Dulcometer® D1C and D2C Series Process Controller

Description	Part no.

D1C Series Single Variable Controllers and D2C Series Dual Variable Controllers for Water and Wastewater Treatment or Industrial Process Control

The D1C/D2C integrates process monitoring and control into a single, easy-to-use device, replacing separate and multiple monitors and controllers: ProMinent Dulcotest sensors measure the process and the controller displays the value on a large LCD screen; control outputs can operate various control devices (e.g. metering pumps) to keep the process within control limits using proportional or PID control action; alarm relays are available for fault annunciation and analog outputs are available for recording the measured value. Features/options are selectable by identity code.

Features:

- Microprocessor based technology
- Large, clear, backlit display of measured and correcting values, status, error annunciation
- Menu-driven calibration, limit and control settings
- Control opposing functions with one unit (e.g. both acid and base to set pH) with or without deadband
- Sensor diagnostics monitor alarms upon sensor failure
- Five available voltages, including DC capability
- Limit values may be exceeded for adjustable time periods before relays change state (hysteresis)
- Programmable access code prevents unauthorized setting changes, yet allows calibration by operators
- Non-volatile memory retains all settings, including calibration, when power is lost; with automatic restart when power is restored
- Retains last measured value in memory during calibration to allow time for sample analysis so that the exact concentration in the sample becomes the standard
- Fault text on the LCD describes the nature of the fault, allowing fast diagnostics and correction
- Electrically isolated signal outputs
- Two current analog signal outputs (optional)
- Spannable outputs offer greater detail for recording and optimization of control
- Controller can revert to pre-set basic load output during calibration or in the event of a fault

Wall Mount

Panel Mount

Mounting

- ***Wall mount:*** Nonmetallic enclosure with protective gland-style strain relief cable sockets

  Dimensions: 7.87"H x 7.87"W x 3.00"D (200 mm x 200 mm x 76 mm)

  Cable glands: Five Pg11, Five Pg7

  Weight: Approx. 2.6 lbs. (1.2 kg) Shipping Weight: 4.4 lbs. (2.0 kg)

  Mounting: Detachable wall mount bracket

  Protection class: NEMA 4X (IP 65)

- ***Panel mount:***

  Dimensions: 3.78"H x 3.78"W x 5.50"D (96 mm x 96mm x 140 mm)

  Weight: Approximately 1.87 lbs. (850 g); 2.6 lbs. (1200 g) shipping weight

  Protection class: NEMA 3 (IP 54) when mounted in panel

Dulcometer D1C/D2C Series (cont.)

Measured Value Ranges Available (from ProMinent Dulcotest sensors or other devices)

- pH value: 0 to 14 pH units
- Oxidation Reduction Potential (ORP): -1000 to 1000 mV
- Free Chlorine Concentration: 0 to 10 ppm (sensor dependent)
- Total Chlorine Concentration: 0 to 20 ppm (sensor dependent)
- Bromine Concentration (using CTE sensor and Chlorine D1C): 0 to 10 ppm (sensor dependent)
- Conductivity (from conductometric or torroidal sensors): 0 to 20,000 mS/cm
- Dissolved Ozone Concentration: 0 to 2 ppm
- Chlorine Dioxide Concentration: 0 to 10 ppm (sensor dependent)
- Temperature: 32º to 212º (0º to 100°C)
- Standard analog (mA) signal inputs from other devices: 0/4 to 20 mA
- Hydrogen Peroxide: 1 to 20, 10 to 200, 100 to 2000 ppm (signal converter dependent)
- Peracetic Acid: 10 to 200, 100 to 2000 ppm (signal converter dependent)

Other Inputs

- Feed Forward (disturbance variable) from flow meter for compound loop control (D1C only)
- Pause contact to stop control output based on external event (D1C only)
- Correcting variables: temperature for pH and conductivity; pH for free chlorine
- Solution ground for pH

Control Capabilities

- Monitoring only
- Setpoint (on/off) control based on high and low limit relays
- Proportional control for batch processes
- PID (Proportional-Integral-Derivative) control for once-through processes (available on D2C in Spring '99)
- Compound loop PID for once-through processes with varying flow (available on D2C in Spring '99)

