

ND7000 Series

Specifications

General

Loop powered, no external power supply required.
Suitable for rotary and linear valves.
Actuator connections in accordance with VDI/VDE 3845 and IEC 60534-6 standards.
Action: Double or single acting
Travel range: Linear; 10 to 120 mm
Rotary; 45 to 95°
Measurement range; 110° with freely rotating feed-back shaft

Environmental influence

Standard temperature range: -40 to 85°C
Arctic temperature range: -53 to 85°C
Influence of temperature on valve position: 0.5%/10°C
Influence of vibration on valve position:
Less than 1% under 2G 5 to 150 Hz
1G 150 to 300 Hz
0.5G 300 to 2000 Hz

Enclosure

| | ND7100 | ND7200 |
|----------------------------|---|--|
| Material | Anodised aluminum alloy and polymer composite | Anodised aluminum alloy and tempered glass |
| Protection class | IP66, NEMA 4X | |
| Air connection port | G1/4 | NPT1/4 |
| Electrical connection port | M20 x 1.5 | |
| Weight | 1.8 kg | 3.4 kg |

* Mechanical and digital position indicator visible through main cover.

Supply air

Supply pressure: 0.14 to 0.8 MPa
Effect of supply pressure on valve position:
Less than 0.1% at 10% difference in inlet pressure
Air quality : Acc. to ISO 8573-1
Solid particles : Class 5 (3 to 5 µm filtration is recommended)
Humidity : Class 1 (dew point 10°C below minimum temperature is recommended)
Oil class : 3 (or less than 1 ppm)
Capacity with 0.4 MPa supply:
93 L/min(ANR) (spool valve 2)
201 L/min(ANR) (spool valve 3)
634 L/min(ANR) (spool valve 6)
Consumption with 0.4 MPa supply in steady state position:
< 9.9 L/min(ANR) (spool valve 2 and 3)
< 17 L/min(ANR) (spool valve 6)

Electronics

HART
Supply power : Loop powered, 4 to 20 mA
Minimum signal : 3.6 mA
Current max : 120 mA
Load voltage : Up to 9.7 VDC/20 mA (corresponding 485 Ω)
Voltage : Max. 30 VDC
Polarity protection : -30 VDC
Over current protection: Active over 35 mA

Performance with moderate constant-load actuators

Dead band: ≤ 0.1% F.S.
Hysteresis: < 0.5% F.S.

Local User Interface (LUI) functions

- Local control of the valve
- Monitoring of valve position, target position, input signal, temperature, supply and actuator pressure difference
- Guided-startup function
- LUI may be locked remotely to prevent unauthorized access
- Calibration: Automatic/manual, manual linearization, One-point calibration
- Control configuration: Aggressive, fast, optimum, stable, maximum stability
- Configuration of the control valve
Rotation: Valve rotation clockwise or counter-clockwise to close
Dead Angle
Low cut-off, cut-off safety range (default 2%)
Positioner fail action, open/close
Signal direction: Direct/reverse acting
Actuator type, double/single acting
Valve type, rotary/linear
Language selection: English, German and French

Position transmitter (optional)

Output signal : 4 to 20 mA (galvanic isolation; 600 VDC)
Supply voltage : 12 to 30 VDC
Resolution : 16 bit/0.244 µA
Linearity : Less than 0.05% F.S.
Temperature effect: Less than 0.35% F.S.
External load : Max. 0 to 780 Ω
Max. 0 to 690 Ω for intrinsically safe

