COW 13F0

COW 1351 MDR

Features

• **Power supply 24 Vac/dc**

• **IP ratings**
  IP65 for enclosure
  IP41 for probe

• **MEMS electrochemical sensor**

• **Sensor life time minimum 10 years**

COW 13F0:

• **Measuring ranges**
  0-100 ppm or 0-300 ppm, jumper selectable

• **Output**
  4-20 mA or 0-10 Vdc, jumper selectable

COW 1351 MDR:

• **Measuring range**
  0-100 ppm or 0-300 ppm, jumper selectable

• **Two Outputs**
  4-20 mA and 0-10 Vdc

• **Modbus RS485 communication**

• **LCD Display 12x2**

• **Relay output, user can set any level**

COW 13F0 and COW 1351 MDR are standard types,
Other types on next page.

• **On request**
  1 x universal input, 2 x universal inputs,
  Wifi, Duct version, Room version

Application

For detection of Carbon Monoxide (CO)
within a wide range of commercial applications such as:

Vehicle exhaust in parking structures
(e.g. underground garages)

Engine repair shops, Tunnels, loading bays,
Engine test benches, Shelters, Go-kart race courses , Etc.

Ordering codes

Mounting type	Range	Output 1	Output 2	"Options"
COW = Wall IP65 enclosure IP41 probe	13 = 0-100 ppm or 0-300 ppm jumper selectable	0 = no output	0 = no output	M = Modbus RS485
		1 = 0-10 Vdc	1 = 0-10 Vdc	D = LCD display
COD = Duct IP65 enclosure IP41 probe	310 = 0-300 ppm or 0-1000 ppm jumper selectable	2 = 2-10 Vdc	2 = 2-10 Vdc	R = Relay
		3 = 0-5 Vdc	3 = 0-5 Vdc	
COR = Room IP30 enclosure		4 = 1-5 Vdc	4 = 1-5 Vdc	
		5 = 4-20 mA	5 = 4-20 mA	
		F = 0-10 Vdc or 4-20 mA field selectable	F = 0-10 Vdc or 4-20 mA field selectable	

COW 13F0   **COW 1351 MDR**   **COD 13F0**   **COD 1351 MDR**   **COR 13F0**

Ordering examples

Type no.	Description
COW 13F0	Carbon Monoxide (CO) detector - for wall mounting, IP65 enclosure and IP41 probe - Range 0-100 ppm or 300 ppm, jumper selectable range - 1 field selectable output 0-10Vdc or 4-20mA
COW 1351 MDR	Carbon Monoxide (CO) detector - for wall mounting, IP65 enclosure and IP41 probe - Range 0-100 ppm or 0-300 ppm, jumper selectable range - Two Outputs 4-20 mA and 0-10 Vdc - Modbus RS485 communication - LCD Display 12x2 - Relay output, user can set any level

Notes:

COW 13F0 and COW 1351 MDR are standard types

COW 13F0 is the simple competitive type.

COW 1351 MDR is the "full featured" type.

Other types in ordering codes above can be supplied in minumum 25 pcs per each unic type.

Technical data

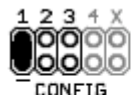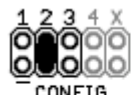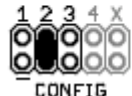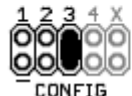|		
Electrical	Power Supply	24 Vac (± %5), 50-60 Hz
		14-35 Vdc
	Power Consumption	< 2.5 W
Outputs	Current Output	4-20 mA, maximum 500 Ω
	Voltage Output	0-10 Vdc, minimum 1.000 Ω
		0-5 Vdc, minimum 1.000 Ω
	Relay Output	max. rating 1A @ 220 Vac accuracy
CO	±2 % for 0-100 ppm	
	±3 % for 0-300 ppm	
	±5 % for 0-1000 ppm (on request)	
General Data	Sensing Element	MEMS electrochemical
	Sensor life time	min. 10 years
	Media	Air or non-aggressive gasses
	Operating Temperature	-25 to +70°C
	Storage Temperature	-30 to +85°C
Ranges	CO	0-100 ppm or 0-300 ppm
		on request 0-1000 ppm
Connections	Terminals	Pluggable screw terminal
	Cable	maximum 1.5mm2
	Cable Gland	M16 or PG9
Protection	Enclosure	IP65 or NEMA 4
	Probe	IP41 or NEMA 3
Standards	EMC Directive	EN 61326-1
	CE Conformity	CE1701
Dimensions	Enclosure	98.0 x 81.5 x 45.5 mm
	Probe	Ø 12 mm x 46.5 mm
Weight Packed	230 grams	
Universal input(s)	Can be 0-10 Vdc, 0-5Vdc, PT1000 (only on request).	
Sensing Coverage area	400 m2	