Outputs

- Analog (mA) control output or measured value output to recorder
- Pulse control outputs for metering pumps (adjustable from 1 to 500 pulses/minute) (D1C only)
- Relay control outputs for solenoid valves or constant speed pumps with adjustable minimum on-time
- Actuator relay control output with feedback for stroke positioners or control valves
- General fault annunciation relay changes state on internal faults, loss of sensor signal, exceeding either high or low limit
- High and low limit relays

Dulcometer D1C/D2C Series (cont.)

Typical Applications

pH - Control acid and/or base feed via metering pumps or valves to adjust pH

ORP - Control hypochlorite metering pump to maintain oxidant residual; or control sulfonator or bisulfite metering pump for dechlorination

Free Chlorine - Control chlorination or hypochlorite metering pump to maintain residual

Total Chlorine - Control chlorination or hypochlorite metering pump to maintain residual; or control sulfonator or bisulfite metering pump for dechlorination

Bromine - Control tablet brominator via solenoid valve; or bromine solution metering pump to maintain residual

Conductivity - Control conductivity through valve on blowdown/makeup for rinse bath, boiler or cooling tower

Dissolved Ozone - Control ozone generator output to maintain residual

Chlorine Dioxide Concentration - Control chlorine dioxide generator output to maintain residual

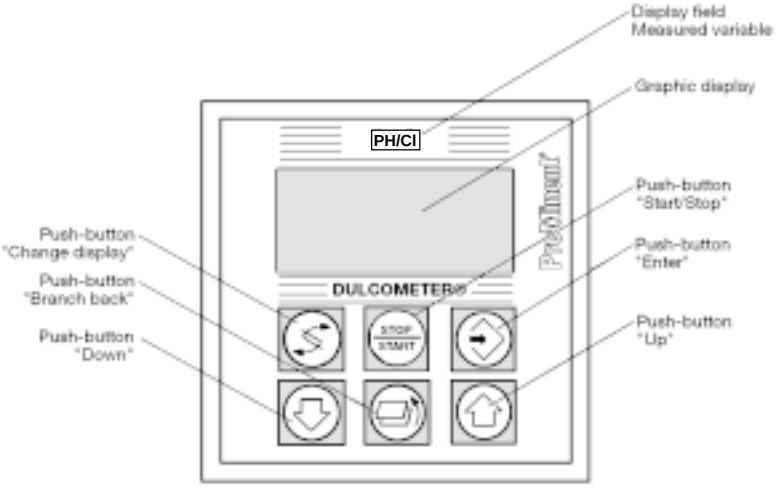
Temperature - Control heater or heat exchanger to maintain bath temperature or process cooling

Analog Signal Inputs - Control virtually any measureable and adjustable process where the measuring device has an analog output and the adjusting device may be controlled by one of the D1C's available control outputs

Peracetic Acid - Monitor or control concentration to ensure disinfection

Hydrogen Peroxide - Control peroxide metering pump for oxidation or advanced oxidation (AOX) systems

User Interface



	CHANGE DISPLAY menu button To change over within a menu level and to change from one variable to another within a menu point.		UP menu button To increase a displayed numerical value and to change variables (flashing display).
	START/STOP menu button Start/stop of control function.		BRANCH BACK menu button To exit operating menu (back to start of relevant setting).
	ENTER menu button To accept, confirm or save a displayed value or status. For alarm acknowledgement.		DOWN menu button To decrease a displayed numerical value and to change variables (flashing display).