Specifications

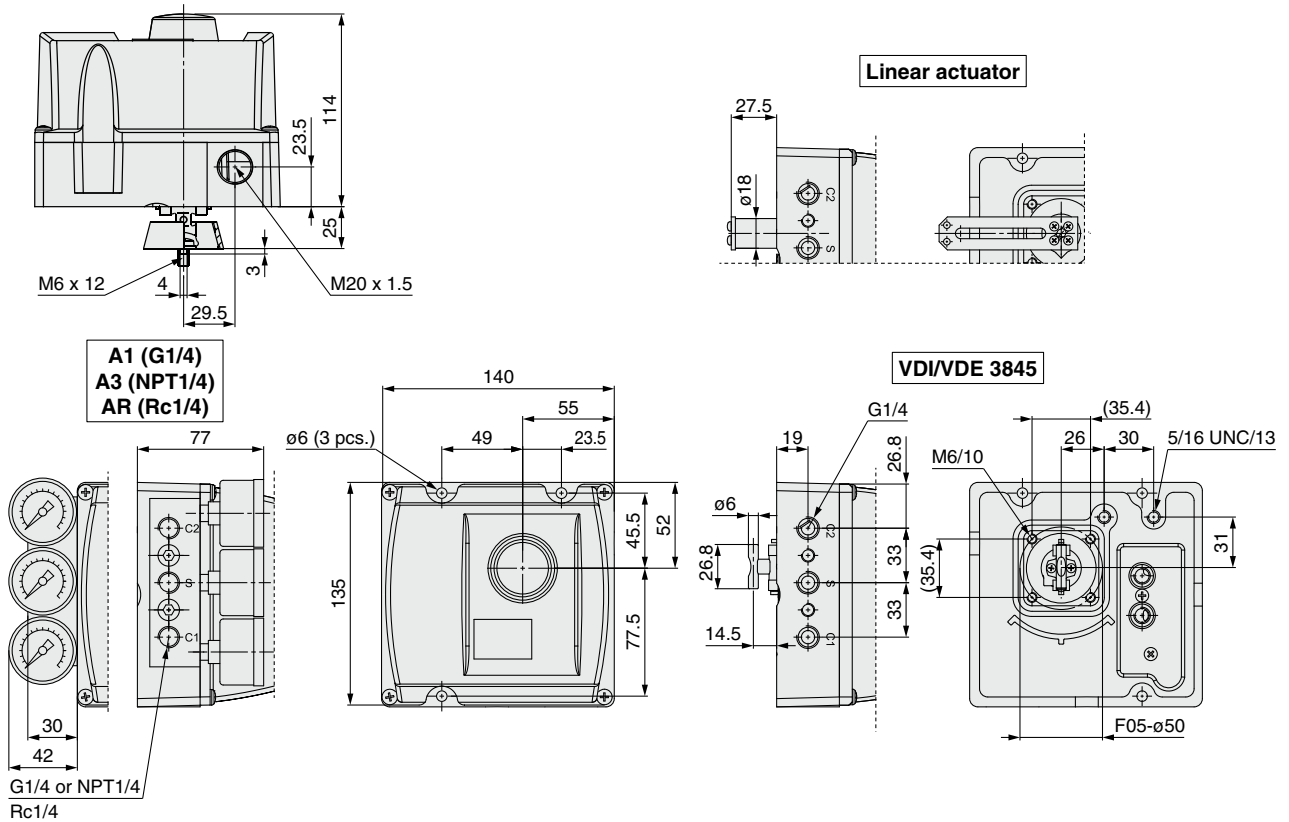
Approvals and Electrical Values, HART

| Certificate | Approval | Electrical values |
|--|--|---|
| ATEX | | |
| ND_X VTT 09 ATEX 033X VTT 09 ATEX 034X EN 60079-0: 2009/2012 EN 60079-11: 2012 EN 60079-26: 2007 EN 60079-31: 2008 | II 1G Ex ia IIC T6...T4 Ga II 1D Ex ta IIIC T90°C Da II 2 G Ex ib IIC T6...T4 Gb II 2 D Ex tb IIIC T90°C Db II 1G Ex ia IIC T6...T4 Ga | Input: $U_i \leq 28$ V, $I_i \leq 120$ mA, $P_i \leq 1$ W, $C_i \leq 22$ nF, $L_i \leq 53$ μ H Output: $U_o \leq 28$ V, $I_o \leq 120$ mA, $P_o \leq 1$ W, $C_o \leq 22$ nF, $L_o \leq 53$ μ H |
| EN 60079-0: 2009/2012 EN 60079-11: 2012 EN 60079-15: 2010 EN 60079-31: 2008 | II 3 G Ex nA IIC T6...T4 Gc II 3 D Ex tc IIIC T90°C Dc | Input: $U_i \leq 30$ V, $I_i \leq 152$ mA Output: $U_o \leq 30$ V, $I_o \leq 152$ mA |
| | II 3 G Ex ic IIC T6...T4 Gc II 3 D Ex tc IIIC T90°C Dc | Input: $U_i \leq 30$ V, $I_i \leq 152$ mA, P_{max} = device limits itself, $C_i \leq 22$ nF, $L_i \leq 53$ μ H Output: $U_o \leq 30$ V, $I_o \leq 152$ mA, P_{max} = device limits itself, $C_o \leq 22$ nF, $L_o \leq 53$ μ H |
| ND_E1 SIRA 11 ATEX 1006X EN 60079-0: 2009 EN 60079-1: 2007 EN 60079-31: 2009 | II 2 G Ex d IIC T6...T4 Gb II 2 D Ex tb IIIC T80°C...T105°C Db | Input: $U_i \leq 30$ V Output: $U_o \leq 30$ V, P_{max} = device limits itself |
| IECEX | | |
| ND_X IECEX VTT 10.0004X IECEX VTT 10.0005X IEC 60079-0: 2007/2011 IEC 60079-11: 2011 IEC 60079-26: 2006 IEC 60079-31: 2008 | Ex ia IIC T6...T4 Ga Ex ta IIIC T90°C Da Ex ib IIC T6...T4 Gb Ex tb IIIC T90°C Db | Input: $U_i \leq 28$ V, $I_i \leq 120$ mA, $P_i \leq 1$ W, $C_i \leq 22$ nF, $L_i \leq 53$ μ H Output: $U_o \leq 28$ V, $I_o \leq 120$ mA, $P_o \leq 1$ W, $C_o \leq 22$ nF, $L_o \leq 53$ μ H |
| IEC 60079-0: 2007/2011 IEC 60079-11: 2011 IEC 60079-15: 2010 IEC 60079-31: 2008 | Ex nA IIC T6...T4 Gc Ex tc IIIC T90°C Dc | Input: $U_i \leq 30$ V, $I_i \leq 152$ mA Output: $U_o \leq 30$ V, $I_o \leq 152$ mA |
