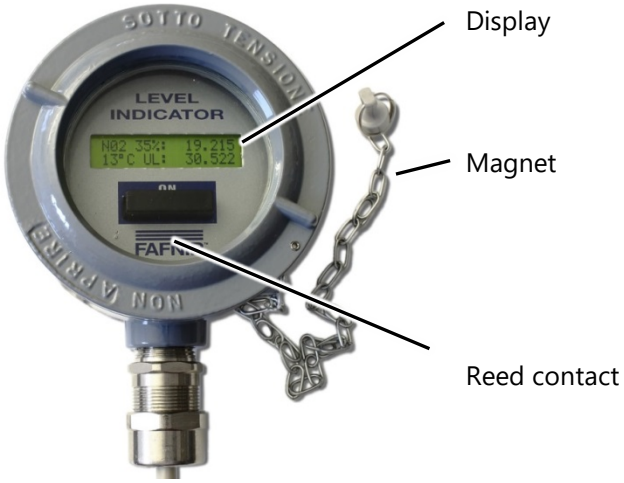


Figure 1: VISY-TD Display Ex d

The magnet must be held over the reed contact (see left Figure).

Depending on how long the magnet is held in this position, a change in operating mode occurs (see the following chapter).

Figure 2: Operation with the aid of the magnet

4.1 Modes of operation

There are 3 different operating modes of the display:

- Overview display
- Detail display
- Configuration

The change between the modes of display occurs according to the following concept depending on how long the magnet is operated:

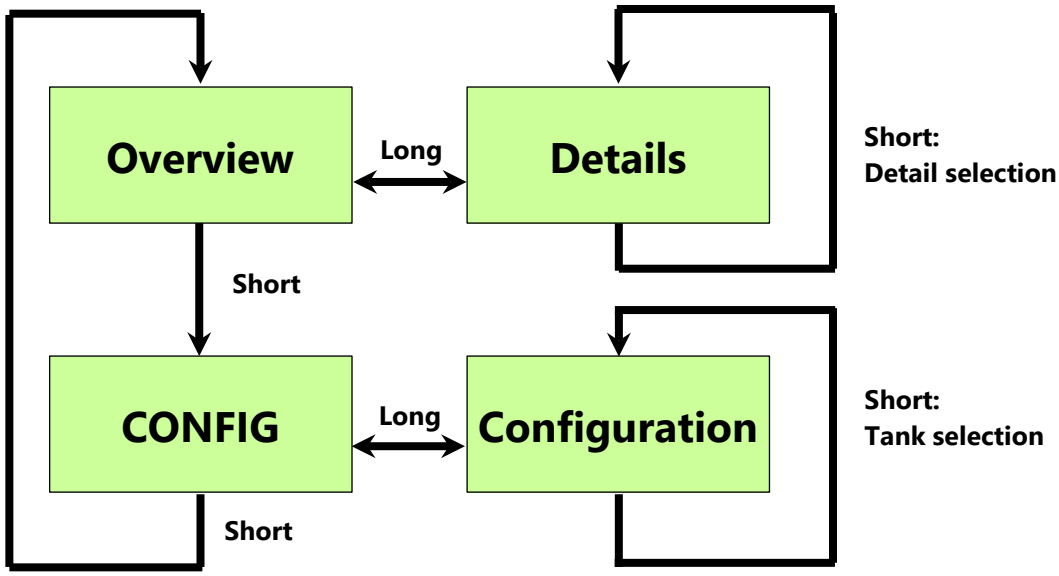


Figure 3: Change of operating modes depending on magnet operation

4.1.1 Overview display

After switching on the display with the power supply of the converter, the firmware is displayed first:

Level Measurement CPTS03510 r. 01.15

r.01.15: Firmware Version (Example: Firmware Version 01.15)

The data of the configured tank are displayed automatically after 5 seconds:

N0 1	34%:	19,215
13°C	UL:	30,522

N01: Tank number (Example: Tank 01)
34%, 19.215: Filling volume in % and m^3 (Example: 34% and 19.215 m^3)
13 °C: Temperature of product in °C (Example: 13 °C)
UL 30.522: Free space in tank in m^3 (Example: 30.522 m^3)