Identity Code: Dulcometer D1C Controller

Series:
D1C DULCOMETER one-channel

Series version:
A Standard

Type of mounting:
W Wall mounting
D Panel mounting

Operating voltage:
0 230 VAC, 50/60 Hz, 1 ph.
1 115 VAC, 50/60 Hz, 1 ph.
4 24 V AC/DC

Note: Power cord not included with unit. For 115 V US & Canada power cord, see PN. 741203.4

Measured variables:
P pH
R Redox/ORP
C Chlorine
L Conductivity
Z Ozone
D Chlorine dioxide
T Temperature
S Standard process signal (0/4-20 mA)
A Peracetic acid
H Hydrogen peroxide

Connection for sensor input:
1 Standard signal 0/4-20 mA
2 SN6 plug (From pH or ORP sensor cable)
3 Terminal for standard conductivity cell (L)
4 Terminal for PT 100 temperature sensor (T)
5 Terminal for mV signal (From pH or ORP sensor cable)

Correcting value: (** Not available for measured variables A & H)
0 None**
1 pH for free chlorine
2 Temperature correction terminal for P or L (Temperature monitoring only for other variables)
3 Temperature correction terminal for 4-20 mA signal for P or L (Temperature monitoring only for other variables)
4 Manual temperature setting for P or L

Feed forward control:
0 None
1 0/4-20 mA signal
2 0-500 Hz signal
3 0-10 Hz signal

Pause contact:
0 None
1 Pause contact

Analog signal output (0/4-20 mA): (** Not available for measured variables A & H)
0 None
1 Measured value (For recording)
2 Control action
3 Measured correcting value
4 Two current outputs **

Relay outputs:
A Alarm relay
G Alarm + 2 limit relays
M Alarm + 2 control relays
R Alarm + positioner relays w/ position feedback potentiometer

Pump pacing:
0 None
2 Two pulse control outputs

Control action:
1 Proportional control
2 PID control

Interface:
0 None (Future versions will have RS interface)

Language:

D †	German	P	Polish
H	German	A	Swedish
E †	English	J	Japanese
F †	French	C	Chinese
S	Spanish	B	Portugese
I	Italian	U	Hungarian
N †	Dutch	T	Thai
		K	Korean

(† Languages for variables A & H)

D1C A W 1 P 2 2 1 1 1 G 2 2 0 E

Identity Code: Dulcometer D2C Controller

Series:
D2C DULCOMETER two-variable

Series version:
A Standard

Type of mounting:
W Wall mounting
D Panel mounting

Operating voltage:
0 230 VAC, 50/60 Hz, 1 ph.
1 115 VAC, 50/60 Hz, 1 ph.
4 24 V AC/DC
Note: Power cord not included with unit. For 115 V US & Canada power cord, see PN. 741203.4

Measured variables:
PC pH/Chlorine
PR pH/Redox
PP pH/pH

Measurement variable 1 connection (Variable 2 connection: 4-20 mA):
1 Standard signal 0/4-20 mA
2 SN6 plug (From pH or ORP sensor cable)
5 Terminal for mV signal (From pH or ORP sensor cable)

Correcting value:
0 None
2 Temperature correction terminal
4 Manual temperature setting

Pause contact:
0 None

Analog signal output (0/4-20 mA):
0 None
4 Two current outputs

Relay outputs:
A Alarm relay
G Alarm + 2 limit relays
M Alarm + 2 control relays
R Alarm + positioner relays w/ position feedback potentiometer

Control action:
1 Proportional control
2 PID control

Interface:
0 None (Future versions will have RS interface)

Language:
D German
E English
F French
S Spanish

D2C	A	W	1	PR	1	0	0	4	G	1	0	E

Identity Code Options for D1C / D2C Controllers

NOTE: OPTIONS ARE NOT THE SAME FOR BOTH D1C AND D2C CONTROLLERS. REFER TO THE IDENTITY CODE.

SERIES:

D1C = Single variable controller

D2C = Dual variable controller

SERIES VERSION:

A = Standard

MOUNTING:

W = Wall mount enclosed in NEMA 4X non-metallic housing. Includes detachable mounting plate in back to allow easy removal from wall. Features five Pg11 and five Pg7 glands for wiring power cord, relays, SN6 connectors, etc.

D = Panel mount (no enclosure). Fits 3.78" x 3.78" (9.6 cm x 9.6 cm) opening, 5.51" (14 cm) depth. The unit must be mounted in an enclosure suitable for the environment. The controllers's membrane switch face and gasketed frame provide NEMA 3 (IP 54) protection; mounting hardware included. For optional wall mount enclosure for the panel mount controller, see PN 790235.8.

