Gönnheimer
Elektronic GmbH

VZ 150 Multifunction Preselection Counter

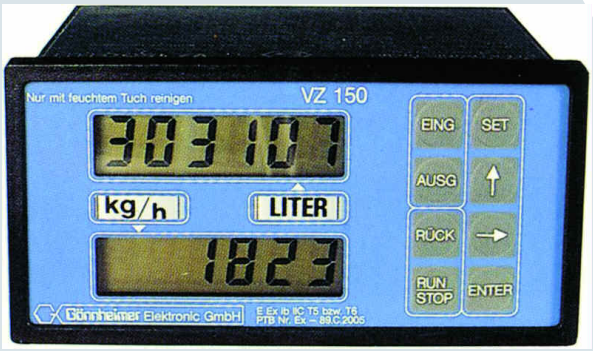
Microprocessor Control PTB No. Ex-89.C.2005

Variable functions by means of 8/13 integrated software packages 4 of these software packages for DOSING CONTROL

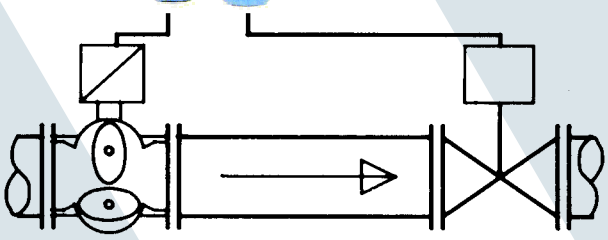
- Installation in the hazardous area (temperature class T6)
- Software packages integrated in the VZ 150 for
  - dosing
  - counting
  - counting + frequency/flow/speed measurement
  - flow-proportional sampling
  - timer
  - time switch
  - filling with level signal
- Passive or active control of inputs by means of contactors or intrinsically safe circuits respectively
- Partial or complete locking of keyboard
- Remote operation when used for DOSING CONTROL in "rough" operating conditions
- 3 outputs and two 6-digit displays, software packages with menu-assisted programming
- Analog output 0/4 to 20 mA or 0/1 to 5 V as an OPTION
- Additional totalizer and time/date display depending on the function
- Optionally available with serial TTY interface, e.g. for log printout

DOSING
SAMPLING
FLOW
COUNT
TIME
SPEED
FREQUENCY

VZ150.5/6



VZ150.0/1



SENSOR ACTUATOR

Function

The VZ 150 multifunction preselection counter is supplied by an intrinsically safe circuit (terminal 3,4). Power requirements for a terminal voltage of 9 to 65 volts are 20 mA. Installation of a serial interface or analog output increases power requirements to 40 mA and installation of both to 60 mA.
The short circuit current of the supply unit must be ≤ 160 mA.

The specified power requirements take into account the supply of passive transducers at inputs E1 to E7. The internal capacitance and inductance at all inputs and outputs are negligible. Meshes and temperature rises in the VZ 150 due to the supply of several active control circuits at the inputs and outputs have been checked and found to be in accordance with the limit values specified in the PTB approval. No further certification is required.

Inputs E2 to E7 (terminal 8 to 13) can be controlled via potential-free contacts for which an intrinsically safe power supply is provided at terminal 1,2. Input E1 (terminal 7) is designed for two-wire transducers to NAMUR or DIN 19234. The circuit at terminal 1,2 supplies power to the sensor. This input can also be designed as a 24 V digital input (necessary in combination with VI 151), as a voltage input (0 to 5 V) or for constant-current signals (0/4 to 20 mA). All inputs can also be fed from external, active, intrinsically safe circuits which operate within the specified safety limits.

The switching level at inputs E2 to E7 is defined with a 0 signal $\leq$ 2 V and a 1 signal $\geq$ 4 V. Outputs must be monitored with intrinsically safe control circuits (preferably to NAMUR or DIN 19234). All outputs are galvanically separated up to a nominal insulation voltage of 90 V. The switching function and direction of action (open/closed circuit connection) can be selected from the initialization menu.