☞ *The return to the overview display occurs automatically after approx. 60 seconds without operating the magnet.*

☞ *Product/water **warnings** are displayed by means of a flashing **W**.*

⚠ *Product/water **alarms** are displayed by means of a flashing **A**.*

4.1.2 Detail display

During the active detail display additional data are displayed for the selected tank. The change between the overview display and the detail display is done by a *longer* actuation (more than 2 seconds) of the reed contact. In the detail display, it is switched between individual values by a *brief* actuation (less than 2 seconds) of the reed contact.

For the configured tank the following 11 values can be displayed in the detail display:

- Product level in mm (Example: "Prod.(mm): 1017“)
- Water level in mm (Example: "Water(mm): 0“)
- Product volume in l (Example: "Prod.(l): 18692“)
- Water volume in l (Example: "Water(l): 0“)
- Temperature-compensated volume (Example: "Compen(l): 0“)
- Ullage in litres (Example: "Ullage(l): 31045“)
- Tank capacity (Example: "MaxVol(l): 55264“)
- Temperature in °C (Example: "Temper(°C):+11.8")
- Density in kg/l (Example: Density(kg/l): 0,847“)
- Level of alarm (Example: "L.Alar:")
- Level warning (Example: "L.Warn:")

Example:

< 01	N01	> 11
Prod.(mm):		705

N01: Tank 01

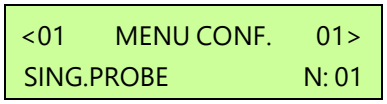
Product level: 705 mm

☞ *Possible displays for level warning and level alarm are:*
Max: Product warning / alarm,
Water: Water warning / alarm, or
Max&Water: Product and water warning / alarm

4.1.3 Configuration

In the configuration menu the displayed tank can be selected.

The change between overview menu and configuration menu is done by a *longer* actuation (more than 2 seconds) of the reed contact. In the configuration menu, it is switched between the individual tanks by a *brief* actuation (less than 2 seconds) of the reed contact.



Example: Tank 01 has been selected

5 Installation

5.1 Assembly

The VISY-TD Display Ex d should be mounted at eye level for better readability. The mounting rail at the rear of the housing has been provided for the installation of the display.

When the housing is being installed it should be ensured that the housing and mounting rail are not damaged.

5.2 Electrical connection

The VISY-TD Display Ex d (in the following figure designated as AT04111/F) is connected to the service interface of the VI-4 board in the VISY-Command via the RS-232/485 converter. The VISY-Quick protocol is used for communication.

