



Translation

(1) **EC-TYPE EXAMINATION CERTIFICATE**

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



(3) EC-Type Examination Certificate Number

TÜV 00 ATEX 1572

(4) Equipment: Measuring transducer type OCP/...

(5) Manufacturer: NIVUS GmbH

(6) Address: D-75031 Eppingen, Im Täle 2

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

(8) The TÜV NORD CERT GmbH & Co. KG, 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° 00 PX24000.

(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, examination and tests of the specified equipment in accordance 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 or protective system must include the following:

II (2) G [EEx ib] IIB

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TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
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Head of the
Certification Body



Hanover, 2004-02-11

TÜV NORD CERT GmbH & Co. KG
legal successor of the notified body of
TÜV Hannover/Sachsen-Anhalt e.V.
German original certificate
issued on 2000-12-18

(13)

SCHEDULE

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 00 ATEX 1572**

(15) Description of equipment

The measuring transducer type OCP/... is used together with associated sensors for the measurement of flow speed and the flow level in open and closed channels via supersonic technology.

Electrical data

Supply circuit
(a1 to a3)
(b2, b3)

U = 90 ... 250 V AC, 25 VA
or
U = 18 ... 36 V DC, 25 W

Digital inputs
(a12...a14, b12...b14)

U = 24 VDC, I = 12 mA

Analogues inputs
(a15...a17, b15...b17)

U = 12 VDC, I = 55 mA

Analogous outputs
(a18...a20, b18...b20)

Current output I = 0 ... 30 mA

Contact circuit
(a4...a8, b4...b8, c4...c8)

U = 250 VAC, I = 6 A at $\cos \varphi = 0,9$

Analogous sensor connection
(a21, b21, c21)

in type of protection Intrinsic Safety EEx ia IIB
only for the connection of certified sensors
Maximum values $U_o = 25.2$ V
 $I_o = 128$ mA

Characteristic line: linear
max. permissible outer inductance 9 mH
max. permissible outer capacitance 820 nF

Sensor connections
(a22...a29, b22...b29, c22...c29)

in type of protection Intrinsic Safety EEx ib IIB
only for the connection of associated sensors
type OCS/... according to TÜV 00 ATEX 1573
Maximum values per circuit: $U_o = 10.5$ V
 $I_o = 500$ mA

Characteristic line: rectangular
max. permissible outer inductance 0.15 mH
max. permissible outer capacitance 100 nF



The intrinsically safe circuits are safely galvanically separated from all other circuits up to a peak value of the nominal voltage of 375 V.

(16) Test documents are listed in the test report No.: 00 PX 24000.

(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 00 ATEX 1572

of the company: NIVUS GmbH
Im Täle 2
D-75031 Eppingen

The measuring transducer type OCP/... may also be manufactured according to the test documents listed in the test report.

The amendments concern the internal design and the electrical data.

Electrical data

Supply circuit (a1 to a3) (b2, b3)	U = 90 ... 250 VAC, 20 VA or U = 18 ... 36 VDC, 20 W resp. Auxiliary voltage output of the AC version 24 V / 3 W
Contact circuit (a4...a8, b4...b8, c4...c8)	U = 250 VAC, I = 6 A at $\cos \varphi = 0.9$
RS232 interface (terminal a and b) (a9...a11, b9...b11)	U = ± 10 V
CAN bus interface (terminal c) (c9...c11)	U = 5 V
Digital inputs (a12...a14, b12...b14)	U = 24 VDC, I = 12 mA
Analogous inputs (a15...a17, b15...b17)	U = 12 VDC, I = 55 mA
Analogous outputs (a18...a20, b18...b20)	current output I = 0 ... 30 mA

1. Supplement to EC Type-Examination Certificate No. TÜV 00 ATEX 1572

Analogous sensor connection
(a21, b21, c21)

in type of protection Intrinsic Safety EEx ia IIB
only for the connection of certified sensors

Maximum values: $U_o = 23.1 \text{ V}$
 $I_o = 162 \text{ mA}$

Characteristic line: linear

max. permissible outer inductance 6 mH

max. permissible outer capacitance 1020 nF

Sensor connections
(a22...a29, b22...b29, c22...c29)

in type of protection Intrinsic Safety EEx ib IIB
only for the connection of associated sensors
type POA/... und OCL/... according to
TÜV 03 ATEX 2262

Maximum values per circuit: $U_o = 10.5 \text{ V}$
 $I_o = 640 \text{ mA}$

Characteristic line: rectangular

max. permissible outer inductance 0.12 mH

max. permissible outer capacitance 4.8 μF

The intrinsically safe circuits are safely galvanically separated from all other circuits up to a peak value of the nominal voltage of 375 V.