Output Jumpers

1.. There is no output jumper for the fixed output types
2.. Please check if there is any special Jumper Instruction in the enclosure
3.. Range Jumpers for AO1 and AO2 have same specifications

AO1	Output 1
no jumpers	fixed at the factory *according to your request*
AO1	0…10V *jumper selection*
AO1	4…20mA *jumper selection*

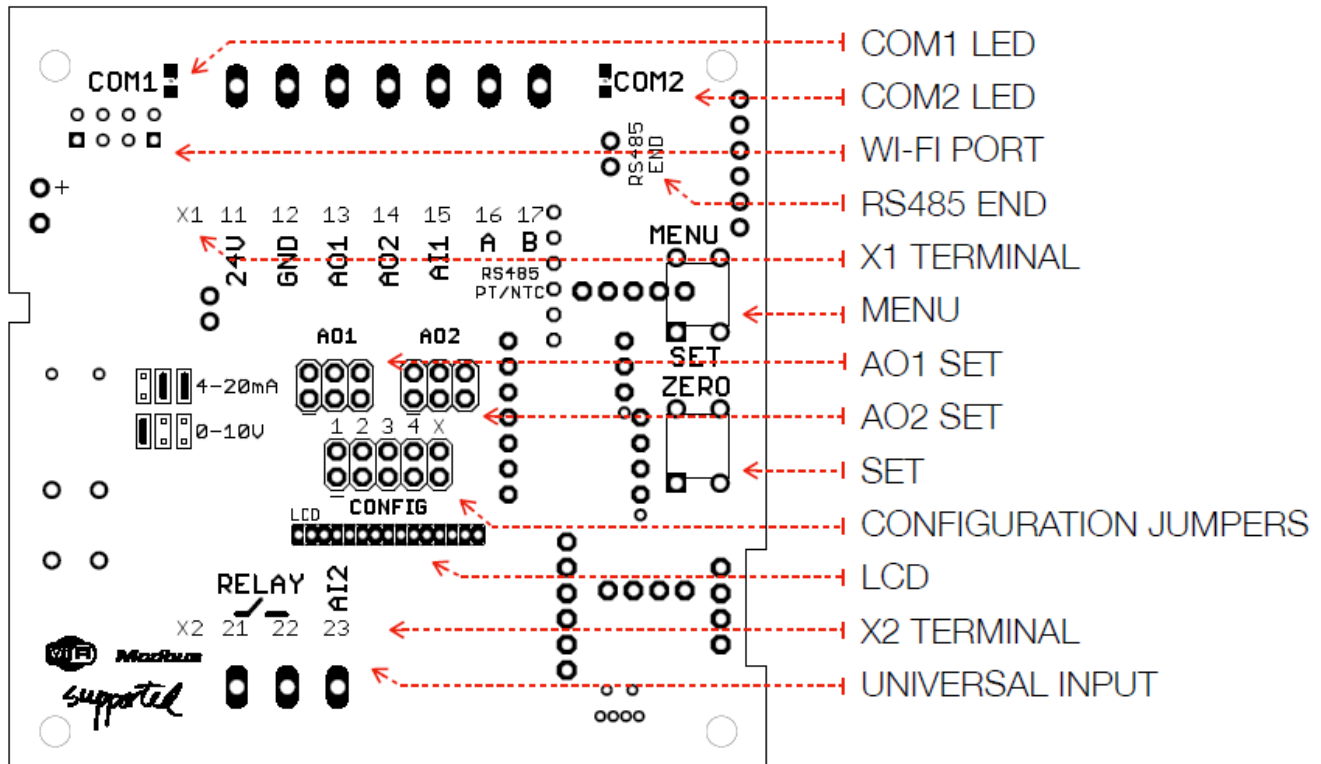| AO2	Output 2
no jumpers	fixed at the factory *according to your request*
AO2	0…10V *jumper selection*
AO2	4…20mA *jumper selection*