| | Ex ic IIC T6...T4 Gc Ex tc IIIC T90°C Dc | Input: $U_i \leq 30$ V, $I_i \leq 152$ mA, P_{max} = device limits itself, $C_i \leq 22$ nF, $L_i \leq 53$ μ H Output: $U_o \leq 30$ V, $I_o \leq 152$ mA, P_{max} = device limits itself, $C_o \leq 22$ nF, $L_o \leq 53$ μ H |
| ND_E1 IECEX SIR 11.0001X IEC 60079-0: 2011 IEC 60079-1: 2007 IEC 60079-31: 2008 | Ex d IIC T6...T4 Gb Ex tb IIIC T80°C...T105°C Db | Input: $U_i \leq 30$ V Output: $U_o \leq 30$ V, P_{max} = device limits itself |
| INMETRO | | |
| ND_Z NCC 12.0793 X NCC 12.0794 X ABNT NBR IEC 60079-0: 2008 (2011) ABNT NBR IEC 60079-11: 2009 ABNT NBR IEC 60079-26: 2008 (2009) ABNT NBR IEC 60079-27: 2010 ABNT NBR IEC 60079-0: 2008 (2011) ABNT NBR IEC 60079-11: 2009 IEC 60079-15: 2010 ABNT NBR IEC 60079-27: 2010 ABNT NBR IEC 60529: 2009 | Ex ia IIC T4/T5/T6 Ga Ex ia IIC T4/T5/T6 Gb | Input: $U_i \leq 28$ V, $I_i \leq 120$ mA, $P_i \leq 1$ W, $C_i \leq 22$ nF, $L_i \leq 53$ μ H Output: $U_o \leq 28$ V, $I_o \leq 120$ mA, $P_o \leq 1$ W, $C_o \leq 22$ nF, $L_o \leq 53$ μ H |
| | Ex nA IIC T4/T5/T6 Gc | Input: $U_i \leq 30$ V, $I_i \leq 152$ mA Output: $U_o \leq 30$ V, $I_o \leq 152$ mA |
| | Ex ic IIC T4/T5/T6 Gc | Input: $U_i \leq 30$ V, $I_i \leq 152$ mA, P_{max} = device limits itself, $C_i \leq 22$ nF, $L_i \leq 53$ μ H Output: $U_o \leq 30$ V, $I_o \leq 152$ mA, P_{max} = device limits itself, $C_o \leq 22$ nF, $L_o \leq 53$ μ H |
| ND_E5 NCC 12.0795 X ABNT NBR IEC 60079-0: 2008 (2011) ABNT NBR IEC 60079-1: 2009 (2011) ABNT NBR IEC 60079-31: 2011 ABNT NBR IEC 60529: 2009 | Ex d IIC T4/T5/T6 Gb Ex tb IIIC T100°C Db IP66 | Input: $U_i \leq 30$ V Output: $U_o \leq 30$ V, P_{max} = device limits itself |
| Japanese Ex-d Certification | | |
| ND_E4 | II 2 G Ex d IIC T6 Gb II 2 D Ex tb IIIC T80°C Db | Input: $U_i \leq 30$ V Output: $U_o \leq 30$ V, P_{max} = device limits itself |

