131 Datasheet

Your success counts

Limited



Batch Controller

Availability with two stage control / pulse and analog output in relation to the flow rate



























The F-Series is your first and safest choice for field mount indicators in safe and hazardous area applications. Especially in harsh weather conditions like rain, snow, salty atmospheres and temperatures between -40°C up to +80°C (-40°F up to 176°F).

Advantages

- Robust aluminum or stainless steel 316L field enclosure (IP67 / NEMA Type4X). It is so rugged, a truck can even stand on it!
- Intrinsically Safe available ATEX and IECEx approval for gas and dust applications.
- Programming can be done by your own crew, with the sensible menu-driven structure, saving cost and irritation. Know one, know them all!
- Very diverse mounting possibilities: walls, pipes, panels or directly onto outdoor sensors!

Features

- Large display shows preset value, running batch value and instantaneous flow rate.
- Self-learning overrun correction and no-flow monitoring.
- Easy to enter a batch value and to control the process.
- Count-up and count-down function available.
- Ability to process all types of signals: Sine wave (coil), NAMUR, NPN/PNP pulse, Reed-switch, Active pulse signals, (0)4 - 20mA.
- Remote control input: Start / Pause / Stop.
- Analog output according to flow rate.
- Two configurable control outputs: for two-stage control or onestage control with scaled pulse output according to acc. total.
- Full Modbus communication RS232/485/TTL.
- Power requirements: Loop or battery powered, 8 30V DC, 8 - 24V AC/DC or 115 - 230V AC.
- Sensor supply 3 / 8.2 / 12 / 24V DC.



Introduction

The F131 offers in addition to the standard functions an analog output signal in relation to the flow rate. The operator can enter a batch quantity easily or execute repeating batches. During the batch, the preset value is displayed as well as the batched (or remaining) quantity and the flow rate. The automatic self-learning overrun correction ensures an accurate result after each batch. A wide selection of options further enhances the capabilities of this model.

Display

The display has large 17mm (0.67") and 8mm (0.31") digits. Besides the proces information, a seven digit resettable "day total" is available as well as an eleven digit non-resettable accumulated total. All values are backed-up in EEPROM memory every minute.

Configuration

All configuration settings are accessed via a simple operator menu which can be password protected. Each setting is clearly indicated with an alphanumerical description, therefore avoiding confusing abbreviations and baffling codes. All settings are safely stored in EEPROM memory in the event of sudden power failure.

Communication

All process data and settings can be read and modified manually or through the Modbus communication link (RS232 / RS485). If desired, the batch process can even be started and stopped through communication. Full Modbus functionality remains available for the Intrinsically Safe version (TTL).



Control outputs

Two outputs are available which can be configured to operate as two stage control for large batch quantities or as one stage control for smaller batches, where the second output is available as a scaled pulse output. The maximum output frequency is 500Hz. The output signals can be passive NPN, active PNP or an isolated electromechanical relay.

Hazardous areas

This model is ATEX and IECEx certified as Intrinsically Safe for gas applications with an allowed ambient temperature of -40°C to +70°C (-40°F to +158°F) and dust applications with an allowed ambient temperature of -40°C to +50°C (-40°F to +122°F). A flame proof Ex d enclosure with ATEX/IECEx certification is also available.

Analog output signal

The flow rate is re-transmitted with the (0)4-20mA or 0 - 10V DC output signal. The output signal is updated eight times per second with a filter function being available to smoothen out the signal if desired. The output value is user defined in relation to the flow rate, e.g. 4mA equals to 15L/Hr and 20mA equals to 2000L/Hr. The output signal can be passive, active or isolated where the passive output type will loop power the F131 as well.

No-flow

If there is a predefined time-out in the input signal, the no-flow alarm will be triggered. The F130 goes in pause-mode and the display will show: NO FLOW.



All info at a glance



Easy to install



Easy to program



Know one know them all!



Reliable

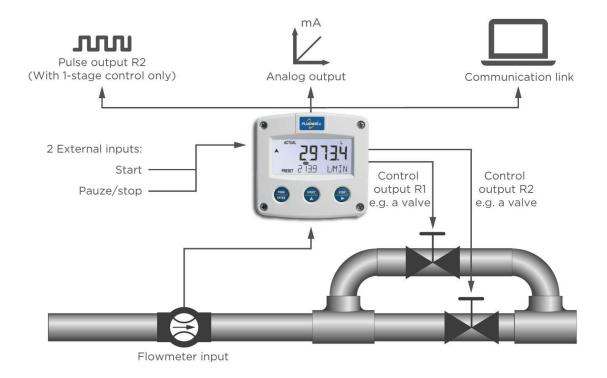


User-friendly



Overview application F131

The F-Series is your first and safest choice for field mount indicators in safe and hazardous area applications. Especially in harsh weather conditions like rain, snow, salty atmospheres and temperatures between -40°C up to +80°C (-40°F up to 176°F). For batching small up to very large quantities. Flow rate indication and / or retransmission is required. Alternative basic model: F030 and F130 or more sophisticated models: F136 and the the N-Series DIN panel mount batch controllers with numerical keypad.