OPERATING VOLTAGE:

0 = 230 VAC, 50/60 Hz, 1 phase
1 = 115 VAC, 50/60 Hz, 1 phase
2 = 200 VAC, 50/60 Hz, 1 phase*
3 = 100 VAC, 50/60 Hz, 1 phase*
4 = 24 V AC/DC

Note: Power cord not included with unit. For 115 V US power cord, see PN 741203.4

*Not for measured varialbe L (Conductivity)

D1C MEASURED VARIABLES:

P = pH: For wall mount, use connection 2 (SN6) for push-and-twist connectors with pH sensors (PHEX, PHE, PHEP, PHED). For panel mount, use terminal connection 5 for same sensors. For distances between 30 and 300 feet from sensor to controller, add impedance converter, PN 305350.1. For distances > 300 feet from sensor to controller or with stray currents, use connection 1 with signal converter pH V1 (PN 809126.6) giving 4-20 mA output.

R = Oxidation Reduction Potential: For wall mount, use connection 2 (SN6) for push-and-twist connectors with ORP sensors RHEX or RHE. For panel mount, use terminal connection 5 for same sensors. For distances between 30 and 300 feet from sensor to D1C, add impedance converter, PN 305350.1. For distances > 300 feet from sensor to D1C or with stray currents, use connection 1 with signal converter rH V1 (PN 809127.4) giving 4-20 mA output.

C = Chlorine; use connection 1. For free chlorine (hypochlorous acid) measurement, use CLE3 - mA, 2 ppm or 10 ppm sensors. See "correcting value" for optional pH correction on free chlorine. For total chlorine or bromine measurement, use CTE - mA - 0.5 ppm, 2 ppm or 10 ppm sensors.

L = Conductivity; use connection 1 for conductivity cells with transducer giving 4-20 mA output. Use connection 3 for standard conductivity cells.

Z = Ozone; use connection 1 and OZE 3-mA-2 ppm sensor.

D = Chlorine Dioxide; use connection 1 and CDE 2 - mA - 0.5 ppm, 2 ppm or 10 ppm sensors.

T = Temperature; use connection 4, terminal, with PT100 sensor. For distances > 30 feet from sensor to D1C, use connection 1 with signal converter PT 100 V1 (PN 809128.2) giving 4-20 mA output.

S = Standard signal 0/4-20 mA. Use connection 1 with any measuring device that outputs a 0-20 or 4-20 mA signal corresponding to the measured value. Display is as a percent of input current.

A = Peracetic Acid; use connection 1 with transducer corresponding to desired measuring range.

H = Hydrogen Peroxide; use connection 1 with transducer corresponding to desired measuring range.

D2C MEASURED VARIABLES:

PC = pH/chlorine: See above descriptions for each variable.

PR = pH/Oxidation Reduction Potential: See above descriptions for each variable.

PP = pH/pH: See above descriptions for each variable.

CONNECTION FOR SENSOR INPUT (FOR VARIABLE 1 CONNECTION ON D2C CONTROLLERS):

1 = Standard signal 0/4-20 mA

2 = SN6 plug connector for pH (P) or ORP (R). Usually, this is only used with the wall mount since SN6 plugs cannot pass through cable glands on a panel mount enclosure.

3 = Terminal for standard conductivity cell (L)

4 = Terminal for PT 100 temperature sensor (T)

5 = Terminal for mV input on standard pH (P) or ORP (R) sensors

CORRECTING VALUE:

1 = pH for free chlorine (total chlorine does not require pH correction); corrects CLE sensor's hypochlorous acid (HOCl) measurement by chlorine dissociation curve to display free chlorine ($HOCl + OCl^-$). The correcting pH input must be a 4-20 mA signal, requiring signal converter PH V1 (PN 809126.6).

