

VEGA II

Electronic counter



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I M P I A N T I
The solutions that count

LEAFLET: PR/VE/0001
Edition April 2015

The **VEGA II** electronic counter is compatible with almost any type of flow meter, it is an instrument for handling the measurement, the control and automation of liquid products.

Typical applications include tank truck, rail car or barge loading at bulk petrochemical plants, custody transfer applications and truck deliveries.

ISOIL has over twenty years experience manufacturing electronic counters and measuring systems, VEGA II is the result.

Construction

The shape and dimensions of the electronic counter have been designed:

- » to allow the counter to be mounted directly on the PD meter by means of a dedicated support and electrical wiring to pulses emitter (see photo 1)
- » to allow remote mounting (see photo 2)
- » to allow easy access for maintenance purposes, the electronics are completely accessible once the cover has been removed
- » to have an "all in one" unit without the need of an additional box for power supply, relays, barriers etc.

Features and general characteristics

Different versions have been developed according to the required functions, as well different software for the specific applications.

Dedicated literature is available from ISOIL on request or can be downloaded from our web site.

The general characteristics of all the versions are:

» Compatibility with almost any type of flow meter

VEGA II can be matched with:

- » one volumetric PD meters provided with pulse transmitters
- » mass flow or any meter based on any working principle as long as it is providing pulses proportional to the measured quantity.

» **Simple construction.** The basic electronics consist of three pc-boards plugged into a purpose designed rack which can be removed in few seconds. Future updating and upgrading can be performed just by replacing or adding pc-boards.

» **User friendly** on screen instructions guide you through all operations. In particular, the operator's functions are extremely simple and clearly separate from those of the technicians.

» **Self-diagnosis** of all functions, both of the unit and of the externally linked devices, with detailed read-out.

» **Strong and reliable**, a heavy duty counter, suitable for use demanding industrial environments:

- » high protection rating (IP66) against liquids and solids penetration.
- » push buttons commands and outputs are completely solid state
- » optical decoupling of signals
- » heating device, with thermostat
- » electronic boards are mounted on internal anti-shock supports.

» Safety and security:

Parameters having metric influence are protected by a "hardware key" and by seals. Passwords with different access levels allow only the authorised persons to enter diagnostic functions and working parameters.

» Broad communication capability

VEGA II works as an intelligent terminal for the supervision and automation systems, to which it can be linked to via serial communication line. Further lines are available for devices and instruments such as injectors, densitometers, or dedicated printers.

Functions

Read out

All information is clearly visible on a single screen with graphic (permanent back-light) display.

- » resettable totalisers, delivered observed volume
- » resettable totalisers, delivered standard (compensated) volume
- » preset quantity
- » instantaneous and average flow rate
- » instantaneous and average temperature
- » diagnostic information and I/O status

The quantities are displayed in the chosen programmable units of measure.

VEGA II Blending is studied for blending two different products and only in this case VEGA II is used with two different meters, in this case the screen is divided in half and the data is shown for each meter in a separate area of the display.

During programming procedures instructions are displayed on screen to guide the user through the process.

Pre-setting (batch control) of the delivered volume

Via a two stage valve control performing:

- » low flow start
- » slowing down and final closing
- » anticipating the final closing (to compensate valve inertia)

Auxiliary outputs are provided for controlling the pumps.

A "multistep" digital control valve can also be used, allowing the flow rate regulation at prefixed values.





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Flow rate measure

Continuous read out of the instantaneous or average value, in the selected engineering units. Alarm threshold for minimum and maximum flow rate, freely programmable.

Temperature volume compensation

- » temperature detection: via thermal resistor Pt100
- » reference temperature: programmable (typically 15°C or 60°F for petroleum products)
- » method of calculation: according to ASTM S. 1250, API Standard D2540 e IP200 code.
- » product temperature range: -40°C ÷ +200°C
- » density range @ 15°C: 500 ÷ 1100 kg/m³
- » display and pre-setting of:
 - observed quantity
 - base quantity (compensated)
 - mass

Pressure volume compensation (on request)

Real time clock

Date, hour, minutes, seconds are automatically updated and can be transmitted together with delivery data (to a computer or a printer).

Data storage, programmed parameters and delivery data are stored into a permanent memory, along with the data of more than 100 previous deliveries, with events and alarms.

The internal battery allows to VEGA II to work in stand alone mode in the event of power failure.

Calibration and error curve linearisation

» self-calibration:

By following proper procedures the volume correction factor is automatically worked out by simply entering the prover volume.

» linearisation:

It is possible to perform the error curve compensation in max 10 points of the flow rate range, by means a special algorithm performing a linear interpolation.

