

# **Technical information on the OMC-303 datalogger**

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# 1. Technical information

## 1.1 General

The OMC-303 is the compact universal datalogger in the Obsermet datalogger products line.

## 1.2 Extension of the datalogger

The OMC-303 datalogger can be extended with additional inputs and outputs by the use of i/o modules. This modules connect to the datalogger by means of the extension bus. On the OMC-303 datalogger and on each of the i/o modules are two screw terminals available for each bus connection an for each power connection.

## 1.3 Communication

The OMC-303 datalogger has a serial communications port (RS-232) with RJ-45 connection on front.

## 1.4 Power supply

The power supply voltage for the OMC-303 is 8 to 30 VDC (nominal 12-24 VDC)

**Observe polarity, as wrong polarity may cause damage to the OMC-303 datalogger**

**Always turn the power supply OFF while connecting the OMC-303 datalogger**

## 1.5 Environmental conditions.

The OMC-303 datalogger is IP-40. The datalogger must be mounted in a dust-free and dry environment. In practice: The OMC-303 should be mounted in a protective housing.

## 1.6 Mechanical

The OMC-303 datalogger snaps on a mounting rail according to EN 50022 (Omega rail)

## 1.7 Terminals

The screw terminals are pluggable.

**Take care to place the pluggable terminal blocks in the right position when placing them back to the OMC-303 datalogger**

*Table 1 Screw terminals*

No.	Name	Function	Remarks
1	Dgnd	Digital input #2 OR digital output #1	
2	Din2/ Dout1		in or out
3	RX-	RS422 / RS485 I/O	in or out
4	RX+		in or out
5	Dgnd	Digital input #1	
6	Din 1		in
7	Agnd	Analogue input #1	
8	Ain 1		in
9	Ex1		out
10	Agnd	Analogue input #2	
11	Ain 2		in
12	Ex2		out
13	A	Extension bus	i/o
14	B		i/o

No.	Name	Function	Remarks
15	Gnd		
16	A	Extension bus	i/o
17	B		i/o
18	Gnd		
19	ExtOn	Power supply	out
20	Gnd		
21	+Vs		in
22	ExtOn	Power supply	out
23	Gnd		
24	+Vs		in

### Excitation

The load of both excitation outputs together should not exceed 100 mA. The maximum excitation current for each of the analogue inputs is 100 mA.

## 1.8 Utility port (RS-232)

### 1.8.1 General

The utility port is accessible by means of an RJ-45 connector on top of the OMC-303 housing. The signal levels comply to TIA-IEA-232.

### 1.8.2 Pin-out

*Tabel 2. RS-232 connector pin-out (RJ-45)*

pin no.	name	input/output	function
1	CD	input	Modem Carrier Detect
2	RD	input	Received Data
3	TD	output	Transmitted Data
4	DTR	output	Data Terminal Ready
5	SG	ground	System Ground
6	RTS	output	Request To Send
7	CTS	input	Clear To Send
8	RI	input	Ring Indicator

Pin 1 is the pin on the lower side of the housing, closest to the yellow bar with the text "OMC 303". Note that there is no DSR input on the OMC-303.

Pin descriptions:

Pin 1 (CD input)

Pin 2 (RD input): data from modem or computer to the OMC-303. Data can only be accepted when ??? is active??/

Pin 3 (TD output): data from OMC-303 to modem or computer. Data will only be send when the ?? input is active. This output is in hi-Z?? when the OMC-303 is in the sleep mode.

Pin 4 (DTR output): This output is set active as soon as ????? This output is in hi-Z?? when the OMC-303 is in the sleep mode

Pin 5 (SG) : common for all other signals. Note that the RS-232 communications port is not isolated. SG is internally connected to the power supply GND.

Pin 6 (RTS output): This output is in hi-Z?? when the OMC-303 is in the sleep mode

Pin 7: (CTS input)

Pin 8: (RI input): When the RI goes active, and the OMC-303 is in sleep mode, the OMC-303 will go from sleep mode to active mode, provided ... jumper settings.

The OMC-303 datalogger will remain active when the RI input is active. Verder ??? ingangsimpedantie is 10k.

