

The CP 111, CP112, CP113 Series
Compact Pressure (CP)
Transmitter Display,
Differential Pressure
0-5 V, 0-10 V, RS485 or
Loop Powered 4-20 mA



DESCRIPTION

Advanced Sensors Compact Pressure (CP) Series Transmitter Display is a differential pressure transmitter that incorporates a user configurable display and wide TFT screen. The devices internal auto calibration valve ensures the highest stability at low pressure values. With an ABS V0 housing, barbed hosing connections and cable gland connector the rugged device can meet the most demanding IP65 environments.

APPLICATIONS

- Clean room
- Pharmaceutical Laboratory
- Surgical Room
- Ambulatory Instrumentation

FEATURES

- Ranges from 25 Pa to 300psi (Contact Factory for custom ranges)
- Configurable intermediary ranges
- 0-5 V, 0-10 V, RS485 or active 4-20 mA output, power supply from 15 to 35 Vdc
- WIFI configurable with local server for remote monitoring.
- ABS V0 housing, IP65, with or without display
- "¼ turn" system mounting with wall-mount plate
- High Accuracy
- Low Overall Errors, 1%TEB
- All Welded Design
- Custom Outputs and Ranges Available
- Housing with simplified mounting system
- Solenoid valve for auto-calibration
- Relay output, alarm pressure level configurable
- Flexible Electrical Outputs

SPECIFICATIONS

	CP 111	CP 112	CP 113	Units	Note
Performance Specifications					
Measurement Units	inH2O, Kpa, Psi, Bar, Pascal, mmH2O			User Defined	
Accuracy	±0.5% of reading ±2Pa	±0.5% of reading ±3Pa	±0.5% of reading ±2mmH2O		
Response Time	0.3 s			S	
Resolution	1	0.1	0.01	Unit	
Auto Zero	Integrated Solenoid Valve on Ranges < 50Kpa			User Defined	
Type of Fluid, Media	Air or Neutral, Non-Ionic Gases				
Overpressure	5	10	100	kPa	
Operating Temperature	0		50	°C	
Storage Temperature	-20		75	°C	
Weight	350			gf	

SPECIFICATIONS	Symbol	Min	Typical	Max	Unit	Note
Absolute Maximum Conditions						
Supply Voltage		-16		35	V	
Storage Temperature		-50		150	°C	
Relay Contact Rating				5	A	

Reference Conditions: Vsupply: Table Below, Ta=25° C.

1. All specification at reference conditions unless otherwise noted.
2. Exceeding Absolute Maximum Specification may damage the device. Extended exposure beyond the operating conditions may affect device reliability.

	Current	Regulated	
Electrical Output Type	4-20mA	0-5V	0-10V
Supply Voltage (Vdc)	24	15	15
Operating Voltage	15-35	15-35	15-35
Current Consumption	22mA	<2W	<2W
Span (FSS)	16.0	5.0	9.0
Output Load	500Ω Max	1.0kΩ Min	1.0kΩ Min
Reverse/Overvoltage Protection	Yes	Yes	Yes

User Settable Functions

The pressure transmitter is highly flexible with many user settable features. These include the selection of the pressure units (inH₂O, Kpa, Bar, Pascal, mmH₂O), the display background setting (white characters on black background, black characters on white background), the display intensity improving low light visibility (5 intensity settings), and the display resolution (integer, 0.1, 0.01). Below are three other configurable settings with a detailed summary of their functions.

Auto Calibration (Menu Item 1)

The pressure transmitter incorporates an auto calibration process that guarantees excellent stability and ensures high accuracy is measurements on low and high pressure ranges over time. The auto calibration principle uses a microprocessor within the transmitter that drives a solenoid valve that compensates the drifts on the sense element over time. The compensation is performed by the permanent adjustment of the zero offset, so the measurement of the differential pressure is then independent from the environmental conditions of the transmitter. The frequency of the auto calibration process can be set from 1min to 60 minutes.

