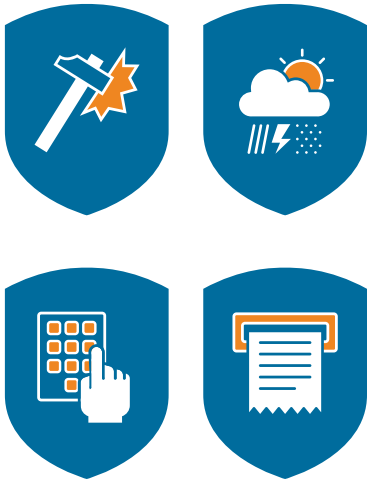
N 413 Datasheet

Your success counts

FLUIDWELL

Batch Controller

with numerical keypad and receipt printer driver



Application examples: *Truck or tank filling*

Pharmaceutical industry

Food industry

The N-Series distinguishes itself by its userfriendly features: Numerical keypad, easy ticket printing, clear programming menu structure, easy to read display and simple mounting enclosure. The numerical keypad allows simple and fast changing of the preset batch quantity.

Advantages

- Save time and cost with the easy to operate numerical keypad.
- Intuitive “Know one, know them all!” configuration menu, saving time, cost and aggravation.
- Key information at a glance as it simultaneously shows actual value, preset value, batch process indication, relay status and selectable measuring units for volumetric or mass.
- Easy operation to enter a batch value and to control the proces.

Features

- Receipt printing function after each batch.
- Rugged aluminum DIN-size panel mount enclosure.
- 7 large digits (14mm, 0.56”) for total, flow rate and acc. total.
- 10 smaller digits (8mm, 0.3”) for preset value and batch count.
- Bright LED backlight.
- Ability to process all types of signals: Reed-switch, open collector, NPN/PNP pulse or active 8 / 12 / 24V pulse signals.
- 5 remote inputs: START, HOLD, RESUME, keypad lock, alarm.
- Two heavy duty relays, configurable for i.e. batching with 1- or 2-stage or pump control with on/off time delay function.
- Three transistor outputs for connection to PLC’s or other controlling equipment.
- Power requirements: 24V DC / 110 - 230V AC.
- Sensor supply: 1.2 / 3 / 8.2 / 12 / 24V DC.
- No-flow monitoring and automatic overrun correction.

Introduction

The N413 batch controller distinguishes itself by its userfriendly features: Numerical keypad, easy ticket printing, clear programming menu structure, easy to read display and simple mounting enclosure. The numerical keypad allows simple and fast changing of the preset batch quantity. Fluidwell stands for simplicity and reliability.

Display

The unique LCD display provides multiple batch control data at a glance. The main information like actual value, flow rate or batched total are displayed with 7 large digits (14mm, 0.56”). The preset value and units of measure are displayed with 10 smaller segments (8mm, 0.3”). A graphical indication of the batch process and relay status are displayed simultaneously. On-screen engineering units are easily configured in the configuration menu. All values are saved in EEPROM memory. The N413 is standard provided with a bright backlight, which ensures good readings during day and night and it can be adjusted in 6 steps from 0 to 100%.

Configuration

The N413 uses the same highly appreciated configuration structure as our other product series. Each setting is clearly indicated with an alphanumerical description, eliminating confusing abbreviations. Once familiar with an N-series product, you will be able to program all models in all series without a manual. For example: the configuration menu of the (intrinsically safe) F-Series batch controllers operate almost identical to an N413! In other words: Know one, know them all. Operation and configuration is done via the easy- to - operate numerical keypad. All settings are accessed via a simple operator menu that can be password protected.

Overrun correction

The Fluidwell N413 measures the overrun quantity at the end of every batch. With the automatic overrun correction procedure, the batch is corrected automatically; every run is executed with the highest accuracy.

All info at a glance

Easy to install

Easy to program

Know one know them all!

