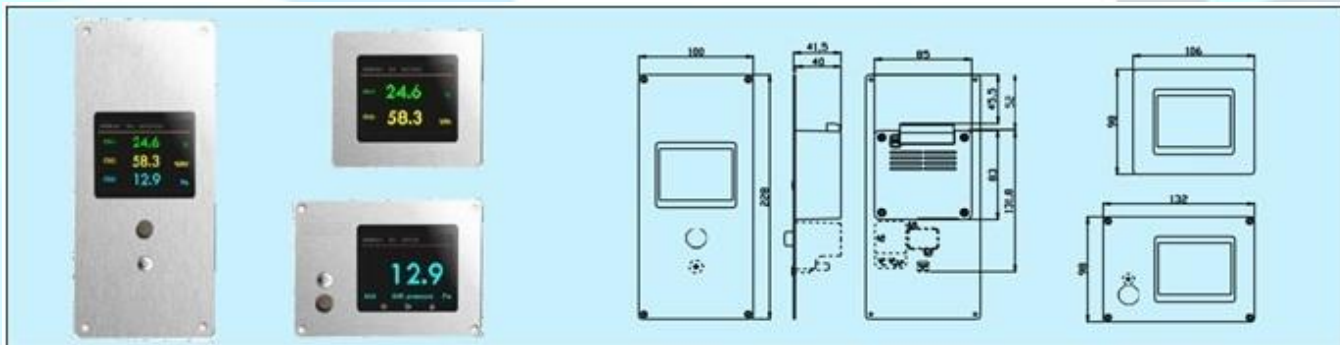


## RSA-DMFP Multi-function Display Unit/Transmitter



### Applications& Features

- Designed for flush mount, measure and display environment temperature, humidity and diff. pressure
- 316L front panel, PMMA window, flat surface, no dust stay, good for all detergents, sanitizers and bactericides
- Parallel or alternatively display input channels 1 to 3
- Large high light 3.2" color TFT LCD display
- Multiple inputs and outputs for different applications
- High accuracy sensor, 100% field changeable
- Optional 3 analog 4~20mA/0~10V inputs signals
- Optional 3 analog 0~10V outputs signals
- Optional RS485/Modbus RTU and key functions
- Compatible to any DDC/PLC/SCADA or other data collect and control systems
- Very high performance/price ratio: replace the single channel (T/RH/DP) display instruments, provide value added multi-function combination including local measurement, displaying and networking

### Specifications

#### Display

**Display:** high light 3.2" color TFT LCD, resolution 320×240

**Display panel material:** PMMA

**Resolution:** ±0.1 engineering unit

**Channels:** 1~3 channels, parallel (simultaneously) or single row(alternate) display

**Engineering unit:** 3 preset units, °C/°F, %RH and Pa

**Update time:** <1s

#### Housing

**Front panel material:** 316L stainless steel, 1.5mm thick

**Back housing parts:** fire-proof ABS+PC UL94 V-0 class

**Protection:** front panel IP65 (Not include DP and T/RH sensors )

**Weight:** MINI: about 380g; Horizontal: about 450g; Vertical: about 650g

#### Technical Specifications

**Power Supply:** 16~28VAC/16~35VDC

**Consumption:** 0.5VA

**Built-in sensor:**

|                 | Temperature                 | Humidity                         | Diff. pressure                         |
|-----------------|-----------------------------|----------------------------------|----------------------------------------|
| Range           | 0~50°C                      | 0~100%RH                         | 0~60Pa                                 |
| Accuracy        | 0.4°C 或 0.3°C<br>(@15~40°C) | 3%或 2%RH<br>(@25°C,<br>20~80%RH) | 1%或 0.5%FS                             |
| Nonlinear       | /                           | <0.1%RH                          | /                                      |
| Repeatability   | ±0.1°C                      | ±0.1%RH                          | /                                      |
| Hysteresis      | /                           | ±1.0%RH                          | /                                      |
| Long term drift | <0.02°C/Year                | <0.25%RH/Year                    | <0.5%FS/Year                           |
| Response time   | <90s<br>(in slow air)       | <40s<br>(25°C, in slow air)      | 0.5~30s                                |
| Temp drift      | /                           | /                                | <0.05%FS/°C(zero)<br><0.08%FS/°C(span) |
| Temp. comp.     | /                           | /                                | 0~50°C                                 |
| Medium Temp.    | /                           | /                                | 0~60°C                                 |
| Work Temp.      | /                           | /                                | 10xFS(over load)<br>15xFS(burst)       |