Signal input

The F131 will accept most pulse and analog input signals for volumetric flow or mass flow measurement. The input signal type can be selected by the user in the configuration menu without having to adjust any sensitive mechanical dip-switches or jumpers. The analog input is available with linear and square root calculation and even as 4 - 20mA input loop powered.

Type of signal	Resistance	Low Pass filter (LP)	Max. frequency	Max. frequency Low Pass filter (LP)	Min. amplitude P-P	Remark
NPN	100kΩ pull-up	100kΩ pull-up	6kHz Threshold 1.2V	1.2kHz		Open collector
REED	1MΩ pull-up	1MΩ pull-up	1.2kHz Threshold 1.2V	120Hz		
PNP	100KΩ pull-down	100KΩ pull-down	6kHz Threshold 1.2V	1.2kHz		
NAMUR	820Ω pull-down	-	4kHz	-		External power required
COIL LO	-	-		-	80mV _{pp}	Default sensitivity
COIL-HI					20mV _{pp}	Sensitive for
COIL-HI (Type ZF)	-				10mV _{pp}	interference!
ACTIVE 8.2V DC	3K9Ω		10kHz Threshold 4V			External power required
ACTIVE 12V DC	4ΚΩ		10kHz Threshold 6V			External power required
ACTIVE 24V DC	ЗКΩ		10kHz Threshold 12V			External power required

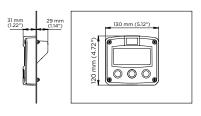


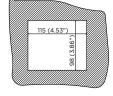
Enclosures

Various types of enclosures can be selected, all ATEX and IECEx approved. The F131 is supplied in an GRP panel mount enclosure as standard, which can be converted to an IP67 / NEMA Type4X GRP field mount enclosure by the addition of a back case. Most popular is our robust aluminum field mount enclosure which is also available with an extended backcover with undrilled preparation for direct meter mounting at the back side. It is so rugged, even a truck can stand on it! For the most challenging environments we have a durable high grade Stainless steel 316L enclosure. All enclosures have a IP67 / NEMA Type4X rating and EU or U.S. cable gland entry threads available.

