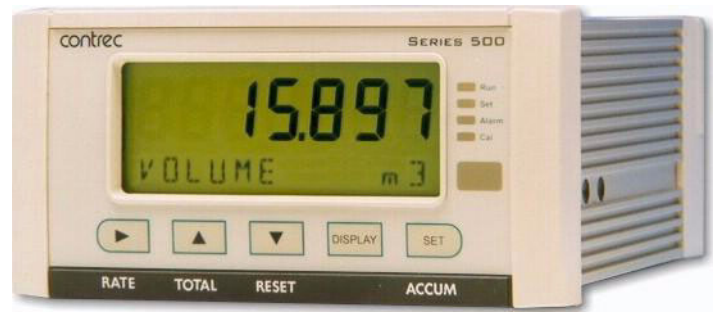


Application FC04

Single Channel Flow Computer

for Mass Analog Flowmeter



Features

- Tailored for mass analog flow input
- Versatile “user value” available on main menu
- Allows for square law and non-linear correction
- Selection of second language and user tags
- RTC logging with up to 100 entries at user-specified scheduled times
- Infra-red communications port on front panel
- Pulse width and scaling of pulse output
- 4-20mA retransmission
- Selectable protocols on serial ports including Modbus RTU and Printer output
- Front panel adjustment of 8-24V DC output voltage
- Backlit display
- LCD backup



Overview

The 505 FC04 application pack is a rate totaliser for the measurement of a product. It uses the 4-20mA analog output from a mass flowmeter.

The flow computer displays the flow rate, resettable total and the accumulated total in the units of measure according to the purchase order.

The analog input can be scaled as well as having filtering, square law or non-linear correction and cutoff points applied to the signal.

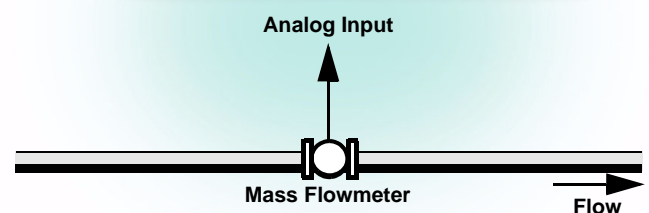
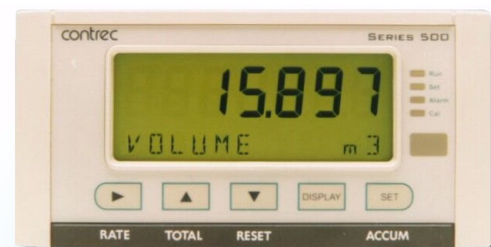
A freely programmable “user value” on the main menu can serve as a setpoint for the 4-20mA output or as an operator identifier to be logged.

Calculations

To derive the flow rate, the analog input is normalised to a value (A) between 0 and 1.

$$massflow = (M_{fmax} - M_{fmin})A + M_{fmin}$$

$$mass = \int (massflow \cdot \Delta t)$$



Displayed Information

The front panel display shows the current values of the input variables and the results of the calculations. A list of the variables for this application and their type (total or rate) is shown at the end of this document.

The instrument can be supplied with a real-time clock for data logging of up to 100 entries of the variables as displayed on the main menu.

Communications

There are three communication ports available as follows:

- RS-232 port (standard)
- RS-485 port (standard)
- Infra-red port (on front panel - display panel option)

The ports are available for remote data reading, printouts and for initial application loading of the instrument.

Retransmission Outputs

The instrument can re-transmit any main menu variable. The digital outputs can re-transmit totals as pulses. If the instrument has the advanced option, it outputs rates as a 4-20mA signal.

Relay Outputs

The relay alarms can be assigned to any of the main menu variables of a rate type. The alarms can be fully configured including hysteresis. Two relays are standard.

Software Configuration

The instrument can be further tailored to suit specific application needs including units of measurement, custom tags, second language or access levels. A distributor can configure these requirements before delivery.

Instrument parameters including units of measurement can be programmed in the field, according to the user access levels assigned to parameters by the distributor.

All set-up parameters, totals and logged data are stored in non-volatile memory with at least 30 years retention.

Terminal Designations

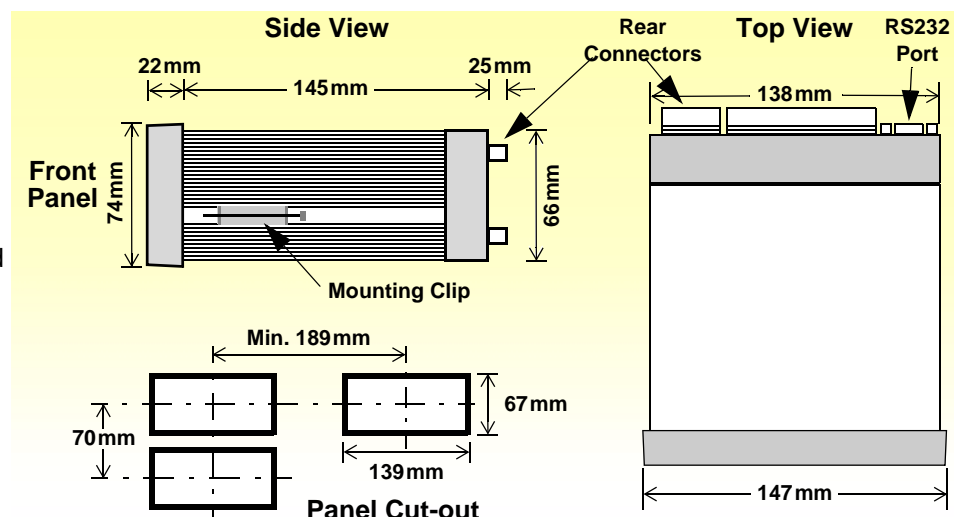
Terminal Label	Designation	Comment
1	RS485 +	RS485 (+)
2	RS485 -	RS485 (-)
3	G	Comms ground
4	Tx	RS232 data out
5	Rx	RS232 data in
6	C	CTS (Clear to send)
7	Io	4-20mA output
8	SG	Signal Ground 0V
9	Li	Logic input
10	D OUT 1+	Open collector o/p 1
11	D OUT 2+	Open collector o/p 2
12	li	4-20mA input
13	SG	Signal Ground 0V
14	Fi	Frequency input
15	Vo	8-24 volts DC output
16	G	DC Ground
17	Vi	DC power input
18	SH	Shield terminal
19	R1	Relay 1
20	RELAYS RC	Relay Common
21	R2	Relay 2
E	E	Mains ground
N	N	Mains neutral
A	A	Mains active
RS232 port		9-pin serial port

