

Product Data Sheet

Gas Multiplexer GMUX



Introduction

Analysing the exhaust gas composition from a fermenter provides continuous observation of the metabolism of microorganisms or cells. The data generated can be used for simple batch history or enhanced process control. Very often exhaust gassed have to be analysed from more than one fermenter. The Gas Multiplexer (GMUX) Unit with integrated Multiplexer Controller meets this requirement. GMUX systems are available for connecting up to 4,8,12 or 16 fermenters and can be combined with any Gas Analyser. All components are housed in a stainless steel benchtop unit.

- Gas Multiplexer with integrated controller
- Can be used with any Gas Analyser
- Up to 16 gassing lines
- Connection to MFCS/win SCADA system

General

The Multiplexer controller periodically switches the selected fermenter exhaust line (measurement channels) to the analyser via 3/2-way solenoid valves. An additional gas flow pump in the bypass line provides a constant gas flow and ensures a « fresh » sample reaches the analyser in the shortest amount of time. Selection of the active fermenters, cycle and delay times are programmed in GMUX Controller. The gasses pass to the Analyser and the results are transmitted back to the GMUX Controller for integration in a PC based SCADA system or presentation via chart recorder.

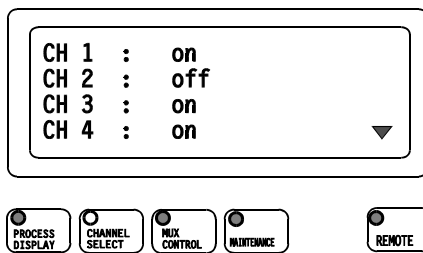
Product Data Sheet

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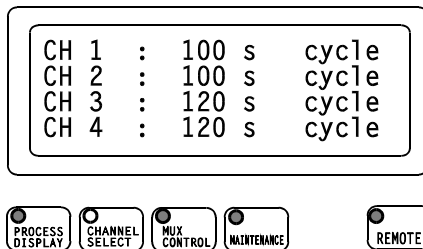
Multiplexer Controller

This system is based on a microcomputer, equipped with a special tailored standard software and an ergonomical optimized operation terminal. All functions and settings are defined via a splash-proof membrane keypad.

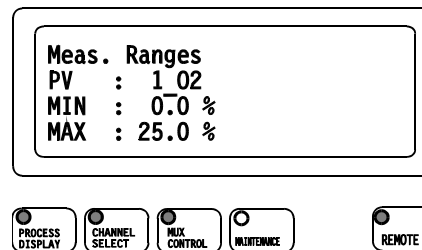
The Multiplexer Control operates according to the following principle:



Each measurement channel can individually switched-on and off for the multiplexer operation. Depending on the application and the GMUX version, 1...4 measured values can be assigned to each channel.



According to different measuring requirements, individual measurement cycle time can be defined for each channel and individual measurement ranges can be defined for each value.



According to channel and cycle time settings, solenoid valves switch-over the sample gas line to the measurement line of the gas analyzer in sequential order. An additional gas flow pump in the bypass line provides a constant gas flow and ensures a « fresh » sample reaches the analyser after switching to the related channel.

At switching-over of the channels the new measured values of a measuring cycle will be transmitted after an adjustable delay time.

The Multiplexer Controller temporarily stores the measured values of the inactive measurement channels. All unassigned channels will get the entry „zero“ in the display and in the memory.

Due to the temporary storage of all values, the connected SCADA system can “ask” for the measurement values at any point of time.

As long as the Multiplexer-Controller is in “Calibration” state, it transmits a related status signal.

