VIRTEC INSTRUMENTS INC

VIR-850 SERIES USER MANUAL

ULTRASONIC FLOW/HEAT METER

The documentation is only complete when used in combination with the relevant documentation for the signal converter.

 8000697 - MANUALVIR-8500 R07 en

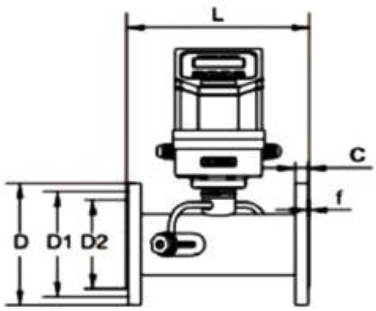
Dimensions - Transit Time UltraSonic Flow / Heat Meters

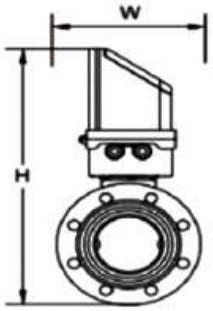
VIRTEC INSTRUMENTS INC

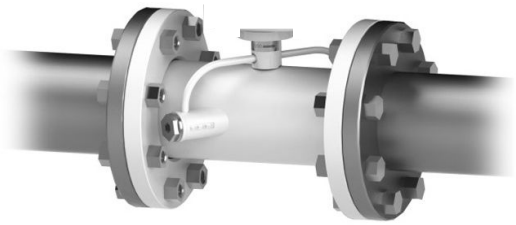
VIR-850 SERIES -Inline

Measuring range: DN40 ~ DN800

Fluid temperature: -30 -160 ° C



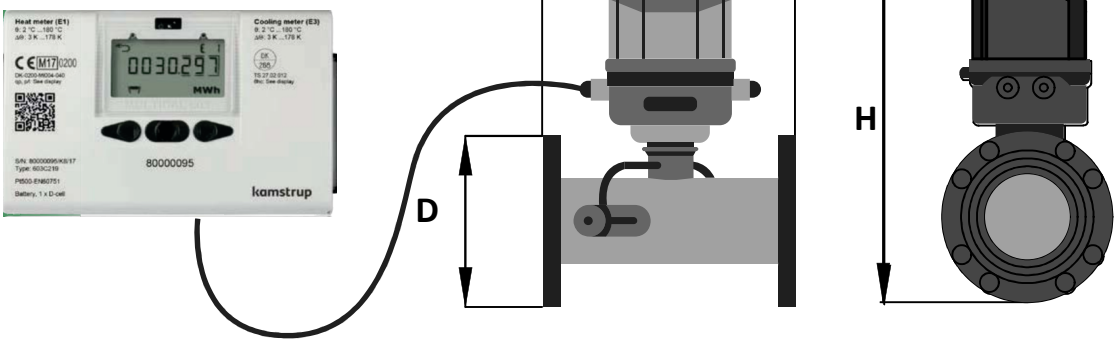




Model	Nominal Diameter (DN)	P/N P	Length L	Width W	Height H	Flange Dimension						
						Outer Dia D	Bolt Hole Centers D1	Bolt Hole X Quantity ϕX n	Sealing Surface Diameter D2	Flange Thickness c	Flange Thickness f	Bolt Specification
65-UF-1-VIR-850	40	1.6	30 0	150	336	150	110	18x 4	84	18	2	M16x 60
65-UF-2-VIR-850	50	1.6	30 0	165	349	165	125	18x 4	99	20	2	M16x 70
65-UF-3-VIR-850	65	1.6	30 0	185	366	185	145	18x 4	118	22	2	M16x 70
65-UF-4-VIR-850	80	1.6	22 5	200	381	200	160	18x 8	132	20	2	M16x 80
65-UF-5-VIR-850	100	1.6	25 0	220	401	220	180	18x 8	156	22	2	M16x 80
65-UF-VIR-850	125	1.6	27 5	250	428	250	210	18x 8	184	22	2	M20x 80
65-UF-A-VIR-850	150	1.6	30 0	285	459	285	240	22x 12	211	24	2	M20x 90
65-UF-B-VIR-850	200	1.6	35 0	340	511	340	295	26x 12	266	26	2	M22x 90
65-UF-C-VIR-850	250	1.6	45 0	405	569	405	355	26x 12	319	28	2	M22x 90
65-UF-D-VIR-850	300	1.6	50 0	460	621	460	410	23x 16	370	32	2	M22x 90
65-UF-E-VIR-850	350	1.0	55 0	500	666	500	460	25x 16	428	28	4	M20x 80
65-UF-F-VIR-850	400	1.0	60 0	565	697	565	515	25x 20	482	30	4	M22x 90
65-UF-G-VIR-850	450	1.0	70 0	615	774	615	565	25x 20	532	30	4	M22x 90
65-UF-H-VIR-850	500	1.0	800	670	826	670	620	30x 20	585	32	4	M22x 90
65-UF-I-VIR-850	600	1.0	1000	780	931	780	725	25x 24	685	36	5	M27x110
65-UF-J-VIR-850	700	0.6	11 00	860	1021	860	810	30x 24	775	32	5	M22x90
65-UF-K-VIR-850	800	0.6	1200	975	1129	975	920	30x 24	880	32	5	M27 x100

VIR-850 SERIES

Optional Kamstrup make Multical-603 Calculator with various Communication options.