All other data apply unchanged for this supplement.

Test documents are listed in the test report N° 04 YEX 551173.

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Hannover, 2004-01-26



Head of the
Certification Body

Translation
2. SUPPLEMENT to

EC-TYPE EXAMINATION CERTIFICATE No. TÜV 00 ATEX 1572

Equipment: Measuring transducer OCM-Pro aktiv type OCP-x2xx xx x3 E xx and
Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx

Manufacturer: NIVUS GmbH

Address: Im Täle 2
75031 Eppingen

In the future, the measuring transducer type OCP/... may also be manufactured according to the test documents listed in the test report.

The changes refer to the electrical data and the protection level of the circuit „Analogous sensor connection“, the execution of the OCM Pro Backplane and the type designation of the measuring transducer.

In the future, this reads: Measuring transducer OCM-Pro aktiv/CF type OCP-xxxx xx xx E xx .

The type designations according to this 2. supplement to EC-Type Examination Certificate TÜV 00 ATEX 1572 read as follows:

„Version 2“: Measuring transducer OCM-Pro aktiv type OCP-x2xx xx x3 E xx

„Version 3“: Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx

Electrical data

**Measuring transducer OCM-Pro aktiv type OCP-x2xx xx x3 E xx and
Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx**

Supply circuit (Terminals a1 [L1], a2 [N], a3 [PE] resp. b2 [+], b3 [GND])	U = 90 ... 250 V a. c., 20 VA or U = 18 ... 36 V d. c., 20 W resp. auxiliary voltage output of the a. c. version 24 V / 3 W
Contact circuits (Terminals a4...a8, b4...b8, c4...c8)	U = 250 V a. c., I = 6 A at $\cos \varphi = 0.9$
RS232 interface (Terminals a9...a11, b9...b11)	U = ± 10 V
CAN bus interface (Terminals c9...c11)	U = 5 V
Digital inputs 1 to 4 (Terminals a12...a14, b12...b14)	U = 24 V d. c., I = 12 mA

Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx

Auxiliary voltage output $U = 18 \dots 36 \text{ V d. c.}, 3 \text{ W}$
 24 V / 3 W
 (Terminals a14, b15)

Analogous inputs 1 to 4 $U = 12 \text{ V d. c.}, I = 55 \text{ mA}$
 (Measuring transducer OCM-Pro aktiv type OCP-x2xx xx x3 E xx:
 Terminals a15...a17, b15...b17;
 Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx:
 Terminals a16...a18, b16...b18)

Analogous outputs 1 to 4 Current output 0 ... 30 mA
 (Measuring transducer OCM-Pro aktiv type OCP-x2xx xx x3 E xx:
 Terminals a18...a20, b18...b20;
 Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx:
 Terminals a19...a21, b19...b21)

**Measuring transducer OCM-Pro aktiv type OCP-x2xx xx x3 E xx and
 Measuring transducer OCM-Pro CF type OCP-x3W0 xx x3 E xx**

Analogous sensor connection in type of protection "Intrinsic Safety" EEx ib IIB
 (OCM-Pro aktiv: Terminals a21, b21, c21; only for connection to certified sensors
 OCM-Pro CF: Terminals D8, D9) Maximum values:
 $U_o = 25.2 \text{ V}$
 $I_o = 90 \text{ mA}$
 Characteristic line: linear

max. permissible external inductance	2 mH	1 mH	0.5 mH	0.2 mH
max. permissible external capacitance	380 nF	430 nF	510 nF	660 nF

Sensor connections in type of protection "Intrinsic Safety" EEx ib IIB
 (OCM-Pro aktiv: only for connection to the belonging sensors
 Terminals a22...a29, b22...b29, type POA/... and OCL/... according to
 c22...c29; TÜV 03 ATEX 2262
 OCM-Pro CF: Maximum values per circuit:
 Terminals D1 ... D5, E1 ... E5, $U_o = 10.5 \text{ V}$
 F1 ... F5, G1 ... G5) $I_o = 640 \text{ mA}$
 Characteristic line: rectangular
 max. permissible external inductance: 0.12 mH
 max. permissible external capacitance: 4.8 μF

The intrinsically safe circuits are safely galvanically separated from all other circuits up to a peak value of the voltage of 375 V.

All other data apply unchanged for this 2. supplement.