Reliable

User-friendly

No-flow monitor

Following the START command, the flowmeter generates a signal. If this fails to come within the programmed time, an alarm is triggered. The batch is interrupted and the latest process values are stored in the memory. At the same time, the cause of the alarm is displayed. Alarm conditions are indicated visibly and can be configured as an alarm output. The No-flow function detects the absence of liquid, an obstruction in the pipeline or a breakdown.

Control, Pulse or Alarm outputs

Five outputs are available with the N413: two heavy duty relays and three transistor outputs. Relay 1 is fixed as the main batch control relay. Relay 2 and the transistor outputs can be configured as alarm/pulse outputs, 1- or 2-stage batch or pump control with on/off time delay function.

Power requirements

Two power inputs are available to power the N413 and sensor. A 110 - 230V AC and a 24V DC power supply. Both offer an 1.2/3/8.2/12 or 24V DC sensor supply to power the sensor.

Batch sizes

The preset value of the batched quantity can be programmed fast and easily by the operator via the numerical keypad. Repeating batches are executed, paused and reset easily with a start, hold and reset button. A just-in-time back-up stores the latest batch information in case of a power failure.

Ticket printing

End-of-batch tickets can be printed automatically, manually or after a notification. Multiple reprints are easily executed on demand. Even in the unexpected event of an uncompleted batch, is it possible to print a ticket. An external printing device is neccessary, which is available as accessory

Printer accessories

An external printing device is neccessary, below handheld and panel printers are optional available as accessory.

Handheld and panel printers

Receipt information

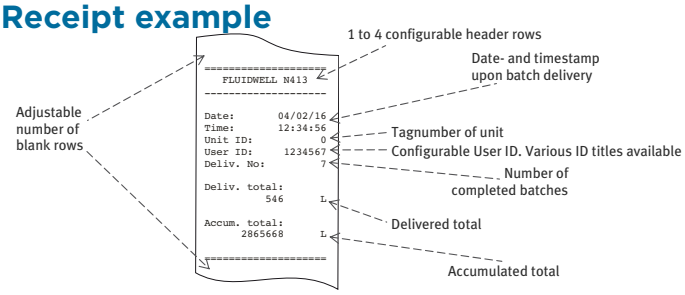
Standard information printed on the receipt:

- A date- and timestamp.
- Tagnumber.
- ID title
- Number of completed batches
- Delivered total.
- Accumulated total.

Configurable information printed on the receipt:

- 1 to 4 header rows with 16 character upper case text.
- 1 to 9 empty lines before printing the receipt.
- 1 to 9 empty lines after printing the receipt.

