Dynisco SPX 4-Series

Description

The Dynisco SPX 4-Series is a smart 4-20mA pressure transmitter designed for use in hazardous locations and are available with a variety of different process and electrical connections.

These amplified transmitters eliminate the need for external signal conditioning. All models can interface directly with distributed control systems, PLC’s, computers, and similar high level control devices. Optional thermocouple or RTD configurations are available to provide melt temperature.

Features

- 4-20mA loop-powered output
- +/- 0.25% accuracy available
- Wide selection of pressure ranges available
- Turndown 6:1
- Configurations available for use in hazardous locations
- Remotely configurable via HART
- Precise, repeatable pressure measurements
- Output supplied directly to DSC or PLC
- Meets CE requirements
- CE ATEX Intrinsically Safe Approved
- IECEx Intrinsically Safe
- SIL 2 Certified (pressure output)
- PL’c’ Certified (relay output)
- Additional approvals are available
# Performance Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output</strong></td>
<td>4 - 20 mA, with optional HART™</td>
</tr>
<tr>
<td><strong>Input Voltage</strong></td>
<td>16 - 36 Vdc (Std); 16 - 30 Vdc (ATEX IS)</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>4222 ± 0.25% for pressure ranges &gt;1,500 psi; ± 0.50% for pressure ranges &lt; 1,500 psi</td>
</tr>
<tr>
<td></td>
<td>4232 ± 0.25% for pressure ranges ≥1,500 psi; ± 0.50% for pressure ranges &lt; 1,500 psi</td>
</tr>
<tr>
<td></td>
<td>4352 ± 0.25% for pressure ranges ≥1,500 psi; ± 0.50% for pressure ranges &lt; 1,500 psi</td>
</tr>
<tr>
<td></td>
<td>4502 ± 0.50%</td>
</tr>
<tr>
<td></td>
<td>4622 ± 0.50%</td>
</tr>
<tr>
<td></td>
<td>4672 ± 0.50%</td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>±0.1%</td>
</tr>
<tr>
<td><strong>Rangeability</strong></td>
<td>6:1 Turndown</td>
</tr>
<tr>
<td><strong>Over Pressure</strong></td>
<td>2X FSO or 35,000 psi, whichever is less</td>
</tr>
<tr>
<td></td>
<td>1.2 X FSO 35,000 - 72,500 psi</td>
</tr>
<tr>
<td><strong>Zero Balance Adjustment Range</strong></td>
<td>-40% to +10%; -80% to 20% for FSP &lt; 500 psi</td>
</tr>
<tr>
<td><strong>Load Resistance</strong></td>
<td>500 Ω @ 24 Vdc; 1,000 Ω @ 36 Vdc</td>
</tr>
<tr>
<td><strong>Electronics Ambient Temperature</strong></td>
<td>70°F (20°C)</td>
</tr>
<tr>
<td><strong>Electronics Operating Temperature</strong></td>
<td>-20 to 185°F (-29 to 85°C)</td>
</tr>
<tr>
<td><strong>Diaphragm Temperature</strong></td>
<td>750°F (400°C) max [SPX4502 model limited to 600°F (315°C)]</td>
</tr>
<tr>
<td><strong>Electronics Compensated Temperature Range</strong></td>
<td>0 to 150°F (-18 to 65°C)</td>
</tr>
<tr>
<td><strong>Zero Shift (Electronics Temp Change)</strong></td>
<td>4222: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4232: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4352: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4502: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4622: 0.05% F.S./°F max (0.10% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4672: 0.05% F.S./°F max (0.10% F.S./°C max)</td>
</tr>
<tr>
<td><strong>Span Shift (Electronics Temp Change)</strong></td>
<td>4222: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4232: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4352: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4502: 0.01% F.S./°F max (0.02% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4622: 0.02% F.S./°F max (0.04% F.S./°C max)</td>
</tr>
<tr>
<td></td>
<td>4672: 0.02% F.S./°F max (0.04% F.S./°C max)</td>
</tr>
<tr>
<td><strong>Zero Shift (Snout Temp Change)</strong></td>
<td>4222: 15 psi/100°F (27 psi/100°C) typical</td>
</tr>
<tr>
<td></td>
<td>4232: 15 psi/100°F (27 psi/100°C) typical</td>
</tr>
<tr>
<td></td>
<td>4352: 15 psi/100°F (27 psi/100°C) typical</td>
</tr>
<tr>
<td></td>
<td>4502: 1 psi/100°F (from 75-450°F); 2 psi/100°F (from 450-600°F) typical</td>
</tr>
<tr>
<td></td>
<td>4622: 25 psi/100°F (45 psi/100°C) typical</td>
</tr>
<tr>
<td></td>
<td>4672: 25 psi/100°F (45 psi/100°C) typical</td>
</tr>
</tbody>
</table>