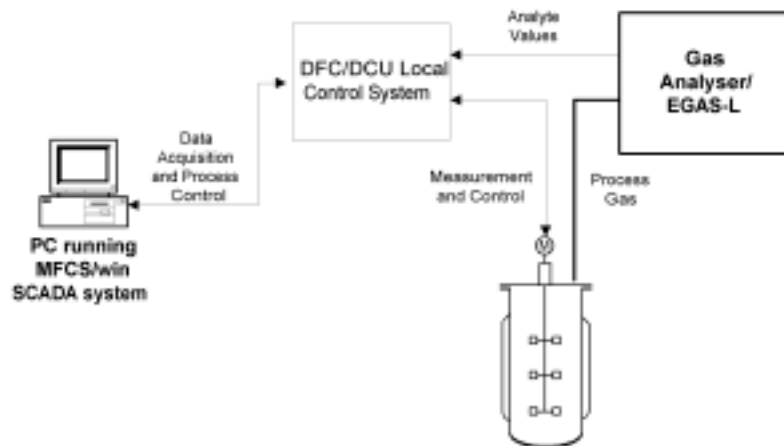
Product Data Sheet

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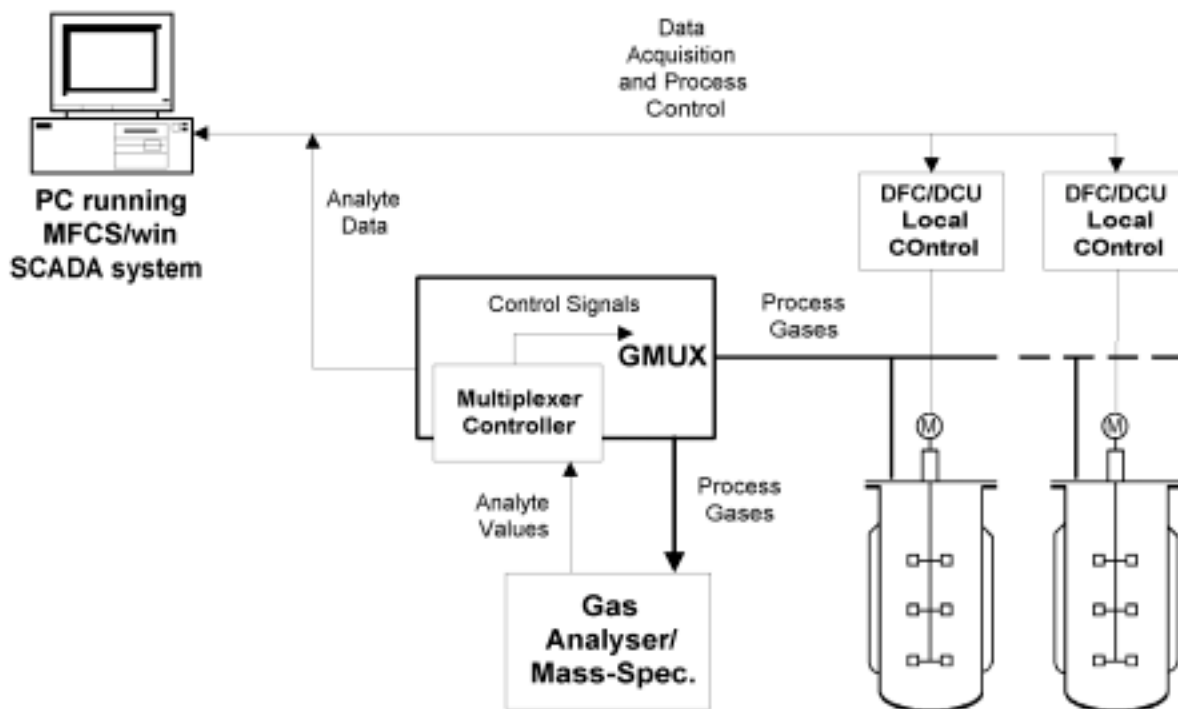
Connection to SCADA system

When used with MFCS/win SCADA system, exhaust gas values can be just stored, or used to generate on-line calculations e.g.CER,OUR and RQ as a basis for enhanced control strategies.

Measuring exhaust gas from a single fermenter, connection to the SCADA system is done via the local controller (Micro-DCU, DCU).



If the Analyser shall analyse exhaust gas from more than one fermenter, Gas-Multiplexing and data transmission is done with and via BBIs GMUX system.



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Technical Data / Summary

Cabinets

Dimensions

GMUX 4,8	(W x H x D) 520 x 300 x 600 mm
GMUX 12,16	(W x H x D) 520 x 300 x 1200 mm

Weight

GMUX 4,8	39 kg
GMUX 12,16	42 kg
Mains	230 V, 50...60 Hz / 115 V, 50...60 Hz
Power consumption	100 VA

Multiplexer MUX 100

Microprocessor system	Elan SC400, AMD, 2 MByte DRAM, 32 kByte SRAM, 512 kByte EPROM, 256 Byte EEPROM, 512 kByte Flash
Operation	LCD-display and splash-proof key pad, IP 54
Cycle times	default time 120 sec. (adjustable within 1...999s), for each channel separately
Delay time	default time 60 sec.
Channel selection	each channel can be switched on or off separately
Measurement ranges	Vol% for each measurement value separately
Analyser values	
GMUX 4,8	Up to 4
GMUX 12,16	Up to 2

Peripheral Connections

Analog inputs	4 analog inputs 4 ... 20 mA at 500 Ω
Recorder connection	8 voltage outputs 0 ... 10 VDC (configurable)
Valve outputs	16 digital outputs 24 VDC, 0,5 A
Status signals	3 digital inputs relay contact 1 digital output 24 VDC, 0,5 A
PC - connection	DCU - protocol via RS 422 interface

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Related products and modules

- Exhaust Gas Analyser EGAS-L

Ordering Information

Art. Nr.	Description
BB-8840771	GMUX-4 (230 V)
BB-8840770	GMUX-4 (120 V)
BB-8840781	GMUX-8 (230 V)
BB-8840780	GMUX-8 (120 V)
BB-8840731	GMUX-12 (230 V)
BB-8840730	GMUX-12 (120 V)
BB-8840761	GMUX-16 (230 V)
BB-8840760	GMUX-16 (120 V)

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