RS-232 transmitter/receiver interface IC is Dallas/Maxim MAX208E, except for RI

*Table 3. RS-232 connections from OMC-303 to PC (Wiring OMC-304)*

RJ-45 pin no.	RJ-45 name	direction	DB9F name	DB9F pin no.
1 & 8	CD & RI	←	DTR	4
2	RD	←	TD	3
3	TD	→	RD	2
4	DTR	→	DSR	6
5	SG	-	SG	5
6	RTS	→	CTS	8
7	CTS	←	RTS	7
		no connection		1
		no connection		9

### 1.8.3 Connection to PC

The connection cable that is required for communication to a PC is the Obsermet type OMC-304 . This cable is wired according to the following table:

## 2. Jumper settings

### 2.1 General

The OMC-303 datalogger contains two printed circuit boards. Take care: Both boards have jumpers, numbered from J1 and up.

### 2.2 Opening the housing

Take care the power supply voltage is disconnected while opening the housing.

It is not necessary to remove the screw terminal blocks.

Press the four notches using a flat-blade screwdriver. The notches are located under the screw terminals. Shift the upper part of the housing up, and remove it from the lower part. The two printed circuit boards are connected to the upper part.

**Do only open the OMC-303 datalogger in a clean environment. Preferably use an antistatic mat as base. Never use a metal underground! Because of the risk of electrostatic discharges to the components on the printed circuit boards, remove all plastic materials in the area, except for special antistatic plastics. Always hold the printed circuit boards at the housing or at the side of the board. Be careful while working on the opened datalogger, because parts of the OMC-303 datalogger are still operational as they are powered by the internal Lithium battery.**

To get access to the jumpers, the printed circuit boards must be separated. The boards are connected to each other by a 34-pole connector (X5) and a 10-pole connector (J1).

### 2.3 Jumper settings on the processor board 44530-01

#### 2.3.1 Marking

In the component layout drawing, pin 1 of the jumper fields is marked by a chamfered corner. On the printed circuit board, pin 1 of each jumper field is marked by the use of a square solder pad, while the other pins have circular solder pads.

*Table 4 Jumper settings on processor board*

Jumper No.	Description	Setting
J1	Internal connector	n.a.
J2	Internal measuring point for Lithium battery	1-2
J3	Continuously on	1-2 = always on none = sleep/active
J4	Always in position 2-3	2-3
J5	not in use (OMC-303 will start in boot-mode when jumpers are placed on 3-4 and 5-6)	none
J6	test terminal for realtime clock	n.a.

### 2.4 Jumper settings on the I/O board 44532-01

*Table 5 Jumper settings on i/o board*

Jumper No.	Description	Setting
J1	Internal connector	n.a.
J2	Configuration for 2nd digital input or digital output	1-2 = digital output 2-3 = 2nd digital input
J3	RS-232 connector (RJ-45)	n.a.
J4	Excitation voltage for analogue input #1	1-2 = 2.5 V

Jumper No.	Description	Setting
		2-3 = +Vs
J5	Input range analogue input #1	see Table 6
J6	Input range analogue input #2	see Table 6
J7	Excitation voltage for analogue input #1	1-2 = 2.5 V 2-3 = +Vs
J8	Wake-up on digital input #1	1-2 = wake up none = don't wake-up
J9	Wake-up on digital input #2	1-2 = wake up none = don't wake-up
J10	Excitation on digital input #1	1-2 = always on 2-3 = switched
J11	Excitation on digital input #1\2	1-2 = always on 2-3 = switched

Table 6 Analog input range setting

Input range	Input impedance	PGA programming	Jumper J5 / J6
-40..+40mA	124 Ohm	0	1-2 and 3-4
-20..+20mA	124 Ohm	1	1-2 and 3-4
-60..+60V	109 kOhm	0	3-5 and 4-6
-30..+30V	109 kOhm	1	3-5 and 4-6
-12..+12V	109 kOhm	2	3-5 and 4-6
-5..+5V	>10 MOhm	0	2-4 (and 5-6)
-2.5..+2.5V	>10 MOhm	1	2-4 (and 5-6)
-1.00..+1.00V	>10 MOhm	2	2-4 (and 5-6)
-100mV..+100mV	>10 MOhm	3	2-4 (and 5-6)
-55mV..+55mV	>10 MOhm	4	2-4 (and 5-6)
-25mV..+25mV	>10 MOhm	5	2-4 (and 5-6)

A potentiometer input should be configured as analogue input with 2.5V excitation, and  $-2.5 \dots +2.5V$  input range

The analogue inputs should be re-calibrated after changing the jumper setting of J5/J6!