The equipment inclusive of these changes meets the requirements of the following standards:

EN 50 014:1997 +A1+A2

EN 50 020:2002

(16) The test documents are listed in the test report N° 05 YEX 552376.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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Hannover, 2005-12-01



**Head of the
Certification Body**

Translation

3. SUPPLEMENT

to Certificate No.	TÜV 00 ATEX 1572
Equipment:	Measuring transducer type OCP-x4W0xxx4Exx
Manufacturer:	NIVUS GmbH
Address:	Im Täle 2 75031 Eppingen, Germany
Order number:	8000555840
Date of issue:	2010-08-06

In the future, the measuring transducer according to the EC-Type Examination Certificate TÜV 00 ATEX 1572 is only manufactured as type OCP-x4W0xxx4Exx.

The changes refer to

- the pc boards for the power supply and the backplane,
- the assemblies for limitation of voltages and currents of the intrinsically safe circuits,
- data for the intrinsically safe RS485 interface and
- the application of new optoelectric couplers for a faster data transfer rate.

In the future, the electrical data for the measuring transducer are valid as listed below.

In the future, the marking of the measuring transducer reads as follows:

II (2) G [Ex ib] IIB

Electrical data

Supply circuit	U = 85 ... 264 V a. c., 31 VA
(Klemmen	U _m = 264 V a. c.
a1 [L1], a2 [N], a3 [PE] resp.	or
b2 [+], b3 [GND])	U _n = 24 V d. c. (9 ... 36 V d. c.), 34 W
	U _m = 36 V d. c.

For all other non intrinsically safe data circuits (not for the relay contacts and for the auxiliary voltage output), a maximum voltage for safety reasons of U_m = 30 V is valid.

Analogue sensor connection	in type of protection Intrinsic Safety Ex ib IIB
(Terminals D8, D9)	only for connection to certified sensors
	maximum values:
	U _o = 25.4 V
	I _o = 91 mA
	P _o = 577 mW
	characteristic line: linear
	effective internal capacitance: 14 nF
	The effective internal inductance is negligibly small.

max. permissible external inductance	10 mH	1 mH	0.5 mH	0.1 mH
max. permissible external capacitance	356 nF	406 nF	486 nF	796 nF

3. Supplement to Certificate No. TÜV 00 ATEX 1572

Sensor voltage supply in type of protection Intrinsic Safety Ex ib IIB
 (Terminals D3...5, E3...5, F3...5, G3...5) only for connection of the belonging sensors
 type POA-x1... and OCL-L0... as well as
 type POA-x2..., OCL-L1... and CS2-... according to
 EC-Type Examination Certificate TÜV 03 ATEX 2262
 maximum values per circuit:
 $U_o = 10.5 \text{ V}$
 $I_o = 640 \text{ mA}$
 $P_o = 6.72 \text{ W}$
 characteristic line: rectangular
 effective internal inductance: 3 μH
 effective internal capacitance: 2 μF

max. permissible external inductance	117 μH	97 μH	47 μH
max. permissible external capacitance	4.2 μF	4.9 μF	8 μF

Sensor communication interface
 RS485 in type of protection Intrinsic Safety Ex ib IIB
 (Terminals D1, D2; E1, E2; F1, F2; G1, G2) only for connection of the belonging sensors
 type POA-x1... and OCL-L0... as well as
 type POA-x2..., OCL-L1... and CS2-... according to
 EC-Type Examination Certificate TÜV 03 ATEX 2262
 maximum values per circuit:
 $U_o = 6.51 \text{ V}$
 $I_o = 167 \text{ mA}$
 $P_o = 272 \text{ mW}$
 characteristic line: linear
 The effective internal inductance and capacitance are negligibly small.

max. permissible external inductance	8 mH	2 mH	1 mH	0.5 mH
max. permissible external capacitance	4.5 μF	9 μF	11 μF	14 μF

$$U_i = 12.3 \text{ V}$$

$$I_i = 164 \text{ mA}$$

The maximum values of the tables are also allowed to be used up to the permissible limits as concentrated capacitances and as concentrated inductances.
 The intrinsically safe circuits are safely galvanically separated from the non intrinsically safe circuits up to the peak value of the voltage of 375 V.

All other details remain unchanged for the 3. supplement.

3. Supplement to Certificate No. TÜV 00 ATEX 1572

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2006

EN 60079-11:2007

(16) The test documents are listed in the test report No. 10 203 555840.

(17) Special conditions for safe use

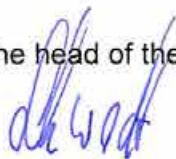
none

(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

A handwritten signature in blue ink, appearing to read "Schwedt".

