c) Current Range Adjustment

Select 'Current Max' menu item and enter. Adjust the factor value until the ammeter reads 20±0.004mA (or voltmeter reads 2±0.0004V). Press ENTER to confirm setting.

After calibration, the converter can output high accuracy current signal of linearity better than 0.1%.

7.3.2.8 Contact Control Input

By controlling the ON/OFF of contact input, a high/low level signal is transferred to CPU to control the start/stop or reset of internal totalizer.

If 'Stop Totalizer' function is enabled, a contact ON signal can stop the internal counter, while an OFF signal starts it.

The three internal totalizers can be cleared remotely by a contact ON signal if 'Reset Totalizer' Function is active.

7.3.3 Parameter Setting

The meter has two running modes: Automatic Measurement Mode and Parameter Setting Mode.

After power-on, the meter enters measurement mode automatically. Under this mode, the meter fulfills all measurement functions, displays data and outputs signals.

There are four keys on the keypad. They can be used to enter the parameter setting mode and change the meter's configuration. The key operation does not affect the measurement and the output.

Code 2901

7.3.3.1 Key Function

7.3.3.1.1 Automatic Measurement Mode

DOWN:	Scroll bottom line display;
UP:	Scroll top line display;
ALT + ENTER:	Enter into setting mode;
ENTER:	Return to measurement mode.

7.3.3.1.2 Parameter Setting Mode

DOWN:	Subtract one form the digit at the cursor;
UP:	Add one on the digit at the cursor
ALT + DOWN:	Cursor shifts left
ALT + UP:	Cursor shifts right
ENTER:	Enter/exit submenu;
ENTER:	Return to measurement mode if held for 2 seconds at any location

Notes:

(1) When using ALT key, hold ALT first and then press UP or DOWN.

(2) Under setting mode, the meter returns to measurement mode automatically if no key is pressed for 3 minutes.

(3) When adjusting flow zero, UP or DOWN key can be used to change the sign (+/-).

(4) When setting flow range, UP or DOWN key can be used to change flow unit.

7.3.3.2 Parameter Setting Operation

To setup the meter, changing to setting mode from measurement mode is the first step. Enter ALT + ENTER key in measurement mode to pop a login page and password is required to enter. Input authorized password and press ENTER again to confirm. The converter enters into setting mode if the password is approved, otherwise it returns to measurement display.

7.3.3.2.1 Menu Items

HDMF converter setting menu consists of 42 items. Many of them are set up by manufacturer before shipping. It is not necessary to change them when applying. There are only a few of them to be set by user according to the application.   The menu items are listed in Table 3.1.

Table 3.1 Operation Menu

Item No.	Menu Display	Setting Method	Password Level	Value Range
1	Language	Option	1	Chinese/English
2	Sensor Size	Option	1	3 - 3000mm
3	Flow Range	Modify	1	0 - 99999
4	Auto Rng Chg	Option	1	ON / OFF
5	Damping	Option	1	0 - 100 s
6	Flow Dir.	Option	1	Fwd/ Res
7	Flow Zero	Modify	1	+/-0.000
8	L.F. Cutoff	Modify	1	0 - 99%
9	Cutoff Enble	Option	1	ON / OFF
10	Rate-Of-Chng	Modify	1	0 - 30%
11	Limit Time	Modify	1	0 - 20 s
12	Total Unit	Option	1	0.0001L - 1 m3
13	Flow Density	Modify	1	0.0000 - 3.9999
14	Current Type	Option	1	4-20mA/0-10mA
15	Pulse Output	Option	1	Frq/ Pulse
16	Pulse Factor	Option	1	0.001L - 1 m3
17	Freq Max	Modify	1	1 - 5999 Hz
18	Comm Address	Modify	1	0 - 99
19	Baudrate	Option	1	600 - 14400
20	EmpPipe Det.	Option	1	ON / OFF

Handwritten annotations: "2 Sec" (next to item 5 Damping), "0.5%" (next to item 8 L.F. Cutoff), "L" (next to item 12 Total Unit), "ON" (next to item 20 EmpPipe Det.)

