

CERTIFICATE

(1) EC-Type Examination

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **DEKRA 13ATEX0193 X** Issue Number: **1**

(4) Equipment: **Reflex VF2 Series Two Wire TDR,
Type VF24xxxxxxxxxxxxx2xxxxxx and
Type VF29xxxxxxxxxxxxx2xxxxxx and
Reflex VG5 Series Two Wire FMCW Radar
Type VG54xxxxxxxxxxxxx2xxxxxx and
Type VG59xxxxxxxxxxxxx2xxxxxx**

(5) Manufacturer: **Hycontrol Ltd.**

(6) Address: **Larchwood House, Orchard Street, Redditch,
Worcestershire, B98 7DP, United Kingdom**

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

(8) DEKRA Certification B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment 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 confidential test report number 216651400.

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

**EN 60079-0 : 2009
EN 60079-11 : 2012**

**EN 60079-1 : 2007
EN 60079-26 : 2007**

EN 60079-31 : 2009

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment 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, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:



For marking see section 15.

This certificate is issued on 20 November 2013 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

R. Schuller
Certification Manager

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(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 13ATEX0193 X**

Issue No. 1

(15) **Description**

The Reflex VF2 Series Two Wire TDR Type VF24xxxxxxxxxxxx2xxxxxx and Type VF29xxxxxxxxxxxx2xxxxxx and Reflex VG5 Series Two Wire FMCW Radar Type VG54xxxxxxxxxxxx2xxxxxx and Type VG59xxxxxxxxxxxx2xxxxxx are used for continuous level measurement of flammable or non-flammable liquids or solid particles, granulates or powders within storage or process tanks or in a stilling well.

The distance between transmitter Reflex VF2 Series Two Wire TDR and the surface of the process medium is measured using a probe system (e.g. cable or rod) that guides electromagnetic pulses that are reflected by the surface of the process medium.

The distance between the antenna of transmitter Reflex VG5 Series Two Wire FMCW Radar and the surface of the process medium is measured using frequency modulated continuous wave radar.

The 2-wire transmitter is loop powered. The output is either a 4 - 20 mA current signal with an overlaid digital communication protocol (HART) or a fixed current with a carrier signal for the fieldbus protocol (PROFIBUS PA or FOUNDATION fieldbus FF).

Either the 4 - 20 mA HART Transmitter is completely in type of protection intrinsic safety "i" or the transmitter is provided with the power supply compartment in type of protection flameproof enclosures "d". In the latter version a zener barrier circuit board is located in the terminal compartment.

Optionally, the transmitter may be provided with display and adjustment capabilities (HMI option).

Transmitters Reflex VF2 Series Two Wire TDR and Reflex VG5 Series Two Wire FMCW Radar are also available as remote versions. The length of the cable between transmitter housing and sensor is maximum 100 m.

Optionally, the Reflex VF2 Series Two Wire TDR may be equipped with an adaptor for connection to an existing certified Reflex VF7, VF04 or VF03 probe system.

Optionally, the Reflex VG5 Series Two Wire FMCW Radar may be equipped with an adaptor for connection to an existing certified Reflex VG502 Horn, VG510 Wavestick, VG50 Horn or VG51 Wavestick antenna system.

The enclosure provides a degree of protection of at least IP6X as per EN 60529.

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Issue No. 1

Marking codes

Compact version

II 1/2 G or II 2 G Ex ia IIC T6...T2 Ga/Gb or Ex ia IIC T6...T2 Gb

II 1/2 D or II 2 D Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db

or

II 1/2 G or II 2 G Ex d ia IIC T6...T2 Ga/Gb or Ex d ia IIC T6...T2 Gb

II 1/2 D or II 2 D Ex ia tb IIIC T90°C Da/Db or Ex ia tb IIIC T90°C Db

Remote version transmitter

II 2 G Ex ia [ia Ga] IIC T6...T4 Gb

II 2 D Ex ia [ia Da] IIIC T90°C Db

or

II 2 G Ex d ia [ia Ga] IIC T6...T4 Gb

II 2 D Ex ia tb [ia Da] IIIC T90°C Db

Remote version sensor

II 1/2 G or II 2 G Ex ia IIC T6...T2 Ga/Gb or Ex ia IIC T6...T2 Gb

II 1/2 D or II 2 D Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db

The temperature class depending on the ambient temperature, the flange temperature and the type of probe / antenna used, is listed in the following tables:

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(14) **to EC-Type Examination Certificate DEKRA 13ATEX0193 X**

Issue No. 1

Compact version of the Reflex VF2 Series Two Wire TDR

Equipment category	Max. ambient temperature			Max. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	52 °C	54 °C	53 °C	60 °C	T6
	70 °C	70 °C	70 °C	60 °C	T5
	80 °C	80 °C	80 °C	60 °C	T4
II 2 G	52 °C	54 °C	53 °C	60 °C	T6
	42 °C	51 °C	45 °C	85 °C	
	67 °C	69 °C	68 °C	75 °C	T5
	57 °C	66 °C	60 °C	100 °C	
	77 °C	79 °C	78 °C	85 °C	T4
	67 °C	76 °C	70 °C	110 °C	
	57 °C	73 °C	62 °C	135 °C	
	51 °C	71 °C	57 °C ¹⁾	150 °C	T3
	Not allowed	68 °C	Not allowed	180 °C ²⁾	
	Not allowed	65 °C	Not allowed	200 °C ²⁾	
	Not allowed	60 °C	Not allowed	250 °C ²⁾	T2
	Not allowed	54 °C	Not allowed	300 °C ²⁾	

Equipment category	Min. ambient temperature			Min. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C ²⁾	T6-T2
	-36 °C	-39 °C	-37 °C	-50 °C ²⁾	

¹⁾ Not allowed for the Reflex VF03 probes without extension.

²⁾ Permitted gasket temperature ranges must be observed (see instructions)

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(14) **to EC-Type Examination Certificate DEKRA 13ATEX0193 X**

Issue No. 1

Remote version of the Reflex VF2 Series Two Wire TDR

Equipment category	Max. ambient temperature			Max. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	49 °C	51 °C	49 °C	60 °C	T6
	70 °C	70 °C	70 °C	60 °C	T5
	80 °C	80 °C	80 °C	60 °C	T4
II 2 G	49 °C	51 °C	49 °C	60 °C	T6
	39 °C	48 °C	43 °C	85 °C	
	64 °C	66 °C	64 °C	75 °C	T5
	54 °C	65 °C	58 °C	100 °C	
	77 °C	79 °C	78 °C	85 °C	T4
	64 °C	75 °C	68 °C	110 °C	
	51 °C	71 °C	59 °C	135 °C	
	43 °C	69 °C	54 °C ¹⁾	150 °C	T3
	Not allowed	65 °C	Not allowed	180 °C ²⁾	
	Not allowed	62 °C	Not allowed	200 °C ²⁾	
	Not allowed	54 °C	Not allowed	250 °C ²⁾	T2
	Not allowed	47 °C	Not allowed	300 °C ²⁾	

Equipment category	Min. ambient temperature			Min. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C ²⁾	T6-T2
	-35 °C	-39 °C	-36 °C	-50 °C ²⁾	

¹⁾ Not allowed for the Reflex VF03 probes without extension.

²⁾ Permitted gasket temperature ranges must be observed (see instructions)

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 13ATEX0193 X**

Issue No. 1

Compact version of the Reflex VG5 Series Two Wire FMCW Radar

Equipment category	Max. ambient temperature				Max. flange temp.	Temp. class
	Wave horn PP	Wave horn PTFE & Wavestick	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	42 °C	41 °C	44 °C	55 °C	T5
	38 °C	40 °C	39 °C	43 °C	60 °C	T4
II 2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	42 °C	41 °C	44 °C	55 °C	
	38 °C	40 °C	39 °C	43 °C	60 °C	
	53 °C	55 °C	54 °C	58 °C	75 °C	T5
	40 °C	44 °C	43 °C	54 °C	100 °C	
	77 °C	77 °C	77 °C	79 °C	85 °C	T4
	69 °C	71 °C	70 °C	76 °C	100 °C	
	Not allowed	57 °C	54 °C	71 °C	135 °C ¹⁾	T3
	Not allowed	50 °C	48 °C	68 °C	150 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	64 °C	180 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	61 °C	200 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	53 °C	250 °C ¹⁾	T2

Equipment category	Min. ambient temperature				Min. flange temp.	Temp. class
	Wave horn PP & Wavestick	Wave horn PTFE	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	-40 °C	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C ¹⁾	T6-T2
	Not allowed	-36 °C	-35 °C	-38 °C	-50 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	-37 °C	-60 °C ¹⁾	