## Mechanical Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mounting Torque</strong></td>
<td>4222: 500 inch-lbf max</td>
</tr>
<tr>
<td></td>
<td>4232: 50 inch-lbf max</td>
</tr>
<tr>
<td></td>
<td>4352: 500 inch-lbf max</td>
</tr>
<tr>
<td></td>
<td>4502: 350 inch-lbf max</td>
</tr>
<tr>
<td></td>
<td>4622: 500 inch-lbf max</td>
</tr>
<tr>
<td></td>
<td>4672: 500 inch-lbf max</td>
</tr>
<tr>
<td><strong>Standard Wetted Parts</strong></td>
<td>DyMax coated 15-5 PH SST</td>
</tr>
</tbody>
</table>

## Approvals & Certifications

ATEX/IECEx Intrinsically Safe

SIL 2 (pressure output) & PLc’ (relay output)

Additional approvals available (consult factory)
### Ordering Guide for Models SPX4222 & SPX4622

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>222</td>
<td>Thread Mounted</td>
</tr>
<tr>
<td>622</td>
<td>Thread Mounted</td>
</tr>
</tbody>
</table>

#### Approval
- **N**: No Approval
- **S**: CE ATEX / Intrinsically Safe

#### Diaphragm Material
- **A**: DyMax Coated 15-5 PH SST
- **M**: Hastelloy
- **P**: Inconel

#### Pressure Units
- **B**: BAR
- **C**: KPa
- **K**: Kgf/cm²
- **M**: MPa
- **P**: PSI

#### Process Connection
- **00**: 1/2-20 UNF
- **05**: M18 x 1.5 Thread

#### Pressure Range

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>PSI</th>
<th>Bar</th>
<th>Kgf/cm²</th>
<th>MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>132</td>
<td>250</td>
<td>17.5</td>
<td>17.5</td>
<td>1.75</td>
</tr>
<tr>
<td>14</td>
<td>500</td>
<td>35</td>
<td>35</td>
<td>3.5</td>
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<tr>
<td>15</td>
<td>750</td>
<td>50</td>
<td>50</td>
<td>5.0</td>
</tr>
<tr>
<td>16</td>
<td>1,000</td>
<td>70</td>
<td>70</td>
<td>7.0</td>
</tr>
<tr>
<td>17</td>
<td>1,500</td>
<td>100</td>
<td>100</td>
<td>10.0</td>
</tr>
<tr>
<td>20</td>
<td>3,000</td>
<td>200</td>
<td>200</td>
<td>20.0</td>
</tr>
<tr>
<td>21</td>
<td>5,000</td>
<td>350</td>
<td>350</td>
<td>35.0</td>
</tr>
<tr>
<td>22</td>
<td>7,500</td>
<td>500</td>
<td>500</td>
<td>50.0</td>
</tr>
<tr>
<td>23</td>
<td>10,000</td>
<td>700</td>
<td>700</td>
<td>70.0</td>
</tr>
<tr>
<td>24</td>
<td>15,000</td>
<td>1,000</td>
<td>1,000</td>
<td>100.0</td>
</tr>
<tr>
<td>25</td>
<td>20,000</td>
<td>1,400</td>
<td>1,400</td>
<td>140.0</td>
</tr>
<tr>
<td>27</td>
<td>30,000</td>
<td>2,000</td>
<td>2,000</td>
<td>200.0</td>
</tr>
</tbody>
</table>

#### Communications
- **A**: No Protocol
- **B**: HART™ Protocol
- **C**: HART™ with Turndown

#### Flex Length
- **AA**: No Flex
- **DD**: 18”, 46cm Flex
- **FF**: 30”, 76cm Flex

#### Snout Length
- **AW**: 3”, 7.6cm
- **CE**: 6”, 15 cm
- **DP**: 9”, 23cm
- **FE**: 12.5”, 32cm
- **GH**: 15”, 38cm

*Other configurations are available. Please consult factory.

*Available in M18 x 1.5 thread only
Ordering Guide for Models SPX4352 & SPX4672

4XXX X X XX X XX XX XX X XX XX XXX

Option Code

Temperature Sensor
ZZ = No Thermocouple / RTD

Electrical Connections
AA = PT02A-10-6P Connector
AF = PCIH-12-8P Connector Threaded Style

