

# Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

|                           |   |
|---------------------------|---|
| <b>Manufacturer</b>       | <b>STS Sensor Technik Sirnach AG</b>  |
| <b>Address</b>            | Rütihofstraße 8, Sirnach, 8370, Switzerland   |
| <b>Type</b>               | Pressure Transmitter  |
| <b>Description</b>        | Pressure Transmitter(1)<br>Intrinsically Safe Pressure Transmitter(2)<br><br>refer to appendix  |
| <b>Trade Name</b>         | (1)ATM.1ST, (2)ATM.1ST/Ex, (1)ATM.ECO, (2)ATM. ECO/Ex   |
| <b>Application</b>        | Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 - 2019. |
| <b>Specified Standard</b> | EN 60068-2-6: 2005<br>EN60068-2-27: 2009<br>EN55022: 2015<br>EN61000-4-2: 2009<br>EN61000-4-3: 2010<br>EN61000-4-4:2013<br>EN61000-4-5:2018<br>EN61000-4-6:2014                                 |

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## Type Approval Certificate

|                         |   |                              |
|-------------------------|---|------------------------------|
| <b>Ratings</b>          | Power supply:   | 24 V DC                      |
| <b>Additional Tests</b> | Vibration:  | 10g / 40 to 2000Hz           |
|                         | Shock:  | 100g / impulse duration 6 ms |
|                         | Process temperature:  | -40...150 °C                 |
|                         | Dry heat test:  | 80°C/16h                     |
|                         | Low temperature:  | -10°C/2h                     |
|                         | Enclosure test:   | IP 68 2h/1.5m                |
| <b>Other Conditions</b> | Ratings for application in hazardous areas are to be obtained from the applicable Ex-Certificate. |                              |

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document No. HTS/ETS 39738-20 TW/HN and its supplementary Type Approval Terms and Conditions form part of this Certificate.

## Appendix

### TYPES

<sup>(1)</sup>ATM.1ST①②③④⑤⑥⑦⑧⑨⑩

|                            |                 |  |
|----------------------------|-----------------|--|
| ① Pressure type            | 1               | Gauge  |
|                            | 2               | Absolute (vacuum)  |
|                            | 3               | Sealed gauge   |
| ② Pressure measuring range | XX              | 0 ... 0,05 bar   |
|                            | XX              | 0 ... 1000 bar   |
| ③ Process connection       | 00              | G 1/4 F  |
|                            | 10              | 1/4 NPT M  |
|                            | 19              | 1/2 NPT M  |
|                            | 11              | G 1/4 M  |
|                            | 21              | G 1/4, with flush diaphragm  |
|                            | 12              | G 1/4 M, manometer EN 837  |
|                            | 13              | G 1/2 M  |
|                            | 14              | G 1/2 M, frontal diaphragm   |
|                            | 37              | G 1/2 M, frontal diaphragm Hastelloy C-276                               |
|                            | 15              | G 1/2 M, with flush diaphragm membrane                                   |
|                            | 16              | G 1/2 M, manometer EN 837  |
| ④ Electrical connection    | 17              | G 1/2 M, with bore Ø 14 mm   |
|                            | 01              | DIN 43650 (EN 175301-803A), with metal threaded part, demountable, IP 65 |
|                            | 03              | M16, Binder 723, 5 pins, IP 67   |
|                            | 80              | MIL C26482, 10-6, IP 40  |
|                            | 07              | M12x1, 4 pins  |
|                            | 13              | PE cable, IP 67, black   |
|                            | 15              | PUR cable, IP 67, black  |
|                            | 24              | PUR cable, black, with submersible back end IP 68                        |
|                            | 21              | FEP cable, IP 67, black  |
|                            | 11              | FEP cable, (high temperature), black, IP 67                              |
|                            | ⑤ Output signal | 46   |
| 47                         |                 | 0 to 10 VDC  |
| 05                         |                 | 4 to 20 mA   |
| 08                         |                 | 4 to 20 mA surge protection  |
| ⑥ Accuracy                 | 1               | ≤ ± 0.25 % FS (50 mbar to 99 bar)  |
|                            | 4               | ≤ ± 0.2 % FS (100 mbar to 1000 bar)                                      |
|                            | 2               | ≤ ± 0.1 % FS (100 mbar to 600 bar)                                       |
|                            | 6               | ≤ ± 0.05 % FS (1 bar to 100 bar)   |
| ⑦ Temperature range        | 0               | 0 to 70°C compensated process temp: -40 ... 125°C                        |
|                            | 1               | -25 to 100°C compensated /process temp: -40 ... 125°C                    |
|                            | 2               | -25 to 100°C compensated /process temp: -40 ... 150°C                    |
|                            | 3               | -40 to 100°C compensated /process temp: -40 ... 125°C                    |
|                            | 4               | -40 to 100°C compensated /process temp: -40 ... 150°C                    |
|                            | 6               | -40 to 125°C compensated /process temp: -40 ... 125°C                    |
| ⑧ Option 1                 | A               | Throttle   |
|                            | G               | Special oil filling: Anderol Food (for food applications)                |
|                            | Q               | Special oil filling: PAO4 (silicone free)                                |
|                            | N               | Pressure connection elastomer free                                       |
|                            | V               | Pressure connection welded   |
| ⑨ Option 2                 | C               | Electronics packed in gel: Gauge pressure                                |
|                            | D               | Electronics packed in gel: Absolute and sealed gauge                     |