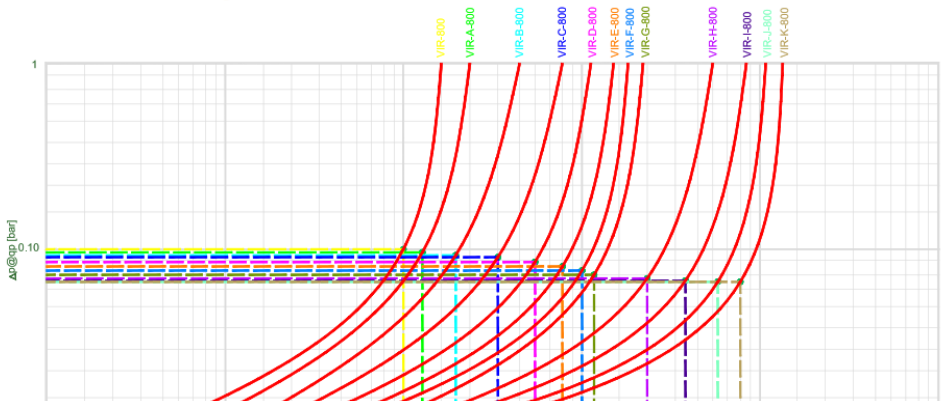


Model- Flow- Dia-Selection

Model	Dia	Nom.Flow qp(M3/hr)	Min.Flow qi(M3/hr)	Max.Flow qs(M3/hr)	p@qp (bar)	Material	Pressure rating Bar
65-UF-2-VIR-850	50	15	1.5	30	0.097	CARBON STEEL	PN-16
65-UF-3-VIR-850	65	25	2.5	50	0.097	CARBON STEEL	PN-16
65-UF-4-VIR-850	80	40	4	80	0.097	CARBON STEEL	PN-16
65-UF-5-VIR-850	100	60	6	120	0.097	CARBON STEEL	PN-16
65-UF-VIR-850	125	100	4	200	0.097	CARBON STEEL	PN-16
65-UF-A-VIR-850	150	150	6	300	0.097	CARBON STEEL	PN-16
65-UF-B-VIR-850	200	250	10	500	0.095	CARBON STEEL	PN-16
65-UF-C-VIR-850	250	400	16	800	0.092	CARBON STEEL	PN-16
65-UF-D-VIR-850	300	600	24	1100	0.09	CARBON STEEL	PN-16
65-UF-E-VIR-850	350	800	32	1600	0.087	CARBON STEEL	PN-16
65-UF-F-VIR-850	400	1000	40	2000	0.084	CARBON STEEL	PN-10
65-UF-G-VIR-850	450	1200	58	2400	0.08	CARBON STEEL	PN-10
65-UF-H-VIR-850	500	3000	60	6000	0.077	CARBON STEEL	PN-10
65-UF-I-VIR-850	600	4400	88	8500	0.077	CARBON STEEL	PN-10
65-UF-J-VIR-850	700	6200	124	12400	0.075	CARBON STEEL	PN-10
65-UF-K-VIR-850	800	8000	160	16000	0.075	CARBON STEEL	PN-10

* Dimensions are subject change without prior Notice. All Dimensions in mm. +/- 3% variation.

PRESSURE LOSS - Δp VIR SERIES



INSTALATION

Delivery acceptance

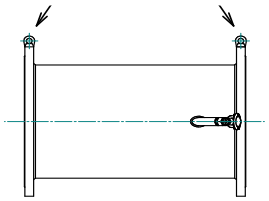
meter delivery, the buyer shall check integrity of the product packaging and the good condition of the product itself.
The delivery scope shall be checked in reference to the order specifications, delivery note and meter rating plates.

In cases of delivery more than one meter at a time, due attention shall be paid to matching the correct sensors and converters (see the system rating plates).

Meter handling

When lifting the meter, hold it by the flanges of transport eye, never by the connecting box or probes!

Recomended points of lifting



To prevent irreparable meter damage during transport, do not place any auxiliary parts inside the sensor.

In meter handling or lifting, use textile slings only. Chains or steel cables might damage the meter. It is recommended to transfer the flowmeter to the installation site in the original transport package.

