HITROL CO., LTD.

HEAD OFFICE.FACTORY.R&D INSTITUDE
HITROL CO.,LTD 141, Palhakgol-gil, Jori-eup
Paju-si, Gyeonggi-do, Korea
TEL. : (00)-82-31-950-9700
FAX. : (00)-82-31-950-9796 ~ 9799
www.hitrol.com

INSTRUCTION MANUAL

HHT-2000 Loader

HHT-2000

Doc. no. : HHT_Kor_2016, Rev. 0
Issued date : 2016. 11

Table of Contents

1. Overview

Model : HHT-2000 Loader is used to inspect and manage thermal diffusion flow meters. It is connected to the serial communication port of a transmitter for communication and power. As such, a separate power supply is not required. It is designed to be compatible with the Multipoint Thermal Mass Flow Meter, Multipoint Thermal Level Meter, and Continuous Level Meter.

1.1 장비

1.1.1 HHT-2000 : 1 EA

1.1.2 Serial Communication Cable : 1 EA

1.1.3 Transmitter : 1 EA

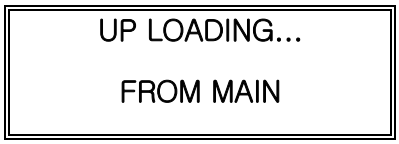
1.1.4 Resistance Decade Box : 1 EA

1.1.5 Digital Multimeter : 1 EA

2. Model Setting

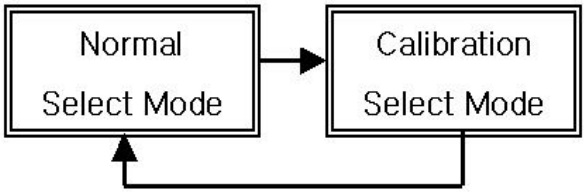
2.1 Loader 를 Transmitter 의 Main Card Serial 통신포트에 연결한다.

Transmitter 의 DATA 가 Loader 로 전송되어 자동으로 Model 을 찾아 Setting 된다.



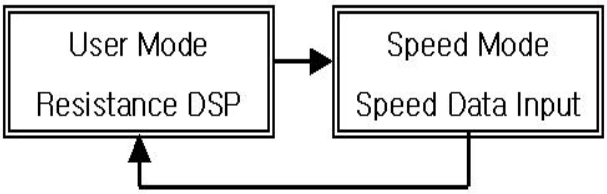
3. Normal Mode and Calibration Mode

3.1 There are Normal and Calibration Modes, which can be toggled by pressing and holding the ***"CLS"*** key for 3 seconds.



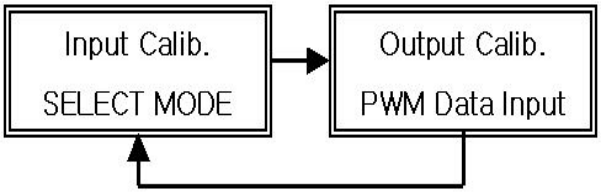
3.1.1 Normal Mode

The Normal Mode has the User and Speed Modes, which can be toggled by pressing the ***"Mode"*** key.



3.1.2 Calibration Mode

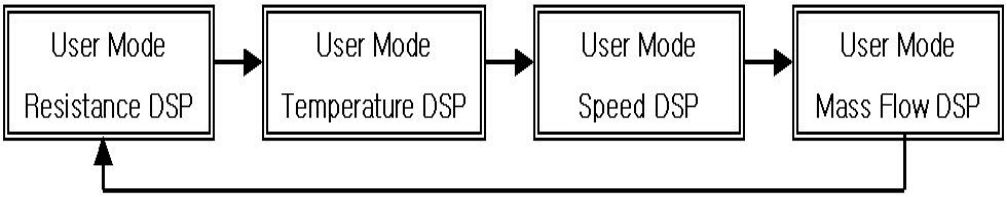
The Calibration Mode has the Input Calib. and Output Calib. Modes, which can be toggled by pressing the ***"Mode"*** key.



4. Normal Mode

4.1 User Mode

The User Mode displays the Mass Flow DSP (Flow), Resistance DSP (Active Sensor), Temperature DSP (Fluid Temperature), and SPEED DSP (Flow Velocity), which can be toggled by pressing the ***"FUNC"*** key.



4.1.1 Mass Flow DSP

It displays the instantaneous flow and can be toggled by pressing the ***"SEN"*** key.

4.1.1.1 ㎥/s (Volume Flow)

4.1.1.2 kg/m (Mass Flow)

4.1.1.3 ㎥/m (Volume Flow)

4.1.1.4 N ㎥/m (Normal Volume Flow)

4.1.1.5 CFM (Actual Air Cubic Feet per Minute)

4.1.1.6 SCFM (Standard Air Cubic Feet per Minute)

4.1.2 Resistance DSP

It displays the difference between the Active Sensor and Reference Sensor values in ohm (Ω).