The front panel of the VZ 150 has a membrane keyboard which can be used to initialize the program, change operating parameters such as preselected values, monitor input/output states, reset parameters and to start/stop operation. Keyboard operation can be completely or partially locked via input 7. Various software packages are standardly integrated in the unit (see table).

The desired function can be initialized in the factory or by the customer. The initialization menu can be called by simultaneously pressing SET and ENTER while power is applied to terminal 3,4 or by entering a code word. Initialization is menu-assisted on LCDs 1 and 2. An initialization flow diagram, a block diagram and a function description with application examples are provided for each unit function.

All preset parameters and operating data, such as count and preselected values, remain stored by means of the battery back-up facility for at least 8 years when power is switched off.

The individual software packages are designed for universal adaptation to specific requirements. In counting functions, e.g. divisors or multiplication factors from 1 to 999999 can be selected for incoming pulses.

Flow and speed are measured according to two different methods; at low frequencies, the duration of periods is measured and at high frequencies the gate times. The unit automatically switches from one method of measurement to the other. To provide a greater stability, 3 measured values are always taken into account in the displayed value. Speed measurement at one pulse per revolution is also possible. Flow transmitters can be adapted to transmitter constants by varying the factor P.

The switching principle of outputs (open/closed circuit connection) as well as the location of decimal points in displayed values can be freely selected.

The adaptability of the VZ 150 allows it to be connected to practically any sensor/actuator system. Talk to us about your needs. Many couplings are already standard and we can provide you with coupling diagrams.

The VZ 150.BT remote control facility enables the VZ 150 preselection counter to be used for dosing control in "ROUGH" operating conditions since it can be operated with gloves or soiled hands. Due to the segregation of the operator control and display levels, soiling of the display window is ruled out and an optimal location can be selected for each.

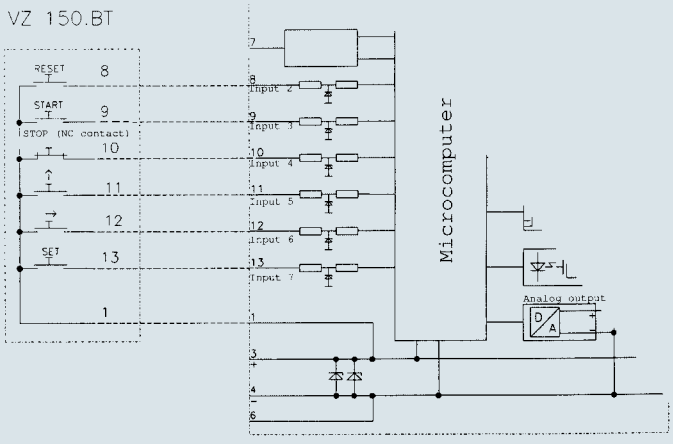
The key faces of the VZ 150.BT remote control unit are 20 x 20 mm and the class of protection to DIN 40050 is IP 65. The key caps and actuator elements can be easily exchanged. This unit may be operated only by the intrinsically safe circuits of preselection counters VZ 150.1.X.X.X or VZ 150.6.X.X.X. The remote control facility can be activated in program packages 12, 13 and 14.

<u>Preselecting values:</u>
Press SET
Preselect the desired value with ⬆ and ➡
Press SET again

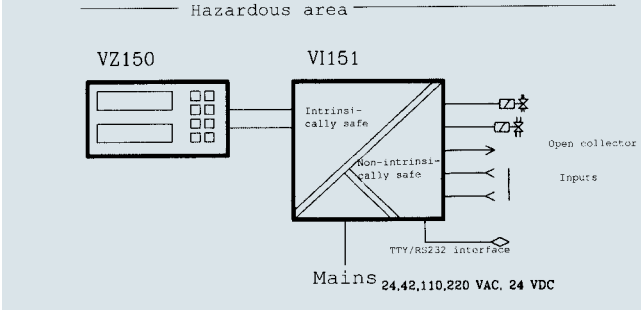
Pressing ⬆ and ➡ simultaneously resets the displayed value to "000000"

The membrane keyboard is locked during remote operation (selection of FErn the menu).