The PGA programming can be set with the command CHTY

## 2.5 Closing the housing

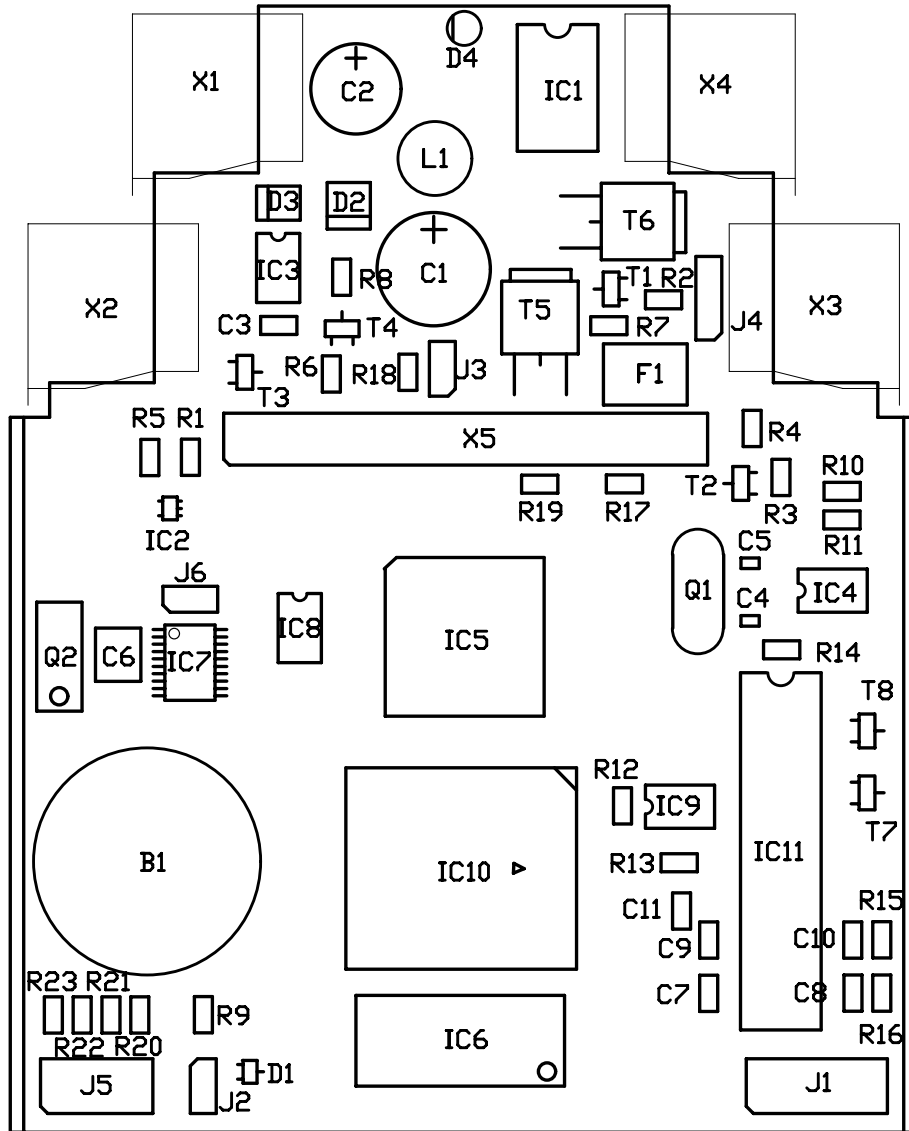
First the printed circuit boards must be re-united. Take care that both the 34-pole connector and the 10-pole connector are exactly opposite before pressing the boards together.