CONFIG Jumpers

1.. Never use the jumper X at CONFIG..!
2.. Please check if there is any special Jumper Instruction in the enclosure
3.. There is no jumper for fixed range models

Range	COx 13 (0-100/0-300 ppm)
CONFIG	0…100 ppm
CONFIG	0…300 ppm

Range	COx 310 (0-300/0-1000 ppm)
CONFIG	0…300 ppm
CONFIG	0…1000 ppm

General Notes

1. High density of some other gasses may effect the reading. Such as: ethanol, ammonia, methane, propane etc.

2. Observe maximum permissible cable lengths.

3. If cable runs parallel to the mains cable: Use shielded cables.

4. Never test with flammable gasses.

5. The cable entry always should have to be pointing downwards.

6. The data indicated under 'Technical Data' apply only to vertically mounted transmitters.

7. Duct type transmitters should be far away from humidifiers, min. 2 meters. (duct version on request).

8. Room and Wall type transmitters should have to be mounted in the center of wall but not near to any windows (room version on request)
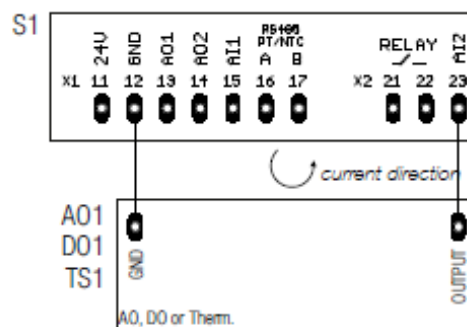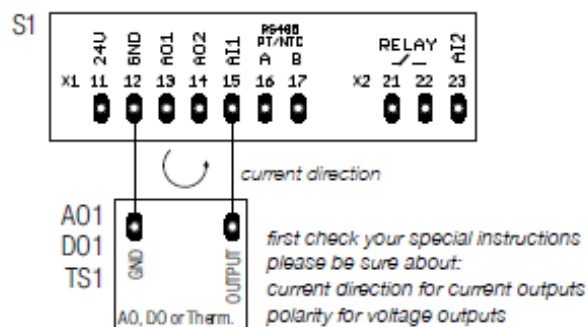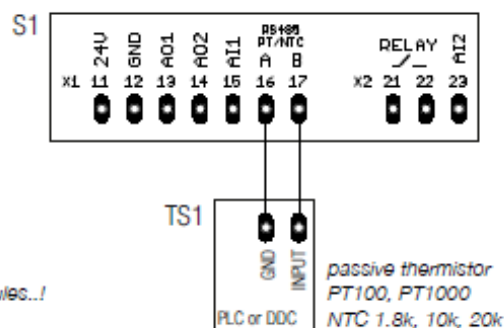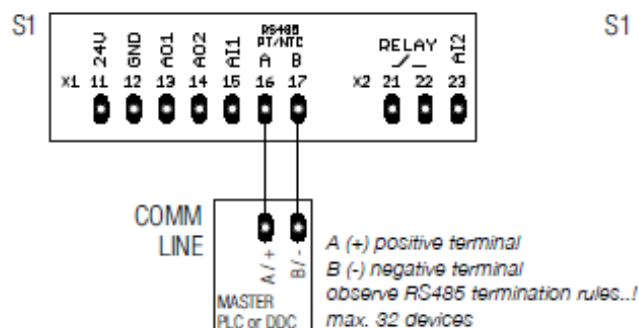
Hardware

