



## Instructions in accordance with directive 2014/34/EU

TÜV 99 ATEX 1508 X

### Evaluation Unit type VAPORIX-Control ...

Edition: 05.2016

#### I Range of application

The evaluation unit is a part of an automatic monitoring device to check operation of vapour recovery systems at petrol stations.

#### II Standards

The evaluation unit is designed in accordance with the following European standards

EN 60079-0:2012 + A11:2013	Equipment – General requirements
EN 60079-11:2012	Equipment protection by intrinsic safety "i"

#### III Instructions for safe ...

##### III.a ... use

The evaluation unit serves as associated equipment and is not approved for use in potentially explosive areas. The intrinsically safe electric circuits of the evaluation unit may be routed to Zone 0 and can be used for gas groups IIA and IIB.

The approval is valid for the device versions

VAPORIX-Control	Evaluation unit in DIN rail housing
VAPORIX-Control Basic	Evaluation unit in DIN rail housing without RS-485 communication
VAPORIX-Control II	Evaluation unit in modular housing

##### III.b ... assembling and dismantling

The assembly and disassembly must solely be carried out with the power disconnected!

The housing of the top hat rail enclosure must not be opened!

The evaluation unit type VAPORIX-Control II can be operated in a modular housing. Then there must be an equipotential terminal on the board. Should the board be fixed on another bracket/housing a secure connection must be established for potential equalization on at least one of the three PA connections.



### III.c ... installation

Wiring work may only be performed with the power disconnected. Special rules and regulations, including EN 60079-14 and local installation regulations, must be observed.

The evaluation unit in DIN rail housing is suitable for DIN rail and wall mounting. The evaluation unit in modular housing must be installed in a housing with a degree of protection of at least IP20. The evaluation unit must be installed outside potentially explosive atmospheres/areas. If the evaluation unit is mounted outdoors, the casing protection class must be at least IP54.

The wiring from the sensor (VAPORIX-Flow) to the evaluation unit (preferably blue coloured cable) must not exceed the permissible inductance and capacitance according to section V.

Terminal designation:

Connection	Terminal	Contacts
Auxiliary power	230V~	PE, N and L
Sensor circuits	B resp. A	1 to 8 as appropriate
Pulse input	Pulse	-B+ resp. -A+
Control outputs	Out B resp. Out A	-2+ resp. -1+ as appropriate
Voltage output	5V	- and +
RS-485 two-wire cable	RS485	G, B and A
RS-485 four-wire cable	RS485-4	(Cradle connector)
RS-232 interface	Service	(Sub D jack)

Table III.c1: Terminal labelling on the evaluation unit VAPORIX-Control

Connection	Terminal	Contacts
Auxiliary power	230V~	PE, N and L
Sensor circuits	B resp. A	1 to 8 as appropriate
Pulse input	Pulse	-B+ resp. -A+
Control outputs	Out B resp. Out A	-2+ resp. -1+ as appropriate
Voltage output	5V	- and +
RS 232 interface	Service	(Sub D jack)

Table III.c2: Terminal labelling on the evaluation unit VAPORIX-Control Basic

Connection	Terminal	Contacts
Auxiliary power	24V=	- and +
Sensor circuits	A resp. B	1 to 8 as appropriate
RS-422	RS422	(Cradle connector)
RS-485	RS485	A, B and G
Equipotential bonding	PA	PA

Table III.c3: Terminal labelling on the evaluation unit VAPORIX-Control II

The evaluation unit VAPORIX-Control II must be bonded in the potential equalization of the hazardous area.



### III.d ... adjustment

To operate the evaluation unit no safety-related facilities are required.

### III.e ... putting into service

Before putting into service, all devices must be checked for correct connection and installation. The electrical supply, including the connected devices, must be checked.



### III.f ... maintenance (servicing and emergency repair)

In general, the evaluation unit is maintenance-free. If there is a defect, it must be sent back to the manufacturer FAFNIR or one of its representatives.

The evaluation units VAPORIX-Control and VAPORIX-Control Basic are in compliance with the requirements for dielectric strength according to EN 60079-11, Clause 6.3.13 between the intrinsically safe sensor circuits and the power supply, the communication terminals and the outputs.

The evaluation unit VAPORIX-Control II is in compliance with the requirements for dielectric strength according to EN 60079-11, Clause 6.3.13 between the intrinsically safe sensor circuits and the communication terminals. No compliance is between the intrinsically safe sensor circuits and the power supply.