Receipt example



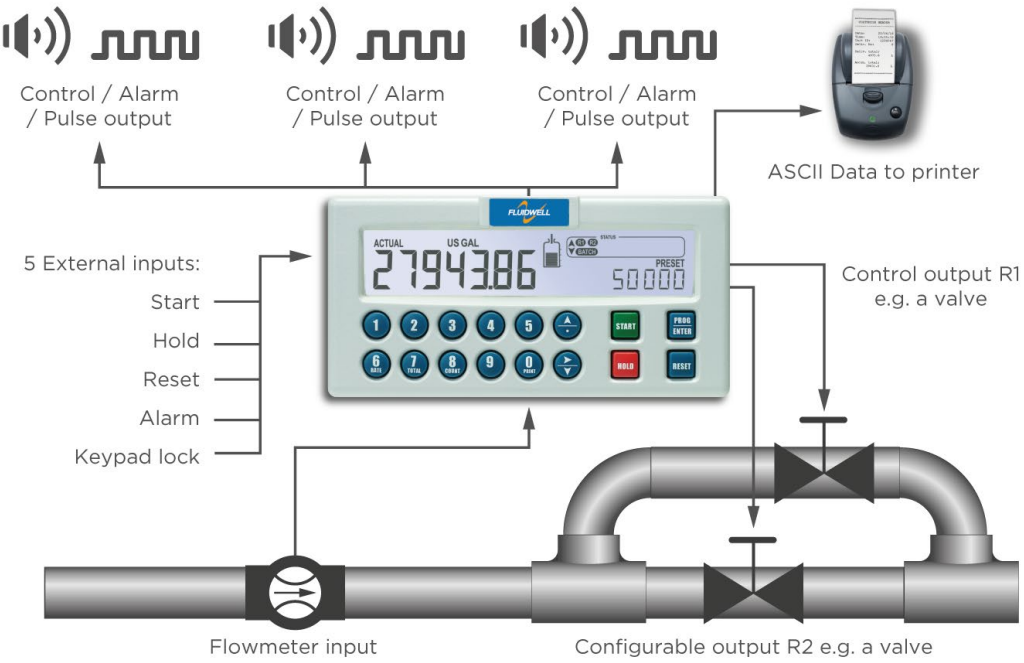
User-friendly numerical keypad

Panel mounted tank filling

Easy ticket printing

Overview application N413

Accurate batching or filling of liquids where the batch size changes frequently and easy ticket printing on location is required.
The N413 offers the perfect solution for batch control applications where a user-friendly instrument is required. Whether you focus on its clear display information, the very easy to operate numerical keypad or the easy menu-driven configuration structure, you've got to have a Fluidwell! Alternative batch controllers with receipt printer driver: F132 & N414. For analog inputs we offer our F-Series and D-Series batch controllers. For intrinsically safe applications we offer our field mount F-Series indicators.



Signal input

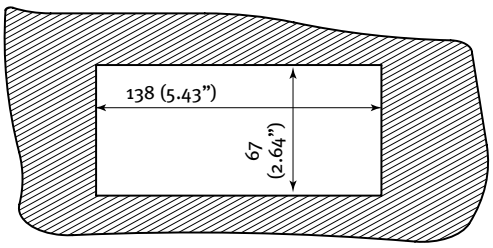
The N413 accepts various input signals for volume flow or mass flowmeters, like reed-switch, open collector, Namur, NPN, PNP, Sine wave (coil) or active 8/12/24V pulse signals

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	2.2kHz		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	700Hz		
NAMUR	820Ω pull-down	-	4kHz	-		External power required
COIL LO	-	-		-	$90mV_{pp}$	Default sensitivity
COIL-HI	-	-	-	-	$20mV_{pp}$	Sensitive for interference!
ACTIVE 8.2V DC	3K9Ω		10kHz Threshold 4V			External power required
ACTIVE 12V DC	4KΩ		10kHz Threshold 6V			External power required
ACTIVE 24V DC	3KΩ		10kHz Threshold 12V			External power required

Enclosures

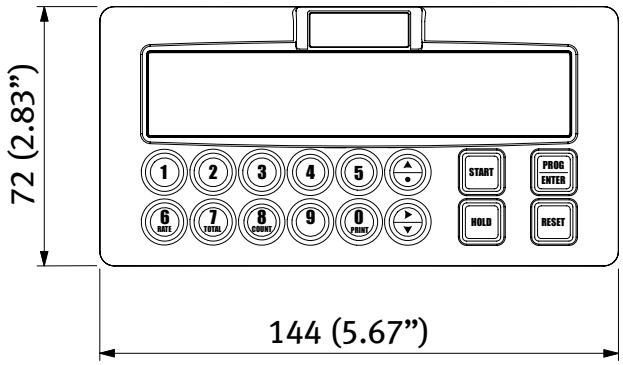
The N413 has an IP67 (Type4X) aluminum DIN size front panel and an IP20 GRP back cover. The removable screw terminal connectors on the back-side and the 4 mounting clamps make the N413 very easy to install.