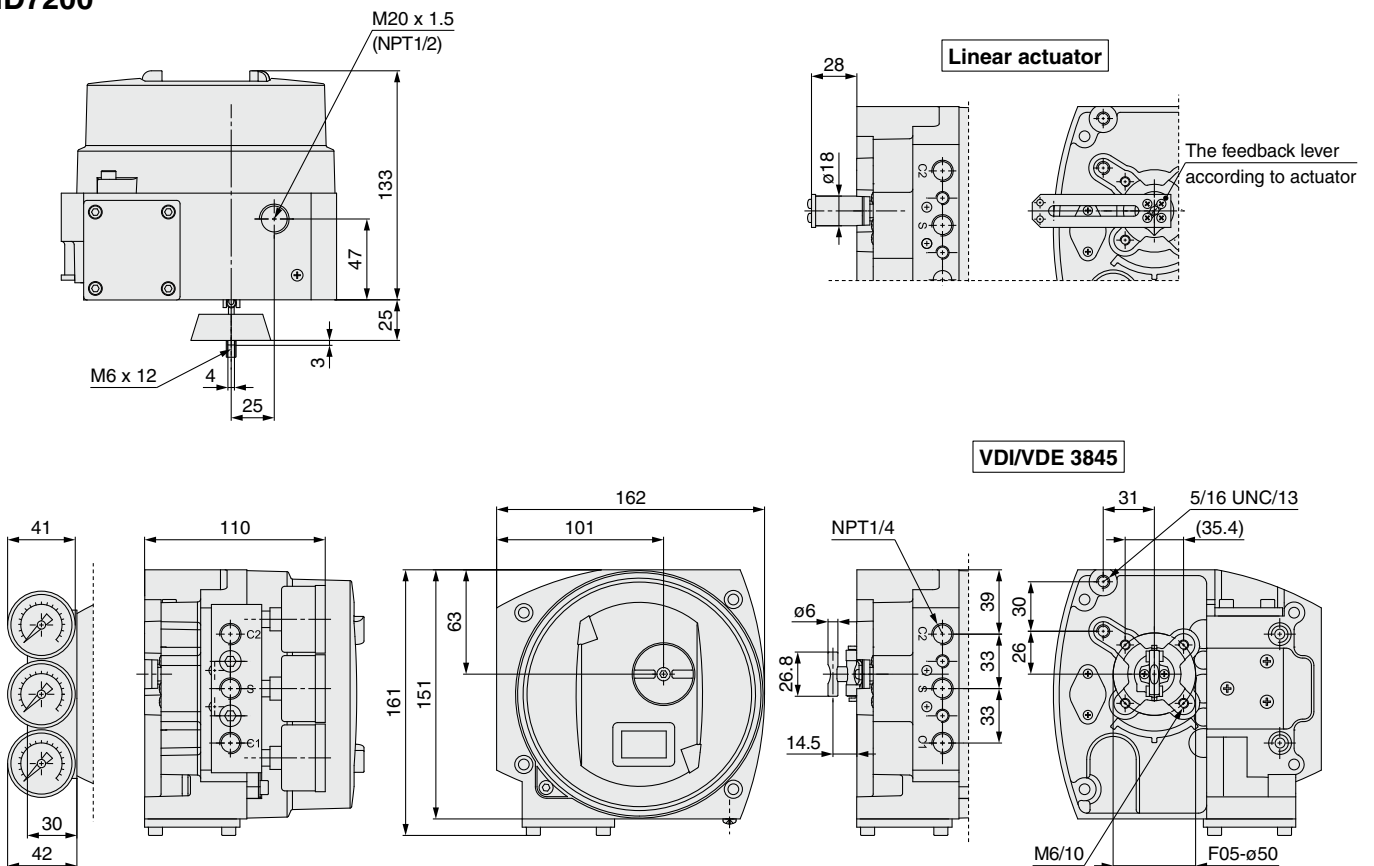
ND7000 Series

Dimensions

ND7100



ND7200





How to Order

ND7 1 03 H X T V02 /K05 -CG5-AR

Digital Valve Controller

① ② ③ ④ ⑤ ⑥ ⑦

⑧ Branded Model for SMC

⑨ Additional Accessories*1
(Refer to page 7 for details.)

② Series Code

Series 7000 digital valve controller with universal shaft and attachment face according to standard VDI/VDE 3845.

③ Enclosure

| | |
|---|---|
| 1 | Standard IP66/NEMA 4X enclosure. |
| 2 | Flameproof (Ex d) IP66/NEMA 4X enclosure. |

*1 The part numbers of ⑨ additional accessories are not included on the product name plate.

⑤ Communication/Input Signal Range

4 to 20 mA, HART communication. Supply voltage 30 VDC.
Load voltage: Up to 9.7 VDC at 20 mA corresponding to 485 Ω (maximum voltage drop).

④ Spool Valve

| | Spool Valve | Pneumatic Connections (S, C1, C2) |
|----|--|-----------------------------------|
| 02 | Low capacity. Stroke volume of actuator < 1 L. | G1/4 (ND7100) NPT1/4 (ND7200) |
| 03 | Medium capacity. Stroke volume of actuator 1 to 3 L. | G1/4 (ND7100) NPT1/4 (ND7200) |
| 06 | High capacity. Stroke volume of actuator > 3 L. | G1/4 (ND7100) NPT1/4 (ND7200) |

⑥ Approvals for Hazardous Areas

| | | | |
|-----------|--|-----------|--|
| N | No approvals for hazardous areas. M20 x 1.5 conduit entry. Temperature range: -40 to 85°C. Not applicable to ③ sign "2". | E1 | ATEX and IECEx certifications: II 2 G Ex d IIC T6...T4 Gb II 2 D Ex tb IIIC T80°C...T105°C Db Temperature range: T4: -40 to 85°C T5: < 75°C T6: < 60°C Not applicable to ③ sign "1". M20 x 1.5 conduit entry. |
| N7 | N7 No approvals for hazardous areas. Like N, but this is with Russian language machine plate. Not applicable to ③ sign "2". | | |
| X | ATEX and IECEx certifications: II 1 G Ex ia IIC T6...T4 Ga II 1 D Ex ta IIIC T90°C Da II 2 G Ex ib IIC T6...T4 Gb II 2 D Ex tb IIIC T90°C Db Temperature range: T4: -40 to 80°C T5: < 65°C T6: < 50°C | E4 | Japanese Ex-d certification: II 2 G Ex d IIC T6 Gb II 2 D Ex tb IIIC T80°C Db Temperature range: T6: < 60°C Not applicable to ③ sign "1". A cable gland approved by IECEx is required. Select an appropriate cable gland from additional accessories for positioners (accessory CG43 or CG44). CG43: NPT1/2 conduit entry and cable entry adapter CG44: G1/2 conduit entry and cable entry adapter |
| | II 3 G Ex nA IIC T6...T4 Gc II 3 D Ex tc IIIC T90°C Dc II 3 G Ex ic IIC T6...T4 Gc II 3 D Ex tc IIIC T90°C Dc Temperature range: T4: -40 to 85°C T5: < 75°C T6: < 60°C M20 x 1.5 conduit entry. | | |
| X7 | ATEX and IECEx certifications: Like X, but this is with Russian language machine plate. Check details of marking from X | E5 | INMETRO certifications: Ex d IIC T4/T5/T6 Gb Ex tb IIIC T100°C Db IP66 Temperature range: T4: -40 to 85°C T5: < 75°C T6: < 60°C Not applicable to ③ sign "1". M20 x 1.5 conduit entry. |
| Z | INMETRO certifications: Ex ia IIC T4/T5/T6 Ga Ex ia IIC T4/T5/T6 Gb Ex nA IIC T4/T5/T6 Gc Ex ic IIC T4/T5/T6 Gc M20 x 1.5 conduit entry. Not applicable to ③ sign "2". | E7 | ATEX and IECEx certifications: Like E1, but this is with Russian language machine plate. Check details of marking from E1 |

