Programming Menu

Display only	M00	Display window POS (positive), NEG (negative) and NET (net) totalizer values. Signal strength for both the sensors,signal quality and working status	
	M01	Display window Totalizer(positive), Flow rate, Velocity, Signal strength for both the sensors,signal quality and working status	
	M02	Display window Totalizer(negative), Flow rate, Velocity, Signal strength for both the sensors,signal quality and working status	
	M03	Display window Totalizer(net), Flow rate, Velocity, Signal strength for both the sensors,signal quality and working status	
	M04	Display window Date, Time, Flow rate, Signal strength for both the sensors,signal quality and working status	
	M05	Display window Date, Time, Velocity, Signal strength for both the sensors,signal quality and working status	
	M06	Display window: the wave shape of the receiving signal	
	M07	Display window: the battery terminal voltage and its estimated lasting time	
	M08	Display window: Detailed working status, signal strength, signal quality	
	M09	Display window: Today's total	
Initial setting menu	M10	Outer perimeter of the pipe (C=2πr) If the diameter is entered in M11correctly, perimeter will be automatically calculated. Example: r=100mm,Perimeter =314.16mm.	
	M11	Outer diameter of the pipe; Valid range: 0 to 6000mm.	
	M12	Pipe wall thickness	
	M13	Inner diameter of the pipe. If pipe outer diameter and wall thickness are entered correctly, the inner diameter will be calculated automatically, thus no need to change anything in this window.	
	M14	Window for selecting pipe material. Standard pipe materials (no need to enter the material sound speed) include: (0) carbon steel (1) stainless steel (2) cast iron (3) ductile iron (4) copper (5) PVC (6) aluminum (7) asbestos (8) fiberglass	
	M15	Window for entering the sound speed of non-standard pipe materials	
	M16	Window for selecting the liner material. Select none for pipes without any liner. Standard liner materials (no need to enter liner sound speed) include: (0) No Liner (1) Tar Epoxy (2) Rubber (3) Mortar (4) Polypropylene (5) Polystryol (6)Polystyrene (7) Polyester (8) Polyethylene (9) Ebonite (10) Teflon	
	M17	Sound speed of non-standard liner materials	
	M18	Liner thickness (window not seen if (0) No Liner is chosen in M16)	
	M19	Roughness coefficient of the pipe inner surface	
	M20	Window for selecting fluid type For standard liquids (no need to enter liquid sound speed) include: (0) Water (1) Sea Water (2) Kerosene (3) Gasoline (4) Fuel oil (5) Crude Oil (6) Propane at -45ºC (7) Butane at 0ºC (8)Other liquids (9) Diesel Oil (10)Caster Oil (11)Peanut Oil (12) #90 Gasoline (13) #93 Gasoline (14) Alcohol (15) Hot water at 125ºC	
	M21	Window for entering the sound speed of non-standard liquids	
	M22	Window for entering the viscosity of non-standard liquids	

Initial setting menu	M23	Window for selecting transducer type There are 14 different types of transducers for selection. (0) Clamp-on M2;(1) Plug-in Type A;(2) Clamp-on TM1;(3) User Type;(4) Clamp-on L2; (5) Plug Type B45;(6) Standard-L;(7) Clamp-on TS2;(8) Standard-M1;(9) Plug-in TypeC; (10) Standard -HS;(11) Standard -HM;(12) Standard - S1;(13) π pipe;(14) Standard L1; If the π type spool-piece transducers are used, the user needs to configure the 3 transducer parameters.Otherwise, the user needs to configure the 4 transducer parameters.	
	M24	Transducer mounting methods 4 methods can be selected: (0) V-method (1) Z-method (2) N-method (3) W-method	
	M25	Transducer mounting spacing or distance (this is a display window - instruction for the spacing)	
	M26	Entry to store the pipe parameters into the internal NVRAM (non-volatile memory)	
	M27	Entry to read the previously saved pipe parameters and load them	
	M28	Entry to determine whether or not to keep the last correct value when poor signal condition occurs. YES is the factory default	
	M29	Window to set the threshold below which the receiving signal is defined as poor. Valid number: from 000 to 999. 0 is the factory default. Empty pipe set up	
Units setting menu	M30	Window for selecting unit system. 'Metric' is the factory default. The conversion from English to Metric or vice versa will not affect the unit for totalisers.	
	M31	Window for selecting flow rate unit. (0). Cubic meter (m3) 1. Liter (l) 2. USA gallon (gal) 3. Imperial Gallon (igl) 4. Million USA gallon (mgl) 5. Cubic feet (cf) 6. USA liquid barrel (bal) 7. Imperial liquid barrel (ib) 8. Oil barrel (ob); The flow unit in terms of time can be per day, per hour, per minute or per second. So there are 36 different flow rate units in total for selection.	
	M32	Window for selecting the totalisers' unit. (0). Cubic meter (m3) 1. Liter (l) 2. USA gallon (gal) 3. Imperial Gallon (igl) 4. Million USA gallon (mgl) 5. Cubic feet (cf) 6. USA liquid barrel (bal) 7. Imperial liquid barrel (ib) 8. Oil barrel (ob);	
	M33	Window for setting the totaliser multiplying factor The multiplying factor ranges from 0.001 to 10000	
	M34	Turn on or turn off the NET totaliser	
	M35	Turn on or turn off the POS totaliser	
	M36	Turn on or turn off the NEG totaliser	
	M37	(1) Totaliser reset (2) Restore the factory default settings. No / Yes: If Yes => None, All, NET Totaliser, POS Totaliser, NEG Totaliser. If **All** is selected you can do the master erase by pressing the dot key followed by the backspace key. Attention, it is recommended to make notes on the parameters before doing the restoration.	
	M38	Manual totaliser used for calibration. Press any key to start and press the key again to stop the totaliser.	
	M39	Language selection, Chinese or English.	
Optional setting menu	M40	Flow rate damper setup. The damping parameter ranges from 0 to 999 seconds. 0 means there is no damping. Factory default is 3 seconds.	
	M41	Zero flow rate (or low flow rate) cut-off to avoid invalid accumulation. Factory default is 0 m/s.	
	M42	Zero point setup. Make sure the liquid in the pipe is not running while doing this setup.	
	M43	Clear the zero point value, and restore the factory default zero point. Reset zero	
	M44	Set up a flow bias. Generally this value should be 0 m3/h.	
	M45	Flow rate scale factor. The factory default is '1'. Keep this value as '1' when no calibration has been made.	