Communications
A = No Protocol
B = HART™ Protocol
C = HART™ with Turndown

Flex Length
DD = 18", 46cm Flex
FF = 30", 76cm Flex

Exposed Capillary Length
EA = 10", 25.4 cm

Pressure Range
14 = 500 psi 35 Bar 35 kgf/cm² 3.5 MPa
15 = 750 psi 50 Bar 50 kgf/cm² 5.0 MPa
16 = 1,000 psi 70 Bar 70 kgf/cm² 7.0 MPa
17 = 1,500 psi 100 Bar 100 kgf/cm² 10.0 MPa
20 = 3,000 psi 200 Bar 200 kgf/cm² 20.0 MPa
21 = 5,000 psi 350 Bar 350 kgf/cm² 35.0 MPa
22 = 7,500 psi 500 Bar 500 kgf/cm² 50.0 MPa
23 = 10,000 psi 700 Bar 700 kgf/cm² 70.0 MPa
24 = 15,000 psi 1,000 Bar 1,000 kgf/cm² 100.0 MPa
25 = 20,000 psi 1,400 Bar 1,400 kgf/cm² 140.0 MPa
27 = 30,000 psi 2,000 Bar 2,000 kgf/cm² 200.0 MPa

Model
352 = Jam Nut
672 = Jam Nut

Approval
N = No Approval
S = CE ATEX / Intrinsically Safe

Diaphragm Material
A = DyMax Coated 15-5 PH SST
M = Hastelloy
P = Inconel

Process Connection
13 = 1/2-20 Jam Nut (JB1)
15 = M18 x 1.5 Thread Jam Nut

Pressure Units
B = BAR
C = KPa
K = Kgf/cm²
M = MPa
P = PSI

Flex Length
DD = 18", 46cm Flex
FF = 30", 76cm Flex

Other configurations are available. Please consult factory.
Ordering Guide for Model SPX4232

Model 232 = Flange Mounted, Small Diaphragm

Approval
N = No Approval
S = CE ATEX / Intrinsically Safe

Diaphragm Material
A = DyMax Coated 15-5 PH SST
M = Hastelloy
P = Inconel

Mounting Flange
25 = Standard Flange

Pressure Units
B = BAR
C = KPa
K = Kgf/cm²
M = MPa
P = PSI

Option Code

Temperature Sensor
ZZ = No Thermocouple / RTD
AA = Single J TC with 3” Flex

Electrical Connections
AA = PT02A-10-6P Connector
AF = PCIH-12-8P Connector Threaded Style

Communications
A = No Protocol
B = HART™ Protocol

Flex Length
DD = 18”, 46cm Flex
FF = 30”, 76cm Flex

Snout Length
CE = 6”, 15.0 cm

Pressure Range
14 = 500 psi 35 Bar 35 kgf/cm² 3.5 MPa
15 = 750 psi 50 Bar 50 kgf/cm² 5.0 MPa
16 = 1,000 psi 70 Bar 70 kgf/cm² 7.0 MPa
17 = 1,500 psi 100 Bar 100 kgf/cm² 10.0 MPa
20 = 3,000 psi 200 Bar 200 kgf/cm² 20.0 MPa
21 = 5,000 psi 350 Bar 350 kgf/cm² 35.0 MPa
22 = 7,500 psi 500 Bar 500 kgf/cm² 50.0 MPa
23 = 10,000 psi 700 Bar 700 kgf/cm² 70.0 MPa
24 = 15,000 psi 1,000 Bar 1,000 kgf/cm² 100.0 MPa
25 = 20,000 psi 1,400 Bar 1,400 kgf/cm² 140.0 MPa
27 = 30,000 psi 2,000 Bar 2,000 kgf/cm² 200.0 MPa

‘Other configurations are available. Please consult factory.'
Ordering Guide for Model SPX4502

Model¹
502 = Flange Mounted, Large Diaphragm

Approval
N = No Approval
S = CE ATEX / Intrinsically Safe

Diaphragm Material
A = DyMax Coated 15-5 PH SST

Mounting Flange
90 = Flat Faced Mounting Flange

Pressure Units
B = BAR
C = KPa
K = Kgf/cm²
M = MPa
P = PSI

Pressure Range
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>08²</td>
<td>25 psi</td>
<td>1.75 Bar</td>
<td>1.75 kgf/cm²</td>
</tr>
<tr>
<td>09²</td>
<td>50 psi</td>
<td>3.5 Bar</td>
<td>3.5 kgf/cm²</td>
</tr>
<tr>
<td>11²</td>
<td>100 psi</td>
<td>7.0 Bar</td>
<td>7.0 kgf/cm²</td>
</tr>
<tr>
<td>13²</td>
<td>250 psi</td>
<td>17.5 Bar</td>
<td>7.5 kgf/cm²</td>
</tr>
<tr>
<td>14²</td>
<td>500 psi</td>
<td>35 Bar</td>
<td>35 kgf/cm²</td>
</tr>
<tr>
<td>15²</td>
<td>750 psi</td>
<td>50 Bar</td>
<td>50 kgf/cm²</td>
</tr>
<tr>
<td>16²</td>
<td>1,000 psi</td>
<td>70 Bar</td>
<td>70 kgf/cm²</td>
</tr>
<tr>
<td>17²</td>
<td>1,500 psi</td>
<td>100 Bar</td>
<td>100 kgf/cm²</td>
</tr>
<tr>
<td>20²</td>
<td>3,000 psi</td>
<td>200 Bar</td>
<td>200 kgf/cm²</td>
</tr>
<tr>
<td>21²</td>
<td>5,000 psi</td>
<td>350 Bar</td>
<td>350 kgf/cm²</td>
</tr>
<tr>
<td>22²</td>
<td>7,500 psi</td>
<td>500 Bar</td>
<td>500 kgf/cm²</td>
</tr>
<tr>
<td>23²</td>
<td>10,000 psi</td>
<td>700 Bar</td>
<td>700 kgf/cm²</td>
</tr>
</tbody>
</table>