¹⁾ Permitted gasket temperature ranges must be observed (see instructions)

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 13ATEX0193 X**

Issue No. 1

Remote version of the Reflex VG5 Series Two Wire FMCW Radar

Equipment category	Max. ambient temperature				Max. flange temp.	Temp. class
	Wave horn PP	Wave horn PTFE & Wavestick	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	41 °C	41 °C	44 °C	55 °C	T5
	39 °C	39 °C	39 °C	43 °C	60 °C	T4
II 2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	41 °C	41 °C	44 °C	55 °C	
	39 °C	39 °C	39 °C	43 °C	60 °C	
	54 °C	54 °C	54 °C	59 °C	75 °C	T5
	43 °C	43 °C	41 °C	55 °C	100 °C	
	77 °C	77 °C	77 °C	79 °C	85 °C	T4
	70 °C	71 °C	70 °C	77 °C	100 °C	
	Not allowed	55 °C	53 °C	72 °C	135 °C ¹⁾	
	Not allowed	48 °C	45 °C	66 °C	150 °C ¹⁾	T3
	Not allowed	Not allowed	Not allowed	63 °C	180 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	57 °C	200 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	53 °C	250 °C ¹⁾	

Equipment category	Min. ambient temperature				Min. flange temp.	Temp. class
	Wave horn PP & Wavestick	Wave horn PTFE	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	-40 °C	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C ¹⁾	T6-T2
	Not allowed	-36 °C	-35 °C	-39 °C	-50 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	-37 °C	-60 °C ¹⁾	

¹⁾ Permitted gasket temperature ranges must be observed (see instructions)

The maximum surface temperature "T" of the electronics enclosure is 90 °C. For detailed temperature data refer to the instruction manual.

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Issue No. 1

Electrical data

Apparatus in type of protection intrinsic safety "ia" with 4-20 mA-HART output

Supply and output circuit (terminals output 1, + and -):
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 30 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1 \text{ W}$; $C_i = 30 \text{ nF}$; $L_i = 30 \text{ }\mu\text{H}$.

Apparatus in type of protection intrinsic safety "ia" and flameproof enclosure "d" or dust ignition protection by enclosure "t" with field wiring in type of protection "ia", with PROFIBUS PA or FIELDBUS foundation FF interface

Fieldbus circuit (terminals output 1, + and -):
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 24 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1,2 \text{ W}$; $C_i = 1 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$.

Fieldbus circuit (terminals output 1, + and -):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit or a circuit in accordance with FISCO, with the following maximum values:
 $U_i = 17,5 \text{ V}$; $I_i = 380 \text{ mA}$; $P_i = 5,32 \text{ W}$; $C_i = 1 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$

Apparatus with terminal compartment in type of protection flameproof enclosures "d" and dust ignition protection by enclosure "t" with 4-20 mA-HART output

Power supply	max. 36 Vdc
Output	4 - 20 mA
Intrinsically safe circuits	$U_m = 250 \text{ V}$

Installation instructions

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Report**

No. 216651400.

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

- When used in a explosive atmosphere requiring the use of a probe of equipment category 1G the probe must be installed so, that even in the event of rare incidents an ignition source due to electrostatic discharging of the plastic parts of the apparatus is excluded.

- When used in an explosive dust atmosphere the apparatus must be installed so that electrostatic discharging is excluded.

- The flame path at the bushing has a width of min. 13,9 mm and a gap of max. 0,118 mm.

- For ambient temperature range see (15).

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 13ATEX0193 X**

Issue No. 1

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

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 216651400.

**ATEX Assessment Report
No. 216651400, issue 1**

**Reflex VF2 Series Two Wire TDR,
Type VF24xxxxxxxxxxxxx2xxxxxx and
Type VF29xxxxxxxxxxxxx2xxxxxx and**

**Reflex VG5 Series Two Wire FMCW Radar
Type VG54xxxxxxxxxxxxx2xxxxxx and
Type VG59xxxxxxxxxxxxx2xxxxxx**

**Laboratory: DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands**

**By order of: Hycontrol Ltd.
Larchwood House, Orchard Street,
Redditch, Worcestershire, B98 7DP,
United Kingdom**

**Manufacturer: Hycontrol Ltd.
Larchwood House, Orchard Street,
Redditch, Worcestershire, B98 7DP,
United Kingdom**

Author	: P. Cvetanović	2013-11-20	Reviewer	: R. Schuller	2013-11-20
Project no	: 216651400				

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This ATEX Assessment Report contains the test results related to the sample(s) tested. The tests results cannot be used for any statement related to the quality of the equipment from running production.

