

D08-1F、D08-1FP、D08-1FM 型

流 量 显 示 仪

使 用 手 册



北京七星华创电子股份有限公司

BEIJING SEVENSTAR ELECTRONICS CO., LTD.

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使用须知

尊敬的用户，感谢您购买本公司生产的 **D08** 系列流量显示仪。本手册详细叙述了正确、安全使用该系列产品的必要事项。

产品使用者，请务必认真参阅本手册并理解后使用，在使用过程中，请注意带有  标志的文字及注意事项中包含的所有内容。

对于未按照使用手册使用造成的财产损失或人身伤害，本公司有权不承担责任。

本手册对您安装、维护及故障维修时，必不可少，请妥善留存保管。

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DOB SERIES FLOW READOUT BOXES

D08-1F、D08-1FP、D08-1FM 型

流 量 显 示 仪

1. 用途和特点

流量显示仪用于为气体质量流量控制器（MFC）和质量流量计（MFM）提供工作电源、操作控制、流量设定和流量数字显示等。D08 系列流量显示仪可直接与我公司生产的 D07 系列 MFC（或 MFM）配套使用。同时原则上也可以与世界上其它型号的 MFC（或 MFM）配合使用。

D08-1F、1FM、1FP 型流量显示仪采用小型塑料机壳，体积较小，便于安装。流量输入输出信号，除了具有标准的 0~+5V 电压信号外，还有 4~20mA 或 0~10mA 的电流信号。

D08-1F 型流量显示仪带有流量设定和阀控功能，可与工作电源为±15V 的 MFC（或 MFM）配套使用。D08-1FP 型流量显示仪则在 D08-1F 型流量显示仪的基础上增加了设定显示功能。

D08-1FM 型无流量设定和阀控功能，专为工作电源为±15V 的 MFM 配套使用。



图 1. 流量显示仪与质量流量控制器配套使用

2. 主要技术指标

表 1. D08-1F、D08-1FP、D08-1FM 型流量显示仪技术指标

编号	项 目	D08-1F、D08-1FP	D08-1FM
1	输出电源	+15V±3% 400mA	-15V±3% 400mA
2	基准源	+5.00V±0.1% 5mA	
3	供电电源	~85-265V 50/60Hz	
4	最大功耗	15 W	
5	输入输出信号	电压信号: 0~+5V 电流信号: 4~20mA (或 0~10mA)	输出电压: 0~+5V 输出电流: 4~20mA (或 0~10mA)
6	外形尺寸	96×96×157 mm	
7	控制通道	1 路 MFC	1 路 MFM(无设定和阀控)
8	抗电磁干扰	通过 CE 认证	
9	重量	1 Kg	

3. 外观和操作面板

三种型号的流量显示仪均采用标准嵌装式塑料机箱，外观和操作面板见图 2~4。



图 2. 1F 型流量显示仪外观

显示选择开关



图 3. 1FP 型流量显示仪外观



图 4. 1FM 型流量显示仪外观

4. 结构说明

4.1 $\pm 15V$ 电源

1F、1FP、1FM 型显示仪的电源采用开关电源，具有工作电源电压范围宽和抗干扰能力强的特点。集成稳压模块内部有过热、过流保护，且具有性能稳定、可靠性高等特点。

4.2 基准源和流量设定

在 1F 和 1FP 型流量显示仪中设计有+5.00V 基准电源，它加载到设定电位器上，通过操作者手动调节面板上的设定电位器，提供 0~5.00V 的设定电压输出，用来控制 MFC 的流量。该电源设计有开机软启动电路，当显示仪接通电源时，基准源缓慢从 0V 升至+5.00V，软启动时间约为 20 秒。

4.3 数字显示器

显示器用来显示流量，采用三位半数字面板表直读，最大显示数为 1999。流量显示的单位有“SCCM”、“SLM”、“%”三种。通常，流量显示仪与 MFC（或 MFM）配套出厂时，将显示器显示的量值和单位与其对应的 MFC（或 MFM）通道的量值和单位调整成一致。若用户订货时没有注明 MFC（或 MFM）的流量规格，则出厂调整为按满量程的百分比显示，它与任何规格的 MFC（或 MFM）配合使用时，满量程均显示“100.0%”。在流量显示仪的面板上，设计有流量单位指示灯，当代表各自单位的发光二极管亮时表示流量是 SCCM 或 SLM，若两个均不亮，表示单位为%。各通道显示的数值、小数点和流量单位均可通过改变和适当调整而满足使用的不同要求。

4.4 阀控开关

1F 和 1FP 型流量显示仪的面板上装有“阀控”开关。阀控开关有三个位置，正常工作时置于“阀控”位，需要通气吹洗管路时，置于“清洗”位，不用时应置于“关闭”位。

4.5 调零电位器

面板上设计有外“调零”电位器，可以用来在小范围内调整 D07 系列 MFC（或 MFM）产品的零点。

4.6 1FP 型的设定显示功能

1FP 型流量显示仪比 1F 型流量显示仪增加了设定显示功能。将面板的显示选择开关拨至“设定显示”，数字显示器显示 MFC 的设定流量；将显示选择开关拨至“流量显示”，则显示 MFC 的实际流量。