**Analog inputs:** max. 3×(4~20mA/0~10V); over voltage and reverse polarity protection; accuracy< 0.1%FS; load resistance < 250Ω(4~20mA) or >100KΩ(0~10V); range: default 0~50°C /0~100%RH/0~60Pa, available range -50~100°C /0~100%RH /-100~100Pa

**Analog outputs:** max. 3×(0~10V); over voltage and reverse polarity protection; accuracy as low as 0.2%FS; load resistance >2KΩ; range: same as analog inputs

**Keys:** set/reset alarm, DP re-zero, calibration, set display mode, etc.

**Communication:** 1 USB for parameter checking and setting, 1 RS485/Modbus RTU, R/W enable, 9600 baud rate

**Terminals:** max Ø1.5mm<sup>2</sup>

**Work Environment:** 0~50°C, 0~95%RH (no cond.)

**Storage Environment:** -10~70°C

**Process connection:** Built-in T/RH sensor: a waterproof, air breathable filter and sensing cap on front panel. Built-in diff. pressure sensor: 2 conical nozzles, Ø 5 mm tube connection on back, or 1 pressure sampling screw on front panel.

**Approval:** CE

### Models

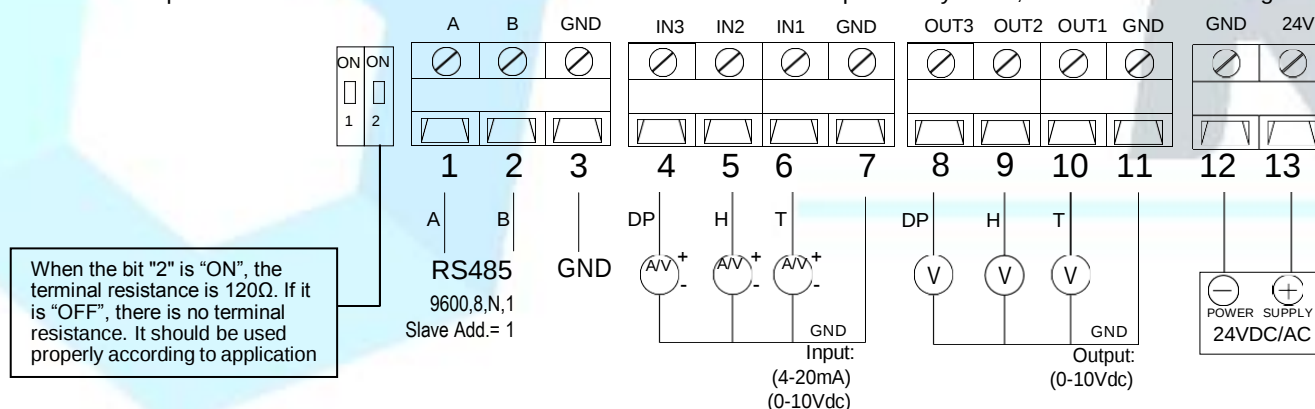
| Model              | RSA-DMFP |   |  |  |   |   |   | Multi-function Display Unit              |
|--------------------|----------|---|--|--|---|---|---|------------------------------------------|
| Temp. Hum. Input   |          | 0 |  |  |   |   |   | N/A                                      |
|                    |          | 1 |  |  |   |   |   | Analog signals (2 channels)              |
|                    |          | 2 |  |  |   |   |   | Built-in T/Rh sensor, accuracy 0.4C/3%   |
|                    |          | 3 |  |  |   |   |   | Built-in T/Rh sensor, accuracy 0.3C/2%   |
|                    |          | 8 |  |  |   |   |   | RS485-Modbus RTU                         |
| Diff. Press. Input |          | 0 |  |  |   |   |   | N/A                                      |
|                    |          | 1 |  |  |   |   |   | Analog signal(1 channel)                 |
|                    |          | 2 |  |  |   |   |   | Built-in DP sensor, accuracy 1%          |
|                    |          | 3 |  |  |   |   |   | Built-in DP sensor, accuracy 0.5%        |
|                    |          | 8 |  |  |   |   |   | RS485-Modbus RTU                         |
| Output             |          | 0 |  |  |   |   |   | N/A                                      |
|                    |          | 1 |  |  |   |   |   | 0~10Vx1 (diff. pressure)                 |
|                    |          | 2 |  |  |   |   |   | 0~10Vx2 (T/Rh)                           |
|                    |          | 3 |  |  |   |   |   | 0~10Vx3 (T/Rh+DP)                        |
|                    |          | 8 |  |  |   |   |   | RS485-Modbus RTU                         |
| Keys               |          |   |  |  | 0 |   |   | N/A                                      |
|                    |          |   |  |  | 1 |   |   | 3 keys                                   |
| Panel Port         |          |   |  |  | 0 |   |   | N/A                                      |
|                    |          |   |  |  | 1 |   |   | 1 pressure sampling screw on front panel |
| Panel Types        |          |   |  |  |   | M |   | MINI type                                |
|                    |          |   |  |  |   | H |   | Horizontal type                          |
|                    |          |   |  |  |   | V |   | Vertical type                            |
| Screw Hole         |          |   |  |  |   |   | 0 | N/A                                      |
|                    |          |   |  |  |   |   | 1 | 4 holes at corners, with SS screws       |