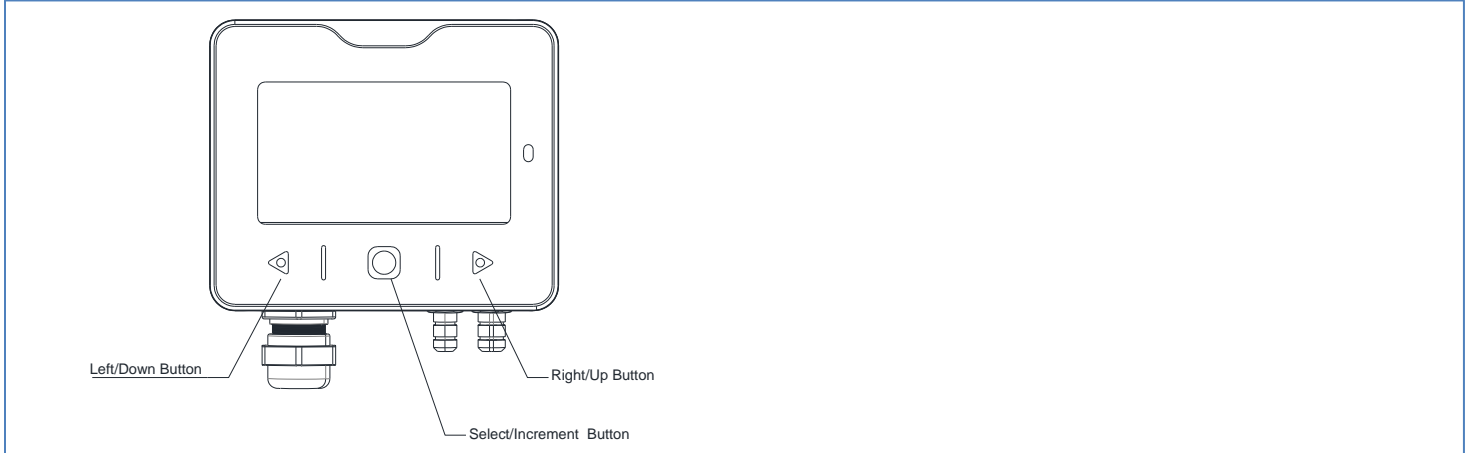
Relay Output Configuration (Menu Item 2)

An output relay can be configured to trigger an external process if the pressure value is exceeded. To utilize this function, the relay must first be enabled and the trigger value set to a percentage of the full scale pressure (0 to 100%, 5% increments). Once the pressure measurement exceeds the trigger value, the contact resistance between Pin 6 and Pin 7 (See Connection Diagram) will be driven to a low resistance, allowing an external valve or relay to close.

Range Configuration (Menu Item 4)

The range of the pressure transmitter can be configured according to user's application. The user range is set by selecting a percentage of the ordered native range and be set to 10%,20%,40%,60%,and 80% within the menu. For example, if the native ordered range is +/-1000Pa, if 10% is selected, the range will change to +/-100Pa, the corresponding 0-5V,0-10V and 4-20mA outputs will be scaled automatically.

Menu Button



The menu can be navigated using 3 buttons located on the display bezel. The CENTER button is used for selecting the menu item or incrementing the value. The LEFT button is used to move the cursor in the left direction or move down through the menu items. The RIGHT button is used to move the cursor in the right direction or move up through the menu items.

To Gain Access to the Menu Structure

To gain access to the menu structure, follow the instruction below. Words in **BOLD** indicate an action performed by the user.

1. Gaining access to the MENU Structure requires that a Password is entered. The default Password is "1 2 3 4"
2. Power The Transmitter, Wait 5 seconds. **TAP** the Select/Increment Button to gain access to the System Menu .
3. The First Digit will Display "0". **TAP** the Select/Increment Button until a "1" is displayed. **TAP** the Right/Up Button to enter the first digit. The First Digit will display "*"
4. The Second Digit will Display "0". **TAP** the Select/Increment Button until a "2" is displayed. **TAP** the Right/Up Button to enter the second digit. The Second Digit will display "*"
5. The Third Digit will Display "0". **TAP** the Select/Increment Button until a "3" is displayed. **TAP** the Right/Up Button to enter the Third digit. The Third Digit will display "*"
6. The Fourth Digit will Display "0". **TAP** the Select/Increment Button until a "4" is displayed. **TAP** the Right/Up Button to enter the Fourth digit. The Fourth Digit will display "*"
7. All Digits should indicate "* * * * ". **TAP** the Select/Increment Button to enter the password.

Select the Menu Language

The transmitter supports both English and Chinese languages. The default language is Chinese. To select the users preferred language, follow the instructions below.

