OBSERVATOR
instruments

Users' Hardware Manual

OMC-048

Scriptable Data logger

Version: 1.5
Status: Released
Date: 11 April 2024
Author: Observator

Document history

The Observator range is in continuous development and so specifications may be subject to change without prior notice. When in doubt about the accuracy of this document, contact the Observator Group.

Revision history

Version	Date	Amendments	Company, position
	2020-7-1	Initial document creation	Observator, TDC
	2020-8-4	Pre- release	Observator, TDC
1.0	2020-11-16	First Release	Observator, TDC
1.1	2021-12		Observator, TDC
1.2	2022-4	Revision to Hardware V1.03 only for review	Observator
1.3	2022-6	Release	Observator
1.4	2022-06-20	Release, minor textual corrections	Observator
1.5	2024-4	Update EU declaration of Conformity	Observator

Preface

This manual is intended for the user of the OMC-048 Scriptable Data logger.
You will find all information related to the hardware v1.03 (released in June 2022).

Detailed and up to date information concerning drivers and firmware is available in the OMC-048 Configuration Manual, which is available for download on the Observator.com website.
It does not include explanation of the Python scripting language. It assumes Observator Instruments or a third party supplies the Python application for your logger.
If you are interested in scripting the logger yourself, we kindly refer to the OMC-048 Webmanual, which is available on our Observator.com website.

For correct functioning of this system the OMC-048 Data logger and connected sensors must be installed and commissioned according installation instructions.

Note the correct power supply voltage:

This a 12-24VDC system
Use external fuse!

After end of life dispose this product according local regulations or return to manufacturer.

What's in the box

1		OMC-048 Scriptable Data Logger
2		Micro SD card 32GB (installed in the logger
3		Backup battery 3V coin cell (installed in logger) Type: BR2032
4		USB cable C-type

Table of contents

1 Introduction

This versatile data logger is the successor of the successful OMC-045-3 data logger. It has a large number of inputs and outputs, including SDI-12, ModBus and analog. The OMC-048 uses the latest technology and includes a powerful processor as well as a state-of-the-art LTE ‘world wide’ modem for connecting to the cellular network.
Thanks to the advanced processor and the availability of a large collection of input and output drivers, it is possible to write your own programs (Python scripts) for maximum flexibility. For common applications, scripts will be available for you to download, so most users will be able to use the logger without any programming.

1.1 Hardware revision 1.03

This manual assumes you have the updated hardware 1.03.
Main differences with previous version:

1. 1 switchable 12VDC power output has been converted to 5VDC (Available outputs are now: 3 x 12VDC and 1 x 5VDC).
2. The reset button is updated to a software controlled reset, button on previous version resulted in a hard reset.
3. Internal ADC for (logger) power supply voltage monitoring.
4. Vref output changed from 2.5V to 5V.

2 First use

2.1 Requirements

For setting up your OMC-048 Scriptable Data Logger you will require the following:

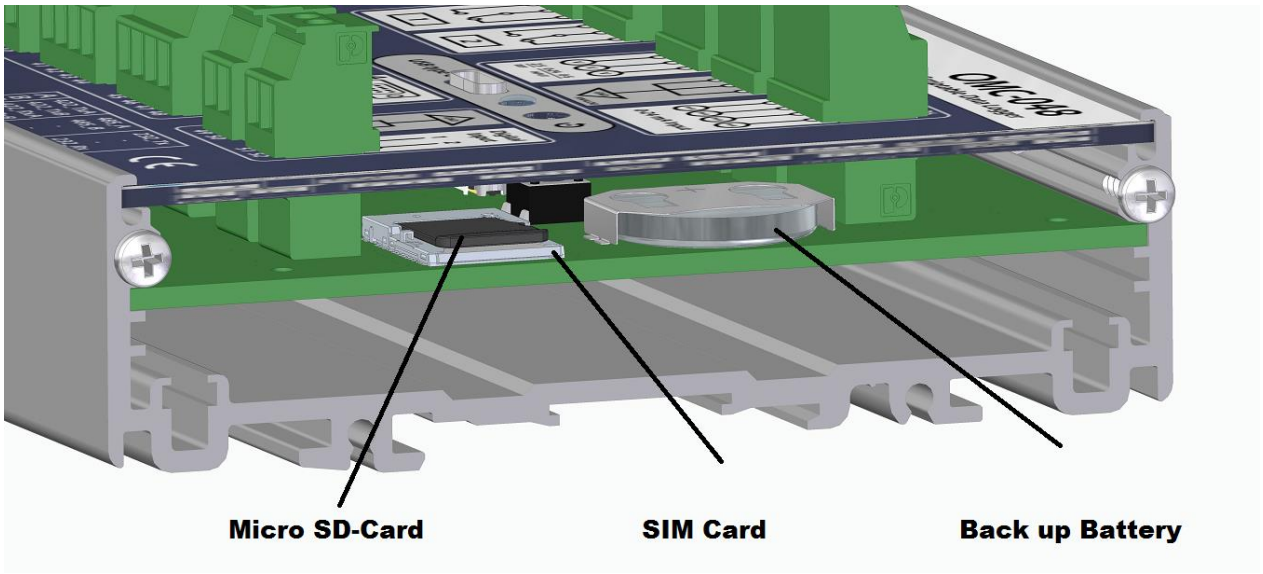
1. USB –C cable (included)
2. PC / laptop
3. Terminal program
4. External power supply *
5. Cellular antenna (suitable for the band you will use)
6. Sensors (optional)
7. Phillips screwdriver
8. 2mm flat screwdriver

