



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx VTT 15.0010X

Issue No: 4

Certificate history:

Issue No. 4 (2017-09-01)

Issue No. 3 (2017-06-29)

Issue No. 2 (2016-09-30)

Issue No. 1 (2015-09-21)

Issue No. 0 (2015-07-08)

Status: **Current**

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Date of Issue: **2017-09-01**

Applicant: **Metso Flow Control Oy**
Vanha Porvoontie 229
FI-01380 Vantaa
Finland

Equipment: **Intelligent Valve Controllers NDX ___ 0 and NDX ___ 2**

Optional accessory: *n/a*

Type of Protection: **Intrinsically safe**

Marking:

Ex ia IIC T6...T4 Ga

Ex ia IIIC T85 °C...T115 °C Da

Ex ib IIC T6...T4 Gb

EX ib IIIC T85 °C...T115 °C Db

Approved for issue on behalf of the IECEx
Certification Body:

Martti Siirola

Position:

Senior Expert

Signature:
(for printed version)

Date:

2017-09-01

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

VTT Expert Services Ltd.
Kivimiehentie 4, Espoo
P.O.Box 1001
FI-02044 VTT
Finland

VTT
VTT EXPERT SERVICES LTD



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Manufacturer: **Metso Flow Control**
Vanha Porvoontie 229
FI-01380 Vantaa
Finland

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

FI/VTT/ExTR15.0010/05

Quality Assessment Report:

NO/DNV/QAR09.0008/07



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

NDX valve positioners are intended for linear or rotary travel control valves. The NDX monitors valve position and controls the actuator of the device. NDX is connected to a control system (DCS) via 4 – 20 mA current loop which provides power supply to NDX and data communication between NDX and DCS utilizing HART communication protocol. The NDX includes floating 4 – 20 mA current transmitter/sink interface that can be used for indicating the valve position to the control system. Current loop for power supply and HART communication (mA loop) and current loop for Position Transmitter (PT loop) are separate I.S. circuits. NDX_ _-2 variant incorporates two current transmitter/sink interfaces complying with NAMUR standard.

The NDX produces pneumatic control signal for the actuator and monitors the pressure of air supply and actuator channel for diagnostic purposes. For valve position sensing, the NDX uses contactless measurement method based on sensing the direction of the magnetic field created by a target magnet on the valve shaft.

The NDX enclosures are made of cast aluminium and plastic (NDX_ _ _0) or cast aluminium entirely (NDX_ _ _2). LUI (Local User Interface) with LCD display and capacitive keypad is intended for controlling and monitoring valve and positioner operation locally. Prestage unit in the device converts the electronic control signal from the main board to pneumatic control signal for the actuator.

The maximum input values of mA and PT loop interfaces are:

$U_i \leq 28 \text{ V}$ $I_i \leq 120 \text{ mA}$ $P_i \leq 1 \text{ W}$ $C_i < 22 \text{ nF}$ $L_i < 100 \text{ }\mu\text{H}$

The maximum input values of NAMUR-DO1 and NAMUR-DO2 interfaces in NDX_ _ _2 are:

$U_i \leq 16 \text{ V}$ $I_i \leq 25 \text{ mA}$ $P_i \leq 100 \text{ mW}$ $C_i < 22 \text{ nF}$ $L_i < 100 \text{ }\mu\text{H}$

SPECIFIC CONDITIONS OF USE: YES as shown below:

The maximum allowed ambient temperature ranges according to different T Classes are:

Tamb -40 °C ... +50 °C for temperature class T6 (IIC) or T85 °C for dust (IIIC)

Tamb -40 °C ... +65 °C for temperature class T5 (IIC) or T100 °C for dust (IIIC)

Tamb -40 °C ... +80 °C for temperature class T4 (IIC) or T115 °C for dust (IIIC)

The permissible ambient temperature range depends on the used configuration.

Temperature Classes for dust are based on measurement w.r.t. total immersion to dust required for EPL Da equipment.

The ambient temperature range is marked on the identification plate. At an ambient temperature $\geq +70 \text{ }^{\circ}\text{C}$, the temperature rating of the connection cable shall be in accordance with maximum ambient temperature range.

For Equipment category 1G (EPL Ga), the enclosure parts or enclosures made of aluminium alloy shall not be subjected to friction or impacts due to spark ignition hazard.

The plastic cover in the NDX_ _ _0 enclosure shall be wiped with damp cloth only due to risk of electrostatic charging.

The safety valve controller shall be connected according to the manufacturer's instructions.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

I.S. component rating calculations updated to cover alternative types. I.S. description and other related documents reviewed accordingly.



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Additional information:

Product type nomenclatures:

NDX__0:

NDX	1	5	1	0		G	-	x	-			0	0	0	0	-	0	0	0	Y
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)

6.) Communication / Input signal range:

"H": HART / 4 – 20 mA

"T": HART / 4 – 20 mA and 4 – 20 mA + PT

"N": 4 - 20 mA (No HART)

"M": 4 - 20 mA + PT (No HART)

11.) Pneumatic connections & gauges: "0"/ "1"/ "2"/"3" (No relevance w.r.t. "ia" or "ib")

12.) Brand:

"N": Neles;

"S": StoneL

18-20.) Partner identification

21.) Special feature - shall not affect hazardous area approval

NDX__2:

NDX	2	5	1	2		G	-	X	N	0	N	0	0	0	0	-	0	0	0	Y
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)

6.) Communication / Input signal range:

"H": HART / 4 – 20 mA

"T": HART / 4 – 20 mA and 4 – 20 mA + PT

"N": 4 - 20 mA (No HART)

"M": 4 - 20 mA + PT (No HART)

"D": HART/ 4 - 20 mA + 2 x DO (Namur)

"L": HART / 4 – 20 mA + PT + DO (Namur)

11.) Pneumatic connections & gauges: "0"/ "1"/ "2"/"3" (No relevance w.r.t. "ia" or "ib")

18-20.) Partner identification

21.) Special feature - shall not affect hazardous area approval

User instruction document:

NDX Intelligent valve controller Quick Guide 7 NDX 70 en-6/2017