5. 安装和接线

5.1 外形和开孔尺寸：见图 5。

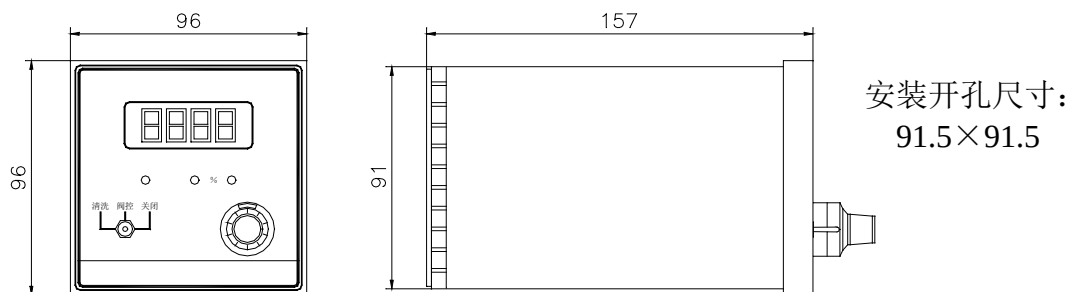


图 5. 1F、1FP、1FM 型流量显示仪机壳外形尺寸

5.2 安装：

5.2.1 用于面板嵌入安装的附件包括长支架、鞍形支架和螺钉各两个，如图 6 所示。它们分别用于从显示仪上下两侧进行固定。



图 6. 1F、1FP、1FM 型流量显示仪附件

5.2.2 将长支架插入显示仪外壳上下两侧的长方形沟槽内，两端弯曲处朝上，如图 7 所示。

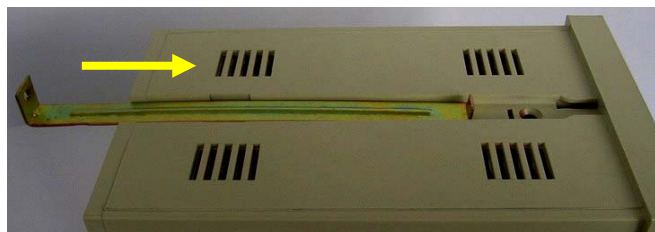


图 7. 插入长支架

5.2.3 将鞍形支架插入长方形沟槽后部的孔中，如图 8 所示。

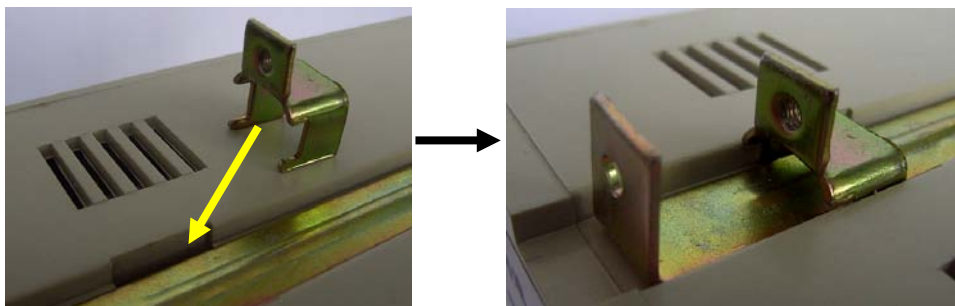


图 8. 插入鞍形短支架

5.2.4 将螺钉穿过长支架后弯板的圆孔，旋入鞍形支架的螺纹孔。拧紧螺钉，使长支架的前弯板和显示仪外壳前端的后檐紧紧夹住面板，达到固定显示仪的目的。如图 9 所示。



A. 穿入螺钉

B. 旋紧螺钉

C. 夹紧面板

图 9. 将显示仪固定在面板上

5.3 1F、1FP 型接线

1F 和 1FP 型流量显示仪的电源线和外控信号端子，见图 10。

1F 型和 1FP 型流量显示仪，除了能提供 0~+5V 的电压输入输出信号之外，还具有电流输入输出功能。可以通过后部接线端子的跳线，改变输入功能。

通常出厂时，显示仪接线为“内设”方式，见图 10a，将“设定”与“内设”线短连，通过面板上的设定电位器调节流量。

当接线端子上的“设定”与“内设”的连线断开，则仪表处于“电压设定”的“外设”状态，由用户自己提供的（计算机数模转换器） $0\sim+5.00\text{V}$ 电压接入“设定”和“信号地”两端，作为外部设定信号来调节流量。参见图 10b，也可以外接一个设定转换开关，进行内外设定的转换。

当接线端子上的“设定”与“电流设定”短连，参见图 10c，则仪表处于“电流设定”状态，由“电流输入”端子输入的 $4\sim 20\text{mA}$ （或 $0\sim 10\text{mA}$ ）信号调节流量。

无论仪表在电流设定还是电压设定状态，能同时输出电压和电流信号。“流量检测”端子相对“信号地”输出 $0\sim+5\text{V}$ 流量信号；“电流输出”端子输出 $4\sim 20\text{mA}$ （或 $0\sim 10\text{mA}$ ）的流量信号。输入输出电流的形式，是 $4\sim 20\text{mA}$ 还是 $0\sim 10\text{mA}$ ，可根据用户订货的要求，在出厂时调定，并在机壳后铭牌上的电流信号复选框上勾选。

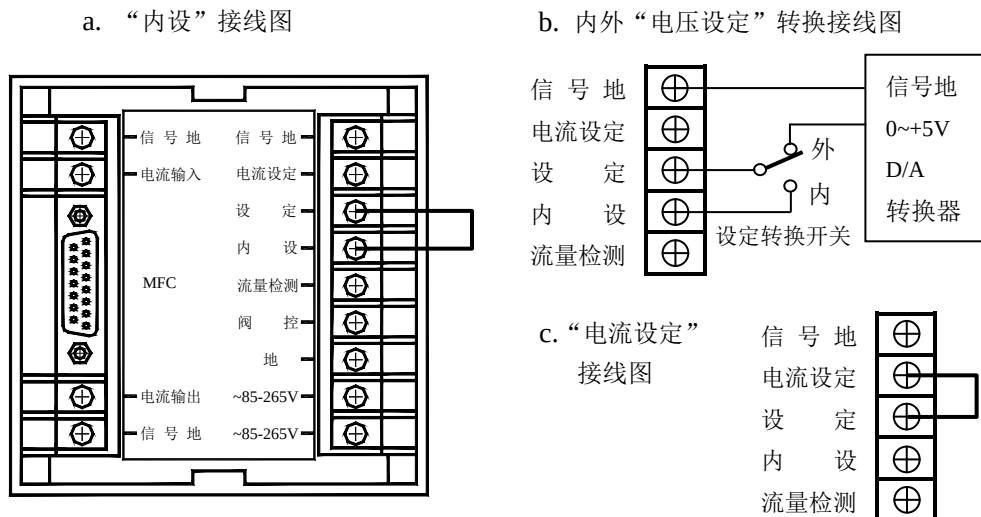
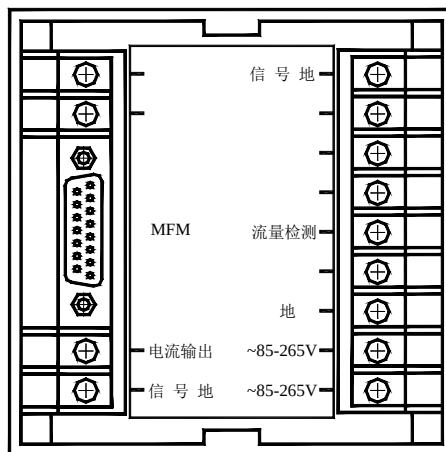