⑦ Options of Valve Controller

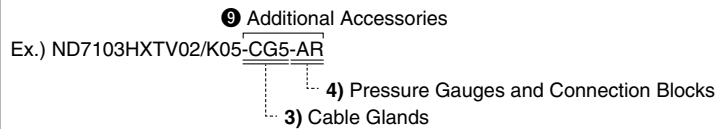
| | | | |
|------------|---|----------|---|
| Nil | None | R | Remote mounting Applicable to ③ sign "1" only. Applicable to ⑥ sign "N" and "N7". * Not applicable to limit switch. Requires always external position measurement. For rotary actuator see accessories type code. Output values for: HART Uo (Voc) = 3.53 V, Io (Isc) = 12.6 mA, Po = 11.1 mW, Co (Ca) = 10 nF, Lo (La) = 10 μH |
| T | Internal 2-wire (passive) position transmitter. Analog position feedback signal, output 4 to 20 mA, supply voltage 12 to 30 VDC, external load resistance 0 to 780 Ω. ND7_HXT, ND7_HZT: II 1 G Ex ia IIC T6...T4 Ga II 1 D Ex ta IIIC T90°C Da II 2 G Ex ib IIC T6...T4 Gb II 2 D Ex tb IIIC T90°C Db Ui ≤ 28 V, Ii ≤ 120 mA, Pi ≤ 1 W, Ci ≤ 22 nF, Li ≤ 53 μH, external load resistance 0 to 690 Ω. ND7_HXT, ND7_HZT: II 3 G Ex nA IIC T6...T4 Gc II 3 D Ex tc IIIC T90°C Dc Ui ≤ 30V, Ii ≤ 152 mA II 3 G Ex ic IIC T6...T4 Gc II 3 D Ex tc IIIC T90°C Dc Ui ≤ 30 V, Ii ≤ 152 mA, Pmax = device limits itself, Ci ≤ 22 nF, Li ≤ 53 μH, external load resistance 0 to 780 Ω. | | |
| | | C | Arctic temperature option. Temperature range: -53 to 85 °C Applicable to ③ sign "2". Applicable to ⑥ sign "X", "X7", "E1" and "E7". * Limit switch may limit the temperature range |

⑧ Limit Switch Type

| | |
|-------------|--|
| Nil | None |
| /I02 | P+F; NJ2-12GK-SN, 2-wire type, DC; > 3 mA; < 1 mA, NAMUR NC Temperature range: -40 to 85°C Not applicable to ⑥ sign "E4". Usable up to SIL3 acc. to IEC61508 * In safety-related applications the sensor must be operated with a qualified fail safe interface, such as P+F KFD2-SH-EX1. |
| /I41 | P+F; NJ4-12GK-SN, 2-wire type, DC; > 3 mA; < 1 mA, NAMUR NC Temperature range: -50 to 85°C Applicable to ⑥ sign "N", "N7", "X", "X7", "E1" and "E7". * That device may limit temperature range. |
| /K05 | Omron D2VW-5, 3 A to 250 VAC, 0.4 A to 125 VDC, 5 A to 30 VDC. Temperature range: -40 to 85°C Not applicable to ⑥ sign "X", "X7", "Z" and "E4". |

ND7000 Series

Additional accessory symbol: When more than one accessory is required, indicate in ascending numerical order from 1) to 8).



*1 The part numbers of ⑨ additional accessories are not included on the product name plate.

