PRODUCT MANUAL

MICRO-HYBRID

Manual
Communication Adapter V2

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1 Legal Information

1.1 Intellectual Property and Usage Restrictions

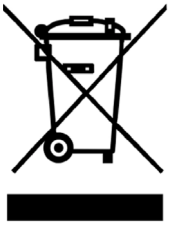
All rights reserved. The information in this document reflects our current knowledge and the results of practical experience and testing. Any previous specifications are superseded. All specifications, including technical data, are subject to change without notice. It is the customer's responsibility to verify that the product is suitable for the intended application. We accept no liability for indirect or consequential damages, including damages resulting from the use of, or inability to use, the product. Any liability is limited to the value of the product. The material and information contained in this technical documentation are proprietary. No part of this document - including schematics, figures, or data - may be reproduced, distributed, or publicly displayed by any means, whether electronic (e.g., digital storage) or mechanical (e.g., scanning), without prior written consent. The contents of this document must not be altered, translated, modified, sold, or disclosed to any third party without the prior written consent of the intellectual property owner.

1.2 Legal Effect and Software Licensing

This technical documentation does not create any legally binding obligations between the manufacturer and its customers or end users. Any binding legal commitments are defined solely in the executed contract or in the applicable General Terms and Conditions of Sale/Service.

The Micro-Hybrid system may include software developed by the manufacturer or by third parties. The use of such software is governed by the specific license terms and conditions set out in the main sales contract or, where no separate license is provided, by the General Software License Conditions of the respective software provider.

1.3 Symbols Used

Symbol	Name	Description
	**Caution**	Ignoring these instructions may damage the device or compromise data integrity. Follow all handling and operating guidelines to protect the product.
	**WEEE Compliance**	Information regarding how to dispose of this product.

1.4 Safety Information and Warnings

The equipment must not be used in explosive atmospheres, for monitoring medical breathing gases, or in any safety-critical application where device failure could cause injury or death. Only accessories supplied with the unit or explicitly approved by the manufacturer may be used. Third-party accessories must fully comply with the manufacturer's specifications.

The safety symbols, identification markings, and rating information printed on the product label, housing, or associated product marking are part of this manual and must be observed at all times. Before installation and commissioning, the operator shall ensure that all markings on the device remain legible and undamaged. If markings become unreadable or are missing, the device must not be put into operation until the issue has been resolved.

The type label or product marking may include information such as product identification, electrical ratings, interface designation, serial or batch identification, and applicable warning symbols. These markings must be considered together with the instructions in this manual.

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If there is reason to believe that safe operation has been impaired, the device must be switched off or disconnected from the supply by the surrounding system, removed from service, and secured against unintentional operation until it has been inspected by qualified personnel.

Prevent condensation or liquid ingress into the electronics box at all times. The device is intended for indoor use only and may be operated at altitudes up to 2000 m.

Symbol	Name	Description
	**Electrical Hazard**	Do not attempt to open the unit. All internal repairs must be carried out by Micro-Hybrid or authorized service partners. Operate the Communication Adapter strictly within its rated voltage limits. Additionally, refer to the respective manuals for the sensors used with this device. Protect all cables from damage: do not kink, over-bend, or strain cables, and do not pinch them with heavy or sharp-edged objects. Before cleaning the housing, switch off the unit and disconnect it from the power supply. Use a slightly damp, well-wrung cloth. Do not use highly flammable or aggressive solvents.
	**Caution**	Before returning this product for calibration or repair, the user must ensure that the unit has not been exposed to dangerous contamination and can be handled safely without special protective measures. Unless explicitly specified otherwise, the device is not intended to provide protection against hazardous atmospheres, corrosive media, or chemically aggressive process conditions. Where such conditions may occur in the end application, the system integrator must verify compatibility of all wetted and exposed materials and must ensure that failure of the device cannot create a hazardous situation. The unit must not be modified or used in any manner not explicitly described in this documentation. Improper modification or unauthorized use may result in safety hazards, equipment damage, or reduced service life. The Communication Adapter does not contain substances classified as hazardous and does not generate or release hazardous, corrosive, or flammable substances during normal use. If installed in systems handling hazardous gases or incubator media, the operator is responsible for appropriate safety measures and decontamination. The Communication Adapter contains no user-replaceable fuses or batteries.