** Configuration & firmware updates are possible with USB power, external power is required for starting the application!*

2.2 Installation SIM card & activation backup battery

When you receive your OMC-048 Scriptable Data Logger, it might or might not already have been configured by Observator Instruments. For the following steps we assume it has not.

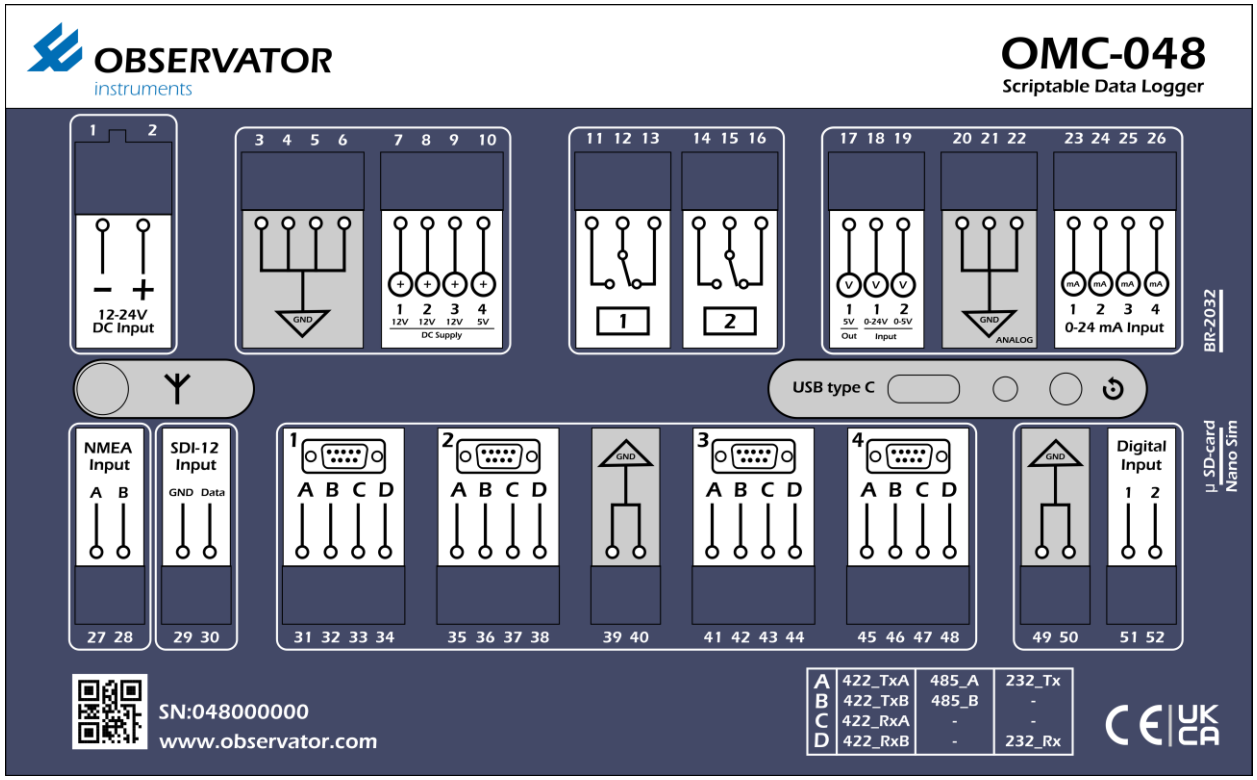
1. Use a suitable Philips screwdriver to remove the 2 screws of the right cover.
2. Remove the right cover
3. Remove plastic strip from coin cell (if not already removed)

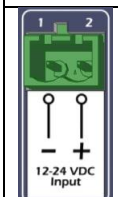
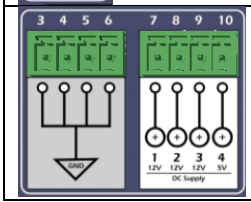