Storage

During meter storage prior to installation, it is necessary:

- to maintain the specified storage conditions regarding temperature and relative humidity of the ambient air,
- to ensure that the meter is not exposed to direct sunlight (risk of damage to the meter display).

It is recommended to store the meter in its transport packaging and remove the protective wrapping and casing only immediately prior to the meter installation.

Installation conditions

General rules

The general rules to be observed during the mechanical assembly and installation of the meter are:

- the protective wrapping and casing shall be removed only prior to the meter installation,
- the arrow on the sensor body shall point in the direction of the positive fluid flow,
- the fluid flow direction in a meter sensor installed in vertical piping shall be upwards,
- the flanges on the piping shall be strictly parallel,
- the internal diameters of the piping and seals shall correspond to that of the sensor,

- the sealing shall be correctly placed between the flanges and not extend into the flow profile,
- the piping supports at the meter input and output shall minimise the mechanical stresses on the sensor (vibration, tension, bend, and others),
- no piping support or brace shall be placed directly under the meter sensor,
- the converter shall be protected against direct sunshine,
- when choosing the meter installation place, make sure that the operators will have good access to the meter converter and all meter rating plates,
- the meter sensor shall always be fully flooded with the measured fluid with a minimum risk of fluid aeration.

Upon completion of the meter installation, make sure that no subsequent electric-arc welding work is done on the adjoining piping. Flanges must not be welded unto the piping ends with the meter sensor attached!

Straight piping sections

The meter installation place in the piping shall meet the requirements of standard EN ISO 4064-5 with the local conditions ensuring:

- stable fluid flow,
- stable fluid velocity profile,
- complete sensor flooding
- preventing the risk of cavitation and fluid foaming.

At the sensor input and output, there shall be straight piping sections of lengths specified as multiples of the inner piping diameter. In cases of bi-directional flow rate measurements, the conditions at the sensor input and output shall be the same.

It is desirable that no intermediate edge causing turbulence appears at the joint plane between the sensor and the adjacent piping section. The inner diameter of the piping connected to the meter sensor shall not be smaller and at the same time not greater than by 1% of the inner diameter of the sensor.

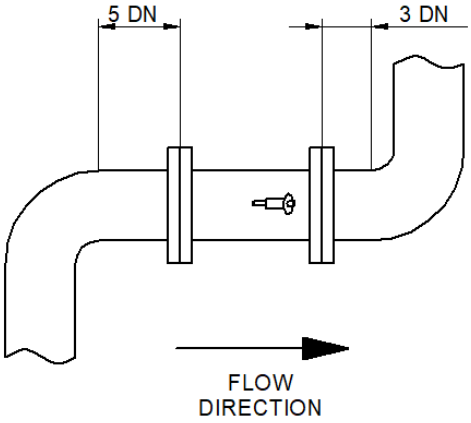
Generally, it is recommended to install the flowmeter sensor before the flow disturbing elements in the piping.

The movement of the measured fluid in the piping shall be as smooth as possible. If the piping system includes a pump generating pressure impulses in the fluid flow (e.g. a pneumatic pump), a suitable hydraulic damper shall be used.

Sensor UC 7.0 (a single-ray sensor)
For sensor UC 7.0, the required lengths of straight piping sections at the input and output of the sensor are 5 DN and 3 DN. Respectively, this rule applies in cases of simple flow-disturbing elements in the piping such as a 90°bend or taper.
For bi-directional flow rate measurement, the basic required lengths of straight piping sections at the sensor input and output are the same, namely 5 DN. If there are more than one flow-disturbing element (such as bend or fitting) found near the meter sensor, the required lengths of straight piping sections shall be the respective multiple of the basic lengths.

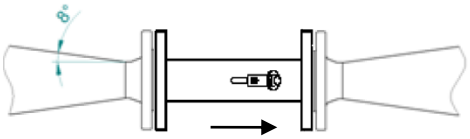
Sensor UC 7.2 (a double-ray sensor)
Using the same lengths of straight piping sections for UC7.2 as for UC7.0 will ensure higher precision of the flow measurements (see Section 9.3 below).

Basic required lengths of straight piping sections



If the flowmeter size is smaller than that of the adjoining piping, it is necessary to use conical reduction pieces with apex angle not exceeding 15°.
With horizontal piping, eccentric reduction pieces should be used to prevent generation of air bubbles – see standard ČSN ISO 6817.

Tapered reduction pieces with slope angle up to 8° can be considered straight piping sections.

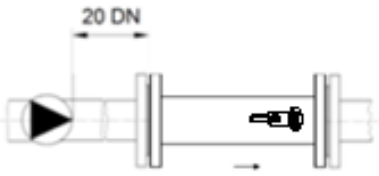


4.4.3 Pump operation effect limitation

To prevent pressure drop inside the sensor and related undesirable effects such as cavitation, generation of gas bubbles or fluid foaming, place the pump in the piping always at the sensor input side.