图 10. D08-1F/1FP 型背视接线图

5.4 1FM 型接线

D08-1FM 型流量显示仪的电源线和输出信号接线端子，见图 11。

图 11. D08-1FM 型
背视接线图



5.5 保护板的安装：接线完毕，将附件中的保护板用自攻螺钉固定到后面板上。如图 12 所示。

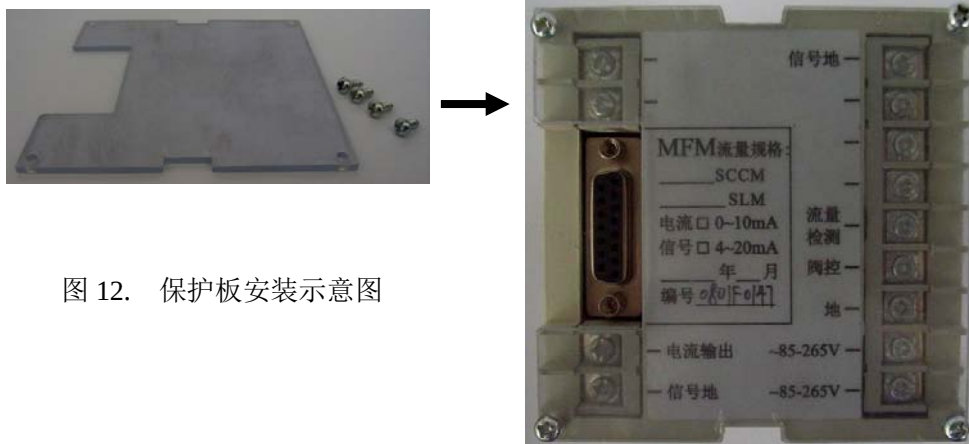
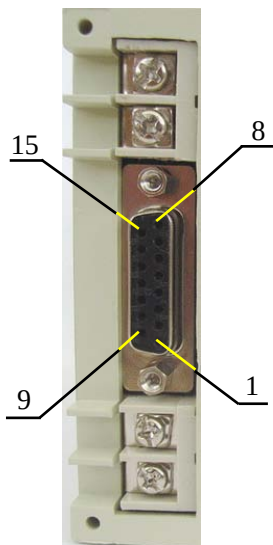


图 12. 保护板安装示意图

5.6 MFC/MFM 信号接线图



1F/1FP 型 MFC 信号	
No.	特 性
1	外调零
2	
3	电源地
4	设定
5	阀控
6	信号地
7	流量检测
8	地
9	
10	
11	-15V
12	-15V
13	
14	公共地
15	+15V

1FM 型 MFM 信号	
No.	特 性
1	外调零
2	
3	电源地
4	
5	
6	信号地
7	流量检测
8	地
9	
10	
11	-15V
12	-15V
13	
14	公共地
15	+15V

图 13. MFC/MFM 信号插座和接线

6. 操作方法

流量显示仪与 MFC（或 MFM）连接后的详细操作说明，可参见 D07 系列 MFC（或 MFM）的有关技术说明书。

6.1 开机：接通电源，则仪表开始工作（1F、1FP、1FM 型无电源开关，将外部电源接通即可）。

- 6.2 MFC（或 MFM）调零：开机预热 15 分钟以后，在不通气的情況下，可以使用小改锥调整显示仪面板上的“调零”电位器，对 MFC（或 MFM）调零。
- 6.3 阀控开关有三个位置，正常工作时置于“阀控”位（1FM 型无此操作）。
- 6.4 流量内设定信号由面板上的十圈电位器调节（1FM 型无此操作）。
- 6.5 关机：切断外接电源即可关机。

7. 参数设置

输出电流信号、流量单位指示和量程要根据用户要求和所配的 MFC（MFM）来设置，通常由厂家在出厂前配好。若用户在使用中要自己改变量程和单位，可以打开流量显示仪外罩，对转换板上的有关拨动开关和电位器进行调整，拨动开关和电位器位置参见图 14。