2 = Temperature for P or L via terminal for PT 100 sensor. Required for accurate pH measurement when operating at extreme pH values and high temperatures. Required for accurate conductivity measurement at varied temperatures. (Temperature monitoring only for other variables)

3 = Temperature for P or L via 0/4-20 mA signal; used with signal converter PT 100 V1 (PN 809128.2) and PT 100 sensor. Feed Forward control is not possible with this option. (Temperature

Identity Code Options for D1C/D2C Controller (cont.)

monitoring only for other variables)

4 = Manual temperature entry for P or L (no sensor); used where temperature is constant.

FEED FORWARD CONTROL - The D1C's control output is based on measured value; however, with feed forward control, a signal from a flow meter proportions the control output considering both the measured value and process flow rate. This eliminates the need for both variable speed drives and stroke positoners on compound loop control metering pumps. Several types of signals may be accepted proportional to process flow.:

0 = None

1 = 0/4-20 mA signal (such as from a magmeter or open channel flow meter)

2 = 0-500 Hz signal (such as from a paddlewheel sensor)

3 = 0-10 Hz (0-600 pulses/min.) signal (such as from a pulse-type water meter)

PAUSE CONTACT - The pause contact allows the controller to continue monitoring measured value, but stops control outputs when the NC contact is opened. This may be used to stop metering when a main water pump is stopped, or when water flow in the sample line to the sensor is blocked as signaled by the DGMa rotameter.:

0 = None

1 = Pause contact

ANALOG OUTPUTS (0/4-20 mA) - Note that only one analog output is possible; therefore, you cannot have an analog control output and an analog measured value output for recording. If this control output is used, it can only be for one-way control such as acid feed for pH control. For bi-directional control, use relay or pump pacing control outputs.:

0 = None

1 = Measured value; normally used for chart recorder, datalogger or DCS.

2 = Control action; normally used to control a variable speed drive or actuator.

3 = Measured correcting value; normally used for recording or as input to a second D1C.

4 = Two current outputs (Not for measured variables A and H)

RELAY OUTPUTS:

A = Alarm relay: changes state when high or low limits are exceeded, internal faults are sensed, 4-20 mA input signal is lost or sensor has failed as determined by no change in the measured variable over a time period adjustable between 1 and 9999 seconds.

G = Alarm + 2 limit relays: limits may be on either side of setpoint, or both limits may alarm on one side, such as low limit and low, low limit. May be used to start a constant rate feeder for simple setpoint control, or a baseline feeder to handle large swings with trim pump on the control output.

M = Alarm + 2 control relays: used to start and stop constant speed pumps or to open and close solenoid valves for opposing functions. Modulating output corresponds to whatever control action is selected (proportional or PID). The minimum "on-time" period may be adjusted from 1 to 9,999 seconds.

R = Alarm + 2 positioner relays with positioner feedback from 1 kOhm feedback potentiometer. Positioner status displayed on LCD. Used for ProMinent 3P stroke positioning motors or valve positioners. Output corresponds to whatever control action is selected (proportional or PID).

PUMP PACING - gives pulse outputs for controlling 1 or 2 metering pumps:

0 = None

2 = Outputs for one or two pulse-control metering pumps (spannable from 0-500 pulses per minute); for opposing functions. Pulse (dry contact) output corresponds to whatever control action is selected (proportional or PID).

CONTROL ACTION:

0 = None; for use as monitor or setpoint relay controller only.

1 = Proportional control; used for batch processes, where output signal is proportional to the measured variable such that the farther from setpoint the greater the output; the closer to setpoint the lesser the output.

2 = PID control; used for once-through or difficult to control processes, providing proportional, integral and derivative control actions, or a combination thereof.

INTERFACE:

0 = None (Future versions will have RS interface available)

LANGUAGE - Note that it is possible to change among other languages in the field, as indicated in parentheses:

†E = English (D, F, N)	A = Swedish (D, E, P)
†F = French (D, E, N)	J = Japanese (D, E)
S = Spanish (D, I, F)	C = Chinese
†D = German (E, F, N)	B = Portugese (S, F, E)
H = German (F, I, S)	U = Hungarian (P, F, E)
I = Italian (D, F, S)	T = Thai
†N = Dutch (D, E, F)	K = Korean
P= Polish (D, E, A)	

†Languages available for measured variables A and H

NOTE: Power cord not included.

