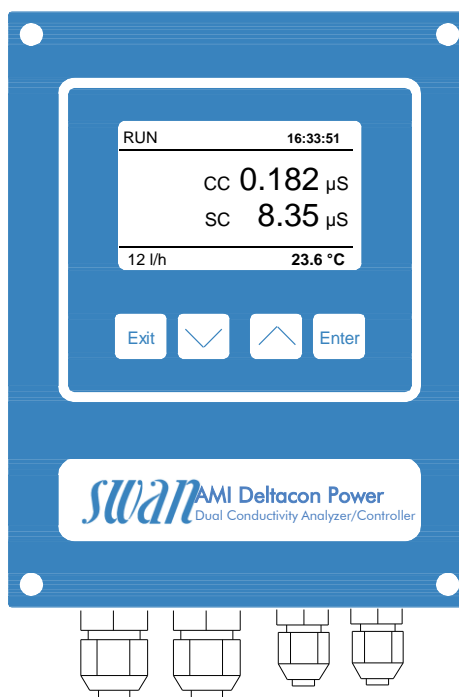


Two-channel electronic transmitter & controller for the conductivity measurement in power cycles. For simultaneous measurements before (specific / total conductivity) and after a cation exchanger (acid / cationic conductivity). Calculation of pH value and alkalizing reagent concentration based on differential conductivity.

Transmitter AMI Deltacon Power

- Measuring and control transmitter in a rugged aluminum enclosure (IP 66).
- Conductivity measurement range from 0.055 $\mu\text{S}/\text{cm}$ to 30 mS.
- Connections for two 2-electrode conductivity sensors with integrated Pt1000 temperature probe (e.g. 2 x Swansensor UP-Con1000) and for a digital SWAN sample flow meter.
- Calculation of pH value (VGB-R 450 L, 1998) in the range from pH 7.5 to 11.5
- Calculation of alkalizing reagent concentration, e.g. ammonia in the range from 0.01 to 10 ppm.
- Temperature compensations: non-linear for high purity water, neutral salts, strong acids, strong bases, ammonia, ethanol-amine, morpholine or linear with coefficient.
- Big backlit LC display for the simultaneous reading of measuring and calculated values, sample temperature, sample flow and operating status.
- Easy user menus in English, German, French and Spanish. Simple programming of all parameters by keypad.
- Electronic record of major process events and calibration data.
- Real-time clock for time stamp in data logs and for automated functions.
- Data logger for 1'000 data records stored at a selectable interval.
- Galvanically separated sensor connections.
- Overvoltage protection for in- and outputs.



- Two current signal outputs (0/4 - 20 mA) for measured signals.
- Potential-free alarm contact as summary alarm indication for programmable alarm values and for instrument faults.
- Two potential-free contacts programmable as limit switch or PID-control.
- Input for potential-free contact to freeze the measuring value or to interrupt control in automated installations (hold function or remote-off).

Order Nr.	Transmitter AMI Deltacon Power	A-13.441.100
Option:	[] 3 rd current signal output (0/4 – 20mA)	A-81.420.050
	[] Profibus DP & Modbus RTU interface (RS-485)	A-81.420.020
	[] USB interface	A-81.420.042
	[] HART interface	A-81.420.060

Conductivity Measurement

Conductivity sensor types
two 2-electrode sensors.

Measuring range	Resolution
0.055 to 0.999 $\mu\text{S/cm}$	0.001 $\mu\text{S/cm}$
1.00 to 9.99 $\mu\text{S/cm}$	0.01 $\mu\text{S/cm}$
10.0 to 99.9 $\mu\text{S/cm}$	0.1 $\mu\text{S/cm}$
100 to 1000 $\mu\text{S/cm}$	1 $\mu\text{S/cm}$
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.
Values for cell constant 0.0415 cm^{-1} ,
with Swansensor UP-Con1000.

Accuracy
 $\pm 1\%$ of meas. value (up to 5 mS/cm)
 $\pm 3\%$ of meas. value (up to 30 mS/cm)

Sensor cell constants
Default value: 0.0415 cm^{-1}
Selectable: from 0.005 to 1.000 cm^{-1}

Temperature compensation
Strong acids or non-linear function for high purity water, neutral salts, strong bases, ammonia, ethanolamine, morpholine, linear coefficient in $\%/\text{°C}$, absolute (none).
Influence of temperature see PPChem 2012 14(7) [Wagner].

pH and alkalinizing reagent calculation
(see appendix of VGB-R 450 L, 1998)
Ranges (25°C): pH 7.5 - 11.5
e.g. Ammonia 0.01 - 10 ppm

Sample conditions:
- Only 1 alkalinizing reagent
- Contamination is mostly NaCl
- Phosphates < 0.5 mg/L
- If pH value < 8, the concentration of contaminant must be small compared to alkalinizing reagent.