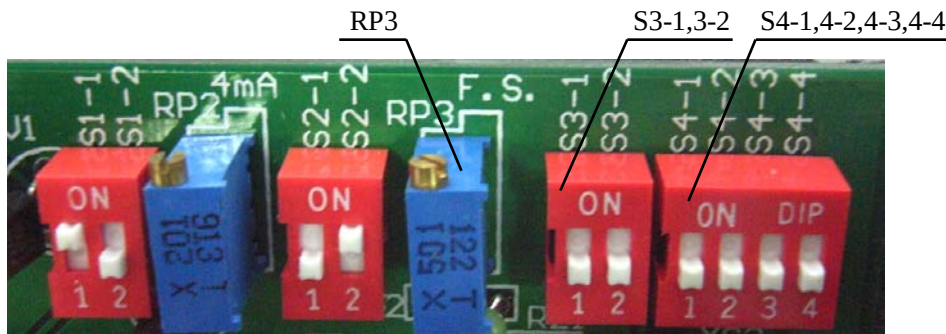


图 14. 拨动开关和调整电位器位置图

7.1 流量单位指示的改变

“SCCM、SLM、%”流量单位改变的拨动开关位置见图 15。

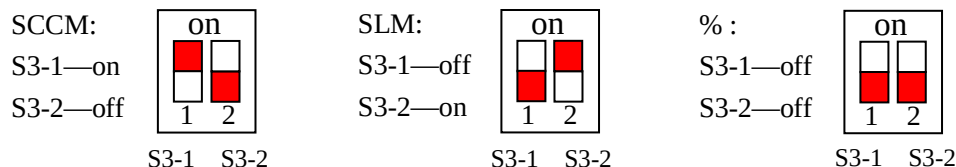


图 15. 流量单位指示改变的拨动开关位置图

7.2 小数点位置改变

流量显示小数点位置可以通过拨动开关 S4 来改变，见图 16。

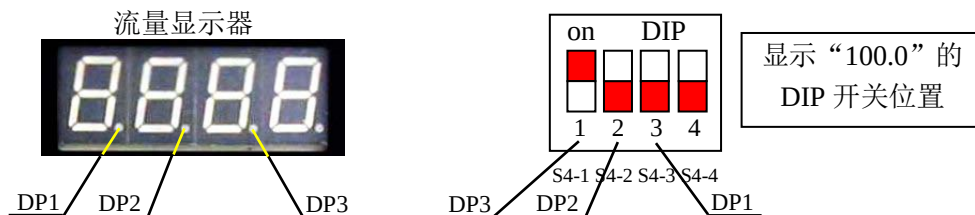


图 16. 小数点改变对应的拨动开关位置图

7.3 显示量程的改变

显示器显示量程的改变包括显示的有效数据和小数点的改变，小数点位置的改变方法见 7.3 条，显示有效数值的改变按以下步骤进行。

- 切断电源，取下 MFC/MFM 插头和电源线，（取下“设定”与“内设”的短连线）打开外壳。
- 如果是改变 1FM 型流量显示仪的量程，可从后面板接线端子上的“流量检测”和“信号地”两端输入+5.00V 电压；如果是改变 1F 型或 1FP 型流量显示仪的量程，可将后面板接线端子上的“流量检测”和“内设”端子用导线短路，并将前面板上的设定电位器顺时针旋转到最大值（使内设输出电压为满量程值+5.00V）。
- 接通显示仪电源，20 秒钟后，观察前面板上数字显示器的显示值，用小一字螺丝刀调节电位器 RP3（见图 10）使显示器显示的数值与对应的 MFC/MFM 通道的满量程值一致（注意对应 3-1/2 位数字电压表，显示的数据范围是 0~1999，同时注意小数点的位置要匹配）。
- 切断电源，对于 1FM 型流量显示仪，要断开外接+5.00V 电压；对于 1F 型和 1FP 型流量显示仪，要断开“流量检测”和“内设”的短连导线。
- 量程调整结束，装上外壳，恢复“设定”与“内设”的短连线，就可以正常使用了。

8. 注意事项

8.1 禁止项

仪表盒内部的电位器在出厂前均已调整好，用户不得随意自行调整。15V 电源的功率有限，用户不能超负荷使用。

8.2 改量程注意

非专业维修人员和电器技术人员，不能进行显示量程的改变和调整。在打开外壳和接通电源时要特别注意安全。

8.3 更换保险丝

1F、1FP、1FM 型流量显示仪的电源保险器在仪表盒内，如遇该显示仪通电后没有显示，可检查是否保险丝断。这时需松开仪表盒下面的螺钉，取下外壳，更换熔断丝管。

8.4 接地问题

流量显示仪的外壳（电源地）与 MFC（或 MFM）的外壳，原则上应一点接地，共一个同等的地电位。如果二者相距较远，机壳与各自机柜地相连，则应考虑将显示仪与 MFC（或 MFM）连接电缆中的地线断开，否则可能出现地线干扰，甚至出现地线烧毁事故。如果 MFC（或 MFM）和显示仪使用在高频发生器的环境中发现有干扰，可以考虑将显示仪交流电源输入线中的“地”（GND）线断开，以减小干扰。

8.5 产品替换

如果用本流量显示仪与世界上其它型号的 MFC（或 MFM）连接使用，要注意电源的容量是否匹配，要注意正确配线和转接。特别要注意的是本机的阀控功能与其它型号产品可能不兼容，需要进行改线或不接。

9 选型与订货规格填写

9.1 显示仪选型表

产品型号	适用范围		电路类型		外形			显示类型			输入电源			输出电源			扩展功能					
	MFC	MFM	模拟产品	数字产品	嵌入式仪表塑壳	台式豪华机箱	上架式型材机箱	单通道单显示	多通道单显示	多通道多显示	~110VAC	~220VAC	~85~265VAC	±15VDC	+24VDC	4~20mA/0~10mA 电流输入	4~20mA/0~10mA 电流输出	4~20mA/1~5V 输入信号	4~20mA/1~5V 输出信号	RS232/RS485 通讯	设定显示	流量积算
1F	√	√	√		√			√					√	√		√	√					
1FM		√	√	√	√			√					√	√			√					
1FP	√	√	√		√			√					√	√		√	√				√	
1/2/4	√	√	√			√			√			√		√								
2F/3F/4F	√	√	√			√				√	√	√		√								
2B/3B/4B 2E/3E/4E	√	√	√				√			√		√		√								
1K	√	√	√		√			√					√		√			√	1~5V			
1G	√	√		√	√			√					√	√						√		
1GM		√		√	√			√					√	√						√		
8C	√	√		√	√			√					√	√						√		√
8CM		√		√	√			√					√	√						√		√

9.2 标准订单填写格式

D08- [t] - [o] - [s]

[t] - Type 型号

1F/1FP /1FM

[o] -I/O signal 输入/输出信号

-[C] 0—5VDC 和 4—20mA

-[A] 0—5VDC 和 0—10mA

[s] - Special request特殊要求

-[-] 百分比显示(100.0)，中文标签。

-[S] 给出显示对应的量程（见右侧的对应关系表），并注明其他要求。

量程	代表字母	量程	代表字母
5sccm	A	5slm	N
10sccm	B	10slm	P
20sccm	C	20slm	Q
30sccm	D	30slm	R
50sccm	E	50slm	U
100sccm	F	100slm	V
200sccm	G	150slm	W
300sccm	H	200slm	X
500sccm	J	250slm	Y
1slm	K	300slm	Z
2slm	L	百分比显示	S
3slm	M		



D08 系列

流量显示仪

北京七星华创电子股份有限公司

质量流量计分公司

(北京七星弗洛尔电子设备制造有限公司制造)

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D08-1F, D08-1FP, D08-1FM

Flow Readout Box

INSTRUCTION MANUAL



北京七星华创电子股份有限公司
BEIJING SEVENSTAR ELECTRONICS CO., LTD.