Labels (top to bottom):
- COM1 LED
- COM2 LED
- WI-FI PORT
- RS485 END
- X1 TERMINAL
- MENU
- AO1 SET
- AO2 SET
- SET
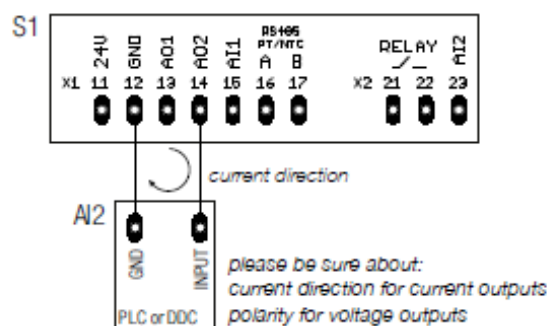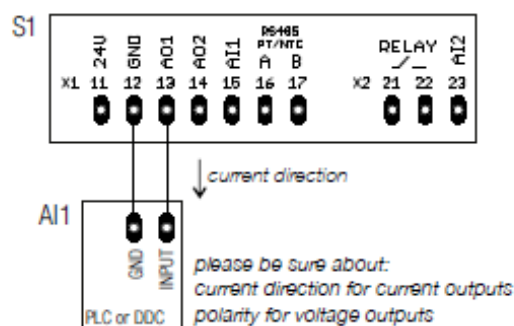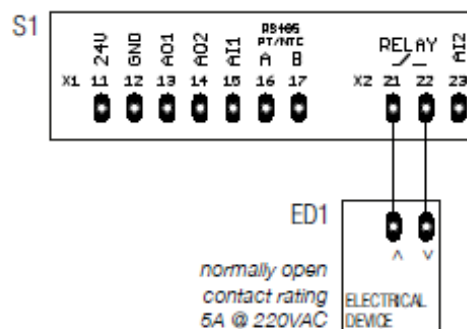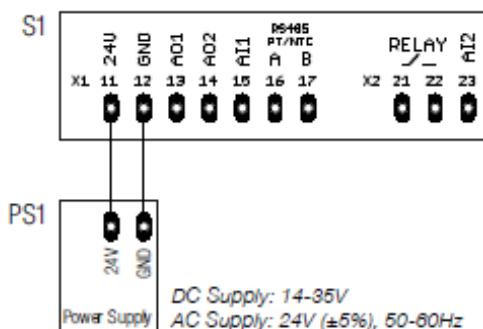- CONFIGURATION JUMPERS
- LCD
- X2 TERMINAL
- UNIVERSAL INPUT

Definitions

COM1 LED without relay option, Bead LED, ON for one period, OFF for one period with relay option,
shows the relay position, lights when contact is closed (X2:21-22)

COM2 LED modbus communication LED, blinks when there is communication

Wi-Fi PORT wi-fi port, it is an advanced option, please contact us for more details

RS485 END modbus ending jumper to connect internal 120ohm resistor to the RS485 line

X1 TERMINAL
11 power 14-35 Vdc or 24 Vac (± %5, 50-60 Hz)
12 GND ground for power and reference for outputs and inputs
13 output 1 analog output for main measurement
14 output 2 analog output for other measurement or duplicated output1 for third party devices
15 input 1 universal input for nearby passive field devices
16 A modbus modbus communication positive pair
17 B modbus modbus communication negative pair

MENU BUTTON press and wait to enter MENU, click to navigate between sub menus one by one
after all parameters turns back to main screen

AO1 & AO2 SET output set as 0-10 Vdc or 4-20 mA with jumpers, only for output selectable products,
for the fixed output models there is no jumpers,
please be sure about the output type and electrical connections

SET BUTTON click to change parameters, parameters are automatically set while exiting menu

CONFIGURATION jumpers to set output range and delay time
JUMPERS please refer to the "jumper reference" sticker on PCB or inside of cover

CAUTION **never use jumper X..!**

LCD 12x2 LCD for monitoring and setting parameters
contrast adjust the contrast from MENU for a better performance
brightness adjust the brightness from MENU for a better performance

X2 TERMINAL
21 NO contact relay dry contact max. rating 1A @ 220 Vac
22 NO contact relay dry contact max. rating 1A @ 220 Vac
23 input 2 universal input for nearby passive field devices

UNIVERSAL
INPUT universal inputs (X1:15 and X2:23) can be digital input as dry contact or
analog input as NTC10k, PT1000, 0-10 Vdc or 0-5 Vdc.
universal input is an advanced option, please contact us for more details

Electrical connections

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

PS1 — Power Supply — 24V GND

DC Supply: 14-35V
AC Supply: 24V (±5%), 50-60Hz

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

ED1 — ELECTRICAL DEVICE — ∧ ∨

normally open
contact rating
5A @ 220VAC

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

↓ current direction

AI1 — GND INPUT — PLC or DDC

please be sure about:
current direction for current outputs
polarity for voltage outputs

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

↻ current direction

AI2 — GND INPUT — PLC or DDC

please be sure about:
current direction for current outputs
polarity for voltage outputs