1. Gain access to the Menu structure by entering in Password "1 2 3 4".
2. **TAP** the Right/Up Button until Item 5 in the Menu structure is highlighted in RED. **TAP** the Select/Increment Button.
3. **TAP** the Right/Up Button until the targeted language is displayed in RED. **TAP** the Select/Increment Button.

Exiting the Menu Structure

4. **TAP** the Right/Up Button until Item 10 in the Menu structure is highlighted in RED. **TAP** the Select/Increment Button.
5. The Menu Structure is closed and the transmitter will display the current pressure

Menu Structure

1. Auto Calibration
 - a. Period [2..10] seconds, 1 second increments
 - b. Frequency [1..60] min, 1 minute increments
 - c. Save
2. Relay Output
 - a. Relay Default Status [On..Off]
 - b. Relay [0..100] %, 5% increments
 - c. Save
3. Unit
 - a. inH20
 - b. Kpa
 - c. Psi
 - d. Bar
 - e. Pascal
 - f. mmh20
4. Range Configuration
 - a. Pmin: System Reports back Pmin of Device
 - b. Pmax: System Reports back Pmax of Device
 - c. Range: [10..20..25..50..75..100] %
 - d. Save
5. Language
 - a. Chinese
 - b. English
6. Display
 - a. Black on White
 - b. White on Black
7. Backlight
 - a. Darkest
 - b. Dark
 - c. Medium
 - d. Brighter
 - e. Brightest
8. Decimal Point Resolution
 - a. 0 bit, Select Integer Values for Pressure
 - b. 1 bit, Select 0.1 Resolution Value for Pressure
 - c. 2 bit, Selects 0.01 Resolution Values for Pressure
9. About
 - a. Version: System Reports Versions
 - b. Device
 - c. Device Name
 - d. RS485 Address
 - e. Sever IP
10. Exit

RS 485 ModBus RTU Protocol

Follows the Standard Modbus-RTU serial communication protocol

Baud rate: 9600, 8 data bits no parity, 1 stop bit.

00 : Pressure output, 16 bits signed integer, Default one decimal point, Unit as kPa

01: Temperature output, 16 bits signed integer, Default one decimal point, Unit as °C

02 : Humidity output, 16 bits signed integer, Default one decimal point, Unit as %

