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Transmitter AMI Pharmacon

Data sheet No. DenA13640100

Electronic transmitter & controller for the measurement of conductivity in purified water and water for injection of pharmaceutical water.

Transmitter AMI Pharmacon

- Measuring and control transmitter in a rugged aluminum enclosure (IP 66).
- Measurement ranges:
  - Conductivity: 0.005 to 2'000 µS/cm
- Sensor connections for a two-electrode sensor with built-in Pt1000 temperature probe like Swansensor Pharmacon and for a digital sample flow meter.
- Big backlit LC display for the reading of measuring value, sample temperature, sample flow, temperature compensation type and operating status.
- Easy user menus in English, German, French and Spanish. Simple programming of all parameters by keypad.
- Wide range of selectable temperature compensations for different sample conditions.
- 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 1'500 data records stored at a selectable interval. (Data download to PC requires optional HyperTerminal interface).
- Galvanically separated sensor connection.
- Overvoltage protection for in- and outputs.
- Two current outputs (0/4 - 20 mA) for measured signals.
- Potential-free alarm contact as summary alarm indication for programmable alarm values and for instrument faults.
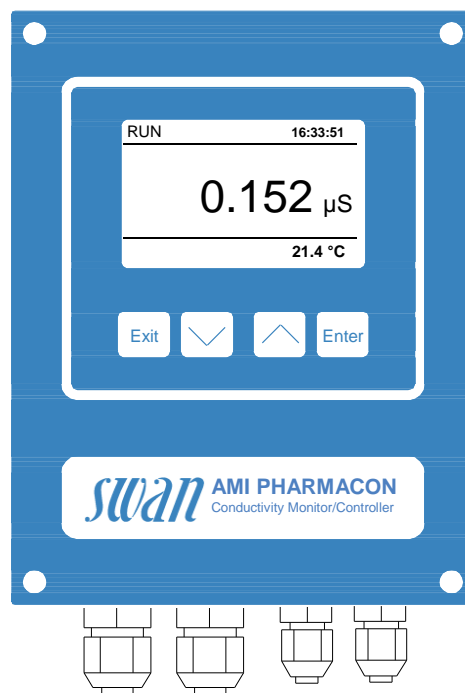
- Two potential-free contacts programmable as limit switch or PID-control.
- Input for potential-free contact to freeze the measuring value or to interrupt control in automated installations (hold function or remote-off).

Order Nr.	Transmitter AMI Pharmacon	A–13.640.100
Option:	[ ] 3rd current signal output (0/4 – 20mA)	A-81.410.020
	[ ] Profibus DP interface	A-81.420.020
	[ ] HyperTerminal interface (RS-232)	A-81.420.010
	[ ] Modbus interface	A-81.420.022
	[ ] USB interface	A-81.420.040

![SWAN ANALYTICAL INSTRUMENTS]

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Conductivity Measurement

Conductivity sensor type
2-electrode inline sensor Pharmacon ($k = 0.1 cm^{-1}$).

Sensor cell constant
Selectable from 0.005 to 11.00 cm^{-1}

Measuring range	Resolution
0.005 to 0.999 μS/cm	0.001 μS/cm
1.00 to 9.99 μS/cm	0.01 μS/cm
10.0 to 199.9 μS/cm	0.1 μS/cm
200 to 2000 μS/cm	1 μS/cm

Automatic range switching.

System accuracy

0.05 to 500 μS/cm	± 2 %
500 to 2000 μS/cm	± 3 %

or ± 0.001 μS/cm whichever is greater.

Greatest long-term stability by auto-zero front-end calibration procedure.

Test modus for transmitter according to USP<645> with test resistance.

Alarm function for limit values according to USP<645> Stage 1.

Temperature compensations
- High purity water (non-linear)
- Neutral salts (NaCl)
- Strong acids (HCl)
- Strong bases (NaOH)
- Linear coefficient: in %/°C
- None (compensation switched off)
Influence of temperature see PPChem 2012 14(7) [Wagner].

Temperature measurement
with Pt1000 sensor (DIN class A)
Measuring range: -30 to +250 °C
Resolution: 0.1 °C

Sample flow measurement
Input for digital 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°C
Humidity:	10 - 90 % rel., non condensing

Power supply

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

Electrical Connection Scheme
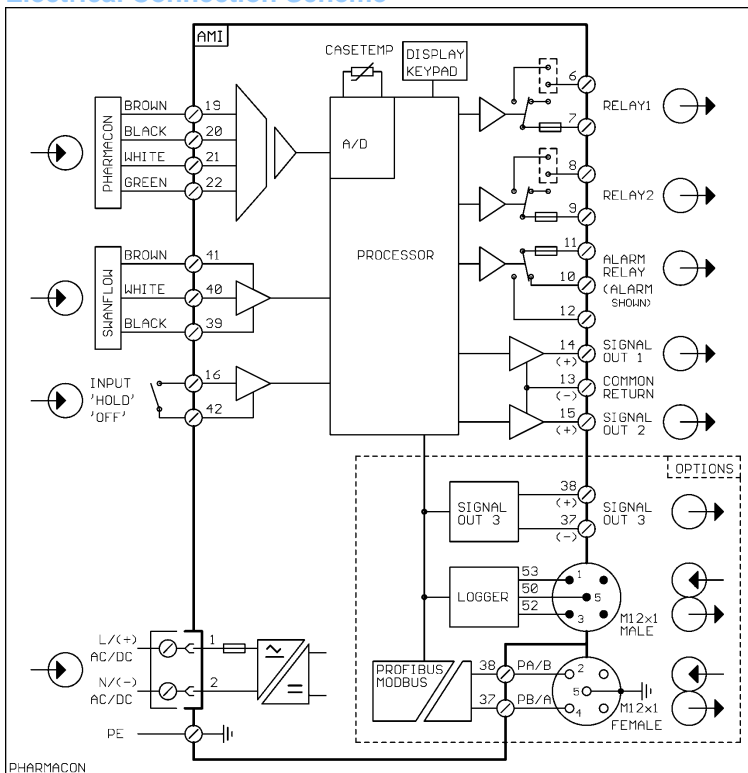
Operation
Easy operation based on separate menus for "Messages", "Diagnostics", "Maintenance", "Operation" and "Installation".

User menus in English, German, French and Spanish.

Separate menu specific password protection according 21CFR Part 11.

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 1'500 data records in logger 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).

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)
- RS232 interface for logger download to PC with SWANTerminal
- RS485 interface (galvanically separated) with Fieldbus protocol Modbus or Profibus DP
- 3rd Signal output
- USB interface