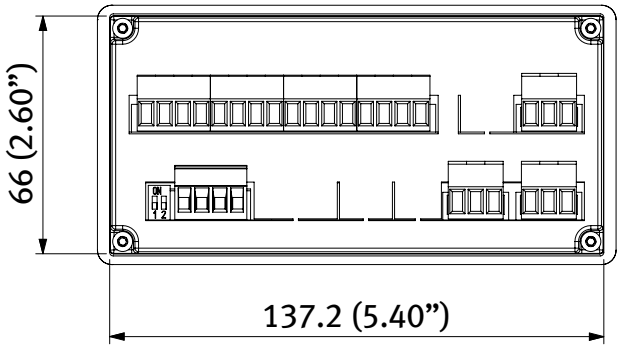
Panel cut out

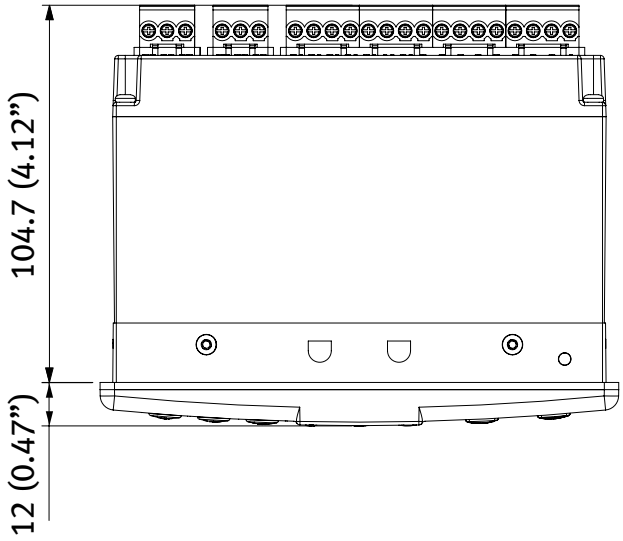


Maximum panel thickness: 6mm (1/4")