- ⑩ Option 3
- K Version titanium
  - U Seals: Viton (standard)
  - S Seals: EPDM
  - T Seals: Kalrez (Industry)
  - H Seals: NBR (ACS)

<sup>(2)</sup>ATM.1ST/Ex①②③④⑤⑥⑦⑧⑨

- ① Pressure type
  - 1 Gauge
  - 2 Absolute (vacuum)
  - 3 Sealed gauge
- ② Pressure measuring range
  - XX 0 ... 0,05 bar
  - XX 0 ... 1000 bar
- ③ Process connection
  - 00 G 1/4 F
  - 10 1/4 NPT M
  - 19 1/2 NPT M
  - 11 G 1/4 M
  - 21 G 1/4 flush diaphragm
  - 12 G 1/4 M, manometer DIN-16288
  - 13 G 1/2 M
  - 14 G 1/2 M, frontal diaphragm
  - 37 G 1/2 M, frontal diaphragm, Hastelloy C-276
  - 15 G 1/2 M, flush diaphragm
  - 16 G 1/2 M manometer DIN-16288
  - 17 G 1/2 M, with bore Ø 14 mm
- ④ Electrical connection
  - 01 DIN-43650, with metal threaded part, demountable, IP 65
  - 03 M16 (Binder 723), 5 pins, IP 67
  - 80 MIL C26482, 10-6, IP 40
  - 07 M12x1, 4 pins
  - 17 PUR cable, blue, IP 67
  - 22 FEP cable, blue, IP 67
  - 36 PUR cable, blue, IP 68
- ⑤ Output signal
  - 05 4 to 20 mA
- ⑥ Accuracy
  - 1  $\leq \pm 0.25\%$  FS (50 mbar ... 99 bar)
  - 4  $\leq \pm 0.2\%$  FS (100 mbar ... 1000 bar)
  - 2  $\leq \pm 0.1\%$  FS (100 mbar ... 600 bar)
  - 6  $\leq \pm 0.05\%$  FS (1 bar ... 100 bar)
- ⑦ Temperature range
  - 0 T6 (Ta: -40 to 50°C) 0 to 70°C compensated
  - 1 T4 (Ta: -40 to 85°C) -25 to 100°C compensated
  - 2 T3 (Ta: -40 to 125°C) -25 to 100°C compensated
- ⑧ Option 1
  - A Throttle
  - G Special oil filling: Anderol Food
  - N Pressure connection elastomer free
  - Q Special oil filling: PAO4 (silicone free)
  - V Pressure connection welded
- ⑨ Option 2
  - K Titanium
  - U Seals: Viton (standard)
  - S Seals: EPDM
  - T Seals: Kalrez
  - H Seals: NBR