Dimensions enclosures

Aluminum & GRP panel mount enclosure

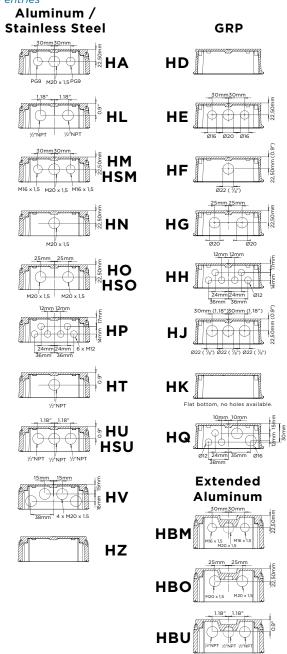




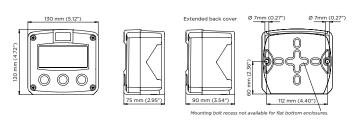
HB & HC enclosures

panel cut-out

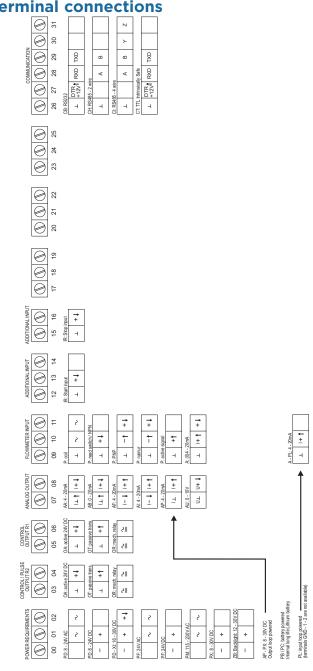
Cable entries



Aluminum, GRP & Stainless steel 316L field mount enclosures

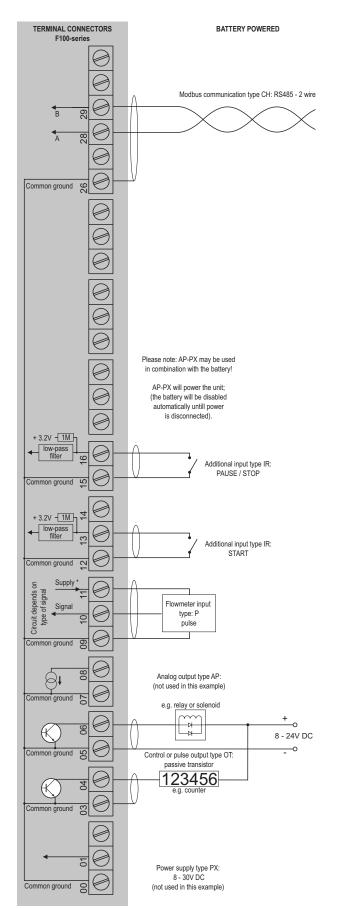


Terminal connections

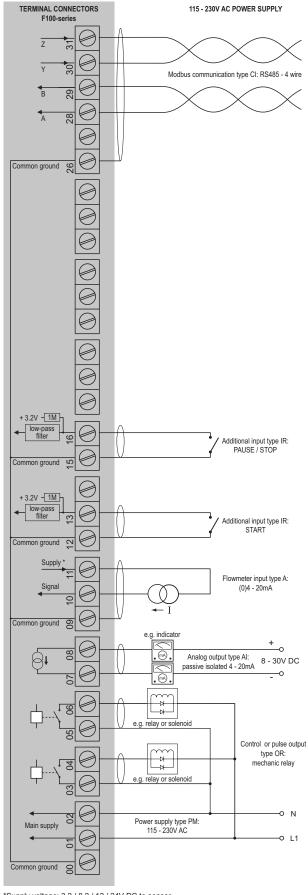




Configuration example F131-P-(AP)-CH-OT-PB-(PX)-XX-ZX



Configuration example F131-A-AI-CI-OR-PM-XX-ZX



^{*}Supply voltage: 3.2 / 8.2 / 12 / 24V DC to sensor



Hazardous area applications

The F131-XI has been certified according to ATEX and IECEx by DEKRA for use in Intrinsically Safe applications with an ambient temperature of -40°C to +70°C (-40°F to +158°F).

For equipment category Dust, zone 20 (1 D / EPL Da), the maximum ambient temperature is limited to 50° C (+122°F) and a maximum dust layer thickness of 200mm.

• The ATEX markings for gas and dust applications are:

Gas: II 1 G Ex ia IIB/IIC T4 Ga.

Dust: II 1 D Ex ia IIIC T₂₀₀ 100 °C Da.

• The IECEx markings for gas and dust applications are:

Gas: Ex ia IIC/IIB T4 Ga. Dust: Ex ia IIIC T_{200} 100 °C Da.

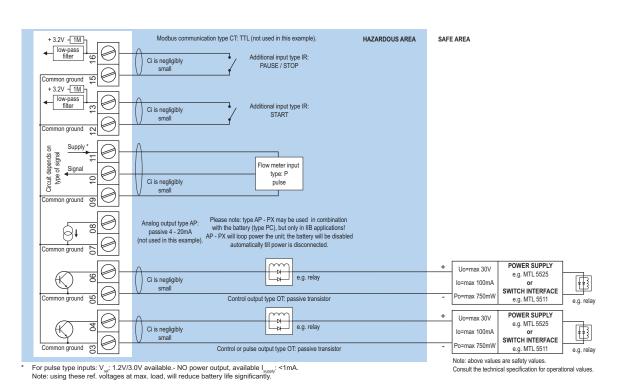
Besides the I.S. power supplies for the control outputs, it is allowed to connect up to three I.S. power supplies in IIB/IIIC applications or one in IIC applications. Consult the certificate for the maximum input and output values of the circuits. Full functionality of the F131 remains available, including two stage control, 4 - 20mA output, pulse output and Modbus communication (type CT). Power supply type PD-XI offers a 8.2V sensor supply e.g. for one Namur sensor. An ATEX/IECEx approved flame proof Ex d enclosure is available as well. Please contact your supplier for further details.

