

Fermenter Control

Photometric Converter



- Multiplex two probes to one converter
- Individualized scaling and linearization for different cell cultures
- Damping functions compensate for external effects and disturbances
- Internal multi-channel data logger
- Noise rejection signal processing circuitry
- High-resolution outputs: 4-20 mA and 0-10 V
- 7 menu languages selectable: German, English, French, Dutch, Spanish, Portuguese and Russian

The new Fermenter Control photometric converter is specifically designed to easily integrate into existing bioreactors and fermenters.

Using input from one or two optek ASD-series photometric probes, the Fermenter Control precisely measures cell growth/biomass as a function of Near Infrared (NIR) absorption.

The menu-based software is easy to use and configure and is now available in French, Dutch, Spanish, Portuguese and Russian in addition to German and English.

The results can be displayed in any laboratory unit, such as OD, AU, Cell Count or Cells/ml. Noise-rejection signal processing provides measurement stability and reliability even in systems with a high degree of aeration and agitation.

The integrated, four-channel data logger stores measurement results in user-selectable time intervals.

Actual results and trend readings can be displayed simultaneously. Set-points, tables and parameters can be stored and even changed by remote I/O. The data can also be transferred to a PC for further analysis.

Three independent set points as well as one or two mA-outputs (4-20 mA) and one or two voltage outputs (0-10 V) are available for alarm and monitoring.

An additional relay output (failsafe) is built in for remote sensing of lamp or power failure.

The Fermenter Control is panel-mountable and is optionally available in a benchtop case for laboratory-scale applications and for portability.

A 115/230 V AC or 24 V AC/DC power supply is available.

Configuration

Fermenter Control

Configuration Fermenter Control	FC10	FC12	FC20	FC22
mA-outputs (4-20 mA)	1	1	2	2
V-outputs (0-10 V)	1	1	2	2
mA-inputs (4-20 mA)	-	2	-	2
Remote-inputs	-	7	-	7
Remote-zero	-	X	-	X
Relay outputs	3	3	3	3
Failsafe (active)	1	1	1	1
Lamp outputs	1	1	2	2
Detector inputs	1	1	2	2
Sensor connections				
1 sensor ASD19	X	X	X	X
1 sensor ASD25	X	X	X	X
2 sensors ASD19 + ASD19			X	X
2 sensors ASD25 + ASD25			X	X
2 sensors ASD19 + ASD25			X	X



Probe ASD19-N-EA/ASD19-N-EB

NIR Absorption, Single Channel
 Concentration Measurement
 Industry-standard, 19 mm port (M26x1)
 Insertion depth ASD19-N-EA: 210 mm + OPL
 Insertion depth ASD19-N-EB: 310 mm + OPL



Probe ASD25-N

NIR Absorption, Single Channel
 Concentration Measurement
 Standard Port Ø 25 mm (H7) (Ingold)
 Insertion depth: 35 mm + OPL
 or 65 mm + OPL



Probe ASD25-BT-N

NIR Absorption, Single Channel
 Concentration Measurement
 Safety Port Ø 25 mm (H7) (BBI)
 Insertion depth: 35 mm + OPL

Technical Data

Fermenter Control



Housing:

19"-version, 3 HE / 42 TE (front IP40 / rear IP20)

Housing material:

stainless steel

Display:

graphic display 240 x 128 pixel,

LED-background illuminated

Display update: 0.5 seconds

1 LED (green): power on

3 LED (yellow): alarm I, II, III

1 LED (red-flashing): lamp failure

Display modes:

Numeric with bargraph, continuous trend-line and others configurable in any combination

Software tools:

product definition: 8 user-configurable products

8 offset + slope sets

linearization: 16 user-configurable tables

auto zero: local or remote activated zero

calibration: mA Input/Output, V Output

damping: selectable symmetric or asymmetric signal damping from 0 to 99.9 seconds

memory: upon power failure, non-volatile memory retains all configurations and logged data

password protection: codes for three levels

Data logger:

4 parallel channels > 25,000 data points

resolution max. 1/second, cycle memory

System clock:

accuracy approx. 1 minute / month, battery life about 15 years

Operation:

18 push buttons keyboard

Language:

English, German, French, Spanish, Dutch, Portuguese, Russian

optek-inputs:

1 or 2 inputs for probes, 1 mA to 500 pA

linearity: typically < 0.1 %, max. 0.5 %

accuracy: typically < 0.3 %, max. 0.5 %

mA-inputs:

0 or 2 inputs, 4 - 20 mA, galvanically isolated, min. 500 V DC,

- accuracy: < 0.5 %

- resolution: < 0.05 %

- load: 200 Ohm

Remote inputs:

optional 7 inputs, 18 - 29 V DC, typically 6.0 mA

Relay-outputs:

3 outputs, 0 - 50 V AC, 0 - 75 V DC, 0 - 2 A, single pole selectable: alarm indicator / status feedback

Failsafe:

1 SPDT contact to alarm in case of lamp or system failure (active), 0 - 50 V AC, 0 - 75 V DC, 0 - 2 A

mA-outputs:

1 or 2 outputs, 4-20 mA (NAMUR), galvanically isolated, min. 500 V DC

- accuracy: < 0.5 %

- resolution: < 0.05 %

- permitted load: 0-600 Ohm

V-outputs:

1 or 2 outputs, 0 - 10 V DC, galvanically isolated, min. 500 V DC

- accuracy: < 0.5 %

- resolution: < 0.05 %

- output impedance: 500 Ohm

Lamp outputs:

1 or 2 outputs, 5.40 V DC for optek ASD-series sensors

Serial communication:

RS232 bi-directional interface

Ambient conditions:

during operation (no direct light):

- converter: -10 °C to +55 °C, (+14 °F to +131 °F)

- in housing T19-42: -20 °C to +45 °C, (-4 °F to +113 °F)

- transport: -20 °C to +70 °C, (-4 °F to +158 °F)

EN 61010-1 / 2002-08 / class 2, category II

Internal operating temperature:

-20 °C to +75 °C, (-4 °F to +167 °F)

Power supply (fixed):

115/230 V AC, selectable or 24 V AC/DC

Power consumption:

max. 50 VA

Cable length:

10 m (33 ft.)

Certificates:

ISO 9001:2000, GS, CE

Use with probes ASD19, ASD25 or ASD25-BT!

Options



Measuring cells for any application

IP65-version

for front panel mounting with gasket
IP65 front side

T19-42 Table top housing

front IP40 / rear IP20

PC-Transfer Software

Software Fermenter Control PC-Transfer
and manuals on CD-ROM



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