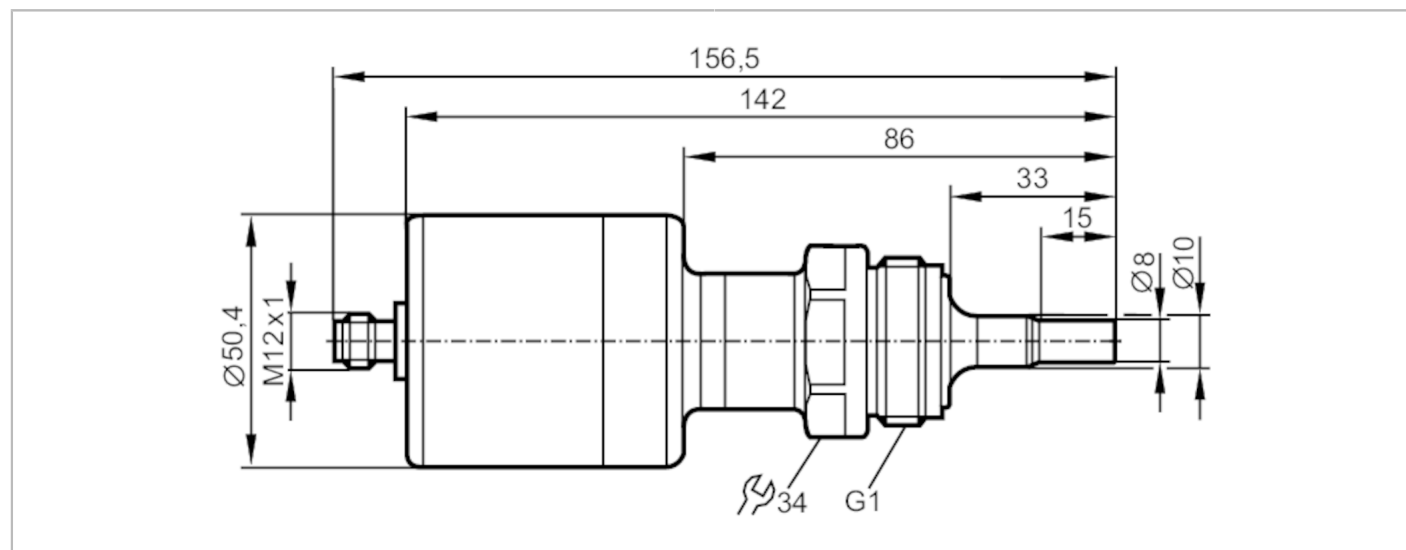


# TAD981



## Temperature transmitter with drift detection

TAD033KLES30-A-ZKG/US



EC 1935/2004 EHEDG Certified FCM FDA IO-Link

### Product characteristics

|                              |                                                             |              |
|------------------------------|-------------------------------------------------------------|--------------|
| Number of inputs and outputs | Number of digital outputs: 1; Number of analogue outputs: 1 |              |
| Measuring range              | -25...160 °C                                                | -13...320 °F |
| Communication interface      | IO-Link                                                     |              |
| Process connection           | threaded connection G 1 external thread Aseptoflex Vario    |              |
| Installation length EL [mm]  | 33                                                          |              |

### Application

|                                                |                                                                                                                    |  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--|
| Special feature                                | Gold-plated contacts                                                                                               |  |
| Measuring element                              | 1 x Pt 1000 + 1 x NTC; (thermally coupled, with backup function (temperature measuring even if one element fails)) |  |
| Media                                          | liquids and gases                                                                                                  |  |
| Pressure rating [bar]                          | 50                                                                                                                 |  |
| Minimum installation depth [mm]                | 25                                                                                                                 |  |
| MAWP (for applications according to CRN) [bar] | 50                                                                                                                 |  |

### Electrical data

|                             |                                         |  |
|-----------------------------|-----------------------------------------|--|
| Operating voltage [V]       | 18...32 DC; ("supply class 2" to cULus) |  |
| Current consumption [mA]    | 6; (24 V)                               |  |
| Protection class            | III                                     |  |
| Reverse polarity protection | yes                                     |  |
| Power-on delay time [s]     | 8                                       |  |
| Integrated watchdog         | yes                                     |  |

### Inputs / outputs

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Number of inputs and outputs | Number of digital outputs: 1; Number of analogue outputs: 1 |
|------------------------------|-------------------------------------------------------------|

### Outputs

|                         |                                                            |
|-------------------------|------------------------------------------------------------|
| Total number of outputs | 2                                                          |
| Output signal           | switching signal; analogue signal; IO-Link; (configurable) |
| Electrical design       | PNP/NPN                                                    |