Certificate of conformity KEMA 03ATEX1074 X

• IECEX DEK 11.0042X

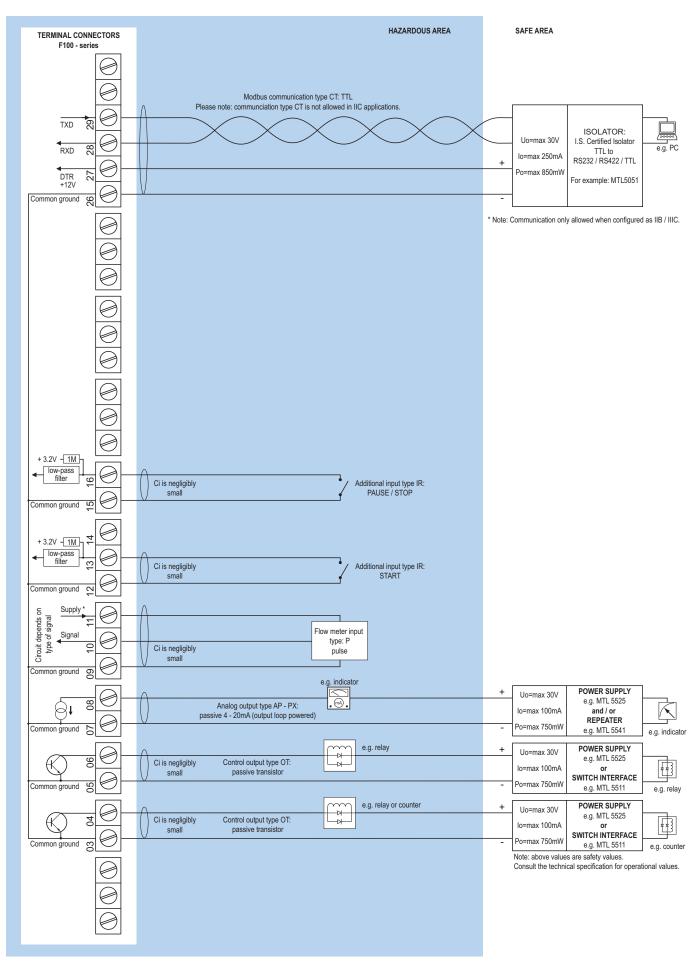


Configuration example IIB / IIIC and IIC - F131-P-(AP)-(CT)-OT-PC-(PX)-XI - Battery powered unit





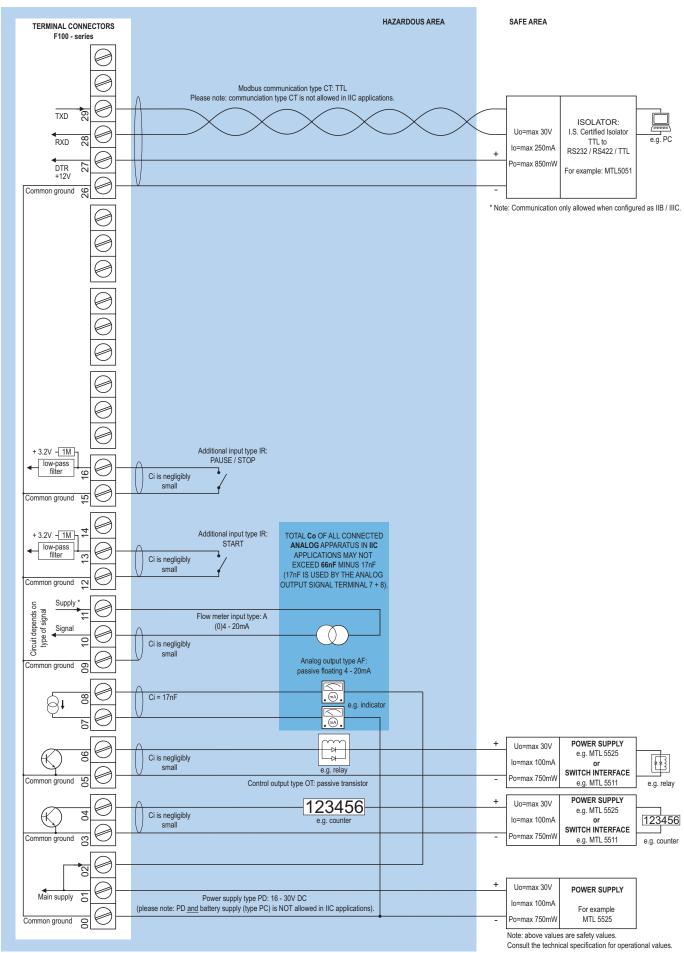
Configuration example IIB / IIIC and IIC - F131-P-AP-(CT)-OT-(PX)-XI - Output loop powered



For pulse type inputs: $V_{\rm ref}$: 1.2V/3.0V available.- NO power output, available $I_{\rm supply}$: <1mA. Note: using these ref. voltages at max. load, will reduce battery life significantly.