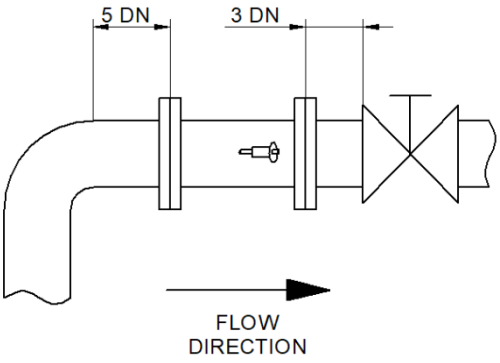
Pump placement at the sensor input side will suppress the cavitation effects and gas release from the measured fluid. Higher pressure in the piping system will keep the fluid under the saturated vapour pressure and so eliminate the cavitation effects.

The required length of straight piping section between the pump and meter sensor is at least 20 DN.

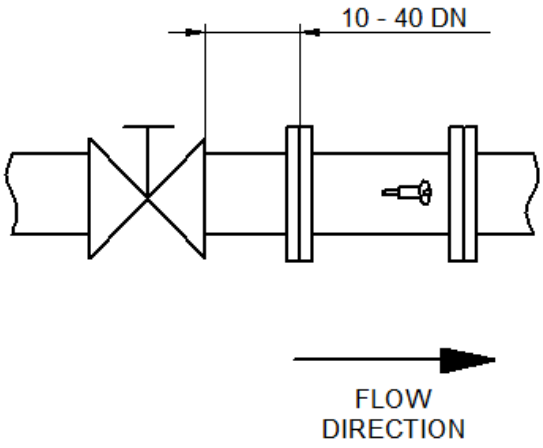


4.4.4 Limitation of the effects of closing and regulation fittings

To prevent negative effect on the fluid velocity profile in the sensor and cavitation, the closing and regulation fittings/valves should preferably be placed at the output side of the flowmeter. If it is so, the required length of straight piping section between the sensor and the nearest valve is 3 DN.

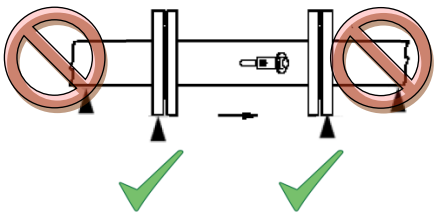


In cases where for technological reasons a full-flow fitting need be placed at the input side of the meter sensor, the recommended length of straight piping section is 10 DN. If such fitting is a regulation valve, the recommended length of straight piping section is 40 DN.



Limitation of the effects of vibration and other mechanical stresses

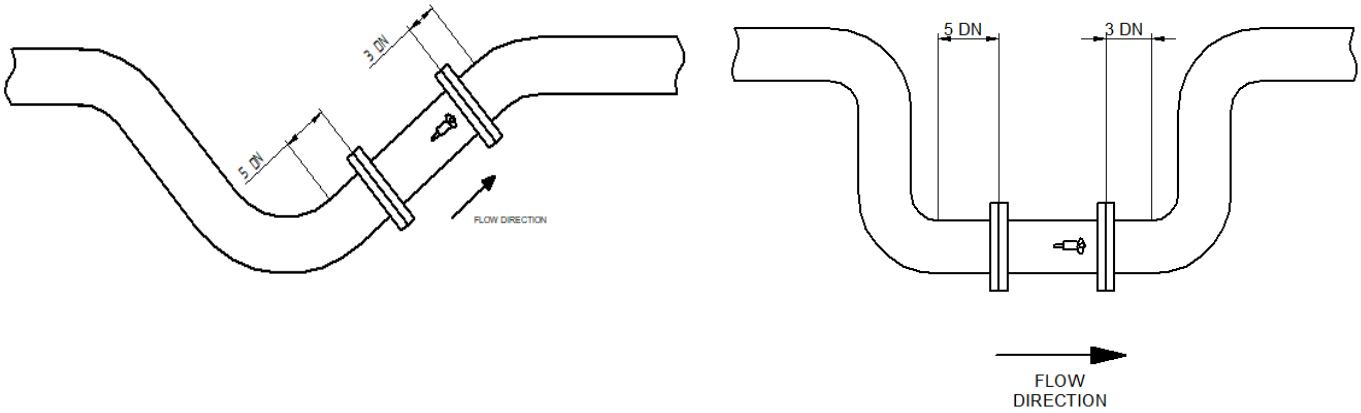
To prevent the action of mechanical stress and undesirable vibration, the piping sections at the sensor input and output shall be supported as near to the sensor as possible.