## IV Equipment marking

1	Manufacturer:	FAFNIR GmbH, Hamburg	
2	Type designation:	VAPORIX-Control ...	
3	Certificate number:	TÜV 99 ATEX 1508 X	
4	Ex marking:	 II (1) G [Ex ia Ga] IIB	
5	CE marking:	 0044	
6	Technical data:	VAPORIX-Control VAPORIX-Control Basic	VAPORIX-Control II
		$U_o \leq 23.9 \text{ V}$	$U_o \leq 22.2 \text{ V}$
		$I_o \leq 325 \text{ mA}$	$I_o \leq 371 \text{ mA}$
		$P_o \leq 1.9 \text{ W}$	$P_o \leq 2.1 \text{ W}$
		$L_o \leq 380 \text{ } \mu\text{H}$	$L_o \leq 440 \text{ } \mu\text{H}$
		$C_o \leq 480 \text{ nF}$	$C_o \leq 510 \text{ nF}$
		$T_a \leq +65 \text{ } ^\circ\text{C}$	$C_i < 200 \text{ nF}$
			$L_i < 10 \text{ } \mu\text{H}$
			$T_a \leq +65 \text{ } ^\circ\text{C}$



## V Technical data

The power supply for the evaluation unit, depending on model

Power Supply		VAPORIX-Control VAPORIX-Control Basic	VAPORIX-Control II
Voltage	U	115 V <sub>AC</sub> ± 10 % resp. 230 V <sub>AC</sub> ± 10 %	24 V <sub>DC</sub> ± 5 %
Frequency	F	50 Hz ... 60 Hz	-
Input Power	P	~ 18 VA	< 9 W
Maximum Safety Voltage	U <sub>m</sub>	134 V @ U = 115 V <sub>AC</sub> 253 V @ U = 230 V <sub>AC</sub>	253 V

The evaluation unit VAPORIX-Control II may only be connected to power supply networks, where the expected AC does not exceed a value of 1.5 kA.

The electric circuits of the sensors have "Intrinsic safety" [ia] ignition protection class with a linear output characteristic. Output values per electric circuit are

Sensor circuit		VAPORIX-Control VAPORIX-Control Basic	VAPORIX-Control II
Output Voltage	U <sub>o</sub>	≤ 23.9 V	≤ 22.2 V
Output Current	I <sub>o</sub>	≤ 325 mA	≤ 371 mA
Output Power	P <sub>o</sub>	≤ 1.9 W	≤ 2.1 W
Inner Capacitance	C <sub>i</sub>	-	< 200 nF
Inner Inductance	L <sub>i</sub>	-	< 10 μF

The permissible external inductance and capacitance are:

IIB	VAPORIX-Control / VAPORIX-Control Basic				VAPORIX-Control II			
L <sub>o</sub> ≤	<b>380 μH</b>	200 μH	100 μH	50 μH	<b>440 μH</b>	200 μH	100 μH	50 μH
C <sub>o</sub> ≤	<b>480 nF</b>	620 nF	800 nF	940 nF	<b>510 nF</b>	680 nF	880 nF	1.1 μF

The maximum values of the parameter pairings may simultaneously be used as concentrated capacitance (minus C<sub>i</sub>) and concentrated inductance (minus L<sub>i</sub>).

The values written in bold can be found also in the equipment marking.

The intrinsically safe sensor circuits of the evaluation units type VAPORIX-Control and type VAPORIX-Control Basic are safely galvanically isolated from the power supply circuit up to a peak value of a nominal voltage 375 V.

The intrinsically safe sensor circuits, if available, are galvanically isolated from the pulse inputs, control outputs, communication interfaces, and voltage output safely up to a peak of 190 V nominal voltage.



As a reference, the corresponding pulse output of the fuel dispenser computer must be connected to the pulse inputs (Pulse). The admissible voltage signal is between

$$U = 5 \text{ V} \dots 30 \text{ V}$$

The control outputs (Out) can be loaded with following electrical values

$$U = 30 \text{ V}$$

$$I = 200 \text{ mA}$$

The signal voltage of the communication interfaces (RS-422, RS-485, RS-485-4 and Service) is

$$U \leq 12 \text{ V}$$

The maximum safety voltage of the pulse inputs, the control outputs, the voltage outputs and the communication interfaces is

$$U_m = 134 \text{ V}$$

The voltage output supplies the following electrical values

$$U = 5 \text{ V}$$

$$I \leq 50 \text{ mA}$$

The evaluation unit can be used in the following ambient temperature range:

$$T_a = -20 \text{ °C} \dots +65 \text{ °C}$$

The evaluation unit achieves a protection rating of

VAPORIX-Control IP20

VAPORIX-Control Basic IP20

VAPORIX-Control II IP00

## **VI Special conditions of use**

1. The evaluation unit type VAPORIX-Control II must be installed in an enclosure with a degree of protection provided by enclosure according to EN 60529 of at least IP20.
2. The potential equalization terminal (PA) on the evaluation unit type VAPORIX-Control II must be bonded to the potential equalization system of the potential explosive area.