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

Translation

4. SUPPLEMENT

to Certificate No.	TÜV 00 ATEX 1572
Equipment:	Measuring transducer OCM Pro CF front panel housing/wall housing type OCP-x4F0/x3W0/x4W0 xx x4 E xx (see below)
Manufacturer:	NIVUS GmbH
Address:	Im Täle 2 75031 Eppingen, Germany
Order number:	8000556184
Date of issue:	2011-03-02

In the future, the measuring transducer according to the EC-Type Examination Certificate TÜV 00 ATEX 1572 may be manufactured according to the documents listed in the test report.

The changes refer to the pc boards for the backplane.

In the future, the "Power mains adapter" built up on a plug-in board according to the 3. supplement to TÜV 00 ATEX 1572 may also be operated together with the backplane of the 2. and 3. generation certified in the 2. supplement.

Designation of the equipment:

Measuring transducer OCM Pro CF front panel housing (FP) type	OCP-x4F0 xx x4 E xx
Measuring transducer OCM Pro CF wall housing	type OCP-x3W0 xx x4 E xx
Measuring transducer OCM Pro CF wall housing	type OCP-x4W0 xx x4 E xx

In the future, the marking of the measuring transducer reads as follows:

II (2) G [Ex ib Gb] IIB

The „Electrical data“ for the intrinsically safe circuits are only valid as listed below:

Analogue sensor connection in type of protection Intrinsic Safety Ex ib IIB
(OCM Pro CF FP: Terminals b21, c21) only for connection to certified sensors
OCM Pro CF: Terminals D8, D9) maximum values:

$U_o = 25.4 \text{ V}$
 $I_o = 91 \text{ mA}$
 $P_o = 577 \text{ mW}$

characteristic line: linear

effective internal capacitance: 14 nF

The effective internal inductance is negligibly small.

max. permissible external inductance	10 mH	1 mH	0.5 mH	0.1 mH
max. permissible external capacitance	356 nF	406 nF	486 nF	796 nF

4. Supplement to Certificate No. TÜV 00 ATEX 1572

Sensor voltage supply in type of protection Intrinsic Safety Ex ib IIB
 (OCM Pro CF FP: only for connection of the belonging sensors
 Terminals a22, a25, a26; b22, b25, b26; type POA-x1... and OCL-L0... as well as
 c22, c25, c26 type POA-x2..., OCL-L1... and CS2-... according to
 OCM Pro CF: EC-Type Examination Certificate TÜV 03 ATEX 2262
 D3...5, E3...5, F3...5, G3...5 maximum values per circuit:
 Terminals D3...5, E3...5, F3...5, G3...5) $U_o = 10.5 \text{ V}$
 $I_o = 640 \text{ mA}$
 $P_o = 6.72 \text{ W}$
 characteristic line: rectangular
 effective internal inductance: 3 μH
 effective internal capacitance: 2 μF

max. permissible external inductance	117 μH	97 μH	47 μH
max. permissible external capacitance(cumulative value)	4.2 μF	4.9 μF	8 μF

Sensor communication interface
 RS485 in type of protection Intrinsic Safety Ex ib IIB
 (OCM Pro CF FT: only for connection of the belonging sensors
 Terminals a23, a24; b23, b24; c23, c24 type POA-x1... and OCL-L0... as well as
 OCM Pro CF: type POA-x2..., OCL-L1... and CS2-... according to
 Terminals D1, D2; E1, E2; F1, F2; G1, G2) EC-Type Examination Certificate TÜV 03 ATEX 2262
 maximum values per circuit:
 $U_o = 6.51 \text{ V}$
 $I_o = 167 \text{ mA}$
 $P_o = 272 \text{ mW}$
 characteristic line: linear
 The effective internal inductance and capacitance are negligibly small.

max. permissible external inductance	8 mH	2 mH	1 mH	0.5 mH
max. permissible external capacitance (cumulative value)	4.5 μF	9 μF	11 μF	14 μF

$$U_i = 12.3 \text{ V}$$

$$I_i = 164 \text{ mA}$$

The maximum values of the tables are also allowed to be used up to the permissible limits as concentrated capacitances and as concentrated inductances.
 The intrinsically safe circuits are safely galvanically separated from the non intrinsically safe circuits up to the peak value of the voltage of 375 V.

All other details remain unchanged for the 4. supplement.

4. Supplement to Certificate No. TÜV 00 ATEX 1572

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009

EN 60079-11:2007

(16) The test documents are listed in the test report No. 11 203 556184.

(17) Special conditions for safe use


none

(18) Essential Health and Safety Requirements

no additional ones

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The head of the certification body

A handwritten signature in blue ink, appearing to read "Schwedt". The signature is written in a cursive style with some loops and flourishes.

Schwedt

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