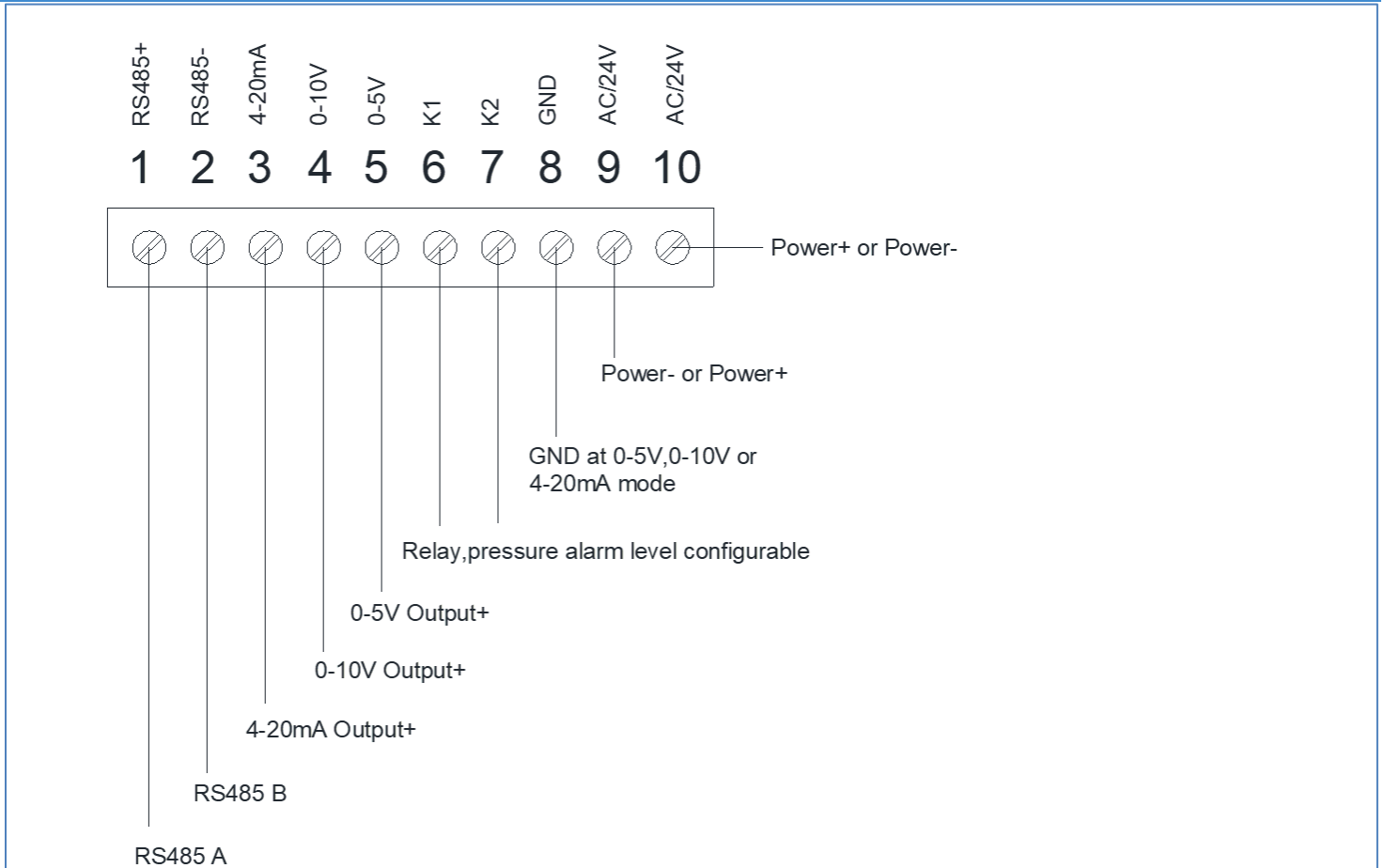
03 : Communication address

04 : Pressure output high 16bits, combined with 05 to form 32 bits signed integer, Default one decimal point, Unit as Pa

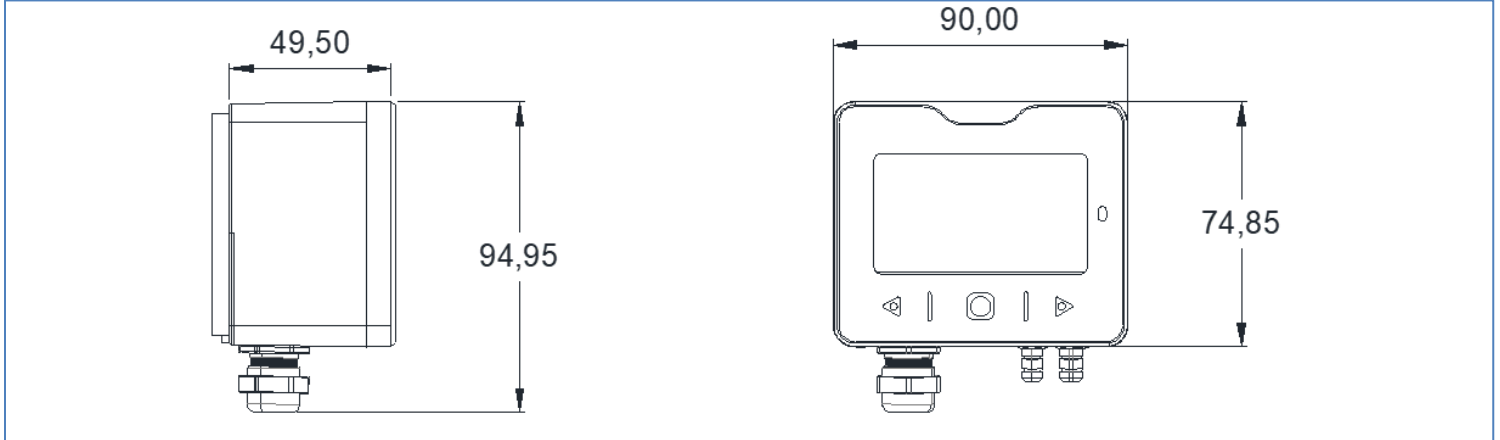
05 : Pressure output low 16bits, combined with 04 to form 32 bits signed integer, Default one decimal point, Unit as Pa