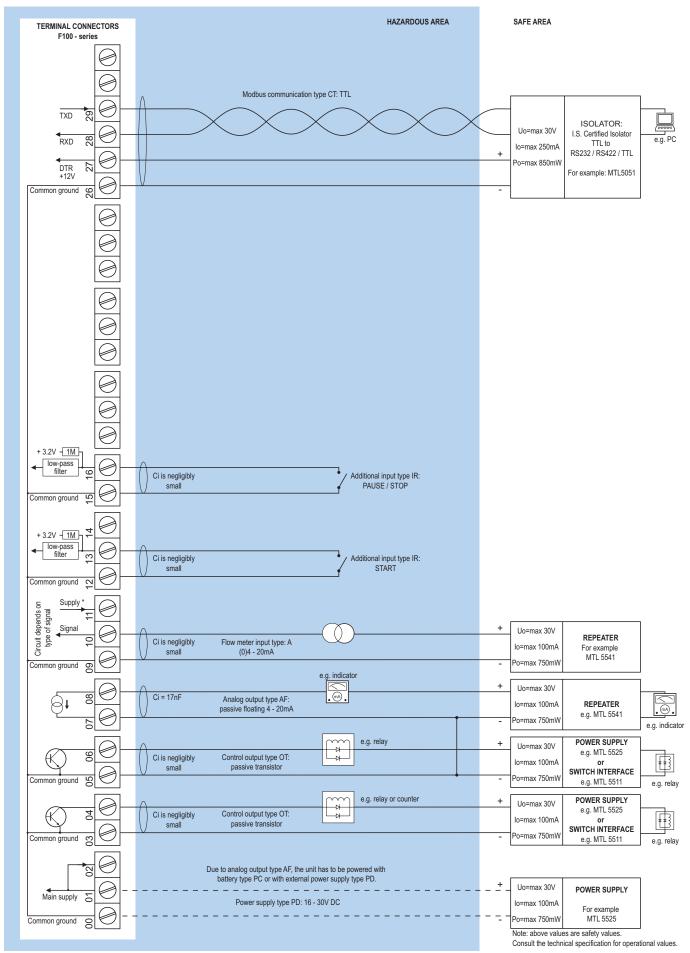
Configuration example IIB / IIIC and IIC - F131-A-AF-(CT)-OT-PD-XI - Power requirement 16 - 30V DC



^{*} Note power supply type PD: the supply voltage to <u>pulse</u> sensors is maximum 8.7V (Uo=max 8.7V lo=max 25mA Po=max 150mW) and to <u>analog</u> sensors as connected to terminal 1 (internally linked).



Configuration example IIB / IIIC - F131-A-AF-CT-OT-(PC)-(PD)-XI - Power requirement 16 - 30V DC or battery powered



^{*} Note power supply type PD: the supply voltage to <u>pulse</u> sensors is maximum 8.7V (Uo=max 8.7V lo=max 25mA Po=max 150mW) and to <u>analog</u> sensors as connected to terminal 1 (internally linked).



Display

Туре	High intensity reflective numeric and
	alphanumeric LCD, UV-resistant.
Dimensions	90 x 40mm (3.5" x 1.6").
Digits	Seven 17mm (0.67") and eleven 8mm (0.31")
	digits. Various symbols and measuring units.
Refresh rate	User definable: fast, 1sec , 3sec, 15sec, 30sec, off.
Option ZB	Transflective LCD with white LED-backlight.
	Intensitiy can be adjusted in the configuration
	menu. Good readings in full sunlight and
	darkness.
Note ZB	Only available for safe area applications, with
	option PD, PF, PM or PX.
	Intensitiy can be adjusted in the configuration menu. Good readings in full sunlight and darkness. Only available for safe area applications, with

Ambient temperature

Safe areas	-40° C to $+80^{\circ}$ C (-40° F to $+176^{\circ}$ F).
Intrinsically Safe	-40°C to +70°C (-40°F to +158°F).
Dust, zone 20	-40°C to +50°C (-40°F to +122°F).

Terminal connections

Type	Removable plug-in terminal strip. Wire max.
	1.5mm ² and 2.5mm ² .

Data protection

Туре	EEPROM backup of all settings. Backup of
	running totals every minute. Data retention at
	least 10 years.
Password	Configuration settings can be password protected.

Directives & Standards

EMC	Directive 2014/30/EU, FCC 47 CFR part 15.
Low voltage	Directive 2014/35/EU
RoHS	Directive 2011/65/EU
ATEX / IECEx	Directive 2014/34/EU, IEC 600079-0,
	IEC 60079-11.
IP & NEMA	EN 60529 & NEMA 250

Intrinsically Safe (Type XI)

ATEX	Gas: II 1 G Ex ia IIB/IIC T4 Ga.
	Dust: II 1 D Ex ia IIIC T ₂₀₀ 100 °C Da.
IECEx	Gas: Ex ia IIC/IIB T4 Ga.
	Dust: Ex ia IIIC T ₂₀₀ 100 °C Da.
Ambient Ta	-40°C to +70°C (-40°F to +158°F).
Dust, zone 20	-40°C to +50°C (-40°F to +122°F).

Explosion proof (Type XF)

/IECEx Gas: II 2 G Ex db IIB+H2 T5 Gb.	
Dust: II 2 D Ex tb IIIC T80°C.	
IP66	
Dimensions of enclosure: 300 x 250 x 200mm	
(11.8" x 9.9" x 7.9") L x H x D.	
Appr. 15kg.	

Enclosure

Window	Polycarbonate window.
Sealing	Silicone.
Control keys	Three industrial micro-switch keys. UV-resistant
	silicone keypad.