⑨ Additional Accessories

1) Filter Regulator

| Nil | None |
|------|---|
| -KS | Filter regulator for supply air Nominal filtration rating 5 μm Pressure gauge, scale bar, psi, kPa, kg/cm ² , basic material: brass, nickel plated, housing stainless steel, glycerine filled Temperature range -40 to 82°C KS option includes a thread nipple NPT1/4" to NPT1/4" between filter regulator and positioner which is suitable with ND7100 and ND7200 positioner options A3 and A5 (NPT1/4 air connection). Supply air connector in the filter regulator is female 1/4". |
| -K1S | Filter regulator for supply air Nominal filtration rating 5 μm Pressure gauge, scale bar, psi, kPa, kg/cm ² , basic material: brass, nickel plated, housing stainless steel, glycerine filled Temperature range -40 to 82°C K1S option includes a thread nipple NPT1/4" to G1/4" between filter regulator and positioner which is suitable with ND7100 positioner and with option A1 (G1/4 air connection). Supply air connector in the filter regulator is female 1/4". |

2) Conduit Entry Nipples

| Nil | None |
|-------|---|
| -CE07 | NPT1/2 conduit entry nipples M20 x 1.5/NPT1/2 (ND7100) |
| -CE08 | R1/2 (PF1/2) conduit entry nipples M20 x 1.5/R1/2 (ND7100) |
| -CE09 | NPT1/2 conduit entry nipples Brass M20 x 1.5/NPT1/2, Exd approved (ND7200) Not applicable to ⑥ sign "E4". |

3) Cable Glands

Not to be used together with conduit entry nipples (CE_) or connection plugs (P_).

| Nil | None |
|-------|--|
| -CG5 | M20 x 1.5 grey/plastic, IP66 (Not applicable to ③ sign "2".) |
| -CG6 | M20 x 1.5 blue/plastic, IP66, Ex e (Not applicable to ③ sign "2".) |
| -CG43 | Conduit entry and cable entry adapter for ND7200 M20 (male thread)/NPT1/2 (female thread) SS Ex d II C Ex db II C Gb, IP66 |
| -CG44 | Conduit entry and cable entry adapter for ND7200 M20 (male thread)/G1/2 (female thread) SS Ex d II C Ex db II C Gb, IP66 |

4) Pressure Gauges and Connection Blocks

| Nil | None |
|--------|---|
| -A1*1 | Pressure gauges, scale 0-12 bar, psi, kPa, kg/cm ² , basic material: brass, nickel plated, housing stainless steel, oil filled Temperature range: -40 to 85°C/-40 to 185°F Pneumatic connection block, material: AISiMg, anodized grey, connections G1/4 (S, C1, C2), only for ND7100. |
| -A1B*1 | Same as A1 but includes two pressure gauges with G1/4 (S, C2) connections Only for use with the single-acting type, only for ND7100. |
| -A3*1 | Pressure gauges, scale 0-12 bar, psi, kPa, kg/cm ² , Basic material: brass, nickel plated, housing stainless steel, oil filled Temperature range: -40 to 85°C/-40 to 185°F Pneumatic connection block, material: AISiMg, anodized grey, connections NPT1/4 (S, C1, C2), also converts ND71_ connections to NPT1/4 |
| -A3B*1 | Same as A3 but includes two pressure gauges with NPT1/4 (S, C2) connections, also converts ND71_ connections to NPT1/4 Only for use with the single-acting type. |
| -A5 | Pneumatic connection block, converts ND71_ connections to NPT1/4 Material: AISiMg, anodized grey Connections NPT1/4 (S, C1, C2), only for ND7100. |
| -D3*1 | Non oil filled, dry pressure gauges, scale 0-12 bar, psi, kPa, kg/cm ² , Basic material: brass, nickel plated, housing stainless steel Temperature range: -40 to 85°C/-40 to 185°F Pneumatic connection block, material: AISiMg, anodized grey, connections NPT1/4 (S, C1, C2), also converts ND71_ connections to NPT1/4 |
| -D3B*1 | Same as D3 but includes two pressure gauges with NPT1/4 (S, C2) connections, also converts ND71_ connections to NPT1/4 Only for use with the single-acting type. |
| -AR | Pressure gauges, scale 0.1-1.2 MPa, basic material: brass, nickel plated, housing stainless, glycerin filled Temperature range: -50 to 85°C/-67 to 185°F Pneumatic connection block, material: AISiMg, connections Rc1/4 (S, C1, C2) |
| -ARB | Same as AR but includes two pressure gauges with Rc1/4 (S, C2) connections Only for use with the single-acting type. |

*1 Under the New Measurement Law, products for overseas use only (SI unit type for use in Japan)

5) Connection Plugs

Not to be used together with conduit entry nipples (CE_) or cable glands (CG_).

| | |
|-------------|---|
| Nil | None |
| -P1H | ND7100 (HART): Connection plug according to M20 x 1.5/DIN 43650A (ISO 4400) Not applicable to 6 sign "X" and "X7". |

6) Driver Sets (Connection Fitting)

Driver sets including the needed parts when assembling ND7000 on rotary actuators with VDI/VDE 3845 attachment face or Neles standard mounting faces. Select the correct driver set according to the actuator and the pneumatic connections of valve controller or gauge block when applicable.