Dimension Drawings

Part Number

505.XXXXXX-FC04
see **Product Codes** to select required features

Default Application software:
505-FC04-000000



Specifications

General

Operating Environment

Temperature	0°C to +60°C (conformal coating) +5°C to +40°C (no coating)
Humidity	0 to 95% non condensing (conformal coating) 5% to 85% non condensing (no coating)
Power Supply	95...135 V AC or 190...260 V AC or 12...28 V DC
Consumption	Typically 6W
Protection	Sealed to IP65 (Nema 4X) when panel mounted
Dimensions	147mm (5.8") width 74mm (2.9") height 167mm (6.6") depth

Display

Type	LCD with 7-digit numeric display and 11-character alphanumeric display (backlit option)
Digits	15.5mm (0.6") high
Characters	6mm (0.24") high
LCD Backup	Last data visible for 15min after power down (optional)
Update Rate	0.3 second

Non-volatile Memory

Retention	> 30 years
Data Stored	Setup, Totals and Logs

Approvals

Interference	CE compliance
Enclosure	ATEX, FM, CSA and SAA approved enclosures available for hazardous areas

Real Time Clock (Optional)

Battery Type	3 volts Lithium button cell (CR2032)
Battery Life	5 years (typical)

Inputs

4-20mA Input

Overcurrent	100mA absolute maximum rating
Impedance	250 ohms (to common signal ground)
Accuracy	0.1% typical full scale (20°C) 0.2% (full temperature range)
Non-linearity	Up to 20 correction points (flow inputs)

Remote Key Input

Signal Type	CMOS, TTL, open collector, reed switch
Configuration	One input set as one of front five keys

Outputs

Relay Output

No. of Outputs	2 relays
Voltage	250 volts AC, 30 volts DC maximum
Current	3A maximum

Communication Ports

Ports	RS-232 port RS-485 port Infra-red port (optional)
Baud Rate	2400 to 19200 baud
Parity	Odd, even or none
Stop Bits	1 or 2
Protocols	Modbus RTU, Printer

Transducer Supply

Voltage	8 to 24 volts DC, programmable
Current	70mA @ 24V, 120mA @ 12V maximum
Protection	Power limited output

Pulse/Digital Output

Signal Type	Open collector, non-isolated
Switching	200mA, 30 volts DC maximum
Saturation	0.8 volts maximum
Pulse Width	Programmable: 10, 20, 50, 100, 200 or 500ms

4-20mA Output (Optional)

Supply	24 volts DC internal, non-isolated
Resolution	0.05% full scale
Accuracy	0.05% full scale (20°C) 0.1% (full temperature range, typical)

Important: Specifications are subject to change without notice.

Ordering Information

Product Codes

Model	Supplementary Code						Description
505	- FC04						
Enclosure	1						Panel mount enclosure
	2						Field mount enclosure (not yet available)
	3/5						Explosion proof Ex410 with metric glands (5 specifies heater version)
	4/6						Explosion proof Ex410 with NPT glands (6 specifies heater version)
Output Options	0						Basic - RS232 and RS485 serial ports, 2 relays, 2 pulse outputs, rear key input
	1						Advanced - also includes 4-20mA o/p and Real-time clock for printer output and logging (100 logs)
Extra Options	2						9 way DB connector for RS232 serial port
Power Supply	E						For 220/240 VAC
	A						For 110/120 VAC
	D						For DC power only 12-28 VDC
Display Panel Options	S						Standard (no backlight, LCD backup or Infra-Red comms port)
	F						Fully optioned (with backlight, LCD backup and Infra-Red comms port)
PCB Protection	C						Conformal coating - required for maximum environmental operating range. Recommended to avoid damage from moisture and corrosion.
	N						None - suitable for IEC standard 654-1 Climatic Conditions up to Class B2 (Heated and/or cooled enclosed locations)
Application Pack Number	FC04						Defines the application software to be loaded into the instrument

Example full product part number is 505.112EFC-FC04 (This is the number used for placing orders).

Main Menu Variables

Main Menu Variables	Default Units	Preferred Units	Variable Type
Mass	kg		Total
Mass Flowrate	kg/min		Rate
User Value	- - -		Rate

Please specify the preferred units of measurement.



500 Series in Ex410 Enclosure

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