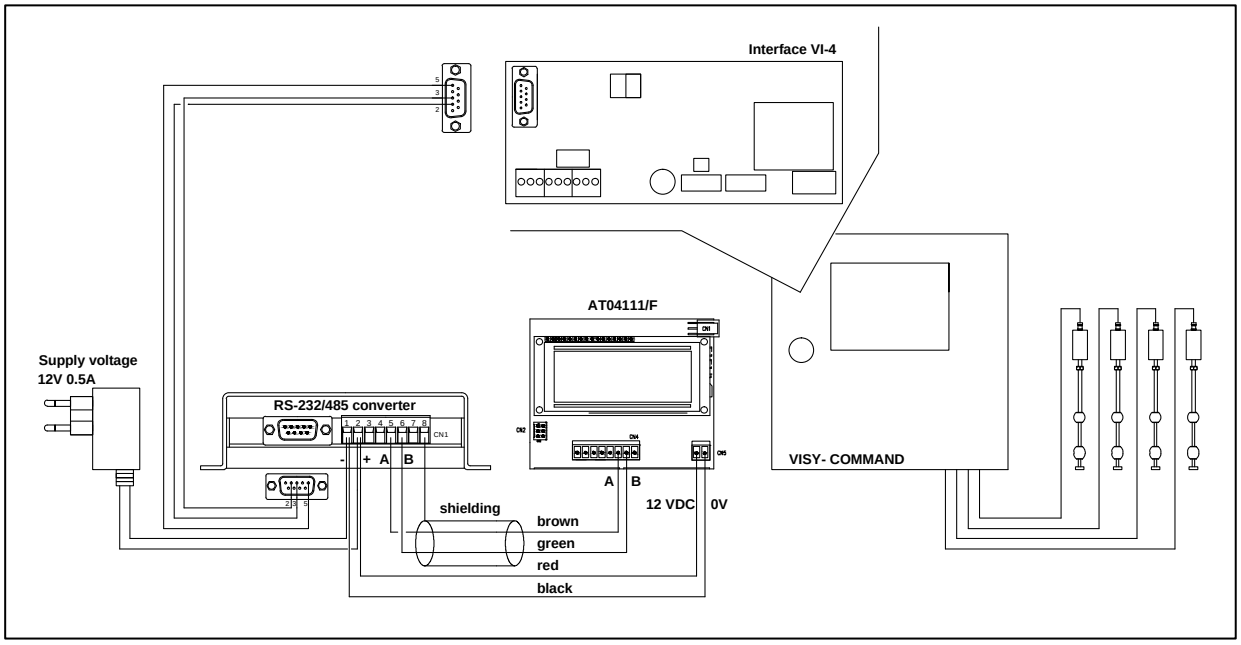


Figure 4: Overview of connection plan

Unused wires of the connection cable of the display are to be suitably insulated, to prevent short-circuits in the display.

5.2.1 Connection of the RS-232/485 converter

To power the RS-232/485 converter, a 230 V_{AC} / 12 V_{DC} plug-in power supply with 2 m long connection cable is included.

☞ *A socket is required at a distance not more than 1.5 m from the VISY-Command*

The RS-232/485 converter is connected to the service interface of the VI-4 board in the VISY-Command via a 2 m long RS-232 cable (see following Figure):

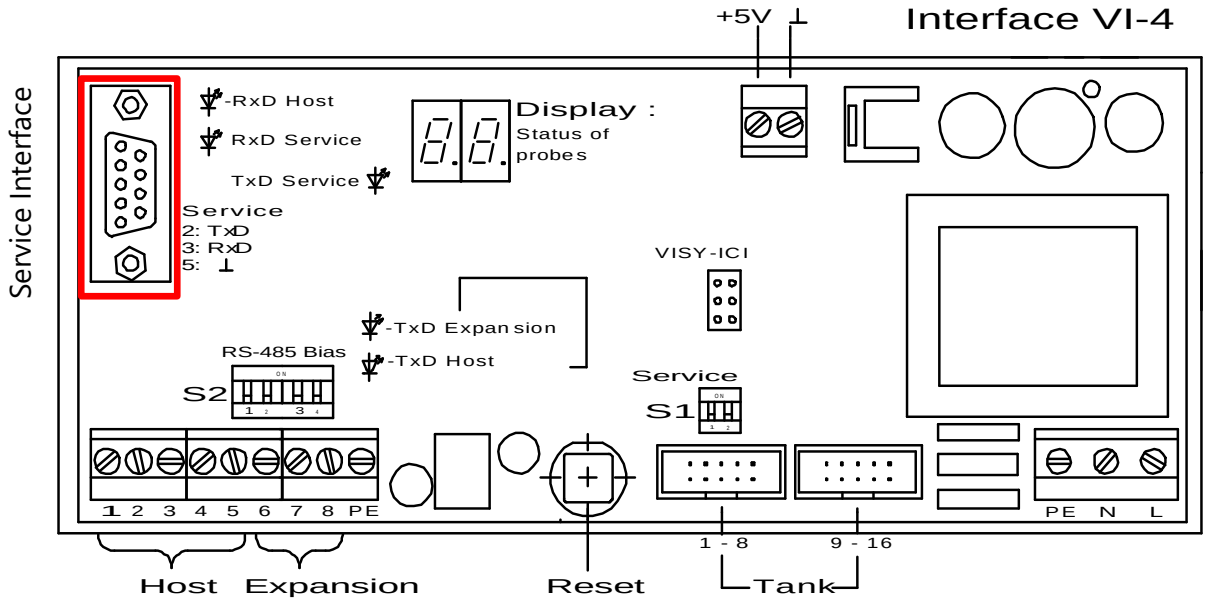


Figure 5: Service interface of the VI-4 Interface

For better wiring, an adapter for connection to the VI-4 board has been included (see the following Figure):