Note:

1. When selecting RS485, only the selected channel has the corresponding function, and the other channels do not have.
2. When the built-in temperature / humidity sensor is selected, the front panel has a corresponding sampling cap.
3. The total number of output channels should NOT be more than input.
4. MINI model does not have any built-in sensors, and can not have diff. pressure port on front panel.

## Connection

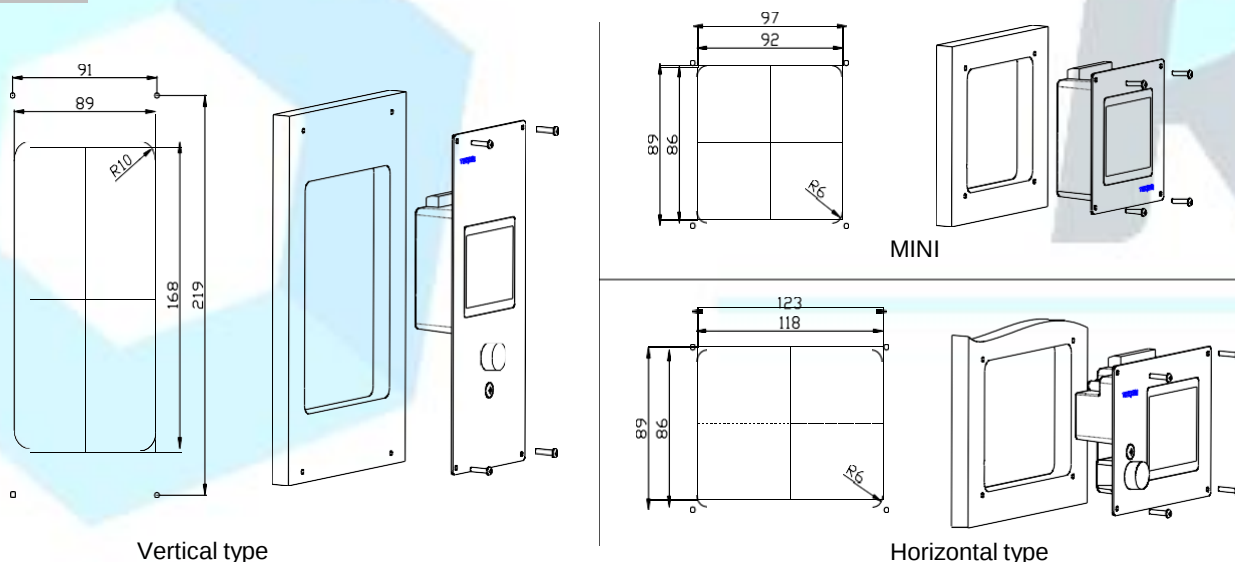
Different models have different electrical terminals. Please wire specific model according to the wiring diagram. This series of products are connected to DDC/PLC/SCADA and other data acquisition systems, such as the below diagram.



\* The factory default input signal is 4 ~ 20mA, user can set to 0 ~ 10V by the host computer.

It should be power OFF during installing and wiring. When using 24VAC, it is strongly recommended to power the unit with independent transformer. If sharing a 24VAC transformer with other equipments such as controllers, transmitters or actuators, please make sure the terminals 24V and GND are connected correctly. Otherwise, it will perhaps reduce serious damages. Before power on, make sure to complete all input / output / communication connections, dial switches and jumpers. There is a self-inspection process of around 30 seconds after powering on, before it goes into normal working status.