Temperature measurement Pt1000
With Pt1000 type sensor
range: -30 to +250 $^{\circ}\text{C}$
Resolution: 0.1 $^{\circ}\text{C}$

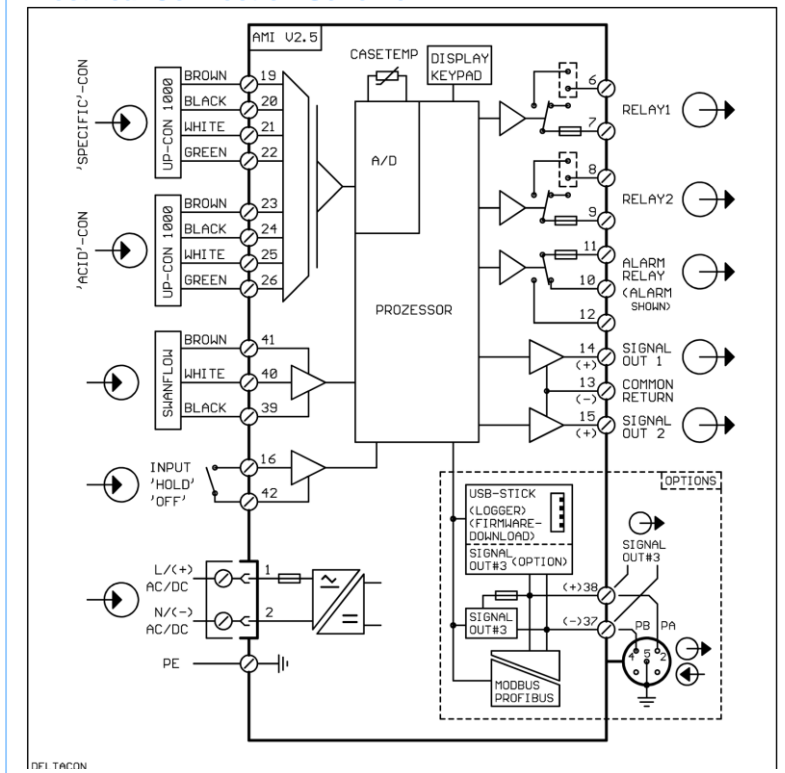
Sample flow measurement
with digital SWAN sample flow sensor.

Transmitter Specifications and Functionality

Electronics case: Cast aluminum
Protection degree: IP 66 / NEMA 4X
Display: backlit LCD, 75 x 45 mm
Electrical connectors: screw clamps
Dimensions: 180 x 140 x 70 mm
Weight: 1.5 kg
Ambient temperature: -10 to +50 $^{\circ}\text{C}$
Humidity: 10 to 90 % rel., non cond.

Power supply
Voltage: 100 - 240 VAC ($\pm 10\%$),
50/60 Hz ($\pm 5\%$)
or 24 VDC ($\pm 10\%$)
Power consumption: max. 30 VA

Electrical Connection Scheme



Operation

Easy operation based on separate menus for "Messages", "Diagnostics", "Maintenance", "Operation" and "Installation". User menus in English, German, French and Spanish.

Separate menu specific password protection. Display of process value, sample flow, alarm status and time during operation.

Storage of event log, alarm log and calibration history.

Storage of the last 1'000 data records in log-ger with selectable time interval.

Real-time clock with calendar

For action time stamp and preprogrammed actions.

Safety features

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

Transmitter temperature monitoring

With programmable high/low alarm limits.

1 Alarm relay

One potential free contact for summary alarm indication for programmable alarm values and instrument faults.

Maximum load: 1A / 250 VAC

1 Input

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

2 Relay outputs

Two potential-free contacts programmable as limit switches for measuring values, controllers or timer for system cleaning with automatic hold function. Rated load: 1A / 250 VAC

2 Signal outputs (3rd optional)

Two programmable signal outputs for measured values (freely scaleable, linear or bilinear) or as continuous control outputs (control parameters programmable) as current source. 3rd signal output selectable as current source or current sink.

Current loop: 0/4 - 20 mA
Maximum burden: 510 Ω

Control functions

Relays or current outputs programmable for 1 or 2 pulse dosing pumps, solenoid valves or for one motor valve. Programmable P, PI, PID or PD control parameters.

1 Communication interface (option)

- RS485 interface (galvanically separated) with Fieldbus protocol Modbus RTU or Profibus DP
- 3rd Signal output
- USB interface
- HART interface