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1 Project no. 216651400

1.1 Standards applied

Samples of the equipment as described under (1.2) below were subjected to the requirements and tests of the following standards:

EN 60079-0 : 2009
EN 60079-11 : 2012
EN 60079-1 : 2007
EN 60079-31 : 2009

The assessment was conducted from September to November 2013.

1.2 Description of the equipment

The Reflex VF2 Series Two Wire TDR Type VF24xxxxxxxxxxxxx2xxxxxx and Type VF29xxxxxxxxxxxxx2xxxxxx and Reflex VG5 Series Two Wire FMCW Radar Type VG54xxxxxxxxxxxxx2xxxxxx and Type VG59xxxxxxxxxxxxx2xxxxxx are used for continuous level measurement of flammable or non-flammable liquids or solid particles, granulates or powders within storage or process tanks or in a stilling well.

The distance between transmitter Reflex VF2 Series Two Wire TDR and the surface of the process medium is measured using a probe system (e.g. cable or rod) that guides electromagnetic pulses that are reflected by the surface of the process medium.

The distance between the antenna of transmitter Reflex VG5 Series Two Wire FMCW Radar and the surface of the process medium is measured using frequency modulated continuous wave radar.

The 2-wire transmitter is loop powered. The output is either a 4 - 20 mA current signal with an overlaid digital communication protocol (HART) or a fixed current with a carrier signal for the fieldbus protocol (PROFIBUS PA or FOUNDATION fieldbus FF).

Either the 4 - 20 mA HART Transmitter is completely in type of protection intrinsic safety "i" or the transmitter is provided with the power supply compartment in type of protection flameproof enclosures "d". In the latter version a zener barrier circuit board is located in the terminal compartment.

Optionally, the transmitter may be provided with display and adjustment capabilities (HMI option).

Transmitters Reflex VF2 Series Two Wire TDR and Reflex VG5 Series Two Wire FMCW Radar are also available as remote versions. The length of the cable between transmitter housing and sensor is maximum 100 m.

Optionally, the Reflex VF2 Series Two Wire TDR may be equipped with an adaptor for connection to an existing certified Reflex VF7, VF04 or VF03 probe system.

Optionally, the Reflex VG5 Series Two Wire FMCW Radar may be equipped with an adaptor for connection to an existing certified Reflex VG502 Horn, VG510 Wavestick, VG50 Horn or VG51 Wavestick antenna system.

The enclosure provides a degree of protection of at least IP6X as per EN 60529.

The temperature class depending on the ambient temperature, the flange temperature and the type of probe / antenna used, is listed in the following tables:

Compact version of the Reflex VF2 Series Two Wire TDR

Equipment category	Max. ambient temperature			Max. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	52 °C	54 °C	53 °C	60 °C	T6
	70 °C	70 °C	70 °C	60 °C	T5
	80 °C	80 °C	80 °C	60 °C	T4
II 2 G	52 °C	54 °C	53 °C	60 °C	T6
	42 °C	51 °C	45 °C	85 °C	
	67 °C	69 °C	68 °C	75 °C	T5
	57 °C	66 °C	60 °C	100 °C	
	77 °C	79 °C	78 °C	85 °C	T4
	67 °C	76 °C	70 °C	110 °C	
	57 °C	73 °C	62 °C	135 °C	
	51 °C	71 °C	57 °C ¹⁾	150 °C	T3
	Not allowed	68 °C	Not allowed	180 °C ²⁾	
	Not allowed	65 °C	Not allowed	200 °C ²⁾	
	Not allowed	60 °C	Not allowed	250 °C ²⁾	T2
	Not allowed	54 °C	Not allowed	300 °C ²⁾	

Equipment category	Min. ambient temperature			Min. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C ²⁾	T6-T2
	-36 °C	-39 °C	-37 °C	-50 °C ²⁾	

¹⁾ Not allowed for the Reflex VF03 probes without extension.