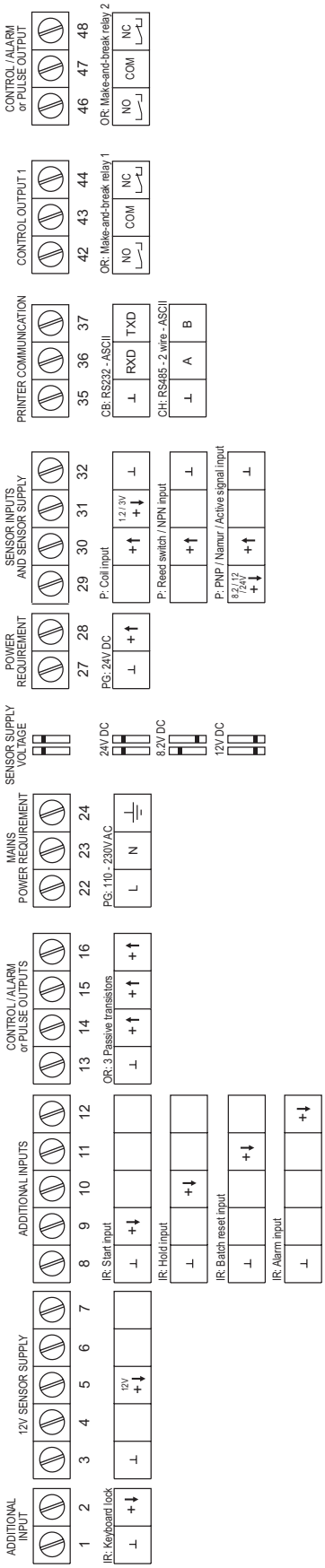
Dimensions enclosures



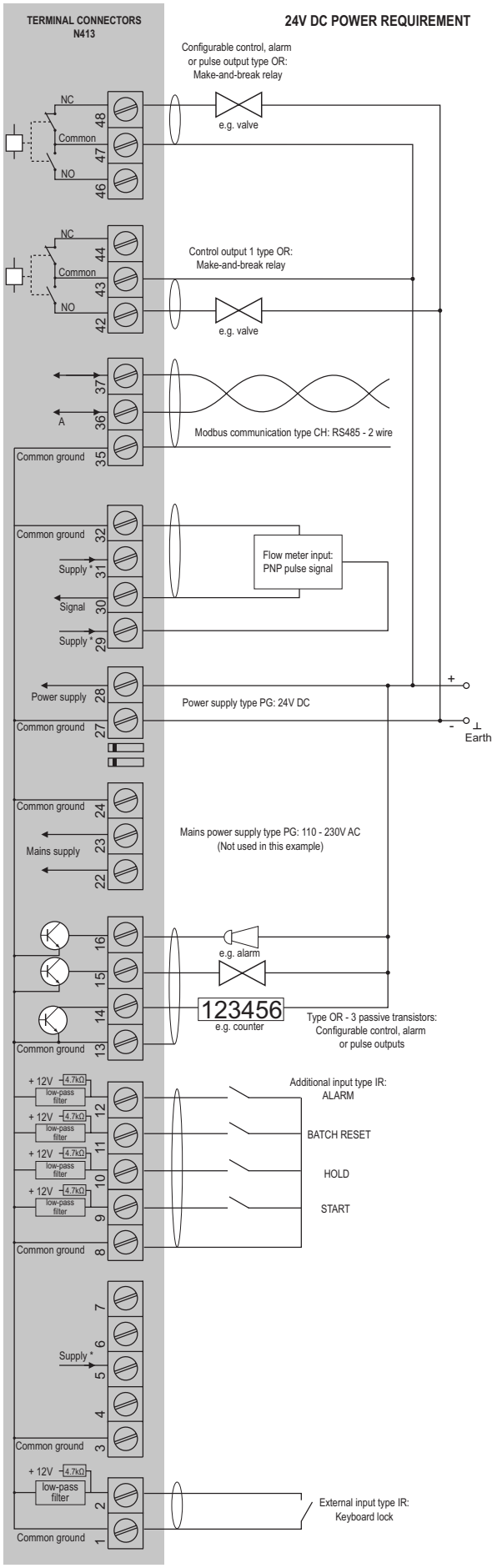




Terminal connections

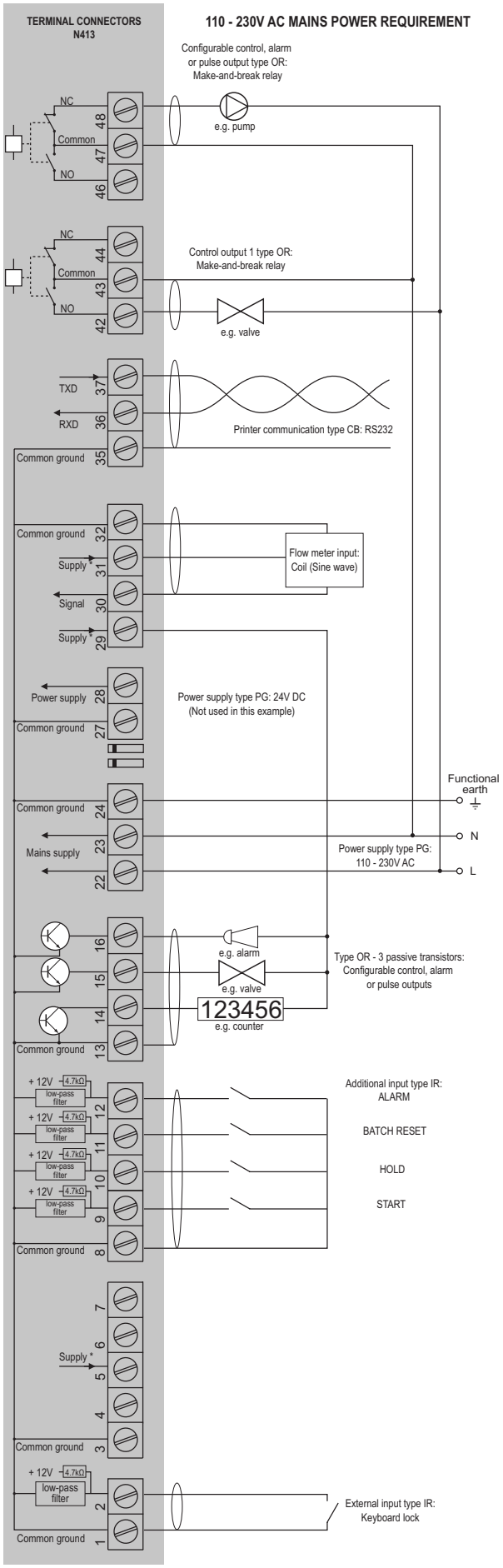


N413-P-CB-IR-OR-PG-ZB-XX-ZB



*Sensor supply voltage terminal 5: 12V DC
Sensor supply voltage terminal 29: 8.2 / 12 / 24V DC
Sensor supply voltage terminal 31: 1.2 / 3V DC

