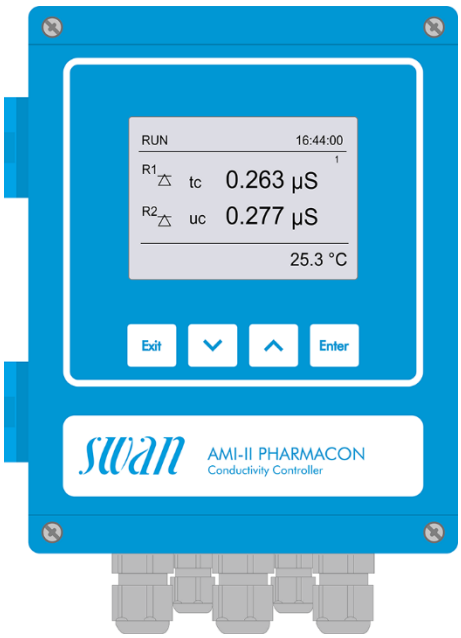
Transmitter AMI-II Pharmacon

Data sheet no. DenA13521X00

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

Application examples

- Monitoring of production, storage and distribution systems for purified water (PW) and water for injection (WFI) in accordance with the requirements of the Pharmacopoeias.



Measuring range

- From 0.055 to 2000 µS/cm.
- Displays uncompensated and temperature-compensated (25 °C) conductivity simultaneously.

Sensors

- Connections for a 2-electrode conductivity sensor with integrated Pt1000 temperature sensor.
- Use with high accuracy conductivity sensor: Swansensor Pharmacon: delivery including traceable calibration and material certificates.

Compliance

- Pre-programmed USP ‹645› stage 1 conductivity limits with individual action limit of 20–100 % configurable.
- Verification of conductivity and temperature measurement circuits with optional high accuracy test resistor kit.
- Support for 21 CFR Part 11 compliance with access control and audit trail with encrypted export of records.

Instrument features

- Measuring and control transmitter in a rugged aluminum enclosure (IP66).
- Large, backlit LC display and simple, menu-driven operation.
- Various connection options: two analog signal outputs, two limit relays, two alarm relays and one relay input.
- Two additional analog signal outputs, Modbus, Profibus or HART as an option.

Order numbers:	AMI-II Pharmacon	A–13.521._00
Power supply	100 – 240 VAC, 50/60 Hz 10 – 36 VDC	1 2
Option	RS485 interface with Modbus RTU or Profibus protocol HART interface Two additional 0/4 – 20 mA signal outputs	A–81.470.0x0 A–81.470.030 A–81.470.040
Accessories	For all accessories and details, please visit our website at www.swan.ch. Swansensor Pharmacon Test resistance plugs according to USP <645>	 A–87.335.X00 A–85.134.020

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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 2.00 mS/cm	0.01 mS/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.

Ranges and accuracy with Swansensor Pharmacon (cell constant ~0.08 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
- Absolute (none)
- Non-linear function (NLF) for high purity water
- Linear coefficient 0.00 – 10.00 %/°C
- Various chemicals

USP <645>
Pre-programmed stage 1 conductivity limits. Individual action limit of 20–100 % configurable.

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.

Transmitter Specifications and Functionality

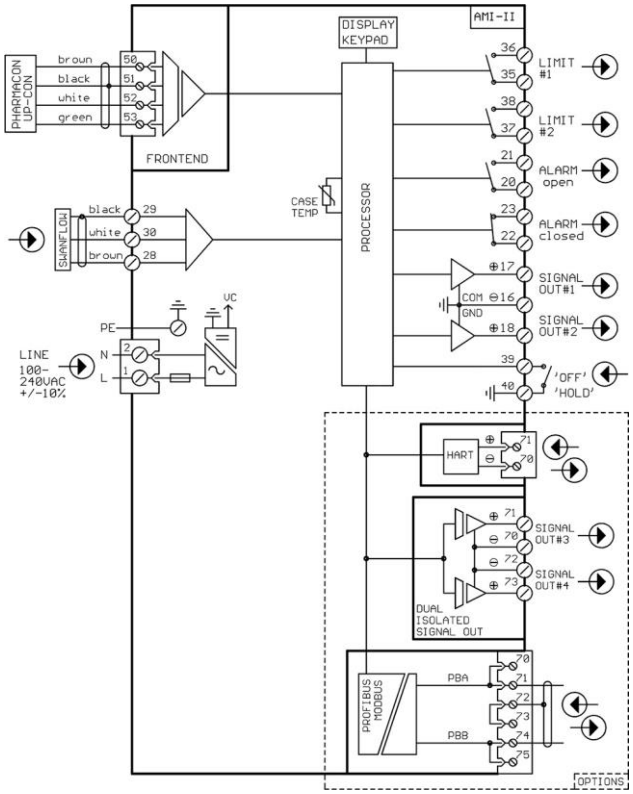
Electronics case:	Cast aluminum
Protection degree:	IP66 / NEMA 4X
Display:	backlit LCD, 74 x 53 mm
Electrical connectors:	screw clamps
Dimensions:	180 x 142 x 94 mm
Weight:	1.7 kg
Ambient temperature:	-10 to +50 °C
Humidity:	10 - 90% rel., non-condensing

Power supply

AC version:	100 – 240 VAC (±10%), 50/60 Hz (±5%)
DC version:	10 – 36 VDC
Power consumption:	max. 35 VA

Operation
User menus in English, German, French and Spanish.

Electrical Connection Scheme



21 CFR Part 11 support
Access control: multi-level user management.
Audit trail: logging of all instrument and user generated events, all changes and all results of instrument routines.
Protection of records: encrypted export of audit-trail records; secure access and generation of human readable exports in signed pdfs with separate PC software SWAN Guard.

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 resistive

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 timers with automatic hold function.
Rated load: 100 mA / 50 V resistive

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

SD card interface
Possibility to record measured values and diagnostic data to an SD card.
SD card included.

Communication interface options
- Two additional signal outputs, galvanically separated
- RS485 interface with Modbus RTU or Profibus DP protocol, galvanically separated
- HART interface