**Take care to prevent bending of the connector pins**

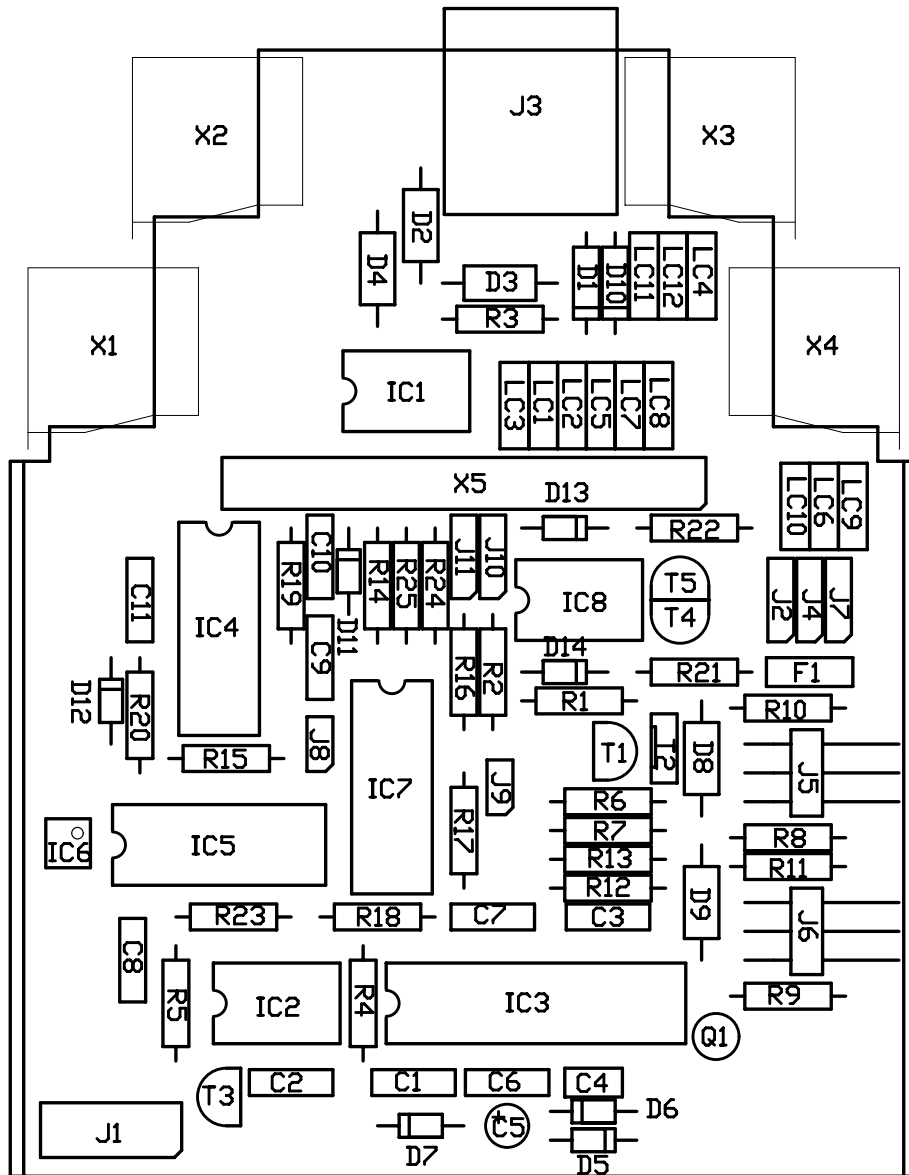
Slide the upper housing into the lower part. The printed circuit boards fit in the sliding rails of the housing. While sliding no pressure is required.

**Take care the blue Obsermet logo on the top is on the same side as the metal clip on the bottom of the housing. Mounting in the wrong position can damage the OMC-303 datalogger.**

Finally apply pressure on the four top corners of the housing to click the notches into the locked position



44530 Top Overlay



44532 Top Overlay