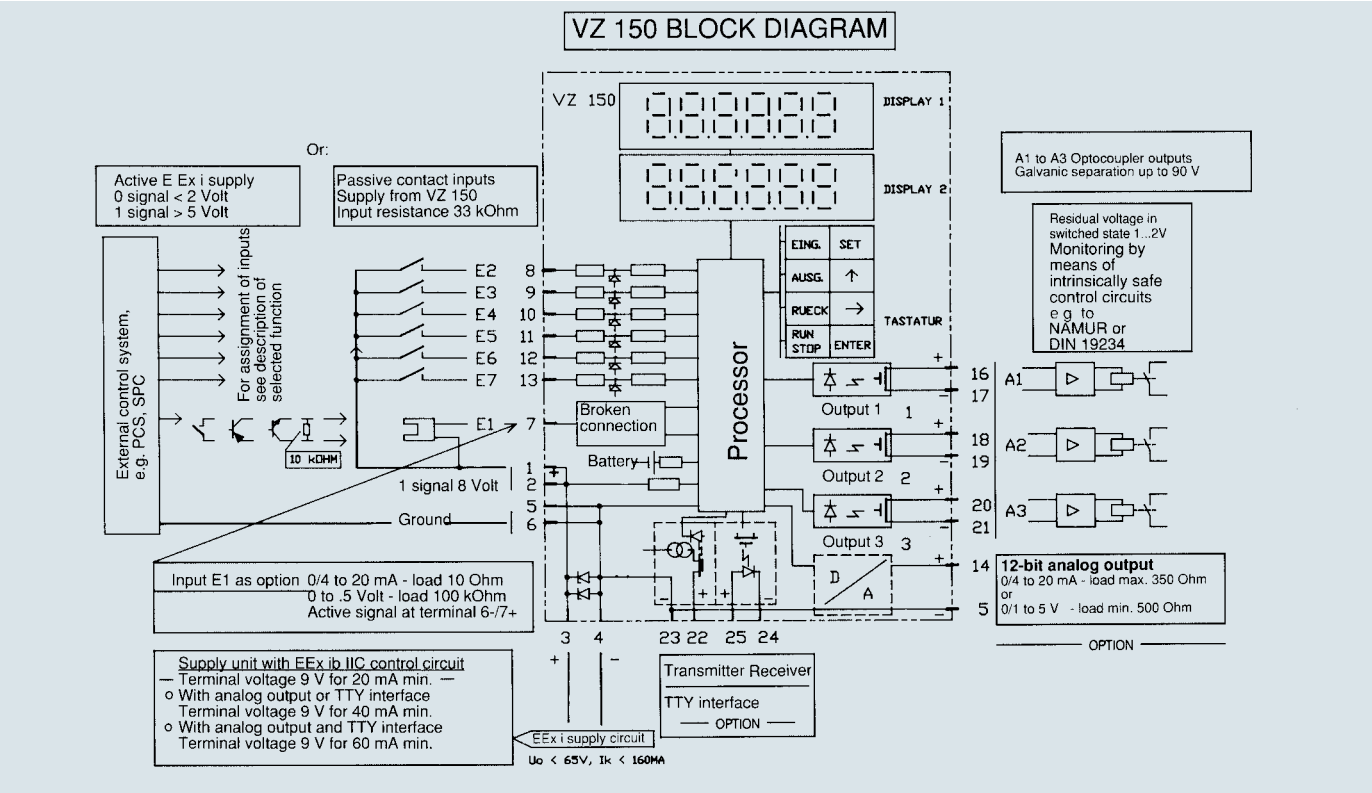
The unit can be <u>initialized only via the membrane keyboard.</u>



An interface unit was developed for easy control and supply of the VZ 150 preselection counter with "non-intrinsically safe signals". Integrated in the VI 151 supply and interface module are input buffer stages, output isolation amplifiers (250 V/6A), a fast electronic output buffer stage and power pack; an interface converter is optionally available. This interface module can be mounted in the hazardous area, thus dispensing with the need for wiring to the safe area.