Figure 6: RS-232 adapter for connection to the VI-4 board

5.2.2 Connection of the VISY-TD Display Ex d

Two cables are required for the electrical connection of the display to the RS-232/485 converter:

- 2-pole shielded cable
- 2-pole low-voltage cable (12 V)

The connection is to be carried out according to the following connection diagram:

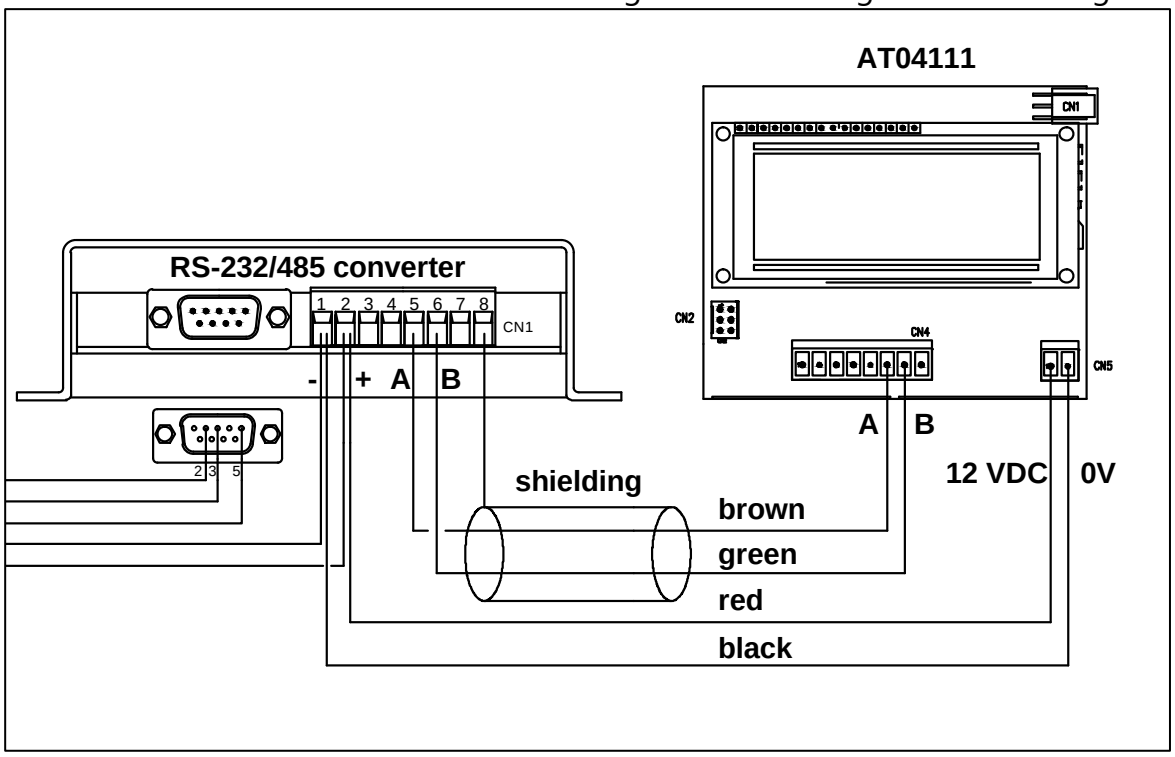


Figure 7: Connection diagram of converter display

⚠ *Unused wires of the connection cable of the display are to be suitably insulated, to prevent short-circuits in the display.*

5.3 Settings on the VI-4 board

The S1 switch is to be set according to the following table so that the VISY-Quick protocol for communication with the VISY-TD Display Ex d is selected on the service interface.