Power cord, 6 ft. (2 m) 115 VAC	741203.4
Power cord, 6 ft. (2 m) 230 VAC	7724015.8

Specifications for Wall and Panel Mount D1C/D2C

ProMinent®

Temperature data (Panel Mount)

Permissible ambient temperature

Basic version: Control panel installation: 32° to 122°F (0° to 50°C)
Installation in wall-mounted housing: 23° to 113°F (-5° to 45°C)

Extended version (with status feedback or with correction value via mA or with disturbance variable via mA: Control panel installation: 32° to 113°F (0° to 45°C)
Installation in wall-mounted housing: 23° to 104°F (-5° to 40°C)

Permissible storage temperature: Control panel installation: 14° to 158°F (-10° to 70°C)

Material data/chemical resistance:

Part	Material
Housing and frame	PPO GF 10
Rear panel	PPE GF 20
Membrane keypad	Polyester film PET
Seal, outside	Cellular rubber CR
Seal, inside	Silicon-based sealing compound
Retaining clip and screws	Galvanized steel

Temperature data (Wall Mount)

Permissible ambient temperature

Basic version: 23° to 122°F (-5° to 50°C)
Installation in wall-mounted housing: 23° to 113°F (-5° to 45°C)

Extended version (with status feedback or with correction value via mA or with disturbance variable via mA: 23° to 104°F (-5° to 40°C)

Permissible storage temperature: 14° to 158°F (-10° to 70°C)

Material data/chemical resistance:

Part	Material
Housing	Luranyl PPE GF 10
Membrane keypad	Polyester film PET
Housing seal	Cellular rubber CR
Outer seal	Cellular rubber CR
Retaining bracket	Galvanized steel
M5 screws	A2

Standards:
Supply voltage in accordance with DIN IEC 38
Electrical safety in accordance with EN 61010-1
Electromagnetic emitted interference in accordance with EN 55011 Gr.1/C1.A
CSA special inspection

Electrical data:	***Panel Mount***	***Wall Mount***
Rated voltage:	115/230 VAC, 50/60 Hz	115/230 VAC, 50/60 Hz
Max. power input:	140 mA at 115 V 70 mA at 230 V	120 mA at 115 V 60 mA at 230 V
Internal fuse protection:	Fine-wire fuse 5 x 20 mm 250 V slow-blow 100-115 V = 315 mA 200-230 V = 160 mA	Fine-wire fuse 5 x 20 mm 250 V slow-blow 100-115 V = 315 mA 200-230 V = 160 mA

Rated voltage: 100/200 VAC, 50/60 Hz
Max. power input: 150 mA at 100 V
75 mA at 200 V

Internal fuse protection: Fine-wire fuse 5 x 20 mm
250V slow-blow
100-115 V = 315 mA
200-230 V = 160 mA

Electrical data for both wall mount and panel mount D1C's

Rated voltage: 24 VDC or 24 VAC, 50/60 Hz (low voltage operation only)
Internal fuse protection: Fine-wire fuse 5 x 20 mm
250 V slow-blow, 100-115 V = 315 mA, 200-230 V = 160 mA

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Specifications (cont.)