Panel mount enclosures

Dimensions	130 x 120 x 60mm (5.12" x 4.72" x 2.36") - W x H x D.
Panel cut-out	115 x 98mm (4.53" x 3.86") L x H.
Туре НВ	Die-cast aluminum panel mount enclosure IP65 /
	NEMA Type4X.
Weight	600 gr.
Type HC	GRP panel mount enclosure IP65 / NEMA
	Type4X, UV-resistant and flame retardant.
Weight	450 gr.
Type HSB	Die-cast stainless steel 316L IP67 / NEMA
	Type4X.
Weight	1150gr.

GRP wall / field mount enclosures

Oiti Waii /	neia mount enclosures
General	GRP wall/field mount enclosure IP67 / NEMA
	Type4X, UV-resistant and flame retardant.
Dimensions	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D.
Weight	600 gr.
Type HD	Cable entry: no holes.
Type HE	Cable entry: 2 x Ø 16mm and 1 x Ø 20mm.
Type HF	Cable entry: 1 x Ø 22mm (1/8").
Type HG	Cable entry: 2 x Ø 20mm.
Type HH	Cable entry: 6 x Ø 12mm.
Type HJ	Cable entry: 3 x Ø 22mm (¾").
Type HK	Flat bottom, cable entry: no holes.
Type HQ	Cable entry: 2 x Ø 16mm & 3 x Ø 12mm.

Aluminum wall / field mount enclosures

Aluminum w	all / field mount enclosures
General	Die-cast aluminum wall/field mount enclosure
	IP67 / NEMA Type4X with 2-component
	UV-resistant coating.
	Extended back cover available with undrilled
	preparation for direct meter mounting.
Dimensions	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D.
	130 x 120 x 90mm (5.12" x 4.72" x 3.54") - W x H x D.
Weight	1100 gr. / extended enclosure: 1310 gr.
Type HA	Cable entry: 2 x PG9 and 1 x M20.
Type HL	Cable entry: 2 x ½" NPT.
Type HM/HBM	Cable entry: 2 x M16 and 1 x M20.
Type HN	Cable entry: 1 x M20.
Type HO/HBO	Cable entry: 2 x M20.
Type HP	Cable entry: 6 x M12.
Type HT	Cable entry: 1 x ½" NPT.
Type HU/HBU	Cable entry: 3 x ½" NPT.
Type HV	Cable entry: 4 x M20.
Type HZ	Cable entry: no holes.

Stainless steel 316L wall / field mount enclosures

General	Die-cast stainless steel 316L wall / field mount	
	enclosure with flat bottom. IP67 / NEMA	
	Type4X.	
Dimensions	130 x 120 x 75mm (5.12" x 4.72" x 2.95") - W x H x D.	
Weight	2700 gr.	
Type HSM	Cable entry: 2 x M16 + 1 x M20.	
Type HSO	Cable entry: 2 x M20.	
Type HSU	Cable entry: 3 x ½"NPT.	



	Signal	inputs	<u>- FI</u>	owmeter
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Ciginal imparts	
Type P	Coil / sine wave (HI: 20mVpp or LO: 80mVpp -
	sensitivity selectable), NPN/PNP, open collector,
	reed switch, Namur, active pulse signals 8 - 12
	and 24V DC.
Frequency	Minimum 0Hz - maximum 6kHz for total and
	flow rate. Maximum frequency depends on signal
	type and internal low-pass filter. E.g. reed switch
	with low-pass filter: max. frequency 120Hz.
K-Factor	0.000010 - 9,999,999 with variable decimal
	position.
Low-pass filter	Available for all pulse signals.
Option ZF	coil sensitivity 10mVpp.
Туре А	(0)4 - 20mA. Analog input signal can be scaled
	to any desired range within 0 - 20mA.
Type U	0 - 10V DC. Contact factory.
Accuracy	Resolution: 14 bit. Error < 0.025 mA $/ \pm 0.125$ % FS.
	Low level cut-off programmable.
Span	0.000010 - 9,999,999 with variable decimal
	position.
Update time	Four times per second.
Voltage drop	Type A: 2.5V @ 2omA.
Relationship	Linear and square root calculation.
Note A	For signal type A: external power to sensor is
	required; e.g. type PD.

Additional inputs

Function	Remote control: Two terminal inputs to start,
	pause and stop the batch process.
Type IR	Internally pulled-up switch contact - NPN.
Duration	Minimum pulse duration 100msec.

Signal outputs - Digital output

User defined: batch process one or two stage
control - scaled pulse output according the
running batch or according accumulated total.
Max. 500Hz. Pulse width user definable between
0.001 second up to 9.999 seconds.
Two active 24V DC transistor outputs (PNP);
max. 50mA per output (requires -PD, PF, PM or
PX).Requires min. 24V power supply
Two electro-mechanical relay outputs isolated
max. switch power 230V AC (N.O.) - 0.5A per
relay (requires PF or PM).
Two passive transistor outputs (NPN) - not
isolated. Max. 50V DC - 300mA per output.