Support command 03 06 16

Connection Diagram



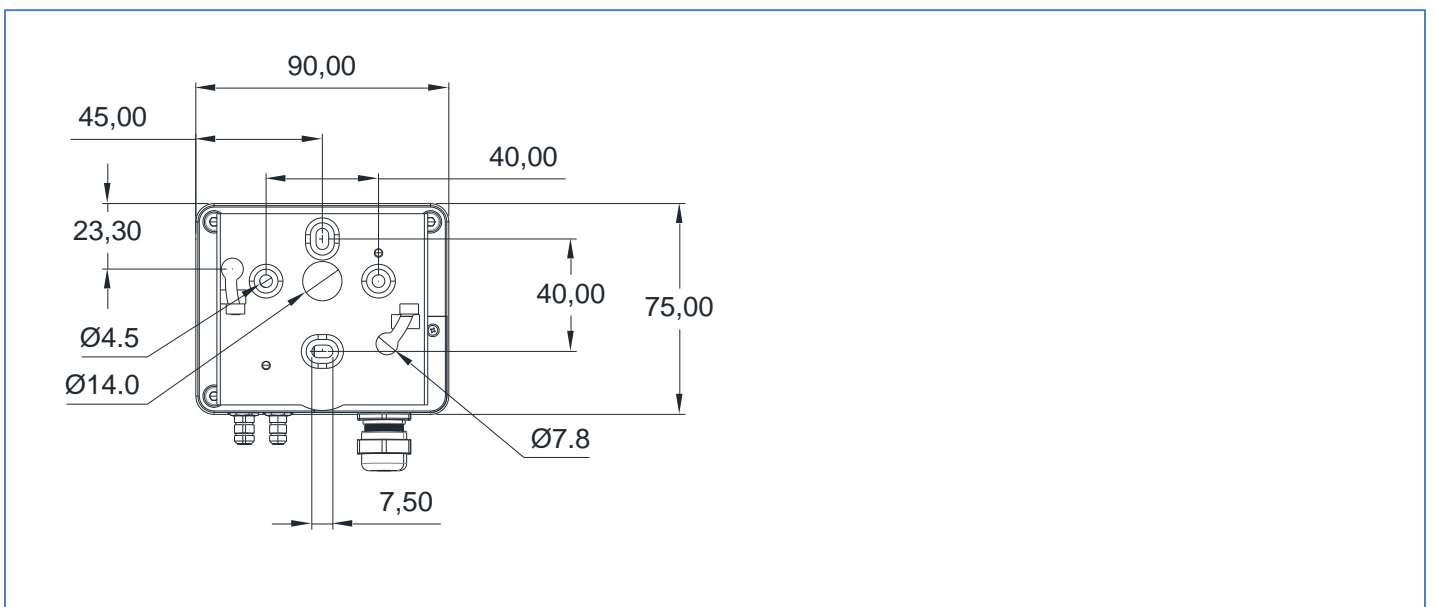
MECHANICAL DIMENSIONS in [mm]



Material:	ABS V0 as per UL94
Protection:	IP65
Display:	42*75mm TFT LCD
Height of Digits:	
Pressure:	10mm
Temperature and Humidity	3mm
Unit	3mm
Pressure Connections:	Ribbed, diameter 6.2mm
Cable Gland:	Diameter Maximum 8mm.

Mounting Diagram

To mount the transmitter, mount the ABS plate on the wall by drilling 6mm diameter holes and use the included screw and pins supplied with the product. Insert the transmitter on the fixing plate (See below drawing for reference). Rotate the housing in clockwise direction until you hear a click which confirms that the transmitter is correctly installed.



PART NUMBERING FOR ORDERS

Series	Range Selection	Display Options
CP 11	1 = 100 Pa to -100 Pa 2 = 1000 Pa to -1000 Pa 3 = 10,000 Pa to -10,000 Pa	-D = Display - N = No Display

Part Number Example: CP 112 -N CP 112 Series, Range from 1000 Pa to – 1000 with No Display

WARRANTY

Pressure sensors have a limited one-year warranty to the original purchaser. AVSensors will repair or replace, at its option, without charge those items it finds defective. This is the buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall AVSensors be liable for consequential, special, or indirect damages. This warranty does not apply to units that have been modified, misused, neglected or installed where the application exceeds published ratings. Specifications may change without notice. The information supplied is believed to be accurate and reliable as of this printing, however, we assume no responsibility for its use.