Version December, 2015

A NOTE TO OUR CUSTOMERS

Dear customer,
Thank you for purchasing SEVENSTAR D08 series Flow Readout Boxes.

This user manual is important when installing and doing maintenance. Please keep it carefully.

We strongly recommend that you read this manual thoroughly before you starting to use the product. This user manual introduces the important issues including the proper and safe use of the products.

And please notice the words and section with the symbol . Not in accordance with the user manual for the use of property caused by loss or personal injury, SEVENSTAR may not be responsible.

If you require any additional information or assistant of Sevenstar D08 series Flow Readout Boxes. Please feel free to contact your local Sevenstar Sales Agent or Sevenstar Customer Service at:
(8610)- 6436 2925.

Yours sincerely,
Sevenstar

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D08 SERIES FLOW READOUT BOXES

Operating Instruction

1. APPLICATIONS & FEATURES

Flow Readout Boxes provide operating power supply, operating control, flow setting and flow digital display for the mass flow controller (MFC) and the mass flow meter (MFM). D08 series of Flow Readout Boxes can be connected with D07 series MFC or MFM without any change. And, it can also be used for other models of MFC or MFM.

With mini-style of plastic chassis, due to the small volume, D08-1F, 1FP, 1FM are quite convenient to be installed. Besides the standard 0~+5V signal, there are 4~20mA or 0~10mA current signals of flow input & output signals.

D08-1F Flow Displayer have functions of flow setting and valves drive, it could be operated together with MFC or MFM. Besides the same function as D08-1F, D08-1FP Flow Displayer also has function of set point display.

D08-1FM do not have flow setting and valves drive functions, which is ONLY used with MFM.



Figure 1. Displayer & MFC

2. SPECIFICATIONS

Table 1. Specifications of D08-1F, D08-1FP, D08-1FM Flow Readout Boxes

No.	Items	D08-1F&1FP	D08-1FM
1	Output Power Supply	+15V $\pm$ 3% 400mA	-15V $\pm$ 3% 400mA
2	Nominal Power Supply	+5.00V $\pm$ 0.1% 5mA	
3	Power Supply	~85—265 VAC 50/60 Hz	
4	Max Consumption	15 W	
5	Output & Input Signal	Voltage Signal: 0 ~ +5V Electric Signal: 4~20mA (or 0~10mA)	Output Voltage: 0 ~ +5V Output Current: 4~20mA (or 0~10mA)
6	Dimension(mm)	96 $\times$ 96 $\times$ 157	
7	Control Channels	1 MFC/MFM	1 MFM (Without Valve Drive & Setting)
8	EMC	Pass CE certificate	
9	Weight(kg)	1	

3. APPEARANCE & OPERATION PANEL

Three models of Flow Readout Box are all applied standard inlay plastic chassis, its appearances and operation panels are showing in figure 2-4.



Figure 2. 1F Flow Readout Box

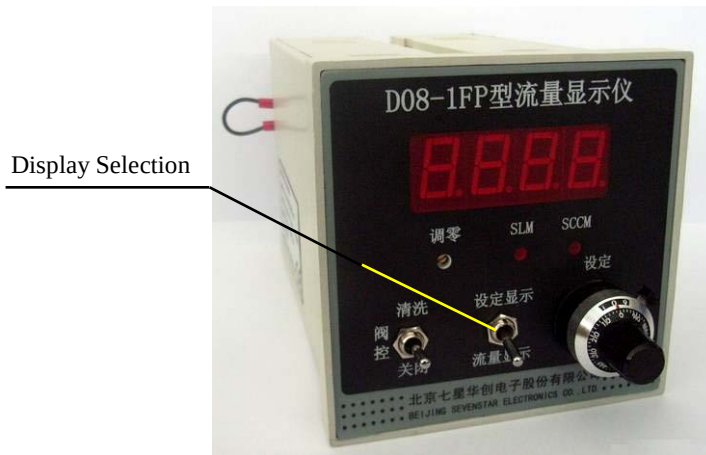


Figure 3. 1FP Flow Readout Box



Figure 4. 1FM Flow Readout Box

4. STRUCTURE INSTRUCTION

4.1 $\pm 15V$ Power Supply

Composed by switching modules, the AC power supply has wide input voltage and strong anti-jamming. With over-heat and over load protection, the output voltage $\pm 15VDC$ has high stability and reliability.

4.2 Nominal Power Supply and Flow Setting

From the +5.00V nominal power supply, the 0~5V voltage output which is adjusted by its set potentiometer can be used for controlling MFCs. Because of the soft-start circuit, the voltage will rise gradually from 0 to +5V for avoiding the overshoot of MFC. The time of soft-start will cost 20 seconds approximately.

4.3 Displayer

3 and 1/2 numbers panel can display the readout from MFC (The maximum value: 1999). Flow rate can be displayed by "SCCM", "SLM" or "%FS". Normally, the default flow range and unit of Flow Displayer will be set to the user want to. If the user cannot give MFC flow specifications, the default will be set as %FS. The SLM and SCCM LED in the frontal panel will indicate the flow unit. Two LBD off means that flow unit is %FS. The radix point, unit of every channel could be adjusted respectively.

4.4 Valve Controller

Valve Controller is used for selecting working status of MFC. When MFC is operated normally, it should be "Valve Control". If MFC valve need to be full opened, it should be "Purge". MFC valve will be closed if it is "OFF". Caution: This function can be only available for D07 series MFC without any problems. For other MFC products, please do NOT connect "Valve Control" pin.

4.5 Zero Potentiometer

"Zero Potentiometer" can only adjust zero in a small range for D07 series MFC/MFM products. It will be useless for other MFC products.

4.6 D08-1FP Setpoint Display Function

1FM have the same function of 1F. 1FM also has function of setpoint display. When the Selection switch is on "Flow display", the Displayer displays the real flow. When the Selection switch is on "Setpoint display", the Displayer displays the setpoint value.