* Earlier the DS04 was delivered with bareshaft positioners as default. This practice is no longer valid, the needed driver set must be ordered as an accessory.

| | |
|--------------|--|
| Nil | None |
| -DS01 | Driver set for ND7100 on actuators with VDI/VDE3845 attachment face Set includes the G1/4 plug for single acting actuators. The driver set should also be applied with all ND7/9 with gauge blocks A1, A1B, A2 or A6. |
| -DS02 | Driver set for ND7200 on actuators with VDI/VDE 3845 attachment face Set includes the NPT1/4 plug for single acting actuators. The driver set should also be applied with all ND with gauge blocks A3, A3B, A5, A7 or A10. |
| -DS04 | General driver set for ND7100/7200 on actuators with VDI/VDE 3845, actuators of Neles E Series, or actuators with Neles standard attachment face (e.g. when replacing NE7/NP7 or ND800 with S2 shaft). Earlier default driver set. The set includes the NPT1/8, NPT1/4, and G1/4 plugs needed when used with a single acting actuator or flush mounted on an E Series actuator. |

7) 3rd Party Mounting Sets

Mounting sets between the ND7000 valve controllers and linear actuators, including bracket and ball joint based feedback system.

* Sets are including the pneumatic plugs needed when used with single acting actuators.
All available mounting sets listed in http://www2.stonel.com/utilities/metso/mkdbase_open.htm

| | |
|--------------|---|
| Nil | None |
| -MS01 | Mounting set for linear actuators, attachment face according to IEC 60534-6, stroke length 10 to 55 mm |
| -MS02 | Mounting set for linear actuators, attachment face according to IEC 60534-6, stroke length 55 to 120 mm |
| -MS03 | Mounting set for Masoneilan 87/88 actuators, sizes 6 to 23 Stroke length 12 to 64 mm |

8) Remote Mounting Accessories

| | |
|--------------|--|
| Nil | |
| -RR01 | ND remote mount rotary sensor QNCOK05HDM |
| -RR02 | ND remote mount rotary sensor QNCAK05HDM |
| -RC01 | Cable assembly remote mount sensor cable 1.2 m, straight connector |
| -RC02 | Cable assembly remote mount sensor cable 3.0 m, angle connector |
| -RC03 | Cable assembly remote mount sensor cable 30 m, angle connector |

ND7000 Series

Countries and Regions Where ND7000 Series Products are Available

Countries Where Products are Available

ND7000 series products are only available in the countries and regions listed below. For details, contact your nearest sales branch.



Europe



1 Austria
SMC Austria GmbH
 Girakstrasse 8, AT-2100 Korneuburg, Austria
 URL <http://www.smc.at>



2 Belgium
SMC Belgium N.V./S.A
 Temesselei 232, 2160 Wommelgem, Belgium
 URL <http://www.smc-pneumatics.be>



3 Finland
SMC Automation Oy
 PB72, 02231, Espoo, Finland
 URL <http://www.smc.fi>



4 Germany
SMC Deutschland GmbH
 Boschring 13-15, 63329 Egelsbach, Germany
 URL <http://www.smc.de>



5 Italy
SMC Italia S.p.A.
 Via delle Donne Lavoratrici, 20861 Brugherio (MB)
 URL <http://www.smcitalia.it>



6 Netherlands
SMC Nederland B.V.
 De Ruyterkade 120, NL-1011 AB Amsterdam, the Netherlands
 URL <http://www.smc.nl>



7 Russia
SMC Pneumatik LLC
 Business center, building 3, 15 Kondratjevskij prospect, St.Petersburg, Russia, 195197
 URL <http://www.smc-pneumatik.ru/>



8 Spain
SMC España SA
 Zuazobidea 14, 01015 Vitoria, Spain
 URL <http://www.smc.eu>



9 Sweden
SMC Automation AB
 Ekhagsvägen 29-31, SE-141 71 Segeltorp, Sweden
 URL <http://www.smc.nu>



10 U.K.
SMC Pneumatics (U.K.) Ltd.
 Vincent Avenue, Crownhill, Milton Keynes, Buckinghamshire MK8 0AN, United Kingdom
 URL <http://www.smc-pneumatics.co.uk/>



11 Brazil
SMC Automação do Brasil Ltda.
 Av. Piraporinha, 777 Barro Planalto, São Bernardo do Campo São Paulo, Brazil
 URL <http://www.smcbr.com.br>



12 Chile
SMC Corporation (Chile), S.A.
 Av. La Montana, #1115 P. Norte km. 16.5 Parque Industrial Valle Grande, Lampa, Santiago, Chile
 URL <http://www.smcchile.cl>



13 Mexico
SMC Corporation (Mexico), S.A. de C.V.
 Carr. Silao-Trejo K.M. 2.5 S/N Predio San Jose del Durazno C.P. 36100, Silao, Gto. Mexico
 URL <http://www.smc.com.mx>



14 Peru
SMC Corporation Peru S.A.C.
 AV.Argentina 2078 -Lima-Lima-Peru.
 URL <http://www.smcperu.com>



15 Australia
SMC Corporation (Australia) Pty Ltd
 14-18 Hudson Avenue, Castle Hill, Sydney, New South Wales 2154, Australia
 URL <http://www.smcworld.com/en-jp/>



