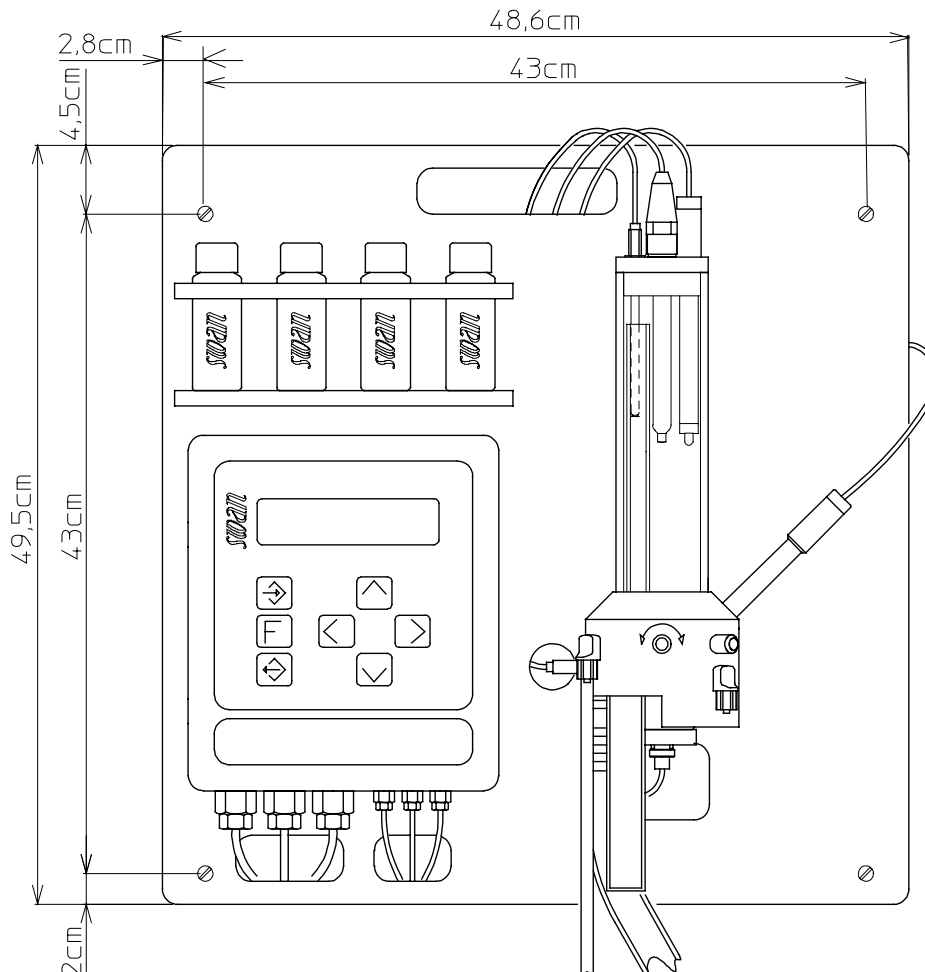


Microprocessor controlled system for the determination and control of disinfectants and pH. Surveillance of sample flow, redox (ORP), and temperature.

COMPACT 401 TRIDES



- Self-cleaning TRIDES three-electrode system for determining disinfectant concentrations with automatic pH- and temperature compensation.
- Automatic surveillance of sample flow.
- Full text display (2 x 20 characters) for measuring value and user guidance.
- Two control outputs with programmable control parameter (PID) for all standard servo components.
- Dosing alarm with programmable delay if the deviation between measuring value and set-point does not decrease during the programmed delay.
- Menu driven programs with configurable print parameters (interval, time etc.).
- RS232 for printer.
- RS485 (option) for remote control terminal and networks.
- Alarm output as collective fault signal for programmable alarm values for disinfectant, pH and redox (ORP).
- Continuous automatic surveillance of system faults such as low voltage or no flow, issued at the alarm output.
- Remote-off for the automatic interruption of control.

Technical data:

Dimensions:

Measuring- and control unit: 230 x 200 x 115 mm
Mounting panel: 495 x 485 mm
Case: injection-moulded aluminium
Protective system: injection-moulded IP65
Mounting panel: plastic (PVC)

Electronics:

Fail-safe measuring transmitter/controller for disinfectants, pH, redox (ORP), and temperature
Line voltage: 100, 115, 200, 230 VAC,
Tolerance: $\pm 15\%$, Frequency: 50/60 Hz.
Current consumption: 35 VA, and max. 1 A for each connected consumer
Galvanic insulation of measuring and signal outputs
Automatic check of power failure and too low / too high voltage
Data loss protection with non-volatile memory
Real-time clock with calendar

Display:

Fluorescence full text display with 2 x 20 characters for 6 measuring values: Disinfectant/pH, temperature/flow, redox (ORP)/auxiliary input
Display of date, time, and chosen disinfectant

Operation:

Choice of disinfectant (free chlorine, HOCl, chlorine-dioxide, iodine, bromine or ozone) by function keys
Menu driven input of calibration values, set-points and alarm values for pH, disinfectant, and redox (ORP) by function keys
Selective password protection for all inputs
Programming a 2nd level for disinfection (day of the week, start at, duration, set-point) for economizing or high level disinfection

Diagnostics:

Diagnostic mode for power frequency, last power failure, last calibration for all parameters, pH offset, pH gain, disinfectant offset, disinfectant gain, redox (ORP) offset, actual signal of all sensors

Documentation:

Menu driven printouts with configurable print parameter (time, interval, header)
Prepared daily protocol with measuring curves for two parameters, hour, minimum, maximum, and average values

Flow cell:

Acrylic glass, clear, with safety filter, metering tap, and sample tap, inserts for all sensors
Water inlet (pressure): 0.15 - 2 bar
Water consumption: approx. 40 l/h
Water inlet, tube connection: 6x9 mm
Water outlet: unobstructed outflow
Water outlet, tube connection: 15x20 mm

Additional sample requirements:

Min. conductivity of sample: 5 $\mu\text{S/cm}$
Temperature: 5 to 45 °C
No sand, no oil, no grease.
No phosphates, no disinfectants containing cyanuric acid / stabilized chlorine.

Sensors:

Disinfectant measurement:

Self-cleaning TRIDES three-electrode system with automatic pH- and temperature compensation.
Maintenance-free TRIDES reference electrode.
Measuring of hypochlorous acid (HOCl), free chlorine (hypochlorous acid and hypochlorite), chlorine-dioxide, iodine, bromine, or ozone
Automatic range switching
Accuracy: Measuring range:
Ozone: 0,000 - 1,000 mg/l
 $\pm 0,005$ mg/l
HOCl, free chlorine: 0,00 - 1,00 mg/l
 $\pm 0,01$ mg/l
 $\pm 0,06$ mg/l
 $\pm 0,2$ mg/l
3,00 - 10,00 mg/l
chlorine dioxide, iodine, bromine: 0,00 - 1,00 mg/l
 $\pm 0,01$ mg/l
 $\pm 0,06$ mg/l
1,00 - 3,00 mg/l
Stability (HOCl): $\pm 1\%$ from end of interval during 1 month at normal conditions
Response time: 90 % of change of excessive Cl₂ in 60 seconds after sample entered flow cell

pH measurement:

Insulated input for pH electrode Swansensor pH (electrode is included in standard equipment)
Automatic temperature compensation
Automatic buffer recognition with choice of buffer set (ISO/DIN or standard)
Measuring range: 1 - 13 pH
Resolution: 0.01 pH

Temperature measurement:

NTC-temperature sensor
Measuring range: 0 - 60 °C
Resolution: 0.1 °C

Flow surveillance:

Rotor speed control (impulse counter) with alarm in case of insufficient sample flow

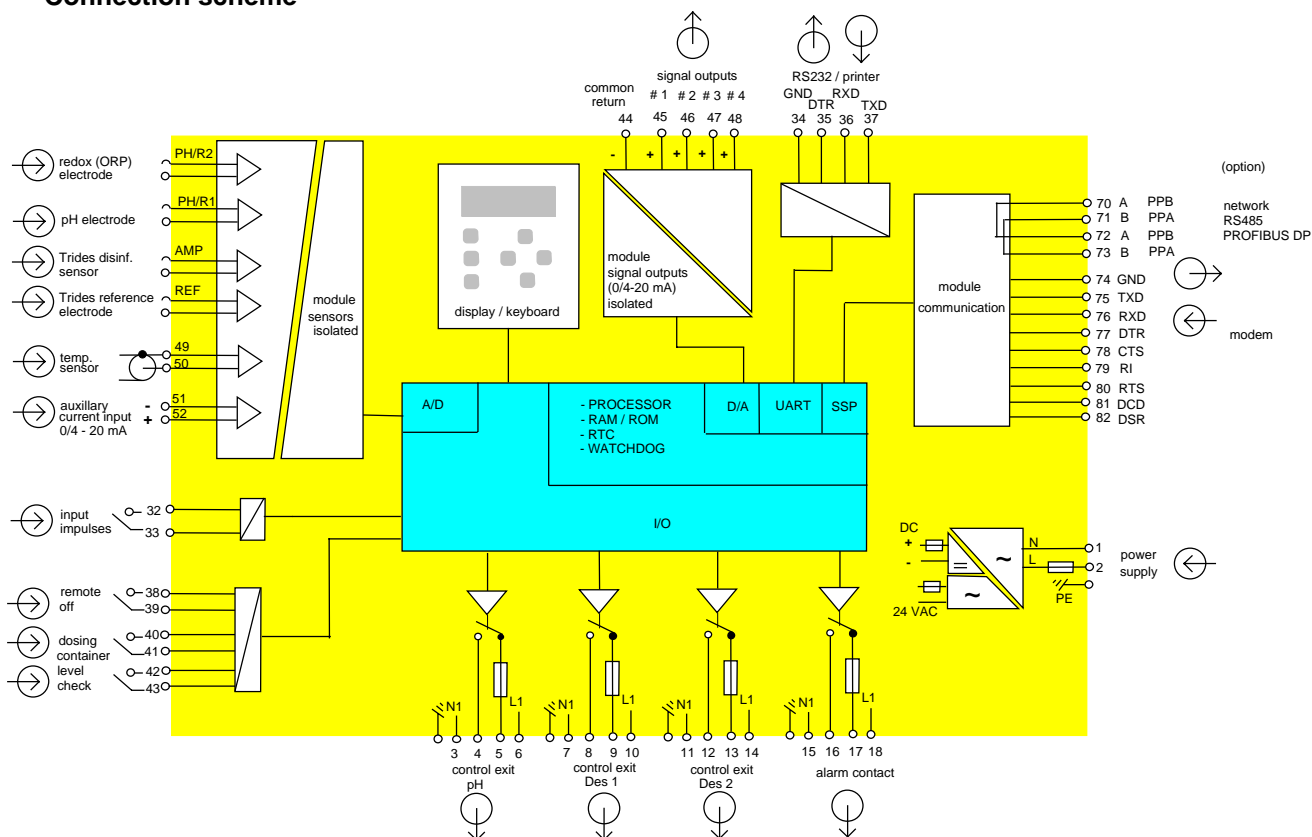
Redox (ORP) measurement:

Insulated input for redox (ORP) electrode (electrode is not included in standard equipment)
Measuring range: - 50 mV to +1500 mV
Resolution: 1 mV

Redox (ORP) electrode (Option):

Swansensor Redox (ORP), PtAg/AgCl

Connection scheme



In- and outputs:

Remote off:

Input for potential-free switching contact for automatic interruption of control. If the contact is closed, control is interrupted.

Contacts for dosing container level check:

Inputs for potential-free contact. A closed contact triggers an alarm.

Auxiliary input (0/4-20 mA)

Input for current loop 0 - 20 mA/4 - 20 mA.
Max. load: 150 Ω

Alarm output:

Potential-free contact as summary alarm indicator for disinfectant, pH, redox (ORP), and system faults as e.g. flow (max. 1 A/250 VAC)
Configuration of alarm parameters by function keys.

Interface RS232:

Configurable for printer.

BUS-interface card RS485:

Configurable for remote control terminal, or for networking of instruments with RS232 for modem. Protocol Swanbus or PROFIBUS DP according to DIN or MODBUS ASCII or MODBUS RTU.

Control exit pH:

Configurable for direct triggering of dosing pumps, solenoid valves, peristaltic pumps, etc. (max. 1 A/250 V) or for the control of pulse frequency pumps
P, PI, PD, or PID control, configurable by function keys.

Control exit disinfectant 1 and 2:

Configurable for direct triggering of dosing pumps, solenoid valves, motor valves, peristaltic pumps etc. (max. 1 A/250 V) or for the control of pulse frequency pumps
P, PI, PD, or PID control, configurable by function keys.

Operating safety:

Automatic surveillance of sample flow with alarm issued at the alarm output.
Dosing alarm if the controller capacity is larger than 90% during the programmed time-out without any change of the measured value towards the set-point. For safety reasons, the controller is switched off.

Options

Quadruple current output:

Galvanically separated. Current loop 0/4 - 20 mA selectable by function keys. Max. burden 510 Ω. Free choice of allocation to measuring parameters (disinfectant / pH / redox (ORP) / temperature) scaling and current loop by function keys.

BUS interface card RS485:

For remote control terminal or for networking (various protocols) with RS232 for modem connection.

Redox (ORP) measurement:

Swansensor redox (ORP) with cable and calibration solution. (Amplifier redox (ORP) is included in standard equipment).

Remote control terminal:

Connection of up to five Compact 401 Trides and/or Compact 402 Codes by RS485. Display and function keys for input of set-points, alarm, and print parameters for all connected Compacts. Accessory printer interface RS232. Prepared protocol for the documentation of measuring values of all connected instruments at the same time.

Order scheme	Compact 401 Trides	A-64.11				
Current supply:	230 VAC, 50/60Hz	1	↑			↑
	115 VAC, 50/60 Hz	2	↑			↑
	200 VAC, 50/60 Hz	5	↑			↑
	100 VAC, 50/60 Hz _____	6	↑			↑
Signal outputs:	none		0			
	quadruple current output 0/4 .. 20 mA _____		1			
Interface RS485:	none			0		
	RS485 with SWANBUS (for terminal)			1		
	RS485 PROFIBUS DP / MODBUS / RS232 Modem _____			2		
Model:	standard					0
	for ozone measurement _____					1

Delivery includes:

Measuring and control system with panel mounted components including electronics, fluidics, TRIDES disinfectant sensor, TRIDES reference electrode, pH electrode (with pH 7 and 9 calibration solutions), temperature sensor, flow sensor and manual. All sensors with cable. Mounted on panel, ready for installation.

All instruments are wet tested and calibrated at the factory. They are ready to operate for nearly all applications.