<sup>(1)</sup>ATM.ECO①②③④⑤⑥⑦⑧⑨⑩

|   |                          |   |
|---|--------------------------|---|
| ① | Pressure type            | 1 Gauge<br>2 Absolute (vacuum)<br>3 Sealed gauge  |
| ② | Pressure measuring range | XX 0 ... 0,1 bar<br>XX 0 ... 1000 bar   |
| ③ | Process connection       | 00 G 1/4 F<br>10 1/4 NPT M<br>19 1/2 NPT M<br>11 G 1/4 M<br>21 G 1/4, with flush diaphragm<br>12 G 1/4 M, manometer EN 837<br>13 G 1/2 M<br>14 G 1/2 M, frontal diaphragm<br>15 G 1/2 M, with flush diaphragm<br>16 G 1/2 M, manometer EN 837<br>17 G 1/2 M, with bore Ø 14 mm<br>37 G 1/2 M, frontal diaphragm, Hastelloy C=276        |
| ④ | Electrical connection    | 01 DIN 43650 (EN 175301-803A), with metal threaded part, demountable, IP 65<br>03 M16 (Binder 723), 5 pins, IP 67<br>80 MIL C26482, 10-6, IP 40<br>07 M12x1, 4 pins<br>13 PE cable, IP 67, black<br>15 PUR cable, IP 67, black<br>21 FEP cable, IP 67, black<br>24 PUR cable, IP 68, black  |
| ⑤ | Output signal            | 05 4 to 20 mA<br>08 4 to 20 mA surge protection<br>46 0 to 5 VDC<br>47 0 to 10 VDC  |
| ⑥ | Accuracy                 | 4 $\leq \pm 0.2\%$ FS   |
| ⑦ | Temperature range        | 0 0 ... 70°C compensated<br>(allowed process temperature:-40° ... 125°C)<br>1 -25 ... 100°C compensated<br>(allowed process temperature:-40° ... 125°C)<br>2 -25 ... 100°C compensated with cooling fins<br>(allowed process temperature:-40° ... 150°C)<br>3 -40 ... 100°C compensated<br>(allowed process temperature:-40° ... 125°C) |
| ⑧ | Option 1                 | A Throttle<br>G Special oil filling: Anderol Food<br>N pressure connection, elastomer free<br>Q Special oil filling: PAO4 (silicone free)<br>V Pressure connection welded   |
| ⑨ | Option 2                 | C Electronics packed in gel: Gauge pressure<br>D Electronics packed in gel: Absolute and sealed gauge   |
| ⑩ | Option 3                 | U Seals: Viton (standard)<br>S Seals: EPDM<br>T Seals: Kalrez   |

<sup>(2)</sup>ATM. ECO/Ex①②③④⑤⑥⑦⑧⑨

|                            |                         |  |  |
|----------------------------|-------------------------|--|--|
| ① Pressure type            | 1                       | Gauge  |  |
|                            | 2                       | Absolute (vacuum)                              |  |
|                            | 3                       | Sealed gauge                                   |  |
| ② Pressure measuring range | XX                      | 0 ... 0,1 bar                                  |  |
|                            | XX                      | 0 ... 1000 bar                                 |  |
| ③ Process connection       | 00                      | G 1/4 F  |  |
|                            | 10                      | 1/4 NPT M                                      |  |
|                            | 19                      | 1/2 NPT M                                      |  |
|                            | 11                      | G 1/4 M  |  |
|                            | 21                      | G 1/4, with flush diaphragm                    |  |
|                            | 12                      | G 1/4 M, Manometer EN 837                      |  |
|                            | 13                      | G 1/2 M  |  |
|                            | 14                      | G 1/2 M, frontal diaphragm                     |  |
|                            | 15                      | G 1/2 M, with flush diaphragm                  |  |
|                            | 16                      | G 1/2 M, manometer EN 837                      |  |
|                            | 17                      | G 1/2 M, with bore Ø 14 mm                     |  |
|                            | 37                      | G 1/2 M, frontal diaphragm, Hastelloy C=276    |  |
|                            | ④ Electrical connection | 01   | DIN-43650, with metal threaded part, demountable, IP65 |
|                            |                         | 03   | M16 (Binder 723), 5 pins, IP 67                        |
| 80                         |                         | MIL C26482, 10-6, IP 40                        |  |
| 07                         |                         | M12x1, 4 pins                                  |  |
| 17                         |                         | PUR cable, blue, IP 67                         |  |
| 22                         |                         | FEP cable, blue, IP 67                         |  |
| 36                         |                         | PUR cable, blue, IP 68                         |  |
| 05                         |                         | 4 to 20 mA                                     |  |
| ⑤ Output signal            | 05                      | 4 to 20 mA                                     |  |
| ⑥ Accuracy                 | 4                       | ≤ ± 0.2 % FS                                   |  |
| ⑦ Temperature range        | 0                       | T6 (Ta: -40 to 50°C) 0 to 70°C compensated     |  |
|                            | 1                       | T4 (Ta: -40 to 85°C) -25 to 100°C compensated  |  |
|                            | 2                       | T3 (Ta: -40 to 125°C) -25 to 100°C compensated |  |
| ⑧ Option 1                 | A                       | Throttle                                       |  |
|                            | G                       | Special oil filling: Anderol food              |  |
|                            | N                       | Pressure connection elastomer free             |  |
|                            | Q                       | Special oil filling: PAO4 (silicone free)      |  |
|                            | V                       | Pressure connection welded                     |  |
| ⑨ Option 2                 | U                       | Seals: Viton (standard)                        |  |
|                            | S                       | Seals: EPDM                                    |  |
|                            | T                       | Seals: Kalrez                                  |  |