5. INSTALLATION & CONNECTION

5.1 Dimension (figure5)

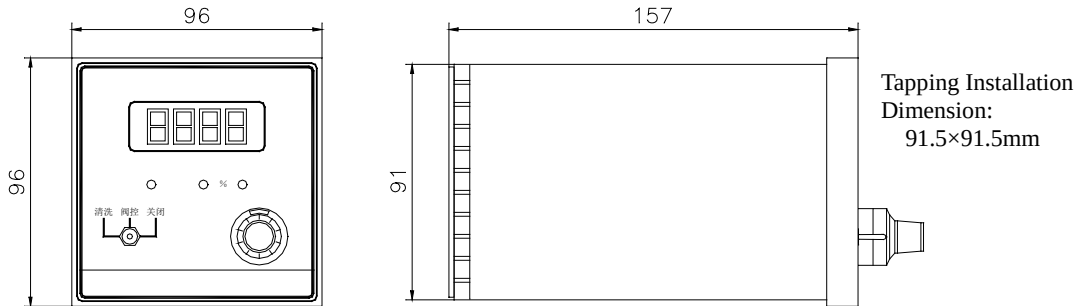


Figure 5. Dimension of 1F, 1FP, 1FM Readout Boxes Chassis

5.2 Installation

5.2.1 Accessories include two sets of long bracket, short bracket and bolt (figure6). They are used for fixing the Flow Readout Box on the panel.



Figure 6. Accessories of D08-1F & D08-1FP & D08-1FM

5.2.2 Insert the long bracket into the slot on upside and downside of Flow Readout Box (figure7).

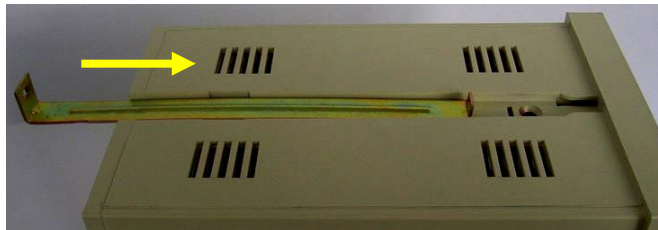


Figure 7. Insert the long bracket

5.2.3 Mounting the short bracket (figure8).

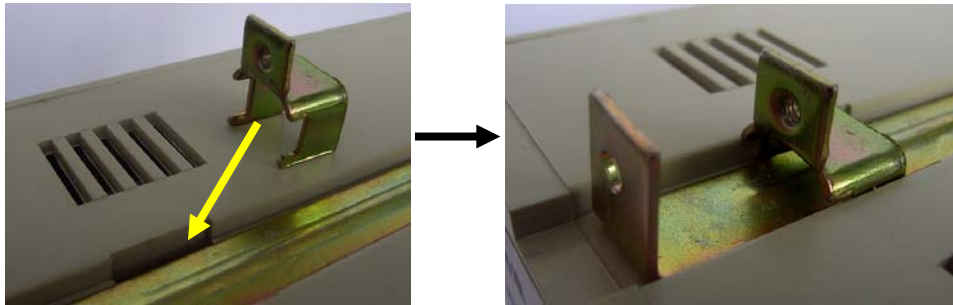


Figure 8. Mounting the short bracket

5.2.4 Insert the long bracket into the slot on upside and downside of Flow Readout Box (figure9).



A. put the bolt

B. screw the bolt

C. clamp the panel

Figure 9. Fixing the Flow Readout Box

5.3 D08-1F&1FP Connection

The ~220V power supply wire and external signal control terminal of D08-1F&1FP Flow Readout Boxes are showing in figure 5.

Besides providing 0~+5V voltage input and output signals, 1F&1FP also has current input and output signals. It can be converted by the rear of connecting terminals shifts.

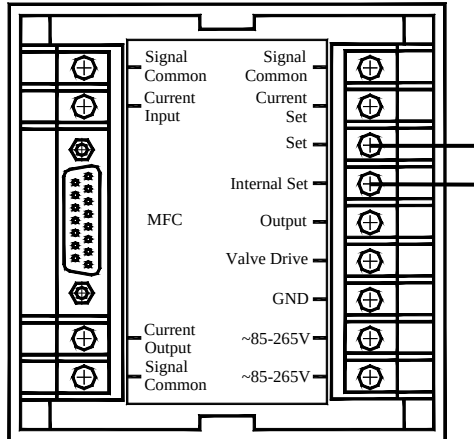
Normally, the flow readout box is set as “Internal Set” function (which is showing as figure 10a), when shorting “Set” and “Internal Set”, the “setting potentiometer” of the box will control the MFC.

When “Set” and “Internal Set” connecting terminals is not connected, the box is in the position of “Voltage Set” and “External Set”, users connect 0~+5.00V voltage which it is provided by himself (PC data module converter) to “Set” and “Signal common” terminals to be the external setting signal to control the MFC (figure 10b). It also external connects a setting converter to function as internal and external setting conversion.

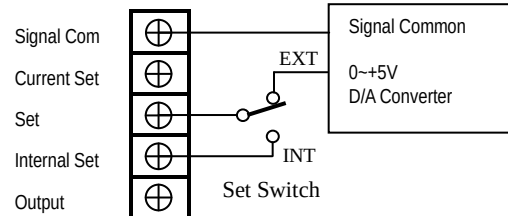
When shorting “Set” and “Current Set” terminal, showing in figure 10c, the box is in the “Current Setting” position, then the input 4~20mA(or 0~10mA) signals of “Current Input” will control the MFC.