¹Other configurations are available. Please consult factory.
²Pressure ranges below 250 psi are supplied with rigid capillary.
DETAIL 'A'
ELECTRICAL HOUSING CONNECTOR

DETAIL 'B'
FLANGE MOUNTED PROCESS CONNECTION

NOTES:
UNLESS OTHERWISE SPECIFIED:
1. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

45° ±5°
1. ALL DIMENSIONS ARE IN INCHES

2. FRACTIONS ± 1/32

3. DRILLS Ø0.5 DIA

4. ANGLES ± 0.5°

5. FILLETS R .005 MAX

6. EDGES R .005 OR CHAMFER MAX

7. PART TO BE FREE OF BURRS

8. ALL DIMENSIONS ARE IN INCHES.

9. UNLESS OTHERWISE SPECIFIED;

10. 2 PLACE DECIMAL ± .01

11. 3 PLACE DECIMAL ± .005

12. CAPILLARY TUBE, TYPE 347 SST ± .06 [1.52 mm] OD

13. COVERED CAPILLARY

14. FLEXIBLE ARMOR, SST [7.1] OD

15. JAM BUSHING V2-03 UNF-2A

16. MATERIAL

17. RIGID LENGTH ± .06 [1.5]

18. RIGID SNOUT LENGTH ± .25 [6.35]

19. FLEX LENGTH ± .12 [3.1]

20. SPANZERO

21. MASTER KEYWAY

22. 0.414 [10.52 mm] CAPILLARY TUBE, TYPE 347 SST

23. SPAN AND ZERO ADJUSTS ARE PROTECTED BY SEAL SCREWS

NOTES:

UNLESS OTHERWISE SPECIFIED:

1. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]
Instruments COMMERCIAL STREET, SHARON, MA

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1. ALL DIMENSIONS ARE IN INCHES

2. FRACTIONS ± 1/32

3. 2 PLACE DECIMAL ± .01

4. 3 PLACE DECIMAL ± .005

5. FILLETS R .005 MAX

6. EDGES R .005 OR CHAMFER MAX

7. PART TO BE FREE OF BURRS

8. ALL DIMENSIONS ARE IN INCHES

3. DRILLS 0.5 DIA

11. NONE

REVDWG. NO.SIZE

MATERIAL DATE

FINISH

APPROVED CHECKED DRAWN

TOLERANCES UNLESS OTHERWISE SPECIFIED;

MODEL NO.

DO NOT SCALE DRAWING

SCALE

NOTES:

UNLESS OTHERWISE SPECIFIED:

1. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

2. FLEX LENGTH OR RIGID LENGTH + SNOUT LENGTH ± .25 [6.35]

3. COVERED CAPILLARY .28 [7.1] OD

4. FLEXIBLE ARMOR, SST .932 .927 23.67 23.55 O


6. BENDIX CONN. PT02A-10-6P OR EQUIVALENT MATING CONN. PT06A-10-6S (SR) OR EQUIVALENT

7. ELECTRICAL HOUSING, CONNECTOR

8. FLANGE MOUNTED PROCESS CONNECTION

9. SPANZERO MASTER KEYWAY

10. CONNECTOR WIRING ZERO AND SPAN ADJUSTS ARE PROTECTED BY SEAL SCREWS

11. (JACK-OUT SCREWS)
GUARDIAN CONNECTOR WIRING

<table>
<thead>
<tr>
<th>PIN</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>POWER +</td>
</tr>
<tr>
<td>B</td>
<td>SIGNAL -</td>
</tr>
<tr>
<td>C</td>
<td>POWER -</td>
</tr>
<tr>
<td>D</td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>E</td>
<td>Rcal -</td>
</tr>
<tr>
<td>F</td>
<td>Rcal +</td>
</tr>
<tr>
<td>G</td>
<td>RELAY CONTACT</td>
</tr>
<tr>
<td>H</td>
<td>RELAY CONTACT</td>
</tr>
</tbody>
</table>

NOTE:
1. THESE CONNECTOR OPTIONS ARE AVAILABLE ON MOST OF THE CONFIGURATIONS SHOWN ON THE PREVIOUS SHEETS.