## Installation



- It is limited to use in indoor environment, flush mount.
- Hole size for flushing in: refer to the corresponding size in above diagram, MINI type: 92x86mm; horizontal type: 118x86mm (when integrated with build in sensors) or 92x86mm (without sensors); vertical type: 168x89mm(with sensors) or 92x86mm(without sensors). The flush in depth is 40mm.
- Installation mode: it could be installed with preparing glue around the back of the front panel. After flushing into the hole, press the front panel to make sure it has already tightly adhered to the wall. It could also be installed with 4 corner screws. But it is still suggested to be properly glued before flushing in to make sure the seal with the wall.
- If chose gas nozzle on front panel, connect it at the back with one of "+" high or "-" low pressure air nozzle on diff. pressure box with attached 9mm OD silicone tube according to the actual application. The shorter tube is the better.
- The installation site of the product may not be the real "measurement point". It should be the actual installation location of the remote temperature/humidity sensor or the sampling location of the diff. pressure.
- The built in temperature/humidity or differential pressure sensors have been completely tested and calibrated. The product should be installed on the appropriate detecting location, with the electrical wiring upward. The measurement point should be far away from frequent human activity area and source of cold, heat, humidity and air-condition outlet, with good ventilation condition. The sampling location of the diff. pressure should be avoided in frequent or abnormal fluctuation air flow area.
- Any sensors or transmitters need re-calibrating after long times operation to ensure the accuracy. It is recommended to re-calibrate this product every 1-2 years or when needed.

## Display

In the display interface, the first line is RSA-DMFPXXXX, which indicates model; IN:X indicates the number of input channels, X=1 or 2 or 3; OUT:CHX/X/X indicates effective output channel number, X=1 or 2 or 3. It could be software configured to two basic

display styles. One is Parallel display, shown as fig. 1/2/3. Another is Alternate display, shown as fig 3. It means multi parameters will alternately display in the screen, with single line for each page. In this way, the biggest characters are obtained.

1. Display mode1: three channels are parallel displayed, shown as Figure 1, showing temperature, humidity and diff. pressure.
2. Display mode 2: the two channels are parallel displayed, shown as Figure 2, showing temperature and humidity.
3. Display mode 3: only one channel is displayed, shown as Figure 3, only showing diff. pressure.



Fig 1



Fig 2



Fig 3

## Setting

1. Pressure zero reset button is used to reset the zero drift of the built-in DP sensor, as in Figure 4. User can connect the “+” and “-” ports first, then press the button for 3 seconds to finish the operation.
2. RS485 terminal resistance (120Ω) is selected by the dial switch, as Figure 5. When bit “2” dial switch is ON, the terminal resistance is 120Ω. Otherwise there is no any terminal resistance.
3. Computer program can set all parameters. Computer can be connected to the product through USB, shown as Fig 4 and 6. The interface is as fig. 7. Click “Help” can get the help. The software for configuring can be downloaded from RSA SENSORS official website: [www.rsa-sensors.com.br](http://www.rsa-sensors.com.br) with path: resources download → tools and software.

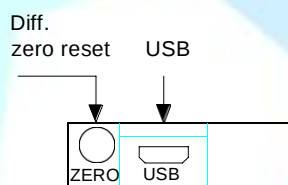


Fig 4

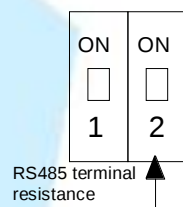


Fig 5

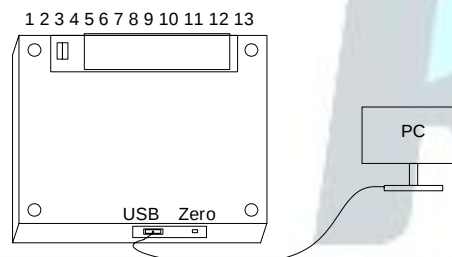


Fig 6



Fig 7

## Communication

1. 1 x RS485

Basic communication settings: 9600, 8, N, 1

Communication address: 1

Communication protocol: MODBUS-RTU

The communication interface can be used for networking with other devices, or for setting the parameters of the product. Refer to RSA-DMFP Modbus instructions for details.



#### 4. Parameter display window

When the parameter is flashing, press "◇", the displaying color will turn to green to indicate that it can be modified. Modify the parameter value with "▷" and "◁", then confirm with "◇".

When the parameter flashes, move to the next or previous parameter with "▷" and "◁".

If there is no any key operation in 30s, it will automatically return to the main display window, the parameters will not be saved.



When this icon flashes, press "◇" to confirm, then the parameters will be saved.



When this icon flashes, press "◇" to confirm, then the parameters will NOT be saved.