Sensor flooding

The meter sensor shall always be fully flooded with the measured fluid. In cases where such condition does not apply to the adjoining piping sections, the sensor position shall be such that its complete flooding is still achieved..

The meter sensor shall not be located at the top of the piping system or, in vertical position, with the fluid

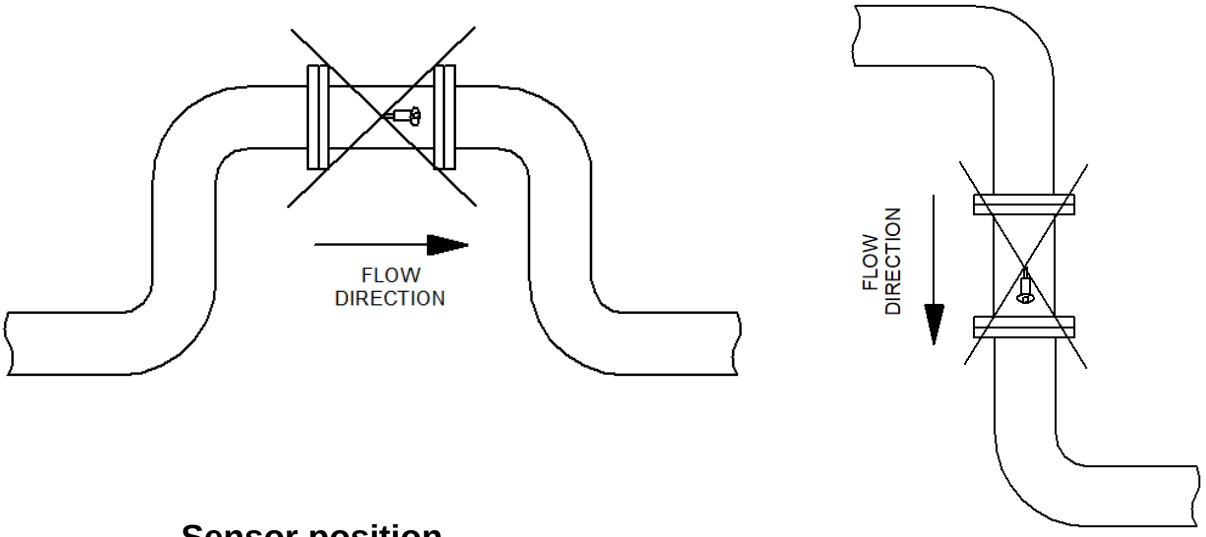


flow direction downwards, especially if the piping discharge point is near. Observance of this rule will prevent measurement errors due to higher concentration of air bubbles inside the sensor.

Incorrect meter placement

The meter sensor shall not be located at the top of the piping system or, in vertical position, with the fluid flow direction downwards, especially if the piping discharge point is near. Observance of this rule will prevent measurement errors due to higher concentration of air bubbles inside the sensor.

Unsuitable meter installation positions



Sensor position

The flowmeter position in the piping can be both horizontal and vertical.

Suitable deviation from the ideal position of horizontal axis:

- sensor UC 7.0 (single-ray) ± 30° in both directions.
- sensor UC 7.2 (double-ray) ± 45° in both directions.

4.5 Thermal insulation

If a flowmeter is to be installed in a thermally insulated piping, thermal insulation is usually applied on the meter sensor too. In such a case, observe the following rules:

- Thermal insulation is placed on the sensor only.
- The meter converter shall be protected against undesirable heating (by direct sunshine or thermal radiation from nearby equipment).

4.6 Flowmeter heating

In cases of flow rate measurements of fluids at sub-zero temperatures or at ambient temperatures near the limit on the permitted sub-zero fluid temperatures, the meter sensor may be thermally insulated and at the same time heated.

- The meter sensor can be heated electrically or using a heat-exchanger piping with a suitable heat-carrying medium.
- Recommended for electric heating is an AC-power system with a zero-switching regulation.