Settings of dip switch Service S1:

Dip switch	S1.1	S1.2
Switch position	OFF	ON

A detailed description is available in the manual of the VISY-Command

📖 Technical documentation VISY-Command, art. no. 207184

6 Maintenance

6.1 Return shipment

Before returning any FAFNIR equipment, the Return Material Authorization (RMA) from FAFNIR customer service is required. Please contact your account manager or the customer service to receive the instructions on how to return goods.

☞ *The return of FAFNIR equipment is possible only with authorization by the FAFNIR customer care.*

7 Technical Data

Display	2-line LCD display with backlighting
Supply voltage	The scope of supply for the converter includes a 12 V DC plug-in power supply
Consumption	3 VA
Communication	RS-485, 2-pole, connection to the VISY-Command via the converter
Ambient temperature	-25°C … +55°C
Protection class	IP 66
Ignition protection class	Ex d II C
Dimensions [mm]:	Height: 105 mm, diameter: 130 mm, without connection

8 List of figures

EU–Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de Conformité
Dichiarazione di Conformità UE

CE

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FAFNIR GmbH, Deutschland / Germany / Allemagne / Germania

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
dichiara sotto la sola responsabilità del produttore, che il prodotto

Anzeige / Display / Affichage / Display

VISY-TD Display ...

den Vorschriften der europäischen Richtlinien
complies with the regulations of the European directives
est conforme aux réglementations des directives européennes suivantes
è conforme ai regolamenti delle direttive europee

2011/65/EU	**Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten**	**RoHS**
2011/65/EU	**Restriction of the use of certain hazardous substances in electrical and electronic equipment**	**RoHS**
2011/65/UE	**Limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques**	**RoHS**
2011/65/UE	**Restrizione dell'uso di determinate sostanze pericolose nelle apparecchiature elettriche ed elettroniche**	**RoHS**
2014/30/EU	**Elektromagnetische Verträglichkeit**	**EMV**
2014/30/EU	**Electromagnetic compatibility**	**EMC**
2014/30/UE	**Compatibilité électromagnétique**	**CEM**
2014/30/UE	**Compatibilità elettromagnetica**	**CEM**
2014/34/EU	**Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen**	**ATEX**
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**
2014/34/UE	**Apparecchi e sistemi di protezione destinati a essere utilizzati in atmosfera potenzialmente esplosiva**	**ATEX**

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

RoHS / RoHS / RoHS / RoHS	**EN 50581:2012**
EMV / EMC / CEM / CEM	**EN 61326-1:2013**
ATEX / ATEX / ATEX / ATEX	**EN 60079-0:2012 + A11:2013**
	EN 60079-1:2014
	EN 60079-31:2014

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
Il prodotto è determinato come apparecchiatura elettrica ed elettronica di RoHS

Kategorie / Category / Catégorie / Categoria	**Überwachungs- und Kontrollinstrumenten in der Industrie / Industrial Monitoring and Control Instruments / Instruments de contrôle et de surveillance industriels / Strumenti di monitoraggio e controllo industriali**

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

Störaussendung / Emission / Émission / L'emissione	**Klasse B / Class B / Classe B / Classe B**
Störfestigkeit / Immunity / D'immunité / Immunità	**Industrielle elektromagnetische Umgebung / Industrial electromagnetic environment / Environnement électromagnétique industriel / Ambiente elettromagnetico industriale**

Die notifizierte Stelle CEC S.C.A.R.L, 1131 hat eine EG-Baumusterprüfung durchgeführt und folgende Bescheinigung ausgestellt
The notified body CEC S.C.A.R.L., 1131 performed a EC-type examination and issued the certificate
L'organisme notifié CEC S.C.A.R.L., 1131 a effectué examen CE de type et a établi l'attestation
L'organismo notificato CEC S.C.A.R.L., 1131 ha effettuato esame CE del tipo e rilasciato il certificato

VISY-TD Display Ex d	**CEC 15 ATEX 030**

Hamburg, 26.09.2019
Ort, Datum / Place, Date / Lieu, Date / Luogo, data

Geschäftsführer / Managing Director / Gérant / Direttore Generale: René Albrecht

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Consorzio Europeo Certificazione

CE

Organismo Notificato n. 1131

[1] # CERTIFICATO DI ESAME CE DEL TIPO (All. III)