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

COMM LINE — A/+ B/- — MASTER PLC or DDC

A (+) positive terminal
B (-) negative terminal
observe RS485 termination rules..!
max. 32 devices

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

TS1 — GND INPUT — PLC or DDC

passive thermistor
PT100, PT1000
NTC 1.8k, 10k, 20k

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

↻ current direction

AO1 DO1 TS1 — GND OUTPUT — AO, DO or Therm.

first check your special instructions
please be sure about:
current direction for current outputs
polarity for voltage outputs

S1

| X1 | 24V 11 | GND 12 | AO1 13 | AO2 14 | AI1 15 | RS485 PT/NTC A 16 | B 17 | RELAY X2 21 22 | AI2 23 |

↻ current direction

AO1 DO1 TS1 — GND OUTPUT — AO, DO or Therm.

Modbus Manual

Use Function 3 for Reading and Function 6 for Writing Holding Registers.
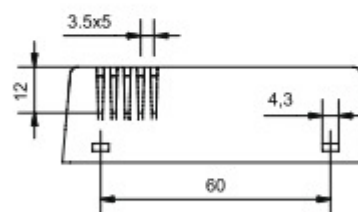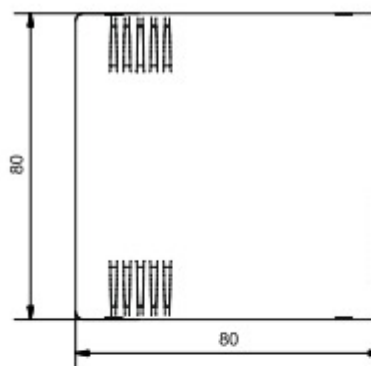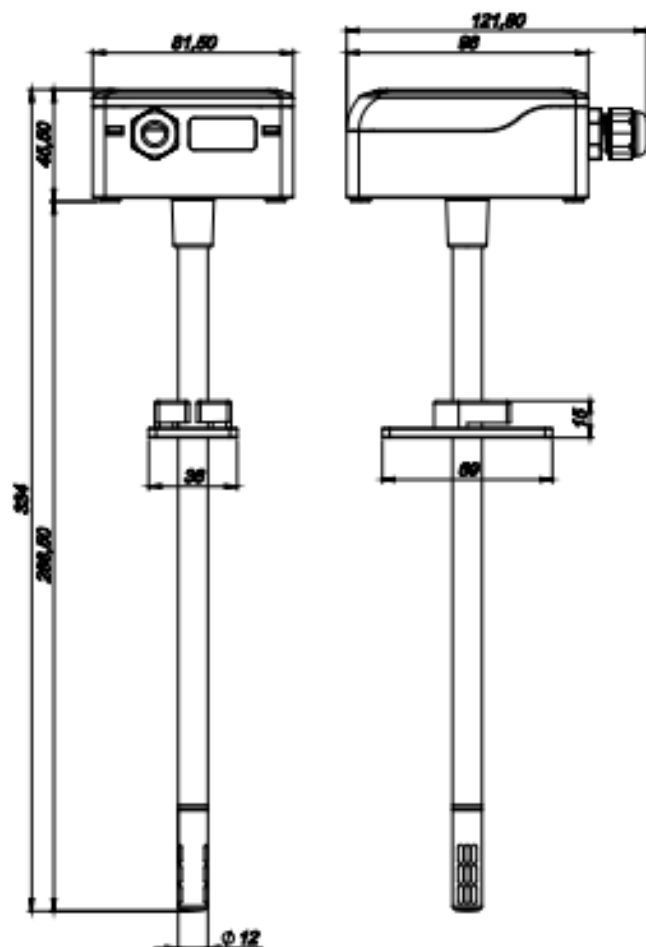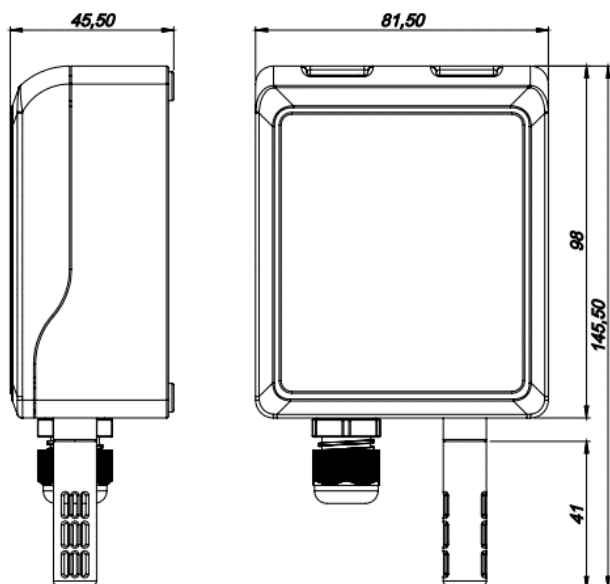Register Table starts from Base 1. Default Settings: Modbus ID:1, 9600, 8bit, None, 1.