Signal outputs - Analog output

Function	Transmitting flow rate.
Accuracy	10 bit. Error < 0.05%. Analog output signal can
	be scaled to any desired range.
Update time	Eight times per second.
Type AA	Active 4 - 20mA output (requires PD, PF, PM or PX).
Type AB	Active 0 - 20mA output (requires PD, PF, PM or PX).
Type AF	Passive floating 4 - 20mA output for
	Intrinsically Safe applications (requires XI + PD).
Type Al	Passive galvanically isolated 4 - 20mA output -
	also available for battery powered models.
Type AP	Passive 4 - 20mA output - not isolated. Unit will
	be loop powered.
Type AU	Active 0 - 10V DC output (requires PD, PF, PM or
	PX). Requires min. 12V power supply.

Signal outputs - Communication option

Function	Reading display information, reading / writing
	preset value and all configuration settings. Start,
	pause and stop batch process.
Protocol	Modbus ASCII / RTU.
Speed	1200 - 2400 - 4800 - 9600 baud.
Addressing	Maximum 255 addresses.
Type CB	RS232 (requires P)
Туре СН	RS485 2-wire (requires P)
Type CI	RS485 4-wire (requires P)
Type CT	TTL Intrinsically Safe. (requires P)



Power requirements

Type AP	Analog output loop powered, 8 - 30V DC.
	Power consumption max 0.5 Watt.
Type PB	Long life Lithium battery - life-time depends
	upon settings and configuration - up to 5 years.
	(requires PD, PL or PX)
Type PC	Intrinsically Safe long life lithium battery
	life-time depends upon settings and
	configuration - up to 5 years.
	(requires XI and PD or PX)
Type PD	8 - 24V AC / DC ± 10%. Power consumption max. 5W.
Type PD-XI	16 - 30V DC power consumption max. 1W.
Type PF	24V AC / DC ± 10%. Power consumption max. 15W.
Type PL	Input loop powered from sensor signal 4 - 20mA
	(type "A") - requires types AI and OT (not Xi).
	Not available with option ZB.
Type PM	115 - 230V AC ± 10%. Power consumption max. 15W.
Type PX	8 - 30V DC. Power consumption max. 0.75W.
Type ZB	12 - 30V DC \pm 10%. Power consumption max. 1.5W.
Note PB/PF/PM	Not available Intrinsically Safe.
Note PF/PM	The total consumption of the sensors and
	outputs may not exceed 400mA @ 24V.
Note XI	For Intrinsically Safe applications, consult the
	safety values in the certificate.

Sensor excitation

Type PB/PC/PX	3V DC for pulse signals and 1.2V DC for coil pick-up.
Note PB/PC/PX	This is not a real sensor supply. Only suitable for
	sensors with a very low power consumption like
	coils (sine wave) and reed-switches.
Type PD	1.2 / 3 / 8.2 / 12 / 24V DC - max. 50mA @
	24V DC. U _{max} sensor is 2V below U _{supply}
Type PD-XI	1.2 / 3 / 8.2V DC - max. 7mA @ 8.2V DC and
	mains power supply voltage (as connected to
	terminal 1).
Note PD-XI	In case PD-XI and signal A: the sensor supply
	voltage is according to the power supply voltage
	connected to terminal 1. Also terminal 2 offers
	the same voltage.
Type PF / PM	1.2 / 3 / 8.2 / 12 / 24V DC - max. 400mA @ 24V DC.

Operator functions

Displayed info	• Preset value - can be entered by the operator.
	 Batched quantity or remaining quantity
	• Flow rate.
	No-flow alarm.
	 Total and accumulated total
	 Total can be reset to zero by pressing the
	CLEAR-key twice.

Preset and total

Digits	7 digits.
Units	L, m³, GAL, USGAL, kg, lb, bbl, no unit.
Decimals	0 - 1 - 2 or 3.
Note	Total can be reset to zero.

Accumulated total

/ toodiiiidididod	
Digits	11 digits.
Units / decimals	According to selection for total.
Note	Can not be reset to zero.

Flow rate

Digits	7 digits.
Units	mL, L, m³, Gallons, kg, Ton, lb, bl, cf, RND, ft³, scf,
	Nm³, NI, igal - no units.
Decimals	0 - 1 - 2 or 3.
Time units	/sec - /min - /hr - /day.