EC-TYPE EXAMINATION CERTIFICATE (Annex III)

[2] ## Apparecchio o Sistema di Protezione inteso per l'uso in atmosfere potenzialmente esplosive, Direttiva 94/9/CE

Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres, Directive 94/9/EC

[3] **Certificato di Esame CE del Tipo numero .... :** **CEC 15 ATEX 030**
EC-Type Examination Certificate number **14/2033-AET1425**

[4] **Apparecchio o Sistema di Protezione ..... :** Visualizzatore Locale / Local Indicator
Equipment or Protective System **VISY-TD Display Ex d**

[5] **Costruttore ..... :** **FAFNIR GMBH**
Manufacturer

[6] **Indirizzo ..... :** **Bahrenfelder Straße 19**
Address **22765 Hamburg - Germany**

[7] **Questo apparecchio o sistema di protezione ed ogni sua variante approvata è descritto nell'allegato al presente certificato e nei documenti descrittivi in esso richiamati.**
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] **Il CEC, organismo notificato n° 1131, in conformità all'articolo 9 della Direttiva 94/9/CE del Consiglio dell'Unione Europea del 23 Marzo 1994, certifica che questa apparecchiatura o sistema di protezione è conforme ai Requisiti Essenziali di Sicurezza e Salute per il progetto e la fabbricazione di apparecchiature e sistemi di protezione destinati ad essere utilizzati in atmosfere potenzialmente esplosive, definiti nell'Allegato II della Direttiva.**
CEC, notified body No. 1131, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, 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.
I risultati dell'esame e dei test sono descritti nel rapporto confidenziale elencato nella sezione 16.
The examination and test results are recorded in confidential reports listed in section 16.

[9] **La conformità ai Requisiti Essenziali di Sicurezza e Salute è assicurata dalla conformità alle:**
Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
IEC 60079-0: 2011, IEC 60079-1: 2014, IEC 60079-14: 2013, IEC 60079-31: 2013
Nel caso in cui tra le norme tecniche citate fossero presenti norme non armonizzate, la conformità ai Requisiti essenziali in materia di Sicurezza e Salute è comunque stata verificata.
If standards not listed in the list of Atex Harmonised Standards are used, compliance to the Essential Health and Safety Requirements is verified anyway.

[10] **Il simbolo "X" posto dopo il numero del certificato indica che l'apparecchiatura o il sistema di protezione è soggetto a condizioni speciali per un utilizzo sicuro, specificate nell'allegato al presente certificato.**
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] **Questo Certificato di esame CE del Tipo è relativo soltanto al progetto, agli esami ed alle prove dell'apparecchio o sistema di protezione specificato in accordo con la Direttiva 94/9/CE. Ulteriori requisiti di questa Direttiva si applicano al processo di produzione e fornitura dell'apparecchiatura o sistema di protezione. Questi requisiti non sono oggetto del presente certificato.**
This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] **L'apparecchiatura o sistema di protezione deve riportare i seguenti contrassegni:**
The marking of the equipment or protective system shall include the following:

Ex II 2G Ex d IIC T4 Gb -25°C < Ta < +60°C

Ex II 2D Ex tb IIIC T 135°C Db IP66 -25°C < Ta < +60°C

Legnano, 25/05/2015

CONSORZIO EUROPEO CERTIFICAZIONE
L'ORGANO DELIBERANTE
Il Direttore Tecnico (A. FUGAZZI)
Il Direttore Generale (L. TIMOSSI)

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
PRD n° 114B ISP n° 071E
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreement

CE
Organismo Notificato n. 1131

[13] **ALLEGATO** – SCHEDULE

[14] **CERTIFICATO DI ESAME CE DEL TIPO n° CEC 15 ATEX 030**
to EC-TYPE EXAMINATION CERTIFICATE no. CEC 15 ATEX 030

[15] **Descrizione** – Description

L'assieme Visualizzatore Locale VISY-TD Display Ex d è composto da una custodia antideflagrante con modo di protezione Ex d contenente un dispositivo elettronico di visualizzazione dei dati tipici di uno o più serbatoi (livello di prodotto, livello acqua, temperatura, densità, ecc.). Esso è posizionato generalmente in una zona classificata EN 60079-10 come Zona 1 / 2.
Potrà essere presente un suffisso nel nome del prodotto con riferimento a varianti con valore commerciale, estetico e di settaggio di default dei parametri del software.