Block Diagram

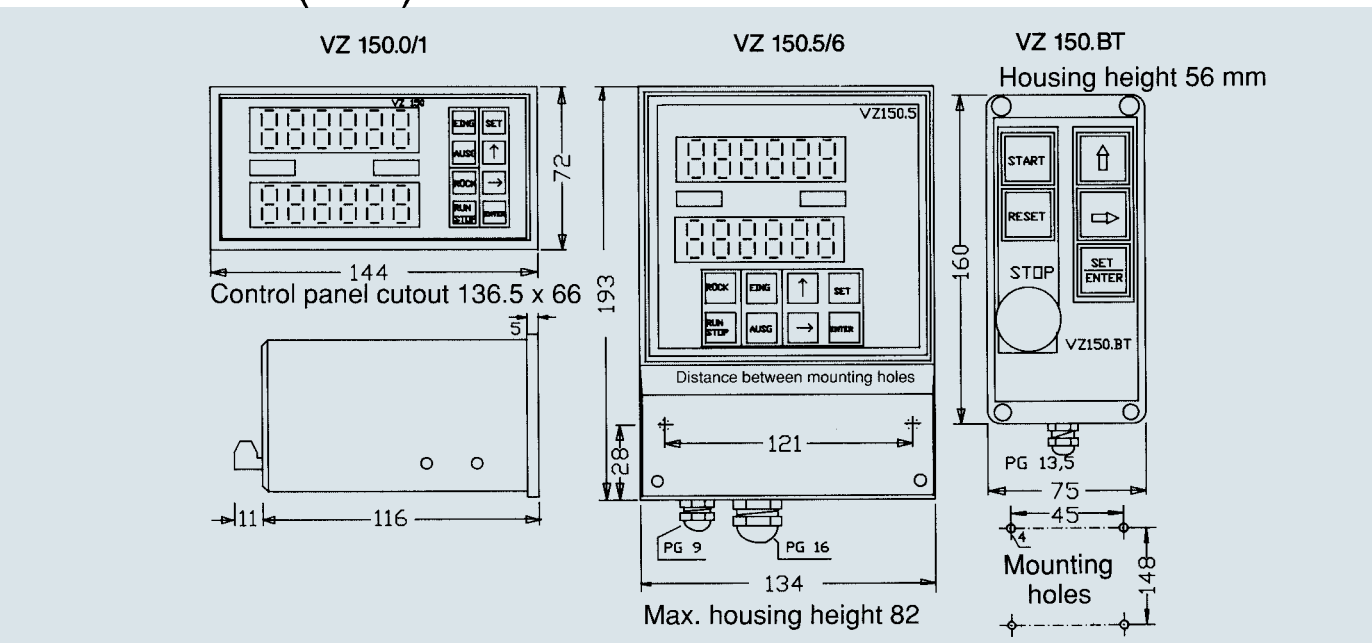


Safety Limit Values

Input E1	Intrinsically safe control circuit with $U_o \leq 30$ V, $I_K \leq 160$ mA
Input E2 to E7	Intrinsically safe control circuit with $U_o \leq 65$ V, $I_K \leq 160$ mA
Supply circuit Terminal 3/4	Intrinsically safe supply circuit $U_o \leq 65$ V, $I_K \leq 160$ mA
Output A1 to A3	Monitored by intrinsically safe control circuit with $U_o \leq 30$ V, $I_K \leq 50$ mA, $P_V \leq 850$ mW
Ex i output Terminal 1,2-5,6	$U_o \leq 9$ V, I_K and L_a like supply circuit at terml. 3,4; $C_o \leq 3.5$ µF
Analog output Terminal 5,14	$U_o \leq 8.6$ V I_K and L_a like supply circuit at terml. 3/4, Total capacitance at terml. 1/2- 5/6, 22-23, 5-14 ≤ 7 µF
TTY sender Terminal 22,23	$U_o \leq 9$ V, $C_o \leq 3.5$ µF, I_K and L_a like supply circuit at terml. 3,4
TTY receiver Terminal 24,25	$U_o \leq 65$ V, $I_K \leq 50$ mA, $P_V \leq 850$ mW