²⁾ Permitted gasket temperature ranges must be observed (see instructions)

Remote version of the Reflex VF2 Series Two Wire TDR

Equipment category	Max. ambient temperature			Max. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	49 °C	51 °C	49 °C	60 °C	T6
	70 °C	70 °C	70 °C	60 °C	T5
	80 °C	80 °C	80 °C	60 °C	T4
II 2 G	49 °C	51 °C	49 °C	60 °C	T6
	39 °C	48 °C	43 °C	85 °C	
	64 °C	66 °C	64 °C	75 °C	T5
	54 °C	65 °C	58 °C	100 °C	
	77 °C	79 °C	78 °C	85 °C	T4
	64 °C	75 °C	68 °C	110 °C	
	51 °C	71 °C	59 °C	135 °C	
	43 °C	69 °C	54 °C ¹⁾	150 °C	T3
	Not allowed	65 °C	Not allowed	180 °C ²⁾	
	Not allowed	62 °C	Not allowed	200 °C ²⁾	
	Not allowed	54 °C	Not allowed	250 °C ²⁾	T2
	Not allowed	47 °C	Not allowed	300 °C ²⁾	

Equipment category	Min. ambient temperature			Min. flange temp.	Temp. class
	2 mm probe	2 mm probe and HT extension	All other probes		
II 1/2 G	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C ²⁾	T6-T2
	-35 °C	-39 °C	-36 °C	-50 °C ²⁾	

¹⁾ Not allowed for the Reflex VF03 probes without extension.

²⁾ Permitted gasket temperature ranges must be observed (see instructions)

Compact version of the model Reflex VG5 Series Two Wire FMCW Radar

Equipment category	Max. ambient temperature				Max. flange temp.	Temp. class
	Wave horn PP	Wave horn PTFE & Wavestick	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	42 °C	41 °C	44 °C	55 °C	T5
	38 °C	40 °C	39 °C	43 °C	60 °C	T4
II 2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	42 °C	41 °C	44 °C	55 °C	
	38 °C	40 °C	39 °C	43 °C	60 °C	
	53 °C	55 °C	54 °C	58 °C	75 °C	T5
	40 °C	44 °C	43 °C	54 °C	100 °C	
	77 °C	77 °C	77 °C	79 °C	85 °C	T4
	69 °C	71 °C	70 °C	76 °C	100 °C	
	Not allowed	57 °C	54 °C	71 °C	135 °C ¹⁾	
	Not allowed	50 °C	48 °C	68 °C	150 °C ¹⁾	T3
	Not allowed	Not allowed	Not allowed	64 °C	180 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	61 °C	200 °C ¹⁾	
Not allowed	Not allowed	Not allowed	53 °C	250 °C ¹⁾	T2	

Equipment category	Min. ambient temperature				Min. flange temp.	Temp. class
	Wave horn PP & Wavestick	Wave horn PTFE	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	-40 °C	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C ¹⁾	T6-T2
	Not allowed	-36 °C	-35 °C	-38 °C	-50 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	-37 °C	-60 °C ¹⁾	

¹⁾ Permitted gasket temperature ranges must be observed (see instructions)

Remote version of the Reflex VG5 Series Two Wire FMCW Radar

Equipment category	Max. ambient temperature				Max. flange temp.	Temp. class
	Wave horn PP	Wave horn PTFE & Wavestick	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	41 °C	41 °C	44 °C	55 °C	T5
	39 °C	39 °C	39 °C	43 °C	60 °C	T4
II 2 G	46 °C	46 °C	46 °C	46 °C	45 °C	T6
	41 °C	41 °C	41 °C	44 °C	55 °C	
	39 °C	39 °C	39 °C	43 °C	60 °C	
	54 °C	54 °C	54 °C	59 °C	75 °C	T5
	43 °C	43 °C	41 °C	55 °C	100 °C	
	77 °C	77 °C	77 °C	79 °C	85 °C	T4
	70 °C	71 °C	70 °C	77 °C	100 °C	
	Not allowed	55 °C	53 °C	72 °C	135 °C ¹⁾	
	Not allowed	48 °C	45 °C	66 °C	150 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	63 °C	180 °C ¹⁾	T3
Not allowed	Not allowed	Not allowed	57 °C	200 °C ¹⁾		
Not allowed	Not allowed	Not allowed	53 °C	250 °C ¹⁾	T2	