No matter what is current setting or voltage setting, the box has current output and voltage output. Terminal of “Current Test” is corresponding with “Signal common” output 0~+5V flow signals; terminal of “Current Output” output 4~20mA(or 0~10mA) flow signals. Whether input and output 4~20mA or 0~10mA, it could depend on users order statements and indicate in the rear of chassis.

a. “Internal Set” Connection



b. Internal & External “Voltage Set” Conversion Connection



c. “Current Set” Connection

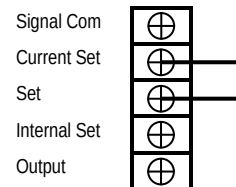
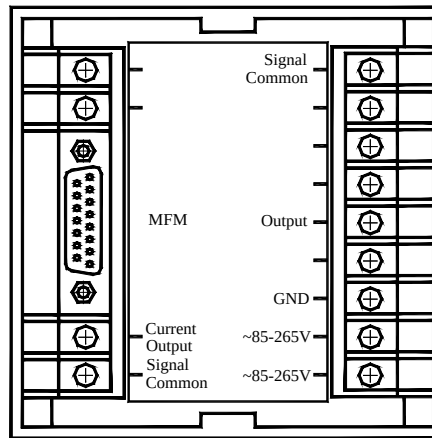


Figure 10. Back View of D08-1F&1FP Connection

5.4 D08-1FM Connection

The wire of AC power supply and output signal terminal connection of D08-1FM Readout Box are showing in figure 11.

Figure 11. Back View of D08-1FM Connection



5.5 Protection Board

Mounting the protection board after above connection (figure 12).

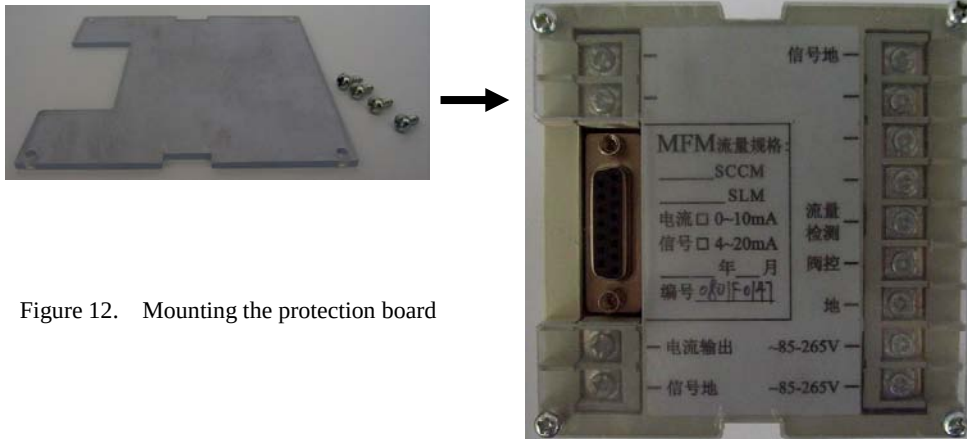
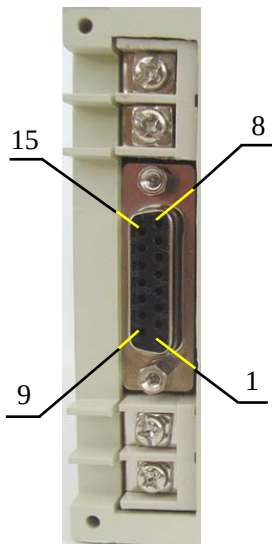


Figure 12. Mounting the protection board

5.6 MFC/MFM “D” connector



D08-1F&1FP MFC Signal	
No.	Specialties
1	External Zero
2	
3	Power Common
4	Set
5	Valve Drive
6	Signal Common
7	Flow Readout
8	GND
9	
10	
11	-15V
12	-15V
13	
14	Common
15	+15V

1FM MFM Signal	
No.	Specialties
1	External Zero
2	
3	Power Common
4	
5	
6	Signal Common
7	Flow Readout
8	GND
9	
10	
11	-15V
12	-15V
13	
14	Common
15	+15V

Figure 13. MFC/MFM “D” Connector diagram

6. OPERATION INSTRUCTION

The operation details of Flow Displayer and MFC(or MFM) connection is referenced in related MFC(or MFM) operation instruction.

- 6.1 Turn On: Connect with power supply, device begin operating (There is no power supply switch of 1F,1FP and 1FM, operates it after external alternating current connecting).
- 6.2 MFC (or MFM) Zero Adjustment: warming up 15 minutes after turning it on, in case of no thru-flow, users could use screwdriver to adjust zero potentiometer of display panel.

- 6.3 There are three phases of valve control switch; it should be positioned in “Valve Control” during its normal operating (1FM could not be functioned as this).
- 6.4 Flow internal setting signals are adjusted by ten-rounded potentiometer of panel (1FM could not have this function).
- 6.5 Shut Off: disconnected its external alternating current.

7. PARAMETER SETTING

Flow rate unit indication & range should be based on MFC (or MFM). Normally, we set them before come to the users. If user wants to change them ranges before operating, they can adjust flow range and unit by related switches and potentiometer after open its overall. The related switch and potentiometer are showing in figure 14.

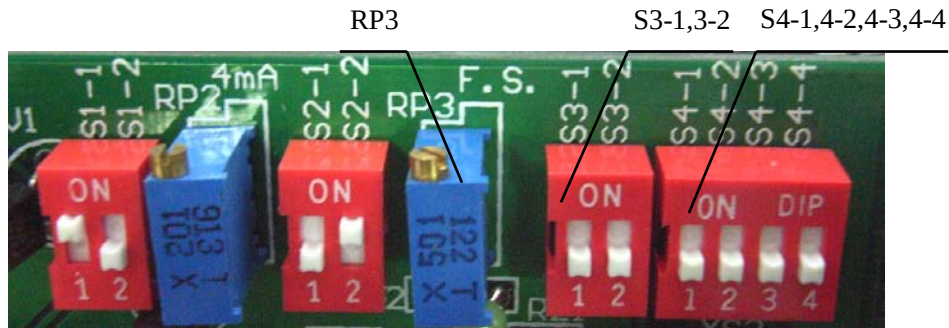


Figure 14. Switches & Potentiometer Positions

7.1 Flow Unit Change

“SCCM & SLM” flow unit switches positions are showing in figure 15:

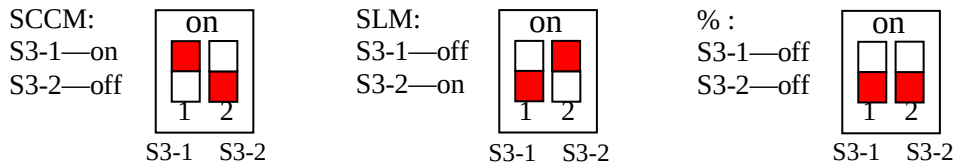


Figure 15. Flow Unit Display Switches Positions

7.2 Radix Point Modifying

The radix point position of flow display could be modified by switches S4, as showing in figure16.