Optional setting menu	M46	Network address identification number (IDN). 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 communications.Factory default is 88	
	M47	System lock to avoid modification of the system parameters	
	M48	Not used	
	M49	Window for network communication test	
Inputs / Outputs menu	M50	**Window to set up the logger option ON/OFF**	
	M51	Window to set up the schedule for the schedule-based data saving **Start : xx:xx:xx** **Interval : 00:00:05** **Go On : xx:xx:xx**	
	M52	Data output direction control. If 'To RS-232' is selected, all the data will be directed to the RS-232 interface If 'To buffer ' is selected, the data will be stored into the built-in logger memory Allow user to clear data buffer **0 : To RS 232** **1 : To Buffer** **2 : Buffer => RS232** **3 : Clear Buffer**	
	M53	Logger buffer viewer. It functions as a file editor. Use Dot, backspace UP and DN keys to browse the buffer. If the logger is ON, the viewer will automatically refresh once new data are stored	
	M54	Not used	
	M55	Not used	
	M56	Not used	
	M57	Not used	
	M58	Not used	
	M59	Not used	
	M60	99 years calendar. Press ENT for modification. Use the dot key to skip the digits that need no modification. **Window to edit the year/month/date and Hour/minute/seconds**	
	M61	Display Version information and Electronic Serial Number (ESN) that are unique for each flow meter. The user can use the ESN for instrumentation management	
	M62	RS-232 setup. Baud rate can be 75 to 115,200 bps **Window to edit the Baud rate and Parity**	
	M63	Not used	
	M64	Not used	
	M65	Not used	
	M66	Not used	
	M67	Window to set up the frequency range (lower limit and upper limit) for the frequency output. Valid values: 0Hz-9999Hz. Factory default is 1-1001 Hz	
	M68	Window to set up the **minimum flow rate** which corresponds to the lower frequency limit of the frequency output	
	M69	Window to set up the **maximum flow rate** which corresponds to the upper frequency limit of the frequency output	
	M70	LCD display backlight control. The entered value indicates how many seconds the backlight will be on with every key pressing.	
	M71	LCD contrast control. The LCD will become darker when a small value is entered.	
	M72	Working timer. It can be reset by pressing ENT key, and then select YES.	
	M73	Alarm #1 lower threshold setup. Below this threshold the #1 Alarm will be triggered. There are two alarming methods. User must select the alarming output items from window M78 or M77	
	M74	Alarm #1 upper threshold setup	
	M75	Alarm #2 lower threshold setup	
	M76	Alarm #2 upper threshold setup	
	M77	Buzzer setup. If a proper input source is selected, the buzzer will beep when the trigger event occurs	

Inputs / Outputs menu	M78	OCT (Open Collector Output) setup By selecting a proper triggering source, the OCT circuit will close when the trigger event occurs	
	M79	Not used	
	M80	Not used	
	M81	Not used	
	M82	Setup for daily totaliser, monthly totaliser and yearly totaliser	
	M83	Not used	
	M84	Not used	
	M85	Not used	
	M86	Not used	
	M87	Select transducer power between 1-10 (default 10)	
	M88	RCV window start 80	
	M89	RCV window end 125	
Diagnostic menu	M90	Display signal strength, signal quality and transit time ratio (upper right corner).	
	M91	Display the transit time ratio. The ratio value should be in the range of 100±3% if the entered pipe parameters are correct and the transducers are properly installed. Otherwise, the pipe parameters and the transducer installation should be checked.	
	M92	Display the estimated sound speed of the fluid in the pipe. If this value has an obvious difference with the actual fluid sound speed, the user is Hand held Ultrasonic Flow Meter recommended to check if the pipe parameters are correct and if the transducer installation is good. 0ºC: 1,403m/s; 20ºC: 1,481m/s; 50ºC: 1,541m/s; 100ºC: 1,543m/s	
	M93	Display the total transit time and delta time (transit time difference between upstream and downstream travelling)	
	M94	Display the Reynolds number and the pipe factor used by the flow rate measurement program. Note, the pipe factor is rarely used.	
Other display menu	M95	Not used	
	M96	Not used	
	M97	Command to store the pipe parameters either in the built-in data logger or to the RS-232C serial interface	
	M98	Command to store the diagnostic information either in the built-in data logger or to the RS-232C serial interface	
	M99	Command to copy the current display either to the built-in data logger or to the RS-232C serial interface	
	M+0	View the last 64 records of power on and off events. The recorded information include the date and time as well as the corresponding flow rate when the power on or off occurs	
	M+1	Display the total working time of the instrument	
	M+2	Display the last power-off date and time	
	M+3	Display the last power-off flow rate	
	M+4	Display the total number of times the flowmeter has been powered on and off	
	M+5	A scientific calculator for the convenience of field applications. All the values are in single accuracy. All the mathematic operators are selected from a list.	
	M+6	Not used	
	M+7	Not used	
	M+8	Not used	
	M+9	Not used	
	M-0	Entry to hardware adjusting windows. Valid for the manufacturer only.	