The Local Indicator VISY-TD Display Ex d assembly is composed of a flameproof enclosure with type of protection Ex d which contains an electrical indicator device intended to visualize data from one ore more tanks (product level, water level, temperature, density, etc.). VISY-TD Display Ex d is generally placed in a EN 60079-10 classified area (zone 1 or 2).
A suffix may be added to the name of the product in order to indicate commercial or aesthetical variations as well as different default parameters of the software.

Caratteristiche nominali / Dati Elettrici – Rated characteristics / Electrical data

Alimentazione /Power supply	12 VCC ± 5% / Batteria 9 V / 12 VDC ± 5% / 9 V battery
Consumo/ Consumption	3 W
Collegamento sensori/ Sensors connection	BUS RS485 + alimentazioni / BUS RS485 + power supply
N° sensori di livello collegabili/ Nr of sensors that can be connected	6
Uscite relè programmabili/ Outputs with programmable relays	2 contatti NA/NC (24 VCC – 0,5 A) / 2 NO/NC contacts (24 VDC – 0,5 A)
Collegamento dati remoto/ Remote data connection	RS232 / RS485 / LAN
Temperatura di funzionamento/ Ambient temperature	-25°C ÷ +60°C

Per quanto concerne le altre caratteristiche di dettaglio, si fa riferimento al manuale specifico dell'apparecchiatura, nelle sue varie versioni.
Further details about rated characteristics can be found on the specific manual of the equipment, in its different variations.

[16] **Rapporto numero** / Report Number**: CEC 14/2033 – RET 002**

[17] **Condizioni speciali per un utilizzo sicuro** – Special conditions for safe use

Nessuna – None.

L'efficacia e l'affidabilità di questi apparecchi sono garantite seguendo le istruzioni del Manuale d'uso. Non sono ammesse modifiche non autorizzate rispetto al fascicolo tecnico agli atti.
Special conditions for safe use depends on correct following of manufacturer's manual. Further modification are not allowed.

[18] **Requisiti Essenziali di Sicurezza e Salute** – Essential Health and Safety Requirements

Nessuno – None.

Riguardo ai Requisiti Essenziali di Sicurezza e Salute questo documento verifica la conformità solo agli standard Ex. La dichiarazione di Conformità del Produttore dichiara la conformità con altre Direttive pertinenti.

Concerning EHSR this schedule verifies the compliance with the Ex standards only. The manufacturer's Declaration of Conformity declares compliance with other relevant Directives.

CE
Organismo Notificato n. 1131

[13] **ALLEGATO** – SCHEDULE

[14] **CERTIFICATO DI ESAME CE DEL TIPO n° CEC 15 ATEX 030**
to EC-TYPE EXAMINATION CERTIFICATE no. CEC 15 ATEX 030

[19] **Documenti descrittivi** – Descriptive documents

I documenti di riferimento listati di seguito costituiscono la documentazione tecnica dell'apparecchio o sistema di protezione oggetto di questo certificato. Questi documenti sono confidenziali e sono a disposizione delle sole autorità competenti.
Una copia di questi documenti è conservata presso l'archivio del CEC.
The descriptive documents quoted hereafter constitute the technical documentation of the equipment or protective system, subject of this certificate. This documents are confidential and they are available only to the authorities.
One copy of all documents is kept in CEC files.

– **Fascicolo tecnico / Technical File**

L'ISPETTORE INCARICATO
Dott. Ing. Giuseppe TERZAGHI

Organo deliberante | Antonio FUGAZZI | Data: 25/05/2015

9.3 Instructions

Instructions in accordance with Directive 2014/34/EU CEC 15 ATEX 030
Display type VISY-TD Display Ex d Edition: 03.2018

I Range of application

The indicator VISY-TD Display Ex d is constructed in a pressure-resistant enclosure and is used to display data from one or more tanks. The indicator is suitable for use in a potentially explosive atmosphere.

