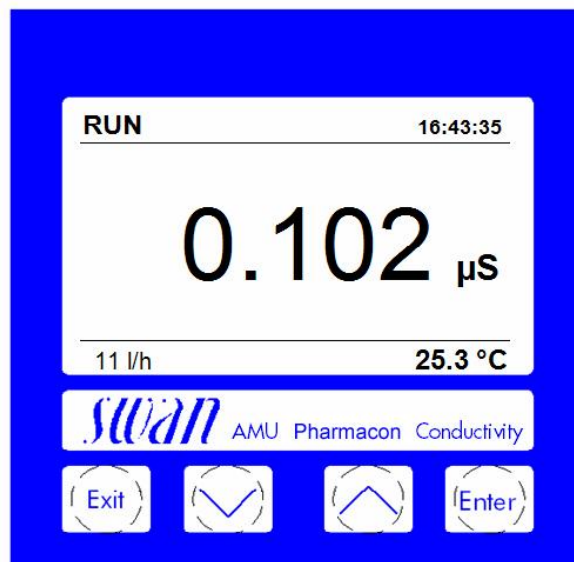


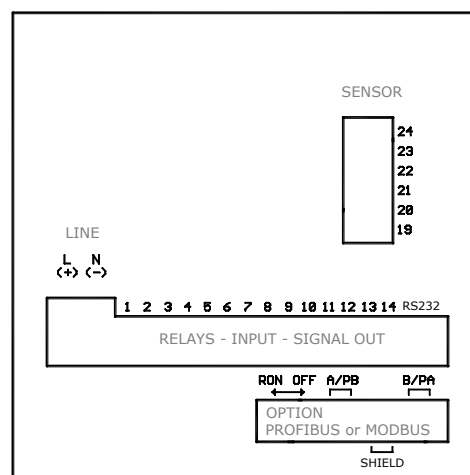
Electronic transmitter & controller for the measurement of the conductivity in purified water and water for injection of pharmaceutical water.

Transmitter AMU Pharmacon

- Measuring and control transmitter for panel installation in a Noryl® resin enclosure, 96 x 96 x 120 mm (DIN 43700).
- Measurement range: 0.005 to 2'000 $\mu\text{S}/\text{cm}$
- Connections for a 2-electrode conductivity sensor with integrated Pt1000 temperature probe (e.g. Swansensor Pharmacon) and for a digital SWAN sample flow meter.
- Big backlit LC display for measuring value, sample temperature, sample flow 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.
- Data logger for 1'500 data records stored at a selectable interval. Serial interface included for data download to PC with Microsoft HyperTerminal.
- 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).



Front panel



Rear panel with electrical connections

Order scheme	Transmitter AMU Pharmacon	A - 1 3 . 6 8 0 .	X	X	X
Power supply	100 - 240 VAC / 50/60 Hz	1	↑	↑	↑
	24 VDC, direct current	2	↑	↑	↑
Alarm Relay	Normally open, Alarm closed (NO = standard)	0			
	Normally closed, Alarm open (NC)	1			
Communication option	None				0
	Profibus DP interface				2
	Modbus interface (for Webserver connection)				4

Conductivity Measurement

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

Sensor cell constant
selectable from 0.005 to 1.000 cm^{-1}

Measuring range	Resolution
0.005 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 199.9 $\mu\text{S/cm}$	0.1 $\mu\text{S/cm}$
200 to 2000 $\mu\text{S/cm}$	1 $\mu\text{S/cm}$

Automatic range switching.

System accuracy
0.05 to 500 $\mu\text{S/cm}$ $\pm 2 \%$
500 to 2000 $\mu\text{S/cm}$ $\pm 3 \%$
or $\pm 0.001 \mu\text{S/cm}$ 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 $\text{‰/}^\circ\text{C}$
- None (compensation switched off)

Temperature measurement
with Pt1000 sensor (DIN class A)
Measuring range: -30 to $+250^\circ\text{C}$
Resolution: 0.1 $^\circ\text{C}$

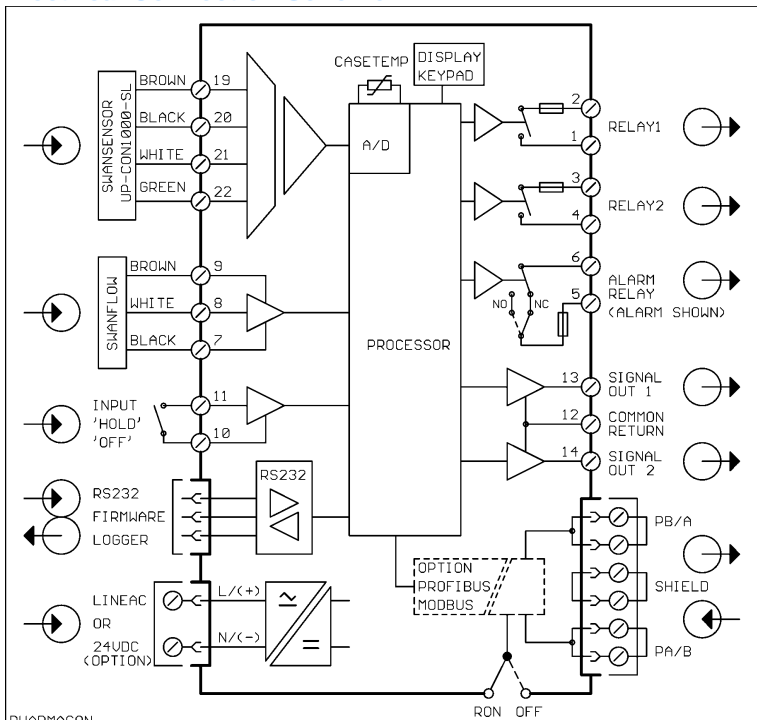
Sample flow measurement
Input for digital sample flow sensor.

Transmitter Specifications and Functionality

Electronics case: Noryl® resin
Protection degree: IP54 (front)
Display: backlit LCD, 75 x 45 mm
Electrical connectors: clamping yoke
Dimensions: 96 x 96 x 120 mm
Weight: 0.45 kg
Ambient temperature: -10 to $+50^\circ\text{C}$
Humidity: 10 - 90% rel., non-condensing

Power supply
Voltage: 100 - 240 VAC ($\pm 10 \%$),
50/60 Hz ($\pm 5 \%$)
or 24 VDC ($\pm 15 \%$)
Power consumption: max. 8 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- and alarm log.

Storage of the last 1'500 data records in logger with selectable time interval.

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.

Real-time clock with calendar

For action time stamp and preprogrammed actions.

1 Alarm relay

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

Maximum load: 100 mA / 50 V

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.

Maximum load: 100 mA / 50 V

2 Signal outputs

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 serial interface RS232

For data logger download to PC using Microsoft HyperTerminal and for transmitter firmware updates.

1 serial interface RS485 (option)

With Fieldbus protocol Modbus or Profibus DP, galvanically separated.

Remote instrument access with PC requires Modbus interface and optional Webserver