The internal inductance and capacitance of inputs and outputs are negligible. (See Certificate of Conformity PTB No. Ex-89.C.2005)

Dimensions (mm)



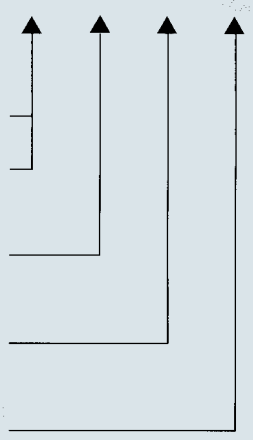
Technical Data

Display	Two 6-digit seven-segment LCDs
Digit height	12.7 mm
Keyboard	8-key membrane keyboard (tactile feedback)
Inputs E2 to E7	6 inputs, 0 signal < 2 V, 1 signal > 5 V - switching time 0.1 to 1 ms, level-dependent
E1	1 input to NAMUR or DIN 19234 - input frequency 1 kHz max., min. pulse time 400 µs, Minimum time interval 400 µs For: Analog input 0/4 to 20 mA, input load 10 Ohm: 0/1 to 5 V, input resistance 100 kOhm: Digital input 24 V , 0 signal ≤ 2 V, 1 signal ≥ 8 V
Outputs A1 to A3	3 outputs for monitoring with intrinsically safe control circuits $U_o \leq 30$ V, $I_K \leq 50$ mA, Pmax ≤ 850 mW, galvanically separated up to a nominal insulation voltage of 90 V
Analog output (Option)	12-bit resolution (4096 steps) 0/4 to 20 mA version, max. load 350 Ohm 0/1 to 5 V " , min. load impedance 500 Ohm Accuracy: ± 0.2%, Tk 0.1%/10°C
Function of VZ 150	Menu programmable - software package (see detailed description)
Explosion protection	E Ex ib IIC T4, T6
Installation	In hazardous area
Interface (OPTION)	TTY/20 mA, serial
Data buffering	By means of lithium battery (service life 8 years)

	VZ 150.0/1	VZ 150.5/6
Housing	Acc. to DIN 43700 control panel standard	—
Dimensions	HxWxD = 72x144x116 mm	HxWxD = 193x134x82 mm
Housing material	Noryl	ABS
Protection class	Standard front panel IP 40	IP65
	Front panel with plastic door IP 55, with adhered membrane keyboard IP 65	
Ambient temp.	-10°C to +40°C for temp. class T6, -10°C to +60°C for temp. class T4, shortened battery service life when operated at ambient temp. above +40°C	

Type Code

Multifunction Preselection Counter VZ 150.



Housing:	0 = control panel housing; with software package 1 to 8 5 = field housing IP 65 with software package 1 to 8 1 = control panel housing; with software package 1 to 14 6 = field housing IP 65 with sofware package 1 to 14
Input 1 (terminal 7):	0 = NAMUR/DIN 19234, 2 = 24V; 4 = 0 to 20 mA, 5 = 4 to 20 mA; 6 = 0 to 5 V
TTY interface:	0 = no interface; 2 = TTY sender; 4 = TTY receiver + sender
Analog output:	0 = no analog output; 4 = 0/4 to 20 mA; 6 = 0/1 to 5 V

Accessories:

- Ex i power pack for VZ 150 (installation in safe area); mains voltage 220 V AC, special voltage 24 V AC, 110 V AC and 24 V DC.
- VI 151.☐.☐ supply and interface module (installation in hazardous area) for counter power supply and Exi/non Exi isolation of input/output signals.
- VZ 150.BT remote control unit for remote dosing control in "rough" operating environments.
- Lockable plastic door for 72x144 mm housing, protection class IP 55

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Zertifiziertes Qualitäts-Managemantsystem nach DIN EN ISO 9001

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