Resistance DSP R=1xxx.xx ohm

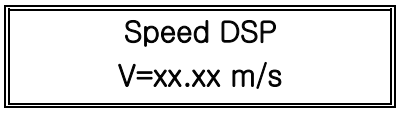
4.1.3 Temperature DSP

It displays the temperature of the fluid in degrees.

Temperature DSP T=xx.xx Degree

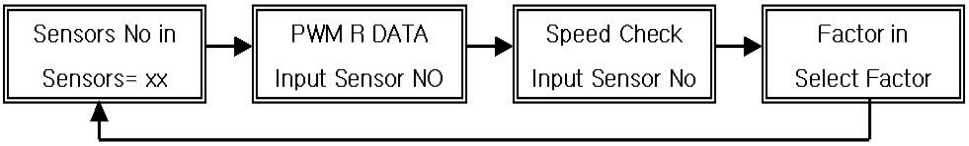
4.1.3 Speed DSP

It displays the instantaneous flow speed in m/s.



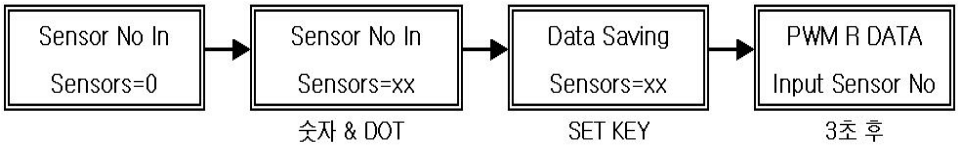
4.2 Speed Mode

The speed Mode displays the input Sensor No. in (Point Quantity Setting), PWM R DATA (△R Input for Flow Speed), Speed Check (Flow Speed of Point), and Factor In (Flux Setting), which can be toggled by pressing the ***'FUNC'*** key.



4.2.1 Senosrs No in

Enter the number of sensors to use and then press the ***'ENT'*** key to set it.



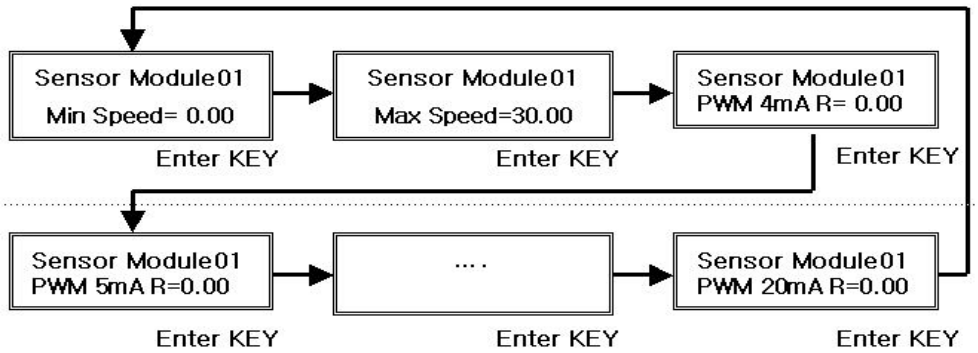
4.2.2 PWM R DATA

The △R value of the flow speed can be saved or modified.

4.2.2.1 Enter the min. flow speed and then press the ***'ENT'*** key.

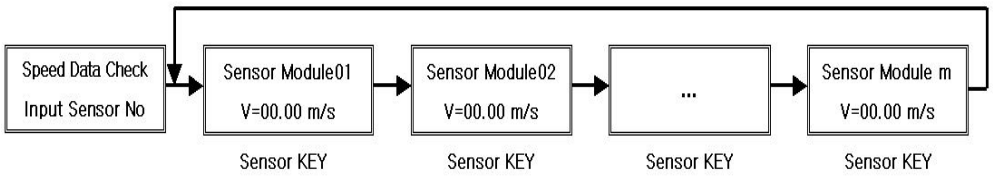
4.2.2.2 Enter the max. flow speed and then press the ***'ENT'*** key.

4.2.2.3 Enter the △R in 4mA~20mA and then press the ***'ENT'*** key.



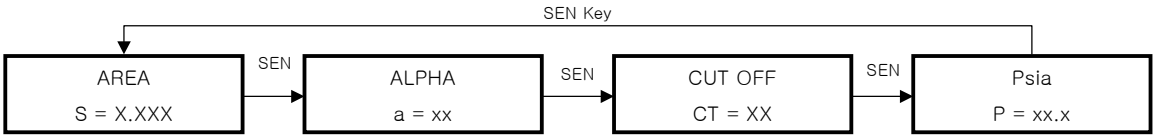
4.2.3 SPEED Check

Press the ***'SEN'*** key to check the flow speed of the sensors.



4.2.4 Factor In

Flux factors can be set, including AREA (Area in Duct), ALPHA (Temperature Compensation Factor), CUT OFF (Zero Dead Zone Setting), and Psia(Pressure Setting), which can be toggled by pressing the ***'SEN'*** key.