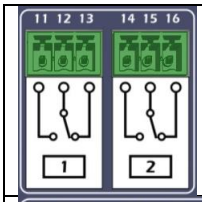
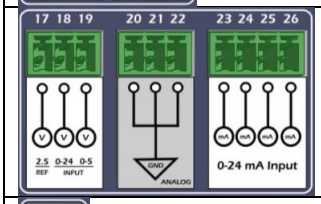
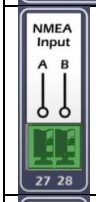
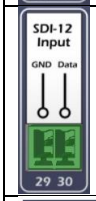
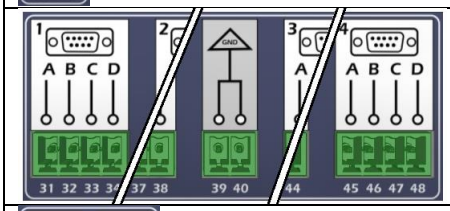
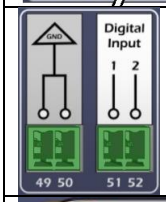
4. Place Nano SIM card (without pin code, check and disable with a phone).
5. Reinstall cover
6. Tighten the 2 screws.

3 I/O Connections

3.1 Pinning



Connector	Description	Remarks
	Power supply input 12- 24 VDC	Note: Power input is protected but not internally fused. Use an external fuse
	Switchable power supply 3 x12VDC, 1x 5VDC Max 200mA nominal per output Peak power 500mA (1 port!)	For sensor use.

	Latching Relay outputs Max 1A @ 30V	Note: relays retain their last position after power down.
	Analogue inputs 0-24VDC 0-5VDC 2.5V reference voltage output 0-24mA input (4 pce)	
	NMEA input Optical isolated	Wind sensors Meteolink NMEA type sensors.
	SDI-12 input	
	Serial inputs (4 ports) RS-232 RS-422 RS-485	Each port can be selected for either type.
	Digital input Contact input (2 pcs)	
	Antenna connection for GPRS/UMTS/LTE (2.5G/3G/4G).	
	USB (type C) connector Status LED Reset Button	

3.2 Ground connections

- The negative input power connection (terminal 1) is filtered and therefore not equal to ground!
- The analogue ground is decoupled so not equal to ground!
- The SDI-12 ground is dedicated to the SDI 12 input.

Basic ground connection rule:

Use the ground (GND) and signal connections within same section (= white lined box) and you will be fine!

3.3 USB connection

The logger can be powered via the USB connection for configuration & firmware updates.
However, your USB port might not supply enough power when sensors are connected and / or the modem is active.

Therefore the logger application will not start when no external power is present!

External power (12-24VDC) is required for running the logger application!

The OMC-048 Scriptable Data Logger will create 2 connections with your PC:

1. Mass Storage device
2. USB Serial device (Com port)

The OMC-048 will check for a USB connection every 10s.

Appendix A: Specifications:

Power

- Supply voltage nominal 12 Vdc to 24 Vdc (min 9Vdc, max 32Vdc).
- Power consumption in sleep mode: <1 mA at 12 V.
- Power consumption in active mode: <30 mA at 12 V (excluding modem and power outputs).
- Peak power consumption (including modem): 250 mA at 12 V (excluding power outputs).
- Max power output per switched power output: 0.5 A peak (one output), 200 mA continuously (4 outputs each).

Note: Switched power output is maximized to 12V for supply voltages above 12V.

Environmental

- Temperature: -25 ... +70 °C.
- Humidity: 10 - 90% RH, non-condensing.
- Enclosure: IP40.

Dimensions

- Width x depth x height: 177 x 105,5 x 50 mm.
- Weight: 410 g.
- Package dimensions: t.b.d.
- Package weight: t.b.d.

SIM & SD cards

- Nano SIM.
- Micro SD (Max 32GB)

Appendix B: Declaration of Conformity

OBSERVATOR
instruments

Observator instruments B.V.

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Internet: www.observator.com
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EU DECLARATION OF CONFORMITY

(1) Apparatus model : **OMC-048**

(2) Manufacturer :
Observator instruments B.V.
Rietdekkerstraat 6
2984 BM Ridderkerk
The Netherlands

(3) This declaration of conformity is issued under the sole responsibility of the manufacturer.

(4) Object of the declaration :

OMC-048 Script Data Logger

(5) The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

(6) References to the relevant harmonised standards used:

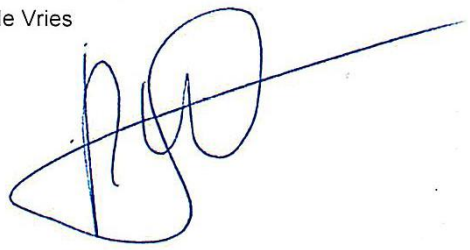
EN IEC 60945:2002 +C1 EN IEC 61326-1:2013
EN IEC 63000:2018

(7) -

(8) Signed for and on behalf of:

Ridderkerk, 23 November 2023,
Observator Instruments

Dr. Ir. R. de Vries
CEO



Since 1924 Observator has evolved to be a trend-setting developer and supplier in a wide variety of industries. Originating from the Netherlands, Observator has grown into an internationally oriented company with a worldwide distribution network and offices in Australia, Germany, the Netherlands, Singapore and the United Kingdom.