# Transmitter AMU-II Powercon

Data sheet no. DenA13650X00

Electronic transmitter and controller for the measurement of specific conductivity in ultrapure water.

### Application examples

- For the use in power and industrial plant water cycles. Measurement can be performed before (specific resp. total conductivity) or after a cation exchanger (acid resp. cationic conductivity).


### Measuring range

- From 0.055 µS/cm to 30 mS/cm.
- Temperature compensations: non-linear for high purity water, neutral salts, strong acids, strong bases, ammonia, ethanolamine, morpholine or linear with coefficient.
- Measured value is compensated to 25 °C.

### Sensors

- Connections for a 2-electrode conductivity sensor with integrated Pt1000 temperature sensor.
- Use with high accuracy conductivity sensors: Swansensor UP-Con1000 for installation in dedicated SWAN flow cells or pipes, Swansensor Retracon for in-pipe applications requiring a wet-tap valve.
- Optional: connecting a SWAN sample flow sensor.

### Instrument features

- Transmitter for panel mounting with IP54 protection (front).
- Large, backlit LC display and simple, menu-driven operation.
- Various connection options: two analog signal outputs, two limit relays, one alarm relay and one relay input.
- Modbus, Profibus, HART, RS232 or USB as an option.
- Daily, automatic electronic zero calibration.

| Order numbers: | AMU-II Powercon | A–13.650._00 |
|---|---|---|
| Power supply | 100 – 240 VAC, 50/60 Hz | 1 |
| | 10 – 36 VDC | 2 |
| Option | RS485 interface with Modbus RTU or Profibus protocol | A–81.460.010 |
| | USB interface | A–81.460.020 |
| | HART interface | A–81.460.030 |
| Accessories | For all options and details, please visit our website at www.swan.ch. | |
| | Swansensor UPCon1000 | A–87.334.XX0 |
| | Swansensor Retracon | A–87.38X.XXX |
| | Flow cell QV-Flow UPCon | A–83.43X.1X1 |
| | Flow cell CATCON+ SL | A–83.444.10X |

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## Conductivity Measurement

**Conductivity sensor type**
2-electrode conductivity sensor

| Measuring range | Resolution |
|---|---|
| 0.055 to 0.999 µS/cm | 0.001 µS/cm |
| 1.00 to 9.99 µS/cm | 0.01 µS/cm |
| 10.0 to 99.9 µS/cm | 0.1 µS/cm |
| 100 to 999 µS/cm | 1 µS/cm |
| 1.00 to 2.99 mS/cm | 0.01 mS/cm |
| 3.0 to 9.9 mS/cm | 0.1 mS/cm |
| 10 to 30 mS/cm | 1 mS/cm |

Automatic range switching.

Accuracy (at 25 °C) ±1% of measured value or ±1 digit (whichever is greater)
Precision (at 25 °C) <1% ±1 digit

Ranges and accuracy with Swansensor UP-Con1000 (cell constant ~0.04 $cm^{-1}$).

For further information, refer to the data sheets of the respective Swan sensors.

**Sensor cell constants**
Selectable: from 0.005 to 10 $cm^{-1}$

**Temperature compensations**
- Non-linear function (NLF) for high purity water
- Neutral salts
- Strong acids
- Strong bases
- Ammonia
- Ethanolamine
- Morpholine
- Linear coefficient 0.00 – 10.00 %/°C
- Absolute (none)

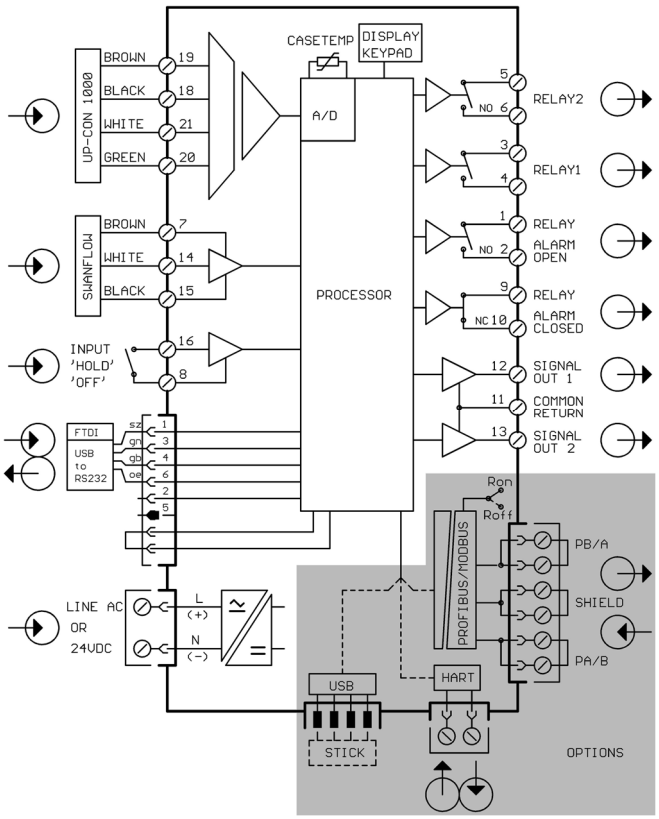
Influence of temperature see PPChem 2012 14(7) [Wagner].

**Auxiliary sensors**
- Temperature measurement with Pt1000 type sensor (DIN class A).
  Measuring range: -30 to +250 °C
  Accuracy (0-50 °C) ±0.25 °C
  Resolution: 0.1 °C
- Sample flow measurement with digital SWAN sample flow sensor. Included as standard when ordering a Q-Flow, QV-Flow or Catcon+ flow cell.

## Transmitter Specifications and Functionality

Electronics case: Noryl® resin
Protection degree: IP54 (front)
Display: backlit LCD, 64 x 32 mm
Electrical connectors: clamping yoke
Dimensions: 96 x 96 x 85 mm
Weight: 0.30 kg
Ambient temperature: -10 to +50 °C
Humidity: 10 - 90% rel., non-condensing

## Electrical Connection Scheme




**Power supply**
AC version: 100 – 240 VAC (±10%), 50/60 Hz (±5%)
DC version: 10 – 36 VDC
Power consumption: max. 3 VA

**Operation**
User menus in English, German, French, Spanish and Chinese.
Separate, menu-specific password protection.

**Safety features**
No data loss after power failure, all data is saved in non-volatile memory.
Overvoltage protection of inputs and outputs.
Galvanic separation of measuring inputs from signal outputs.

**Transmitter temperature monitoring**
With programmable high/low alarm limits.

**Real-time clock with calendar**
For action time stamp and preprogrammed actions

**Alarm relay**
Two potential-free contacts for summary alarm indication for programmable alarm values and instrument faults (one normally open and one normally closed contact).
Maximum load: 100 mA / 50 V

**Input**
One input for potential-free contact.
Programmable hold or remote off function.

**Relay outputs**
Two potential-free contacts programmable as limit switches for measured values, controllers or timer with automatic hold function.
Rated load: 100 mA / 50 V

**Signal outputs**
Two programmable signal outputs for measured values (freely scalable, linear or bilinear) or as controller outputs.
Current loop: 0/4 – 20 mA
Maximum burden: 510 Ω
Type: current source

**RS232 interface**
For data logger download to PC and for transmitter firmware updates. Requires the optional USB to RS232 interface converter.

**Communication interface options**
- RS485 interface with Modbus RTU or Profibus DP protocol, galvanically separated
- USB interface for logger download
- HART interface