#### 4.1 Buzzer alarm setting

| CHAN | Style        | Mode         | SP1          | SP2          | ON Delay     | OFF Delay    |
|------|--------------|--------------|--------------|--------------|--------------|--------------|
| CH1  | Parameter 1  | Parameter 2  | Parameter 3  | Parameter 4  | Parameter 5  | Parameter 6  |
| CH2  | Parameter 7  | Parameter 8  | Parameter 9  | Parameter 10 | Parameter 11 | Parameter 12 |
| CH3  | Parameter 13 | Parameter 14 | Parameter 15 | Parameter 16 | Parameter 17 | Parameter 18 |

Parameter 1,7,13: Indicates the alarm style, optional parameters: None, blink, Buzz, audible and visual alarm (Both).

Parameter 2,8,14: Indicates the working mode, optional parameters: none alarm, low alarm, high alarm, in range alarm, out range alarm.

Parameter 3,9,15: set point / low limit(SP1).

Parameter 4,10,16: dead band /high limit(SP2).

Parameter 5,11,17: on Delay, unit second.

Parameter 6,12,18: off Delay, unit second.

#### Parameters and descriptions

| Mode | Mode Description                                  | Para. #3/9/15 | Para. #4/10/16 | Para. #5/11/17 | Para. #6/12/18 | Definition                                                                                 |
|------|---------------------------------------------------|---------------|----------------|----------------|----------------|--------------------------------------------------------------------------------------------|
| 0    | Cancel alarm function                             | N/A           | N/A            | N/A            | N/A            | Relay OFF                                                                                  |
| 1    | Alarm actuate when input is lower than set point  | Set point     | Dead band      | Actuate delay  | Restore delay  | Relay ON → Deadband → Relay OFF<br>▲ Setpoint                                              |
| 2    | Alarm actuate when input is higher than set point | Set point     | Dead band      | Actuate delay  | Restore delay  | Relay OFF → Deadband → Relay ON<br>▲ Setpoint                                              |
| 3    | Alarm actuate between high and low limits         | Low limit     | High limit     | Actuate delay  | Restore delay  | Relay OFF → Low limit → Relay ON → High limit → Relay OFF<br>▲ Low limit      ▲ High limit |
| 4    | Alarm actuate outside high and low limits         | Low limit     | High limit     | Actuate delay  | Restore delay  | Relay ON → Low limit → Relay OFF → High limit → Relay ON<br>▲ Low limit      ▲ High limit  |

#### 4.2 Clear alarm

Press "◇", then pop-up "Clear Alarm Success" to show that the alarm is clear successfully.

#### 4.3 Reset zero pressure of built-in pressure sensor

Press "◇", if the product has a built-in pressure sensor, select "YES" with "▷" and "◁" to reset the zero pressure. or select "NO" to do nothing. If the product does not include a built-in pressure sensor, the operation is not allowed.

#### 4.4 Display setting

| Name   | CH1         | CH2         | CH3         |
|--------|-------------|-------------|-------------|
| Switch | Parameter 1 | Parameter 2 | Parameter 3 |
| Unit   | Parameter 4 | Parameter 5 | Parameter 6 |
| Mode   | Parameter 7 |             |             |
| Bright | Parameter 8 |             |             |

Parameter 1,2,3: Optional parameters: ON, OFF.

Parameter 4: Optional parameters: °C, °F.

Parameter 5: Optional parameters: %RH.

Parameter 6: Optional parameters: "Pa", "kPa", "In WC", "mbar", "mm WC".

Parameter 7: Optional parameters: parallel (simultaneously display) or alternate display.

Parameter 8: Optional parameters: 40-100% backlight brightness. More brightness may cause more power consumption, more heat, finally bring temperature increase and decrease the performance of electrical components.

#### 4.5 Calibration setting

| CHAN | Adj         | PV          | Unit        |
|------|-------------|-------------|-------------|
| CH1  | Parameter 1 | Parameter 4 | Parameter 7 |
| CH2  | Parameter 2 | Parameter 5 | Parameter 8 |
| CH3  | Parameter 3 | Parameter 6 | Parameter 9 |

Parameter 1,2,3: 1,2,3 channels single-point calibration value, can be modified.

Parameter 4,5,6: 1,2,3 channels current value, cannot be modified.

Parameter 7,8,9: 1,2,3 channels current unit, cannot be modified here. If need to modify, refer to 4.4.

#### 4.6 Restore factory settings

By pressing "◇" and selecting "YES" via "▷", "o ", the factory settings will be restored. Select "NO" will not restore the factory settings.

#### 4.7 Return main display Window

By pressing "◇", return to the main display window.

RSA SENSORES - ATENDIMENTO



ESCANEAR O QR CODE COM A CAMERA DO  
CELULAR, PARA CHAMAR NO WHATS APP