II Standards

The equipment is designed in accordance with the following European standards

EN 60079-0:2012 + A11:2013	Equipment - General requirements
EN 60079-1:2014	Equipment protection by flameproof enclosure "d"
EN 60079-14:2014	Electrical installations design, selection and erection
EN 60079-31:2014	Equipment dust ignition protection by enclosure "t"

III Instructions for safe ...

III.a ... use

The display can be used in gas and dust explosion hazardous area (Zone 1 and Zone 21) for all gas groups (IIA, IIB and IIC) as well as for all dust groups (IIIA, IIIB and IIIC). In addition, only use with gases of temperature class T4 to T1 is permitted and the maximum surface temperature for dusts is 135 °C. The permissible ambient temperature range is -25 °C to +60 °C.

III.b ... assembling and dismantling

Assembling and dismantling must solely be carried out with the power disconnected! After switching off the auxiliary power, the enclosure may be opened immediately. Before opening the flame-proof enclosure, make sure that there is no potentially explosive atmosphere.

For changing the battery, it is necessary to open the case. Care must be taken that the sealing surfaces and threads are not damaged. To open, first loosen the threaded pin on the edge of the cap. Then the cap can be unscrewed.

To replace the battery, do the following:

- unscrew the two screws (M3 × 6) of the display cover;
- lift the display cover with the appropriate magnet;
- replace the battery;
- reposition the display cover;
- tighten the two screws (M3 × 6) again.

After the necessary work, the enclosure must be closed again. For this, the cap must be screwed onto the enclosure and secured with the threaded pin.

III.c … installation

The wiring must be carried out only with the power disconnected. Special rules and regulations, including EN 60079-14 and local installation regulations, must be observed.

The display may only be installed in locations where the IP66 enclosure protection can be complied with.

The display comes with a cable that is already connected inside the enclosure. This allows the display to be connected to another device without being opened.

Name of the wires of the connection cable:

Wire	Signal
white	not used
brown	Communication A
green	Communication B
yellow	not used
grey	not used
pink	not used
blue	not used
red	Power supply, +12 V
black	Power supply, GND
violet	not used
gray / pink	not used
red / blue	not used

Table III.c: Name of the wires of the 12-pole connection cable

Unused wires of the connection cable are to be isolated individually in a suitable manner.

III.d … adjustment

No Ex-relevant adjustments are required for operating the display.

III.e … putting into service

Before putting into service, all devices must be checked of right installation and connection. The electrical supply, as well as connected devices, must be checked.

III.f … maintenance (servicing and emergency repair)

The device is generally maintenance-free. In case of a defect, it must be sent back to FAFNIR or one of its representations.

The repair of the flame-proof routes is not provided.

Battery replacement is described in section III.b. Further information in section V.

IV Equipment marking

1	Manufacturer:	FAFNIR GmbH, 22525 Hamburg
2	Type designation:	VISY-TD Display Ex d
3	Certificate number:	CEC 15 ATEX 030
4	Ex marking:	 II 2 G Ex d IIC T4 Gb II 2 D Ex tb IIIC T 135 °C Db IP66
5	CE marking:	CE 0044
6	Warning label:	WARNING – DO NOT OPEN WHEN ENERGIZED
7	Technical Data:	T_a = -25 °C … +60 °C P.S.: 12 V_{CC} ± 5 % bat 9 V 3 VA

V Technical data

The auxiliary power for the display is

Supply voltage	U	=	12 V_{DC} ± 5 %
Power input:	P	=	3 W

Only batteries with the following rated values may be used:

Electrochemical system:	Alkaline		
Nominal voltage:	U_N	=	9 V
Type:	6LR61		

The signal voltage of the communication interface RS-485 (2-poles) is

Signal voltage:	U	<	12 V

The display may be used in the following ambient temperature range:

Ambient temperature:	T_a	=	-25 °C … +60 °C

The display achieves a housing protection of:

Degree of protection:	IP66

VI Specific conditions for use

None.

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