N410-P-CB-OR-PG-ZB-XX-ZB



*Sensor supply voltage terminal 5: 12V DC
Sensor supply voltage terminal 29: 8.2 / 12 / 24V DC
Sensor supply voltage terminal 31: 1.2 / 3V DC

Display

Type	High intensity transflective numeric and alphanumeric LCD, UV-resistant. Bright LED backlight. Intensity adjustable from 0 – 100% in steps of 20%. Good readings in full sunlight and in darkness.
Dimensions	22 x 116mm (0.87 x 4.57").
Digits	Seven 14mm (0.56") and ten 8mm (0.3") digits. Various symbols and measuring units.
Refresh rate	8 times/sec.

Enclosure

General	Die-cast aluminum front panel, GRP back enclosure. Polycarbonate window, silicone gasket; UV stabilized and flame retardant material.
Keypad	Sixteen industrial micro-switch keys; UV-resistant silicone keypad; replaceable front.
Painting	UV-resistant 2-component industrial painting.
Dimension	144 x 72 x 110mm (5.67" x 2.83" x 4.33") – W x H x D.
Classification	IP67 (Type4X) at the front side. IP20 at the back side.
Panel cut-out	138 x 67mm (5.43" x 2.64") W x H.
Weight	650 gram / 1.7 lbs.
Panel thickness	Max. 6mm (¼").

Operating temperature / humidity

Temperature	-20°C to +60°C (-4°F to +140°F).
Storage	-40°C to +80°C (-40°F to +176°F).
Humidity	85% non-condensing, relative.

Power requirements

Type PG	110 - 230V AC. Power consumption max. 10 Watt. 24V DC ± 10%. Power consumption max. 10 Watt.

Sensor excitation

Type PG	Terminal 5:	12V DC. I_{out} max. 30mA.
	Terminal 29:	8.2 / 12 or 24V DC. 8.2V DC, I_{out} max. 20mA. 12V DC, I_{out} max. 30mA. 24V DC, I_{out} max. 75mA.
	Terminal 31:	1.2 or 3V DC. For sensors with a very low power consumption. (Coil / reed-switch)

Terminal connections

Type	Removable plug-in terminal strip. Wire max. 2.5mm².

Data protection

Just-in-time	EEPROM backup of all settings and latest batch and process information. Data retention at least 10 years.
Password	Configuration settings can be password protected.
Lock function	Complete keyboard can be locked with external input (e.g. key lock or PLC).

Directives & Standards

EMC	Directive 2014/30/EU, FCC 47 CFR part 15.
Low voltage	Directive 2014/35/EU
RoHS	Directive 2011/65/EU
IP & NEMA	EN 60529 & NEMA 250.

Signal inputs - Flowmeter

Type P	Namur, Coil / sine wave (HI: 20mVpp or LO: 80mVpp, sensitivity selectable), NPN/PNP, open collector, reed-switch, active pulse signals 8 - 12 and 24V DC.
Frequency	Minimum 0Hz - maximum 5kHz 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.
Low Level	0V DC min. to 3V DC max.
High Level	8V DC min. to 24V DC max.
Load impedance	4.7kOhm pull-up to +12V DC.
Current	2.5mA steady state.

Signal inputs - Additional input

Function	5 remote control inputs: start, hold, reset, keypad lock and external alarm.
Type IR	Current sinking.
Logic	Level sensitive.
Low Level	0V DC min. to 3V DC max..
High Level	8V DC min. to 24V DC max.
Load impedance	4.7kOhm pull-up to +12V DC.
Current	2.5mA steady state.
Response	100ms make and break time.