6.3 Menu Details

Menu No.	Details
M00	Display flow rate and NET totalizer. Unit selection in M30~M32.
M01	Display flow rate and velocity. Unit selection in M30~M32.
M02	Display flow rate and POS(positive) totalizer. Unit selection in M30~M32.
M03	Display flow rate and NEG(negative) totalizer.Unit selection in M30~M32.
M04	Display date and time, flow rate.
M05	Display heat flow rate and total heat. Unit selection in M84 and M88.
M06	Display temperatures, inlet T1, outlet T2
M07	Display analog inputs, AI3/AI4
M08	Display system error codes. 'R' stands for normal.
M09	Display today's total NET flow
M10	Input outer perimeter.
*M11	Input outer diameter. Available range is 0 to 18000mm.
*M12	Input pipe wall thickness
*M13	Input inner diameter.
*M14	Select pipe material.
M15	Input sound velocity of the pipe material.
M16	Select lining material.
M17	Input sound velocity of the lining material.
M18	Input the lining thickness.
M19	Input the absolute roughness of pipe inner wall.
*M20	Select the liquid type.
M21	Input sound velocity of the liquid.
M22	Input viscosity of the liquid.
*M23	Select the transducer type. Over 20 types can be selected.
*M24	Select the mounting method of transducer.
*M25	Display the transducer mounting distance.
*M26	**0 Use RAM setting**: A switch for the parameters in flash memory will be loaded when power is turned on. The default option is that the parameters will be loaded. If this switch is not turned on, the system will try to use the parameters in the system RAM, if these parameters are OK, otherwise the system will load the parameters in flash memory **1 Solidity setting:** Function to store the current parameters into the flash memory, so that these parameters will be solidified and will be loaded as the default parameters every time when power is turned on.
M27	To save the installation point parameter.

M28	Maintain the last good value when poor signal condition occurs. YES is the default setup.
M29	Setup a signal strength as empty pipe. For example input 65, it means the pipe is treated as empty pipe when the signal is less than 65, and the flow rate display is 0.
M30	Select metric or British system unit.
M31	Select flow rate unit.
M32	Select totalizer flow unit.
M33	Select totalizer multiple factor. The multiplying factor ranges from 0.001 to 10000. Factory default is 1
M34	Turn on or turn off the NET totalizer
M35	Turn on or turn off the POS (positive) totalizer
M36	Turn on or turn off the NEG(negative) totalizer
M37	Restore factory settings. Totalizer reset.
M38	Manual totalizer used for easier calibration. Press a key to start and press a key to stop the manual totalizer.
M39	Language selection. there are Chinese+English+Italian or English+Italian+Turkish
*M40	Damping factor. The damping factor ranges from 0 to 999 seconds. 0 means there is no damping. Factory default is 10 seconds
*M41	Cut-off low flow rate (or zero flow rate) to avoid invalid accumulation.
M42	Zero calibration/Zero point setup. Make sure the liquid in the pipe is not running while doing the setup.
M43	Clear the zero point value, and restore original value.
M44	Manual Zero point . Set up a flow bias. Generally this value should be 0.
M45	Flow rate scale factor. The default value is '1'. Keep this value as '1', when no calibration has been made.
M46	Networks address identification number. Any integer can be entered except 13(0DH, carriage return), 10 (0AH, line feeding), 42 (2AH), 38, 65535. Every set of the instrument in a network environment should have a unique IDN. Please refer to the chapter for communication.
M47	System locker to avoid modification of the system parameters. If password is forgotten, you could send a command 'LOCK0' to the serial input to unlock. Or you can write 0 to REGISTER49-50 under MODBUS protocol.
M48	Entry to linearity correcting data inputs. By using of this function, the non-linearity of flow meter will be corrected. Correcting data shall be obtained by careful calibration.
M49	Displays the input contents for the serial port. By checking the displays, you can know if the communication is OK.
M50	Switches for the built-in data logger. There are as many as 22 different items can be chosen. To turn this function, select 'YES' the system will ask for selecting the items.
M51	Time set for timing output.(data logger or printer)
M52	Data logging direction control. (1) If 'Send to RS485' is selected, all the data produced by the data logger will be transmitted out through the RS-232/RS485 interface (2) If 'To the internal serial BUS is selected, the data will be transmitted to the internal serial bus which allows a thermal printer, or a 4-20mA analog output module, to be

	connected to it.
M53	Display analog inputs, AI5, current value and its corresponding temperature or pressure or liquid level value.
M54	Pulse width setup for the OCT (OCT1) output. Range from 6 mS to 1000 mS
M55	Select analog output (4-20mA current loop, or CL) mode.
M56	Set the value which corresponds to 4mA or 0mA output current (4mA or 0mA is determined by the setting in M55)
M57	Set the value which corresponds to 20mA output current
M58	Current loop verification Check if the current loop is calibrated correctly.
M59	Display the present output current of current loop circuit.
M60	Setup system date and time. Press ENT for modification.
M61	Display Version information and Electronic Serial Number (ESN) that is unique for each flow meter.
M62	RS-232/RS485 setup. All the devices connected with flow meter should have matched serial configuration.
M63	Select communication protocol. Factory default is 'MODBUS ASCII. this is a mode for MODBUS-ASCII, Meter-BUS, Fuji Extended Protocol, Huizhong's various protocols. If you are going using MODBUS-RTU you have to select 'MODBUS_RTU'.
M64	AI3 value range. Used to enter temperature/pressure values that are corresponding to 4mA and 20mA input current. The display values have no unit, so that they can present any physical parameter.
M65	AI4 value range. Used to enter temperature/pressure values that are corresponding to 4mA and 20mA input current.
M66	AI5 value range. Used to enter temperature/pressure values that are corresponding to 4mA and 20mA input current.
M67	Setup the frequency range (lower and upper limit) for the frequency output function. Valid range is 0Hz-9999Hz. Factory default value is 0-1000 Hz.
M68	Setup the minimum flow rate value which corresponds to the lower frequency limit of the frequency output.
M69	Setup the maximum flow Rate value that corresponds to the upper frequency limit of the frequency output.
M70	LCD display back light control.
M71	LCD contrast control.
M72	Working timer. It can be cleared by pressing ENT key, and then select YES.
M73	Window to setup the lower limit of flow rate for Alarm#1. When the flow rate is below the set value, Alarm#1 equals 'on'
M74	Window to setup the upper limit of flow rate for Alarm#1. When the flow rate is above the set value, Alarm#1 equals 'on' There are two alarms in the flow meter, and every alarm can be pointed to alarm output