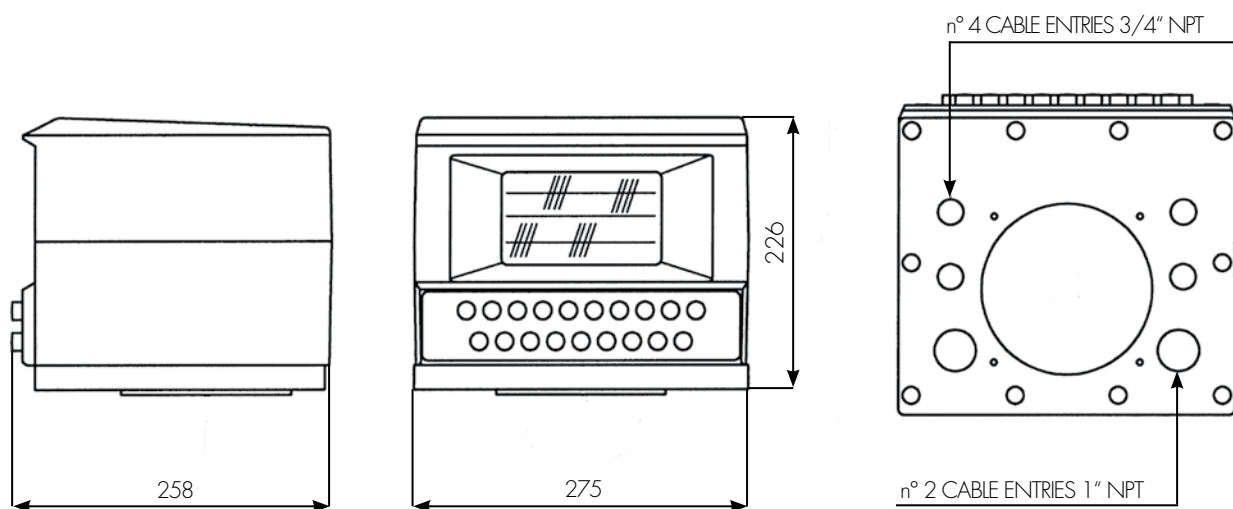
The following graphs show respectively a typical error curve and the resulting corrected curve.

Photo 1



Technical specifications

Firmware versions	Dedicated software-versions for different applications are continuously under development i.e. loading, tanker gravity unloading, blending. For more information see specific data-sheet	
Mechanical characteristics	Housing material	Aluminium casting
	Dimensions/Weight	275 x 226 x 258 mm 20 Kg approx
	Fitting	» On the meter by means of dedicated support » Remote
	Cable entries	» N° 2 hole s 1" NPT » N° 4 holes 3/4" NPT



Environment	Ambient operating temperature	-25÷+55°C
	Storage temperature	-25÷+65°C
Housing protection	Humidity	5÷95%UR with condensation
	Ex environment to ATEX	II 2 G Ex d IIB T6 Gb IP66 Approval INERIS 00 ATEX 0025



Photo 2



VEGA II Electronic counter

Electrical characteristics	Main Power supply	<ul style="list-style-type: none"> » 115÷230 VAC (-15/+10%), 50/60 Hz 40VA » 20÷30 VDC – 40 VA 	Additional power outputs (on I/O board)	<ul style="list-style-type: none"> N° 8, optional » relay 1A/250 VAC » solid state 1A/260 VAC » solid state 1A/60 VDC
	Inputs from pulse emitters	N°2 inputs from pulses emitter; one or two channels shifted 90° (open collector, push pull). DC power available 5 or 15 VDC, 100 mA _{Max}	Analog input (I/O analog board)	<ul style="list-style-type: none"> » N° 2 from Pt100, 3 or 4 wire class A (IEC 751) » N° 2, from 4÷20 mA, 2 wire
	Digital inputs	N°16 inputs from switches powered by VEGA II (15 VDC) or externally powered	Analog output (I/O analog board)	N° 2 4÷20mA, 2 wire
	Additional digital inputs (I/O board)	N°16, as above	Serial communication (standard on CPU board)	<ul style="list-style-type: none"> » N° 2 ports two wires RS232/RS485 settable » N° 1 port four wires RS422/485 » N° 1 port RS232 (Tx, Rx, Com)
	Digital outputs	N°8 powered by VEGA II (+15 VDC 1A max for all outputs) or externally powered 5÷28VDC	Anti- moisture heating device	40W, controlled by thermostat
	Pulses outputs	N°4 dedicate (characteristics as above)	Internal battery	NI Mh -- 12 VDC 1.2 A/h
	Additional digital outputs (I/O board)	N°8 (characteristics as above)	Display	LCD backlighted graphic 240x128 pixel; automatic contrast adjustment
	Power outputs	<ul style="list-style-type: none"> N°8, optional: » relay 1A/250 VAC » solid state 1A/260 VAC » solid state 1A/60 VDC 	Key-pad	From 0 to 19 keys, numeric and functional. Actuation via solid state sensors
Conformity with directive		<ul style="list-style-type: none"> » Direttiva 2004/108/EC (AC) » Direttiva 2004/104/EC (DC) » Direttiva 2006/95/EC (LVD) » Directive 94/9/EC (ATEX) 		
Weight and measure approvals		<ul style="list-style-type: none"> » W&M approvals in Italy, Spain, Swiss, Austria, India and other Countries. » Evaluation certificate MID (Directive 2004/22/EC) 		