21	EmpPipe Alm	Modify	1	200.0 KΩ	100 kΩ
22	Hi ALM Enble	Option	1	ON / OFF	OFF
23	Hi Alm Limit	Modify	1	000.0 - 199.9%	
24	Lo Alm Enble	Option	1	ON / OFF	OFF
25	Lo Alm Limit	Modify	1	000.0 - 199.9%	
26	RevMeas.Enbl	Option	1	ON/OFF	
27	Sensor S/N	Modify	2	000000000000-999999999999	
28	Sensor Fact.	Modify	2	0.0000 - 3.9999	
29	Field Mode	Option	2	Mode 1,2,3	
30	Multiplying	Modify	2	0.0000 - 3.9999	
31	F. Total Set	Modify	3	0000000000 - 9999999999	
32	R.Total Set	Modify	3	0000000000 - 9999999999	
33	Input Contrl	Option	3	Disable/Stop Tot/Reset Tot	Reset told
34	Clr Totalizr	Password	3	00000 - 59999	
35	Clr Tot. Key	Modify	3	00000 - 59999	
36	Date –y/m/d *	Modify	3	99/12/31	
37	Time-h/m/s *	Modify	3	23/59/59	
38	Password L1	Modify	3	0000 - 9999	
39	Password L2	Modify	3	0000 - 9999	
40	Password L3	Modify	3	0000 - 9999	
41	Current Zero	Modify	4	0.0000 - 1.9999	
42	Current Max	Modify	4	0.0000 - 3.9999	
43	Meter Factor	Modify	4	0.0000 - 3.9999	
44	Convtr S/N	Modify	4	0000000000-9999999999	
45	Sys Reset	Password	4		

* Item No. 36 and 37 are optional and only effective for the converter with real clock and power failure recording function.

7.3.3.2 .2 Meter Parameter Description

The setting parameters determine the operation status, calculation method and output mode of the flow meter. Properly setting meter parameter can make the meter work in best condition and higher accuracy of display and output can be obtained.

There are five levels of password, where level 0 - 3 are open for user and level 4 reserved for manufacturer. Level 1 to 2 passwords are changeable by higher level password-holder, e.g. Level-3 password.

Meter setting can be browsed by entering any level of password. However, higher level password is needed to change settings.

- ◆ Password Level-0 (default value 0521): fixed and browsing only;
- ◆ Password Level-1 (default value 7206): changeable and authorized to modify menu item 1 to 25;
- ◆ Password Level-2 (default value 3110): changeable and authorized to modify menu item 1 to 29;

♦   Password Level-3 (default value 2901): fixed and authorized to modify menu item 1 to 38;

♦   Password Level-4 (reserved):   fixed and authorized to modify any menu item including resetting system.

♦   Totalizer Reset Password (default value 36666): changeable in menu item 'Clr Tot. Key' and authorized to clear the three internal counter.

It is suggested that Level-3 password be held by manager or supervisor while Level-0 to 2 passwords be kept by operator. The Level-3 password can also be used to change the password for totalizer resetting.

7.3.2.2.1   Sensor Size
HDMF-2500 converter supports sensor diameter ranging from 3 to 3000mm, which can be chosen by pressing UP or DOWN key.

7.3.2.2.2   Flow Range
Flow range refers to the upper range value (URV) of flow rate. The URV is relative to flow percentage and output signal. At the analog output the amount of the measured values in the range 0 up to URV is displayed linear to the current range 4 to 20mA, at the frequency output to the frequency range 0 to the end frequency. The low flow cutoff and flow limit alarm relates to flow range as well. The maximum measurable flow rate, however, is not limited to the flow range as long as the flow speed does not exceed 15m/s.

In this menu item, user can also choose unit of flow rate. For volume flow, L/s, L/min, L/h, m^3/s, m^3/min and m^3/h are available; while for mass flow, kg/s、 kg/m、 kg/h、 t/s、 t/m、 t/h can be selected from. It is up to the habits and application requirements to pickup a proper unit.

7.3.2.2.3   Auto Rng Chg
The converter has a function called Auto-Range-Change that is usually used for control system with wide flow range variation. The primary flow range is the value given by menu item 'Flow Range'. The second flow range (lower range) is obtained by selecting range ratio 1:2, 1:4 or 1:8 of primary one.

Fig 3.1 illustrates how the flow range is changed automatically. To safely change range and avoid vibration of display and output, a 5% to 10% hysteresis is added at the change point.

- Check flow meter is 240VAC (24VDC is also available).
- Digital input goes into IN+ and IN- (and will reset bottom line totaliser when switched)
- Normally both dipswitches will be set to on. If there are issues programming this may be the issue

Flow Rate

of Total Rate

Total (resettable)