4.2.4.1 AREA

The Area in Duct can be entered in m^2. Enter a value and then press the ***"ENT"*** key to save it.

4.2.4.2 ALPHA

It is the high and low temperature compensation with the default value "30." Enter a value and then press the ***"ENT"*** key to save it. **It is not used for a volume flow meter.**

4.2.4.3 CUT OFF

It is the dead zone setting in % for the entire range. Enter a value and then press the ***"ENT"*** key to save it.

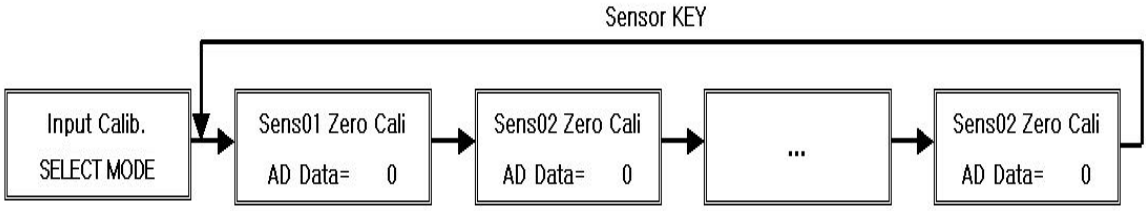
4.2.4.4 Psia

It is the setting of the pressure in duct with the default value of "14.7 Psia." Input the value and then press the ***"ENT"*** key to save it. **It is not used for a volume flow meter.**

5. Calibration Mode

5.1 INPUT Calib Mode

The Input Calibration Mode can calibrate the range (1,000 Ω – 15,000 Ω) of a sensor resistance, wherein the ***"SEN"*** key can be pressed to toggle the sensors for calibration.

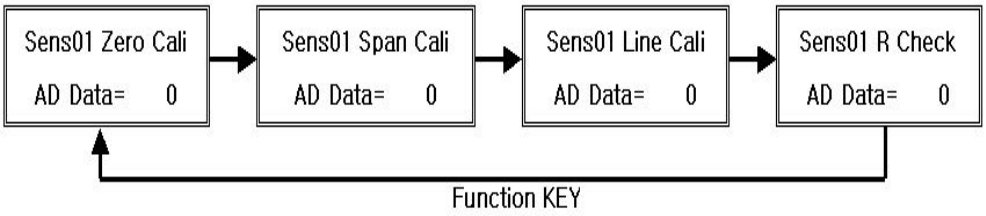


5.1.1 Zero Calibration

Connect the Zero input resistance of 1,000 Ω to the transmitter with 3 wires and then press the ***"FUNC"*** key to highlight the Zero Cali. With the AD DATA displayed, press the ***"ENT"*** key to save the Zero value.

5.1.2 Span Calibration

Connect the Span input resistance of 1,500 Ω to the transmitter with 3 wires and then press the ***"FUNC"*** key to highlight the Span Cali. With the AD DATA displayed, press the ***"ENT"*** key to save the Span value.



5.1.3 Line Calibration

It is used to compensate for the line resistance. Perform 4.1.2 and then press the ***"FUNC"*** key to highlight Line Cali. With the AD DATA displayed, press the ***"ENT"*** key to save the Line value. **If the line resistance is small, the AD DATA is 0.**

5.1.4 Sensor R Check

When the input resistance fluctuates between 1,000 Ω and 1,500 Ω, check if it is indicated within the tolerance of ±0.1% (If so, repeat 5.1.1 to 5.1.3). **Sens01, 03, 05, 07, 09, 11, 13, and 15 indicate the Active Sensors in order. Here, Sens02 is the reference sensor.**

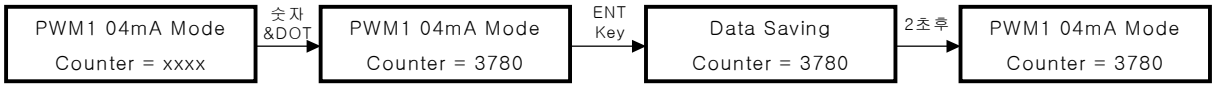
5.1 OUTPUT Calib Mode

The OUTPUT Calibration Mode can calibrate the range (4 mA – 20 mA) of the output current, where the ***"FUNC"*** key can be pressed to toggle between 04 mA and 20 mA modes.

5.1.1 04mA Mode

5.1.1.1 Connect an amperemeter to the output terminal of the transmitter.

5.1.1.2 Adjust the Counter value within the tolerance of ±0.05 for 4 mA and then press the ***"ENT"*** key to check the output.



5.1.2 20mA Mode

5.1.2.1 Connect an amperemeter to the output terminal of the transmitter.

5.1.2.2 Adjust the Counter value within the tolerance of ±0.05 for 20 mA and then press the ***"ENT"*** key to check the output.