Register	R/W	Range	Description
1	R & W	1...254	Modbus Address
2	R & W	0...4	Baudrate, 0: 9.600, 1: 19.200, 2: 38.400, 3: 57.600, 4: 115.200
3	R & W	0...3	Bit_Parity_Stop, 0: 8bit_None_1, 1: 8bit_None_2, 2: 8bit_Even_1, 3: 8bit_Odd_1
4	R		Firmware
5	R	yyww	Production date, yy: year as last two digit, ww: week of the year
6	R		Batch no
7	R		Transmitter ID
8	R	1...1.439	Working time, past minute from starting, resets every 24 hours and every start up
9	R	1...32.767	Working time, workday counter, counts continuous working of 1.440 minutes
10	R	1...32.767	Start-up counter, counts every reset and start
11	R & W		Blank
12	R & W		Blank
13	R & W		Blank
14	R & W		Blank
15	R & W		Blank
16	R & W		Blank
17	R	0...1.000	CO level as ppm
18	R	1...5	Air quality rating, 1: best ... 5: worst
19	R & W		Blank
20	R & W		Blank
21	R & W	0 or 1	Analog output 1 source, 0: measured value, 1: set value from Register 22
22	R & W	0...1.000	manual set value for analog output 1
23	R & W	0 or 1	Analog output 2 source, 0: measured value, 1: set value from Register 24
24	R & W	0...1.000	manual set value for analog output 2
25	R & W		LOW limit for Relay
26	R & W		HIGH limit for Relay
27	R & W	0 or 1	Relay contact position, 0:Open, 1:Close (between LOW-HIGH limit sets)
28	R		Input 1, raw value
29	R		Input 2, raw value
30	R & W		Blank

Relay Manual (version 1)

VCP	intro screen duration 2 seconds
CO ratio 8 PPm	Main screen, measuring value normal operating mode
ENTER MENU >>>>>>>>	press and hold MENU button for entering menu if you skip pressing MENU button before seeing OK, you will be back to main screen
ENTER MENU OK	now you are in MENU
MR Relay EnterSetting	RELAY_MENU, press SET button for entering RELAY_MENU, press MENU button to skip RELAY_MENU and pass to M1_UNIT
Low Limit 10 PPm <>	you can set Low_Limit for RELAY_MENU while arrows (< >) are on screen, press SET button for decreasing or MENU button for increasing the Low_Limit
Low Limit 12 PPm	wait for 3 sec. after last pressing, the arrows (< >) are hidden, press MENU button to pass High_Limit, press SET button for editing Low_Limit
High Limit 22 PPm <>	High_Limit setting is same as Low_Limit setting
Contact Pos. Closed	relay contact action between limits, select with SET button, skip or pass to next screen with MENU button OFF: no relay action, Open: open between low & high limits, closed at out of range, Closed: closed between low & high limits, open at out of range
M1 UNIT ratio - PPm	select the UNIT with SET button, skip or pass to next screen with MENU button
M2 RANGE 0...100 PPm	select the RANGE with SET button, skip or pass to next screen with MENU button
M3 RESPONSE SLOW (60sec)	select the RESPONSE time with SET button, skip or pass to next screen with MENU button
M4 CONTRAST 5	set the CONTRAST between 0 to 10 with SET button, default is 5, skip or pass to next screen with MENU button
M5 BRIGHTNES 5	set the BRIGHTNESS between 0 to 10 with SET button, default is 5, skip or pass to next screen with MENU button
M6 ID Serial 1193	device ID, check the identification datas of the device with SET button, skip and EXIT the menu with MENU button, you will be back to main screen
CO ratio 8 PPm	Main screen, measuring value normal operating mode

Dimensions (mm)