-		Description	
Model	F131	Batch controller with two stage control / pulse and analog output in relation to the flow rate.	Î
Input	А	(0)4 - 20mA input.	
	Р	Pulse input, e.g., coil, npn, pnp, namur, reed-switch.	
‡	AA	Active 4 - 20mA output - requires XX and PD, PF, PM or PX. Active 0 - 20mA output - requires XX and PD, PF, PM or PX. I.S. floating 4 - 20mA output - requires XI + PD. Isolated 4 - 20mA output - requires XX. Passive 4 - 20mA output, loop powered unit.	
Analog output	AB	Active 0 - 20mA output - requires XX and PD, PF, PM or PX.	
	AF	I.S. floating 4 - 20mA output - requires XI + PD.	
oole	Al	Isolated 4 - 20mA output - requires XX. Passive 4 - 20mA output, loop powered unit. Active 0 - 10V DC output - requires XX and PD, PF, PM or PX.	
۸na	AP	Passive 4 - 20mA output, loop powered unit.	
	AU	Passive 4 - 20mA output, loop powered unit. Active 0 - 10V DC output - requires XX and PD, PF, PM or PX.	
io	СВ	Communication RS 232 - Modbus ASCII / RTU - requires P and XX.	
Communication	CH	Communication RS 485 - 2wire - Modbus ASCII / RTU - requires P and XX.	4
ngu	CI	Communication RS 485 - 4wire - Modbus ASCII / RTU - requires P and XX.	ı.
nmo	CT	Intrinsically Safe TTL - Modbus ASCII / RTU - requires P and XI.	
ŏ	СХ	No communication.	
	НВ	Aluminum panel mount enclosure.	
	нс	GRP panel mount enclosure.	
	HSB	Stainless steel 316L panel mount enclosure.	
	HD	GRP field mount - Cable entry: no holes.	
	HE	GRP field mount - Cable entry: 2 x Ø 16mm & 1 x Ø 20mm.	
	HF	GRP field mount - Cable entry: $1 \times \emptyset$ 22mm ($\frac{7}{8}$ ").	
	HG	GRP field mount - Cable entry: 2 x Ø 20mm.	
	НН	GRP field mount -Cable entry: 6 x Ø 12mm.	
	HJ	GRP field mount - Cable entry: $3 \times \emptyset 22mm$ ($\frac{7}{8}$ ").	
	HK	GRP field mount - Flat bottom, cable entry: no holes.	
	HQ	GRP field mount - Cable entry: 2 x Ø 16mm & 3 x Ø 12mm.	
	НА	Aluminum field mount - Cable entry: 2 x PG9 + 1 x M20.	
res	HL	Aluminum field mount - Cable entry: $2 \times \frac{1}{2}$ "NPT.	
nsc	НМ	Aluminum field mount - Cable entry: 2 x M16 + 1 x M20.	
Enclosures	HN	Aluminum field mount - Cable entry: 1 x M20.	
- Ū	НО	Aluminum field mount - Cable entry: 2 x M20.	ì
	HP	Aluminum field mount - Cable entry: 6 x M12.	H
	HT	Aluminum field mount - Cable entry: 1 x ½"NPT.	3
	HU	Aluminum field mount - Cable entry: 3 x ½"NPT.	ij
	HV		
		Aluminum field mount - Cable entry: 4 x M20.	-
	HZ	Aluminum field mount - Cable entry: no holes.	
	HBM	Extended Alu. field/meter mount - Cable entry: 2 x M16 + 1 x M20.)
	НВО	Extended Alu. field/meter mount - Cable entry: 2 x M20.	
	HBU	Extended Alu. field/meter mount - Cable entry: 3 x ½"NPT.	1
	HSM	Stainless steel 316L field mount - Cable entry: 2 x M16 + 1 x M20.	1
	HSO	Stainless steel 316L field mount - Cable entry: 2 x M20.	
	HSU	Stainless steel 316L field mount - Cable entry: 3 x ½"NPT.	1
dditional	IR	Remote control input to start, pause or stop.	
Digital	OA	Two active transistor outputs- requires XX PD, PF, PM or PX.	4
	OR	Two mechanical relay outputs - requires XX and PF or PM.	1.
	ОТ	Two passive transistor outputs.	Į.
Power	PD	8 - 24V AC/DC + sensor supply - with XI: 16 - 30V DC.	1
	PF	24V AC/DC + sensor supply - requires XX.	
	PL	Input loop powered from sensor signal type "A" - requires XX, AI and OT.	Į:
	PM	115 - 230V AC + sensor supply - requires XX.	Į.
	PX	Basic power supply 8 - 30V DC.	II.
Battery	PB	Additional lithium battery powered (optional) - requires XX and PD or PX.	1.
	PC	Additional lithium battery powered (optional) - Intrinsically safe - requires XI, and PD or PX.	1.
Hazar- dous	ΧI	Intrinsically safe, according ATEX and IECEx.	
	XF	Ex d enclosure - 3 keys according ATEX and IECEx.	ľ
	XX	Safe area only, according CE / UKCA.	
Options	ZB	Backlight - requires XX and PD, PF, PM or PX.	
	ZF	Coil input 10mVpp.	ĺ
	ZX	No options.	F