	devices such as the BUZZER or OCT output or RELAY output. For example, if you want the Alarm#1 is to output by the OCT circuit, you need to set M78 at selection item 6.
M75	Window to setup the lower limit of flow rate for Alarm#2.
M76	Window to setup the upper limit of flow rate for Alarm#2.
M77	Buzzer setup. If a proper input source is selected, the buzzer will beep when the trigger event occurs.
M78	OCT (Open Collect Transistor Output)/OCT1 setup By selecting a proper input source, the OCT circuit will close when the trigger event occurs.
M79	Relay or OCT2 setup By selecting a proper input source, the RELAY will close when the trigger event occurs
M80	Window for selecting the trig signal for the built-in batch controller. Available trig sources: 0. Key input (press ENT key to start the batch controller) 1. Serial port 2. AI3 rising edge (when AI3 receives 2mA or more current) 3. AI3 falling edge (when AI3 stop receiving 2mA or more current) 4. AI4 rising edge (when AI3 receives 2mA or more current) 5. AI4 falling edge (when AI3 stop receiving 2mA or more current) 6. AI5 rising edge (when AI3 receives 2mA or more current) 7. AI5 falling edge (when AI3 stop receiving 2mA or more current) 8.Timer periodically (define the start time and interval time in M51) 9.Timer daily (define the start time and interval time in M51) For the input analog current signal, 0 mA indicates “0”, 4mA or more indicates ‘1’. By selecting item #8, the batch totalizer can be started periodically by the internal timer located at Menu51. When the batch totalizer is full, a signal which indicate the batch is full can be direct to either the OCT or the RELAY terminals to stop the pump or other devices. By selecting item #9, the batch totalizer could act as totalizer witch runs for only a period of the day so that a alarm signal could be produced if the total flow during that time period is over a certain amount of. For example, if you want a alarm signal which stand for the total flow is over 100 cubic meters during the period of every day from 20:00 to 06:00, setups is like M51 start time =20:00:00 M51 interval =10:00:00 M51 log times =9999 (means always) M80 select item #9 M81 input 100 (Unit is defined in M30,M31,M32)
M81	The built-in batch controller Set the flow batch value(dose) The internal output of the batch controller can be directed either to the OCT or the RELAY output circuits. M81 and M80 should be used together to configure the batch controller. Note: Because the measuring period is 500mS, the flow for every dos should be keeping at

	60 seconds long to get a 1% dose accuracy.
M82	View the daily, monthly and yearly flow totalizer and thermal energy totalizer value. The totalizer values and errors for the last 64 days, 32 last 32 months and last 2 years are stored in the RAM memory, To view them, use the 'ENT' and 'UP' 'Down' keys.
M83	Automatic Amending Function for automatic offline compensation. Select 'YES' to enable this function, select 'NO' to disable it. When the function is enabled, The flow meter will estimate the average flow uncounted (or 'lost') during the offline session and add the result to the totalizer. The estimation of the uncounted flow is made by computing the product of the offline time period and the average flow rate, which is the average of the flow rate before going offline and the one after going on line.
M84	Set the thermal energy unit: 0. GJ 1. KC 2.KWh 3. BTU
M85	Select temperature sources 0. from T1,T2 (factory default) 1. from AI3,AI4
M86	Select the Specific Heat Value. Factory default is 'GB'. Under this setting, the flow meter will calculate the enthalpy of water based on the international standard. If the fluid is other than water, you should select option '1. Fixed Specific Heat', and enter the specific heat value of the fluid.
M87	Turn on or turn off the Energy totalizer.
M88	Select thermal energy totalizer multiplying factor. Factory default is '1'.
M89	1. Display the temperature difference 2. Window for entering the lowest temperature difference.
*M90	Display signal strengths S (one for upstream and one for downstream), and signal quality Q value. Signal strength is presented by 00.0 to 99.9, the bigger the value, the bigger the signal strength will be, and more reliable readings will be made. Q value is presented by 00 to 99, the bigger the better. It should at least be great than 50 for normal operations.
*M91	Displays the Time Ratio between the Measured Total Transit Time and the Calculated time. If the pipe parameters are entered correctly and the transducers are properly installed, the ratio value should be in the range of 100±3%. Otherwise the entered parameters and the transducer installation should be checked.
M92	Displays the estimated fluid sound velocity. If this value has an obvious difference with the actual fluid sound speed, pipe parameters entered and the transducer installation should be checked again.
M93	Displays total transit time and delta time(transit time difference)
M94	Displays the Reynolds number and the pipe factor used by the flow rate measurement program. Pipe factor is calculated based on the ratio of the line-average velocity and the cross-section average velocity.