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|                                                      |                                                                                                                                                                                                     |              |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Number of digital outputs                            | 1                                                                                                                                                                                                   |              |
| Output function                                      | normally open / normally closed / diagnostic signal; (parameterisable)                                                                                                                              |              |
| Max. voltage drop switching output DC [V]            | 2                                                                                                                                                                                                   |              |
| Permanent current rating of switching output DC [mA] | 150; (200 (...60°C); 250 (...40 °C))                                                                                                                                                                |              |
| Diagnostic output                                    | Drift monitoring; fault monitoring                                                                                                                                                                  |              |
| Number of analogue outputs                           | 1                                                                                                                                                                                                   |              |
| Analogue current output [mA]                         | 4...20                                                                                                                                                                                              |              |
| Max. load [Ω]                                        | (Ub - 15 V) x 50                                                                                                                                                                                    |              |
| Short-circuit protection                             | yes                                                                                                                                                                                                 |              |
| Type of short-circuit protection                     | pulsed                                                                                                                                                                                              |              |
| Overload protection                                  | yes                                                                                                                                                                                                 |              |
| Measuring/setting range                              |                                                                                                                                                                                                     |              |
| Measuring range                                      | -25...160 °C                                                                                                                                                                                        | -13...320 °F |
| Note on measuring range                              | scalable                                                                                                                                                                                            |              |
| Factory setting                                      | 0...150 °C / 32...302 °F                                                                                                                                                                            |              |
| Drift warning                                        | 0.2...5 °C                                                                                                                                                                                          | 0.4...9 °F   |
| Drift alarm                                          | 0.2...5 °C                                                                                                                                                                                          | 0.4...9 °F   |
| In steps of                                          | 0.05 °C                                                                                                                                                                                             | 0.1 °F       |
| Resolution                                           |                                                                                                                                                                                                     |              |
| Resolution of analogue output [K]                    | 0.05                                                                                                                                                                                                |              |
| Accuracy / deviations                                |                                                                                                                                                                                                     |              |
| Precision analogue output [K]                        | ± 0,2 (-10...130°C); ± 0,3 (130...140°C); ± 0,3 ± 0,1% MS (-25...-10/140...160°C); (probe completely inserted into the measured medium up to the sealing chamfer)                                   |              |
| Temperature coefficient [% of the span / 10 K]       | < ± 0,01; (in case of deviation from the reference condition 25 ± 5 °C)                                                                                                                             |              |
| Response times                                       |                                                                                                                                                                                                     |              |
| Dynamic response T05 / T09 [s]                       | 3 / 6                                                                                                                                                                                               |              |
| Software / programming                               |                                                                                                                                                                                                     |              |
| Parameter setting options                            | drift warning/drift alarm threshold; Fail-Safe; Display unit; scaling of the analogue output; redundancy switching; performance diagnostic output; switching logic; normally open / normally closed |              |
| Interfaces                                           |                                                                                                                                                                                                     |              |
| Communication interface                              | IO-Link                                                                                                                                                                                             |              |
| Transmission type                                    | COM1 (4,8 kBaud)                                                                                                                                                                                    |              |
| IO-Link revision                                     | 1.1                                                                                                                                                                                                 |              |
| SDCI standard                                        | IEC 61131-9 CDV                                                                                                                                                                                     |              |
| Profiles                                             | Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis                                                                                                                        |              |
| SIO mode                                             | yes                                                                                                                                                                                                 |              |
| Required master port type                            | A                                                                                                                                                                                                   |              |
| Process data analogue                                | 1                                                                                                                                                                                                   |              |
| Process data binary                                  | 1                                                                                                                                                                                                   |              |
| Min. process cycle time [ms]                         | 18.8                                                                                                                                                                                                |              |



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|                                                      |      |                                                                        |                     |
|------------------------------------------------------|------|------------------------------------------------------------------------|---------------------|
| Supported DeviceIDs                                  |      | Type of operation                                                      | DeviceID            |
|                                                      |      | default                                                                | 323                 |
| Operating conditions                                 |      |                                                                        |                     |
| Ambient temperature                                  | [°C] | -25...70                                                               |                     |
| Storage temperature                                  | [°C] | -40...85                                                               |                     |
| Protection                                           |      | IP 68; IP 69K                                                          |                     |
| Tests / approvals                                    |      |                                                                        |                     |
| EMC                                                  |      | DIN EN 61000-6-2                                                       |                     |
|                                                      |      | DIN EN 61000-6-3                                                       |                     |
| Shock resistance                                     |      | DIN EN 68000-2-27                                                      | 50 g (11 ms)        |
| Vibration resistance                                 |      | DIN EN 60068-2-6                                                       | 20 g (10...2000 Hz) |
| MTTF                                                 |      | [years]                                                                | 213                 |
| Note on approval                                     |      | Including free 5-point calibration certificate.                        |                     |
| Mechanical data                                      |      |                                                                        |                     |
| Weight                                               |      | [g]                                                                    | 399.5               |
| Materials                                            |      | stainless steel (316L/1.4435); stainless steel (316L/1.4404); PEI; FKM |                     |
| Materials (wetted parts)                             |      | stainless steel (316L/1.4435); stainless steel (316L/1.4404)           |                     |
| Process connection                                   |      | threaded connection G 1 external thread Aseptoflex Vario               |                     |
| Surface characteristics Ra/Rz of the wetted parts    |      | Ra: < 0.6                                                              |                     |
| Installation length EL                               |      | [mm]                                                                   | 33                  |
| Remarks                                              |      |                                                                        |                     |
| Remarks                                              |      | MS = set measuring span                                                |                     |
| Pack quantity                                        |      | 1 pcs.                                                                 |                     |
| Electrical connection                                |      |                                                                        |                     |
| Connector: 1 x M12; coding: A; Contacts: gold-plated |      |                                                                        |                     |



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### Connection



OUT: connection for 2-wire operation  
analogue output  
OUT2: connection for 3-wire operation  
analogue output  
OUT1: diagnosis / IO-Link

### Diagrams and graphs



maximum operating time depending on the medium temperature