



1. **EU-TYPE EXAMINATION CERTIFICATE**

2. **Equipment or Protective System Intended for use  
in Potentially explosive atmospheres  
Directive 2014/34/EU**

3. Reference: **VTT 04 ATEX 031X Issue 1**

4. Equipment: **Measuring and control unit**

Certified types: **SET-1000 or SET-2000**

5. Manufactured by: **Labkotec Oy**

6. Address: **Myllyhaantie 6  
FI-33960 Pirkkala  
Finland**

7. This equipment or protective system and any acceptable variations thereto is specified in the schedule and possible supplement(s) to this Certificate and the documents therein referred to.

8. VTT Expert Services Ltd, notified body number 0537, in accordance with Article 21 of the Directive 2014/34/EU of February 2014, 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 system intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. VTT-S-05557-17.

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with the standards:

**EN 60079-0 (2012)**

**EN 60079-11 (2012)**

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 EU-Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. This certificate does not cover these.
12. The marking of the equipment or protective system shall include the following:



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

**-25 °C ≤ Ta ≤ +50 °C**

Espoo, 23.10.2017  
VTT Expert Services Ltd

Jenni Hirvelä  
Expert

Kari Koskela  
Expert



13. **Schedule**

14. **EU-TYPE EXAMINATION CERTIFICATE VTT 04 ATEX 031X Issue 1**

15. Description of Equipment:

The liquid level switch type SET-1000 or SET-2000 is an associated apparatus and supplies one (SET-1000) or two (SET-2000) intrinsically safe level probes. The material of the enclosure is polycarbonate.

The liquid level switch type SET-1000 or SET-2000 shall be installed outside the explosive area.

Electrical data

Supply voltage according to the type plate: 230 Vac or 110 V ac, 50/60 Hz,  $U_m = 253$  V or 11-17 V dc,  $U_m = 23$  V. The ac version liquid level switch is equipped with a 125 mA supply fuse and the dc version is equipped with a 315 mA supply fuse. There are one (SET-1000) or two (set-2000) potentially free relay contact outputs (250 V, 5 A, 100 VA).

The maximum values of the intrinsically safe output values are:

$U_o$	$I_o$	$P_o$
14,7 V	55 mA	297 mW

Maximum external capacitance and inductance values are:

Gas group	$C_o$	$L_o$	$L_o / R_o$
IIC	608 nF	10 mH	116,5 $\mu$ H/ $\Omega$
IIB	3,84 $\mu$ F	30 mH	466 $\mu$ H/ $\Omega$

The output supply is of trapezoidal characteristic according to EN60079-25 with parameters  $U_Q = 21,95$  V or  $R = 404$   $\Omega$  and maximum combined external capacitance and inductance values are:

Gas group IIC		Gas group IIB	
$L_o /$ mH	$C_o /$ nF	$L_o /$ mH	$C_o /$ $\mu$ F
0,15	568	0,15	3,5
0,5	458	0,5	3,1
1	388	1	2,4
2	328	2	1,9
5	258	5	1,6

The output circuits are isolated from ground and other circuits.

Documents:

Title:	Drawing No.:	Date:
<i>SET-1000/SET-2000:</i>		
Description of the liquid level switch SET-1000/SET-2000 for one or two sensors	XA15266_s	28.01.2004
SET-X Main board Printed board	XK15208Ae	20.01.2004
SET-X Control board Printed board	XK15211Ae	20.01.2004
SET-1000 SET-2000 Front cover printing	XK15230_s	04.03.2004
SET-1000 SET-2000 Protection plate printing	XK15221_s	27.01.2004
SET-1000 SET-2000 Protection plates	XK15180_s	11.02.2004
SET-1000 SET-2000 Type plate	XK15220Bs	19.01.2010
<i>SET-1000:</i>		



Title:	Drawing No.:	Date:
SET-1000 Assembly	XK15219_s	05.03.2004
SET-1000 Assembly Part list	XC15219_s	02.02.2004
SET-1000 Main board Schematic diagram	XB15222Ae	08.03.2004
SET-1000 Main board Component layout	XK152224Ae	08.03.2004
*SET-1000 Main board Part list	XC15224AE-1	09.10.2017
SET-1000 Control board Schematic diagram	XB15223Ae	09.03.2004
SET-1000 Control board Component layout	XK15225Ae	06.05.2004
SET-1000 Control board Part list	XC15225Ae	08.03.2004
SET-1000-12VDC Assembly	XK15239_s	30.03.2004
SET-1000-12VDC Assembly Part list	XC15239_s	30.03.2004
SET-1000-12VDC Main board Schematic diagram	XB15237_e	04.03.2004
SET-1000-12VDC Main board Component layout	XK152238_e	04.03.2004
SET-1000-12VDC Main board Part list	XC15238_e	24.03.2004
<i>SET-2000:</i>		
SET-2000 Assembly	XK15179_s	05.03.2004
SET-2000 Assembly Part list	XC15179_s	02.02.2004
SET-2000 Main board Schematic diagram	XB15209Ae	04.03.2004
SET-2000 Main board Component layout	XK15210Ae	22.01.2004
SET-2000 Main board Part list	XC15210Ae	04.03.2004
SET-2000 Control board Schematic diagram	XB15212Ae	05.03.2004
SET-2000 Control board Component layout	XK15213Ae	20.01.2004
SET-2000 Control board Part list	XC15213Ae	05.03.2004
SET-2000-12VDC Assembly	XK15240_s	30.03.2004
SET-2000-12VDC Assembly Part list	XC15240_s	30.03.2004
SET-2000-12VDC Main board Schematic diagram	XB15235_e	04.03.2004
SET-2000-12VDC Main board Component layout	XK152236_e	04.03.2004
SET-2000-12VDC Main board Part list	XC15236_e	24.03.2004

\*) Revised document

16. Report No. VTT-S-05557-17

17. Special conditions for safe use:

The permissible ambient temperature range is  $-25\text{ °C} \leq T_a \leq +50\text{ °C}$ .

18. Essential Health and Safety Requirements:

Met by compliance with the standards referred in point 9.

Certificate History

Issue	Date	Report No.	Comment
-	02.06.2004	TUO26-044010	Original certificate
Issue 1	23.10.2017	VTT-S-05557-17	Compliance with the latest standards revised. Alternative type mains transformer for SET-1000 assessed.

Espoo, 23.10.2017  
VTT Expert Services Ltd



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Certificate without signatures shall not be valid

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