M95	(1) Display the positive and negative energy totalizers (2) Upon entering this window, the circular display function will be started automatically. The following windows will be displayed one by one, each window will stay for 8 seconds: M95>>M00>>M01>>M02>>M02>> M03>>M04>>M05>>M06>>M07>>M08>>M90>>M91>>M92>> M93>> M94>>M95. This function allows the user to visit all the important information without any manual action. To stop this function, simply press a key. Or switch to a window other than M95.
M96	This is not a window but a command for the thermal printer to advance 5 lines of paper.
M97	This is not a window but a command to print the pipe parameters. By default, the produced data will be directed to the internal serial bus (thermal printer). You can also direct those data to the serial communication port.
M98	This is not a window but a command to print the diagnostic information. By default, the produced data will be directed to the internal serial bus (thermal printer). You can also direct those data to the serial communication port.
M99	This is not a window but a command to copy the current display window. By default, the produced data will be directed to the internal serial bus (thermal printer). You can also direct those data to the serial communication port. By use of the window copying function, you can hardcopy very window displaying manually by switching windows, or you can obtain the window displaying data by communication.
M+0	Browse the 32 recorded instrument power-on and power-off date and time with the flow rate at the time of power on and off
M+1	Displays the total working time of the flow meter. When the backup battery is removed, the total working time will be reset to zero.
M+2	Displays the last power-off date and time
M+3	Displays the last power-off flow rate
M+4	Displays how many times of has been powered on and powered off.
M+5	A scientific calculator for the convenience of field working. All the values are in single accuracy. The calculator can be used while the flow meter is conducting flow measurement. Water density and PT100 temperature can also be found in this function.
M+6	Set fluid sound speed threshold Whenever the estimated sound speed (displayed in M92) exceeds this threshold, an alarms signal will be generated and can transmitted to BUZZER or OCT or RELAY. This function can used to produce an alarm or output when fluid material changes.
M+7	Displays total flow for this month(only for the time past)
M+8	Displays total flow for this year(only for the time past)
M+9	Display the not-working total time in seconds. The total failure timer will also include the time when power off, if the back-up battery is applied.
M.2	Entry to solidify the zero point. password protected.
M.5	Setup the Q value threshold. If the present Q is below this threshold, flow rate will be set to 0.

	This function is useful when flow meter is installed in noisy environment or on airy pipes.
M.8	The maximum flow rates for today and this month.
M.9	Serial port tester with CMM command output for very second.
M-0	Entry to hardware adjusting windows only for the manufacturer
M-1	4-20mA output adjustment
M-2	4mA calibration for AI3 input
M-3	20mA calibration for AI3 input
M-4	4mA calibration for AI4 input
M-5	20mA calibration for AI4 input
M-6	4mA calibration for AI5 input
M-7	20mA calibration for AI5 input
M-8	Lower Temperature Zero setup for the PT100
M-9	Higher Temperature Zero setup for the PT100
M-A	Temperature Calibration at 50℃
M-B	Temperature Calibration at 84.5℃

6.4 Quick setup of measured parameters

Accurate measured parameters can have a great influence on measuring precision and reliability. It is suggested to measure the practical perimeter and wall thickness of the pipeline. Ultrasonic thickness gauge can be used to measure the pipe thickness.

Measured parameters setup is from Menu10 to Menu29. Please complete one by one.

>>> Following parameters need to be input before measurement:

1. Outer diameter unit: mm
2. Pipe thickness unit: mm
3. Pipe material
4. Lining parameters: thickness and sound velocity (If have lining)
5. Liquid type
6. transducer type
7. transducer mounting type

Setting Trends

Virtec is one of the global leaders providing Heat & Flow management solutions in HVAC & Water applications. The solutions are based on two measuring technologies, Ultrasonic & Electromagnetic principle. Our high-end services and cutting-edge product solutions in this field have made us the leading providers of technologically advanced Heat and Fow measuring instruments.

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