Sensor input via SN6 socket:	Input impedance > 10^{12} Ω	
	Input impedance with reference electrode with respect to:	
	Device ground:	<1 kΩ
	Input range:	±1 V
	Accuracy:	±0.5% of input range
	Resolution:	0.0625% of input range
	Connection facility for one potential equalization electrode (solution ground). As an alternative, two connection terminals can be connected with a wire jumper.	
Sensor input via terminals:	Input impedance:	>5 x 10^{11} Ω
	Input impedance with reference electrode with respect to:	
	Device ground:	<1 kΩ
	Input range:	±1 V
	Accuracy:	±0.5% of input range
	Resolution:	0.0625% of input range
	Connection facility for one potential equalization electrode (solution ground). As an alternative, two connection terminals can be connected with a wire jumper.	
Standard signal input for measured variable:	Input range:	0/4...20 mA (programmable)
	Input impedance:	50 Ω **(Panel Mount)**; -50 Ω **(Wall Mount)**
	Accuracy:	0.5% of input range
	Resolution:	0.014/0.012 mA
	Supply voltage and current for external electronics: 20 V ±0.5 V, 20 mA	
Standard signal input for correction measured value or disturbance variable mA:	Galvanically isolated from remaining inputs and outputs	
	Insulation voltage:	500 V
	Input range:	0/4...20 mA (programmable)
	Input resistance:	50 Ω
	Accuracy:	0.5% of input range
	Resolution:	0.014/0.012 mA
	Supply voltage and current for external electronics:	23 V ±1 V, 20 mA **(Panel)** 19 V ±1.5 V, 20 mA **(Wall)**
Pt100 input:	Input range:	32° to 212°F (0° to 100°C)
	Accuracy:	±0.5°C
	Resolution:	0.1°C
Digital inputs:	Common reference potential with respect to each other and with the RS 232 interface, but galvanically isolated from remaining inputs and outputs	
	Insulation voltage:	500 V **(Wall Mount only)**
	Disturbance variable:	Up to 10 Hz or up to 500 Hz (as per identity code/ programmable)
Status signaling input:	Galvanically isolated from remaining inputs and outputs	
	Insulation voltage:	500 V
	Potentiometer to be connected: 800 Ω ...10 kΩ	
	Accuracy (without potentiometer error): 1% of input range	
	Resolution:	0.5% of input range
Current output:	Galvanically isolated from remaining inputs and outputs	
	Insulation voltage:	500 V **(Wall Mount only)**
	Output range:	0/4...20 mA (programmable)
	Maximum load:	600 Ω
	Accuracy:	0.5% of output range with respect to displayed value
Frequency outputs (Reed relay)	Type of contact:	n/o contact, interference suppressed with varistors
	Load capacity:	100 V peak, 0.5 A switching current **(Panel Mount)** 25 V peak, 0.5 A switching current **(Wall Mount)**
for pump control:	Contact service life:	>50 x 10^6 switching operations at contact load 10 V, 10 mA
	Max. frequency:	8.33 Hz (500 strokes/min)
	Closing time:	100 ms
Power relay output for alarm signaling:	Type of contact:	Changeover contact, interference supressed with varistors
	Load capacity:	250 VAC, 3 A, 700 VA
	Contact service life:	>50 x 10^6 switching operations **(Panel Mount)** >20 x 10^6 switching operations **(Wall Mount)**

Specifications (cont.)

Power relay output for for control variable output or limit value signaling:	Type of contact:	n/o contact, interference supressed with varistors
	Load capacity:	250 VAC, 3 A, 700 VA
	Contact service life:	>20 x 10^6 switching operations
Serial interface: (not yet available)	in accordance with RS 232	
	Baud rate:	4800, 9600 Bd (programmable)
	Other parameters:	1 stop bit No parity bit 8 bit data length
	Control:	XON/XOFF

Electrotechnical Safety/Radio Interference Protection:

EC low voltage directive (73/23/EEC) subsequently 93/44/EEC

EC EMC directive (89/336/EEC) subsequently 92/31/EEC

Supply voltage in accordance with DIN IEC 38

Electrical safety in accordance with EN 61010-1

Electromagnetic emitted interference in accordance with EN 55011 Gr. 1/Cl B

Noise immunity in accordance with IEC 801-2, -3, -4 or DIN VDE 0843, Part 2, Part 3, Part 4 or EN 50082-2

EN 60335-1:	Safety of electrical devices for domestic use
EN 50081-1:	EMC, emitted interference, residential
EN 50082-2:	EMC, noise immunity, industrial
EN 60555-2:	EMC, reactions in power supply networks, harmonics
EN 60555-3:	EMC, reactions in power supply networks, voltage fluctuations