16 China <Beijing / Shanghai Area>
SMC (China) Co., Ltd.
 A2, XingSheng Street, BDA, Beijing, 100176 P.R. China
 URL <http://www.smc.com.cn>



17 China <Guangzhou Area>
SMC Automation (Guangzhou) Ltd.
 2, Dongming Road 3, Science Park Guangzhou Hi-Tech Industrial Development Zone, Guangzhou, P.R.China
 URL <http://www.smcgz.com.cn>



18 India
SMC Corporation (India) Pvt. Ltd.
 A-4, Sector-88, Noida-201 305 India
 URL <http://www.smc.in>



19 Japan
SMC Corporation
 Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo, Japan
 URL <https://www.smcworld.com>



20 New Zealand
SMC Corporation (NZ) Limited
 5 Pacific Rise Mt Wellington Auckland 1060, New Zealand (P O Box 62-226, Sylvia Park, Auckland, 1644)
 URL <http://www.smcworld.com/en-jp/>



21 Taiwan
SMC Automation (Taiwan) Co., Ltd.
 No.16, Lane 205, Nansan Rd., Sec.2, Luzhu-Dist. Taoyuan-City, Taiwan
 URL <http://www.smc.com.tw>





22 Thailand
SMC Thailand Ltd.
 134/6 Moo 5, Tiwanon Road, Bangkadi Amphur, Muang, Patumthani 12000, Thailand
 URL <http://www.smcthai.co.th>

* The names of countries listed in each area are alphabetically indexed.
 As of September 2019

ND7000 Series

Comparison of Specifications

| Model | | ND7000 Series | ND9000 Series |
|--|--|---|--|
| Product name | | Digital Valve Controller | Intelligent Valve Controller |
| Item | |  |  Refer to the Web Catalog for details. |
| Input current | | 4 to 20 mA DC | |
| Min. operating current | | 3.6 mA DC | |
| Supply pressure | | 0.14 to 0.8 MPa | |
| Valve type (Standard stroke) | Linear | 10 to 120 mm | 10 to 120 mm |
| | Rotary | 45 to 95° | 45 to 95° |
| Actuator type | Single acting | Can be used for both types | Can be used for both types |
| | Double acting | Can be used for both types | Can be used for both types |
| Stroke/Opening feedback type | | Mechanical joint | |
| Performance | Hysteresis | < 0.5% F.S. | |
| | Dead band | ≤ ±0.1% F.S. | |
| | Coefficient of temperature | ≤ 0.5% F.S./10°C | |
| | Output flow (Supply pressure: 0.4 MPa) | 93 L/min (ANR) (Spool valve 02) | |
| | | 201 L/min (ANR) (Spool valve 03) | |
| | | 634 L/min (ANR) (Spool valve 06) | |
| | Air consumption (Supply pressure: 0.4 MPa) | < 9.9 L/min (ANR) (Spool valves 02 and 03) | |
| < 17 L/min (ANR) (Spool valve 06) | | | |
| Ambient and fluid temperatures | | -40 to 85°C | |
| Exterior covering enclosure | | IP66, NEMA 4X | |
| Low-temperature specification | | ○ (-53 to 85°C) | ○ (-53 to 85°C) |
| Safety integrity level (IEC 61580) | SIL | SIL 2 | SIL 2 |
| Explosion proof construction (Option) | Intrinsically safe explosion-proof | ○ | ○ |
| | Explosion-proof | ○ | ○ |
| Transmission | HART | ● | ● |
| | Profibus PA | — | ○ |
| | FOUNDATION fieldbus | — | ○ |
| Limit switch | | ○ | ○ |
| Position transmitter (in HART only) | | ○ | ○ |
| Remote type | | ○ | ○ |
| Self-diagnostics | | ● | ● (Advanced) |
| Fail safe (fully closed/fully open) | | ● | ● |
| Corrosion resistant | Stainless steel enclosure | — | ● (ND93 series) |
| | Stainless steel body/ Polymer composite cover | — | ● (ND94 series) |
| Air connection port | Rc1/4 female thread | ○ (Adapter) | ○ (Adapter) |
| | NPT1/4 female thread | ● (ND72 series) | ● (ND92, ND93, ND94 series) |
| | G1/4 female thread | ● (ND71 series) | ● (ND91 series) |
| Electrical connection port | M20 female thread | ● | ● |
| | NPT1/2 female thread | ○ (In compliance with explosion-proof specifications) | ○ (In compliance with explosion-proof specifications) |
| | G1/2 female thread | ○ (In compliance with explosion-proof specifications) | ○ (In compliance with explosion-proof specifications) |
| Weight | | 1.8 kg Standard/Intrinsically safe explosion-proof (ND71 series) 3.4 kg Flameproof (ND72 series) | 1.8 kg Standard/Intrinsically safe explosion-proof (ND91 series) 3.4 kg Flameproof (ND92 series) 8.6 kg Stainless steel enclosure (ND93 series) 5.6 kg Stainless steel body/Polymer composite cover (ND94 series) |

●: Standard ○: Option