Signal outputs - Digital output

Type OR	• One batch output (always a mechanical relay). • Four configurable outputs (one mechanical relay and three transistors): batch / two-stage control / any alarm / scaled pulse outputs.
Pulse frequency	Max. 500Hz. Pulse length user definable between 1msec up to 10 seconds.
Relays	2 isolated, field replaceable, electro-mechanical relays (NO-NC). Max. switching capacity (resistive load): 8A @ 250V AC / 30V DC Max. switching power (resistive load): 2000VA 240W.
Transistor	Three passive transistor outputs - not isolated. Load max. 50V DC - 300mA.

Printer communication

Function	Send a "Print receipt" command after every batch.
Type CB	RS232 - ASCII data.
Type CH	RS485 2-wire - ASCII data.
Speed	1200 - 2400 - 4800 - 9600 - 19200 - 38400 baud.
Addressing	Maximum 255 addresses.
Type CX	No communication, ticket printing is not possible.

Operator functions

Functions	• Enter a preset value. • Start, hold and stop the batch process. • Total can be reset to zero. • Batch counter can be reset to zero. • End-of-batch ticket printing.
Displayed functions	• Preset value. • Running batch total or remaining quantity. • Flow rate, total and accumulated total. • Batch counter. • Graphical indication progress of the actual batch.
ID Title	• Configurable: asset no. / operator-id / id no. / user id / driver / truck / vehicle / user def. / customer / custom no. / batch / batch no. / order no. / delivery / deliv. no. / location
Additional functions	• Active overrun correction. • Minimum / maximum preset value.

Preset / Total

Digits	7 digits.
Units	L, m^3, USGAL, IGAL, ft^3, bbl, kg, Ton, US Ton, lb.
Decimals	0 - 1 - 2 or 3.
Note	Total can be reset to zero.

Accumulated total

Digits	10 digits.
Units / decimals	According to selection for preset.
Note	Cannot be reset to zero.

Batch counter

Digits	10 digits.
Note	Counter can be reset to zero.

Flow rate

Digits	7 digits.
Units	L, m^3, USGAL, IGAL, ft^3, bbl, kg, Ton, US Ton, lb.
Decimals	0 - 1 - 2 or 3.
Time units	/sec - /min - /hr - /day.

N-Series accessories & spare parts

ACN01	Shock proof stainless steel mounting brackets (2pcs).
SRN01	Spare part: Set of field replaceable relays (2pcs).
SNF01	Spare part: Aluminum N-Series frontcover

Printer ordering information

ACP01	Ap 1300 - Thermal portable printer (incl. cables and battery charger).
ACP02	Ap 1400 - Thermal panel printer with standard 9V DC to 36V DC power supply (incl. cables).
ACP03	Ap 1400 - Thermal panel printer with external 100 - 240V AC power supply (incl. cables).

		Description							
Model	**N413**	**Batch Controller with numerical keypad and receipt printer driver.**							
Input	**P**	**Pulse input, e.g., coil, npn, pnp, namur, reed-switch.**	**-P**						
Communication	**CB**	**RS232 Printer driver- ASCII data.**	**-CB**						
	CH	RS485 Printer driver - 2-wire - ASCII data.	-CH						
	CX	No communication, ticket printing is not possible.	-CX						
Enclosure	**HB**	**Aluminum front panel - IP67 (Type4X).**	**-HB**						
Add.	**IR**	**Remote control input to start, hold, reset, keypad lock and alarm.**	**-IR**						
Digital output	**OR**	**2 field replaceable, mechanical relays (NO-NC) and 3 passive transistor output.**	**-OR**						
Power	**PG**	**24V DC and 110 - 230V AC, with sensor supply.**	**-PG**						
Hazardous	**XX**	**Safe area only.**	**-XX**						
Options	**ZB**	**Backlight is included as standard.**	**-ZB**						
		N413	-P	-C_	-HB	-IR	-OR	-PG	-XX	-ZB

The **bold** marked text contains the standard configuration: N413-P-CB-HB-IR-OR-PG-XX-ZB.

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