Equipment category	Min. ambient temperature				Min. flange temp.	Temp. class
	Wave horn PP & Wavestick	Wave horn PTFE	Metalic horn without HT extension	Metalic horn with HT extension		
II 1/2 G	-40 °C	-40 °C	-40 °C	-40 °C	-20 °C	T6-T2
II 2 G	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C ¹⁾	T6-T2
	Not allowed	-36 °C	-35 °C	-39 °C	-50 °C ¹⁾	
	Not allowed	Not allowed	Not allowed	-37 °C	-60 °C ¹⁾	

¹⁾ Permitted gasket temperature ranges must be observed (see instructions)

The maximum surface temperature "T" of the electronics enclosure is 90 °C. For detailed temperature data refer to the instruction manual.

Electrical data

Apparatus in type of protection intrinsic safety "ia" with 4-20 mA-HART output

Supply and output circuit (terminals output 1, + and -):
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 30 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1 \text{ W}$; $C_i = 30 \text{ nF}$; $L_i = 30 \text{ }\mu\text{H}$.

Apparatus in type of protection intrinsic safety "ia" and flameproof enclosure "d" or dust ignition protection by enclosure "t" with field wiring in type of protection "ia", with PROFIBUS PA or FIELDBUS foundation FF interface

Fieldbus circuit (terminals output 1, + and -):
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 24 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1,2 \text{ W}$; $C_i = 1 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$.

Fieldbus circuit (terminals output 1, + and -):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit or a circuit in accordance with FISCO, with the following maximum values:
 $U_i = 17,5 \text{ V}$; $I_i = 380 \text{ mA}$; $P_i = 5,32 \text{ W}$; $C_i = 1 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$

Apparatus with terminal compartment in type of protection flameproof enclosures "d" and dust ignition protection by enclosure "t" with 4-20 mA-HART output

Power supply	max. 36 Vdc
Output	4 - 20 mA
intrinsically safe circuits	$u_m = 250 \text{ v}$

1.3 Marking of the equipment

Compact version

II 1/2 G or II 2 G Ex ia IIC T6...T2 Ga/Gb or Ex ia IIC T6...T2 Gb

II 1/2 D or II 2 D Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db

or

II 1/2 G or II 2 G Ex d ia IIC T6...T2 Ga/Gb or Ex d ia IIC T6...T2 Gb

II 1/2 D or II 2 D Ex ia tb IIIC T90°C Da/Db or Ex ia tb IIIC T90°C Db



Remote version transmitter

II 2 G Ex ia [ia Ga] IIC T6...T4 Gb

II 2 D Ex ia [ia Da] IIIC T90°C Db

or

II 2 G Ex d ia [ia Ga] IIC T6...T4 Gb

II 2 D Ex ia tb [ia Da] IIIC T90°C Db

Remote version sensor

II 1/2 G or II 2 G Ex ia IIC T6...T2 Ga/Gb or Ex ia IIC T6...T2 Gb

II 1/2 D or II 2 D Ex ia IIIC T90°C Da/Db or Ex ia IIIC T90°C Db

1.4 Test documentation

dated

Document no.	F0821010500, Rev.-	15.11.2013
	F0821010510, Rev.-	02.04.2013
	Cross-reference list Krohne S.A.S – Hycontrol Ltd. (2 sheets)	15.07.2013
	Letter of Consent	24.04.2013
	VF2 ATEX Instructions, Rev. v1 (32 sheets)	09.2013
	VG5 ATEX Instructions, Rev. v1 (32 sheets)	09.2013

All other documentation is listed in ATEX Assessment Report no. 215906600 issued to Krohne S.A.S.

2 Routine tests

Not applicable.

3 Instructions for installation and use

The instructions provided with the equipment shall be followed in detail to assure safe operation.

4 Test results

The detailed test results are laid down in confidential file/files no. 215906600 and will not be disclosed without written approval of the original manufacturer (Krohne S.A.S.).

5 Conclusion

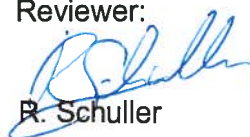
The equipment as described above meets all applicable requirements of the standards as mentioned above. Certification of the equipment is therefore recommended.

Author:



P. Cvetanovic

Reviewer:



R. Schuller

Endorsed on 20 November 2013 by:



R. Schuller
Certification Manager

END OF TEST REPORT