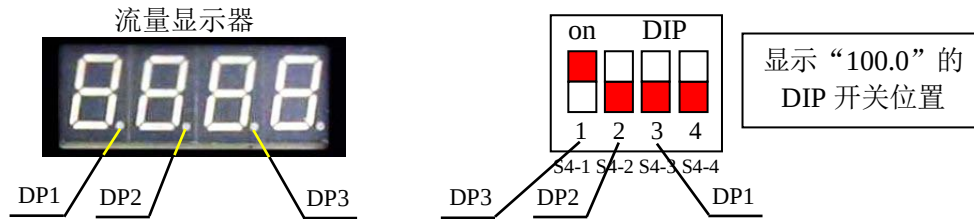


Figure 16. The Related Switches Positions Of Radix Point Modifying

7.3 Displayed Range Adjustment

Flow range display adjustment includes display effective data and radix point modifying. The radix point modifying can be referenced as 7.2; display effective data modifying should be followed as:

- Disconnected by power supply, take down the connector and the power wire of MFC/MFM (Take down short wires between “SET” and “Internal Set”), and then open the overall.
- For 1FM, we need input +5.00V voltage between the terminal “Flow Readout” and “Signal Common” of back panel. For 1F&1FP, we need short the terminal of “Flow Readout” & “Internal Set” of back panel and turn the setting potentiometer Clock Wise to maximum (Internal Set output signal is full scale +5.00V)
- Connecting to power supply, after 20 seconds, for the display value, adjust the potentiometer RP3 (showing in figure 10) by screwdriver to match the same full scale value of bypass (Please be attention, the display data range is 0~1999 of corresponding 3 and 1/2 digital voltage meter and simultaneously matching position of radix point.)
- Disconnect the power supply, for 1FM, it should be cut off external +5.00V voltage; for 1F&1FP Flow Readout Box, it should be cut off the wire of “Flow Readout” from “Internal Set”.
- After mounting its overall, the range adjustment is terminated (resume the short wire of “Set” from “Internal Set”) to normal operation.

8. CAUTION

8.1 Forbidden Item

All internal potentiometers in the device have been already adjusted before delivery, please do NOT adjust it. The maximum 15V power should not be overload.

8.2 Flow Range Adjustment

Flow range adjustment should be under controlled or advised by our professional maintainer and customer service staff. It should be especially careful operating while it was open or connected by power.

8.3 Fuse Change

D08-1F/1FP/1FM Flow Readout Box power fuse is inside box chassis, in case of no display indicated by power connecting, it could be checked for fuse situation. In this time, it should be loosen the bolt of chassis and lift down the overall to change the fuse.

8.4 Grounding Connection

In principle, the ground of the Flow Readout Box (Power GND) and the cover of MFC(or MFM) should be connected for sharing the same grounding place. But they can be connected with the bases respectively, if the connection cable is too long. In this way, please make sure the box must NOT be connected with ground of the MFC because ground wire may be broken, even burning.

8.5 Substitution

If the Flow Readout Box is used for other model MFC (or MFM), please make sure the capability of power supply and the correct connections firstly. Especially, please be very careful for the valve control function and connections because it is quite different according to the different models.

9. PRODUCTION SELECTION

9.1 Type selection

			Circuit		Cases			Display			Power supply			Output voltage		Other funtions						
Type	MFC	MFM	Ana.	Dig.	Mini-Type	Desk-style	Rack-desk-style	1 channel 1 Display	Multi-Channel 1 Display	Multi-Channel Multi-Display	~110 VAC	~220 VAC	~85-265 VAC	± 15 VDC	+24 VDC	4~20mA/0~10mA I input	4~20mA/0~10mA I output	4~20mA / 1~5V Input Signal	4~20mA / 1~5V Output Signal	RS232/RS485 Communication	Setpoint display	Flow Accumulator
1F	✓	✓	✓		✓			✓					✓	✓		✓	✓					
1FM		✓	✓		✓			✓					✓	✓			✓					
1FP	✓	✓	✓		✓			✓					✓	✓		✓	✓				✓	
1/2/4	✓	✓	✓			✓			✓			✓		✓								
2F/3F/4F	✓	✓	✓			✓				✓	✓	✓		✓								
2B/3B/4B	✓	✓	✓				✓			✓		✓		✓								
2E/3E/4E																						
1K	✓	✓	✓		✓			✓					✓		✓			✓	1~5V			
1G	✓	✓		✓	✓			✓					✓	✓						✓		
1GM		✓		✓	✓			✓					✓	✓						✓		
8C	✓	✓		✓	✓			✓					✓	✓						✓		✓
8CM		✓		✓	✓			✓					✓	✓						✓		✓

9.2 Order form

D08- [t] - [o] - [s]

[t] - Type ←

1F/1FP/1FM

[o] - I/O signal ←

-[C] 0—5VDC 和 4—20mA

-[A] 0—5VDC 和 0—10mA

[s] - Special request ←

-[-] Percentage display (100.0), Chinese label.

-[S] List full scale (see table on right side) and other request.

Full Scale	Code	Full Scale	Code
5sccm	A	5slm	N
10sccm	B	10slm	P
20sccm	C	20slm	Q
30sccm	D	30slm	R
50sccm	E	50slm	U
100sccm	F	100slm	V
200sccm	G	150slm	W
300sccm	H	200slm	X
500sccm	J	250slm	Y
1slm	K	300slm	Z
2slm	L	Percentage display	S
3slm	M		



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D08 Series

Flow Readout Boxes.

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Fax: (+86)-755-88294770

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*If there is any mistake in this uses manual, please feel free to contact us.

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