1.5 Version History

Version No.	Remark	Date
1.0	Initial version	22.07.2026

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2 Introduction

2.1 Purpose of This Manual

This manual gives guidance on how to use Micro-Hybrid's Communication Adapter as an accessory to establish digital communication with a selection of sensors from the Micro-Hybrid portfolio. It is intended for qualified personnel in laboratory and industrial environments responsible for installation, commissioning, and service of measurement equipment. This document does not contain information about the use and functions of each sensor type with which the Communication Adapter is compatible. For more details on the sensors' features, please refer to their individual product manuals.

2.2 Limitations of Use

The Micro-Hybrid Communication Adapter is intended to serve as a tool to enable users to easily test and evaluate Micro-Hybrid's sensors and their communication, configuration features, and their performance under laboratory conditions. It is not intended to serve as a measurement or data acquisition tool to replace professional tools.

2.3 Scope of Delivery

The Micro-Hybrid Communication Adapter (Part No. 7250.01-B.xx) consists of:

a) USB-A to USB-C cable
b) Electronics box
c) 5-pin connector
d) 3-pin connector
e) 4-pin connector



3 Getting Started

3.1 Interface Selection

The Micro-Hybrid Communication Adapter is designed as a tool to communicate with a variety of sensors. It therefore supports various interface types. Turn the electronics box upside down to check the position of the interface selection switch, which is positioned inside a slot in the bottom panel of the box.

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The switch provides four selectable positions (left to right: UART, RS485, RS232, CBUS). Depending on the device you intend to connect to the adapter, select the respective interface.

3.2 Connection of Sensor Cables

The Micro-Hybrid Communication Adapter comes with a 3-pin, 4-pin, and 5-pin connector plugged into its communication ports on the left and right sides of the electronics box. These connector clamps are designed to easily connect cables with open wires to the individual ports of the Communication Adapter. If you are already equipped with a cable with a matching connector (WR-TBL Series) and pin assignment, just remove the empty connector clamps and use the connectors attached to your equipment.

Prior to configuring the cable assemblies, always make sure the Communication Adapter is disconnected from its USB port.

The following sections describe the pin assignments of different sensor types. If necessary, prepare your cable assembly according to the sensor type you are planning to connect.

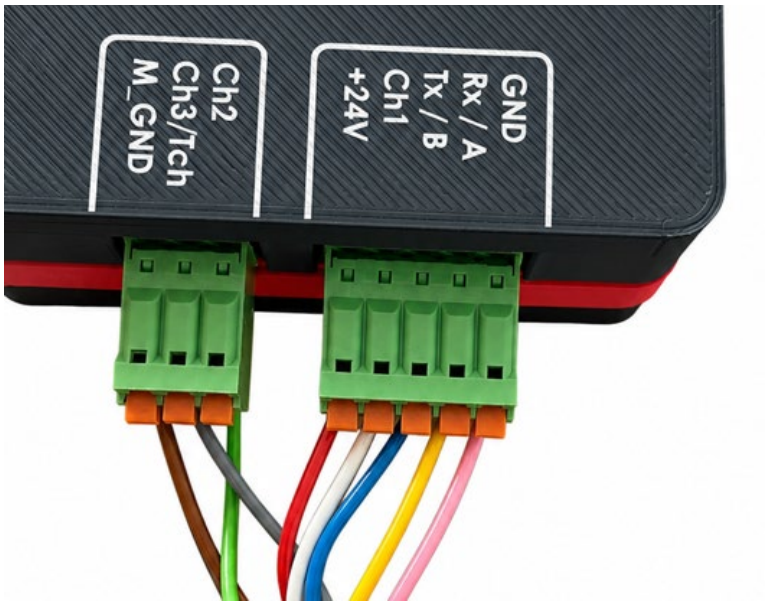
3.2.1 Micro-Hybrid Inertial Sensors with RS485 Interface

Micro-Hybrid inertial sensors that feature an RS485 interface and an 8-pin M12 connector can be connected with any standard A-coded 8-pin M12 sensor-actuator cable. The pin and wire assembly should be as follows:

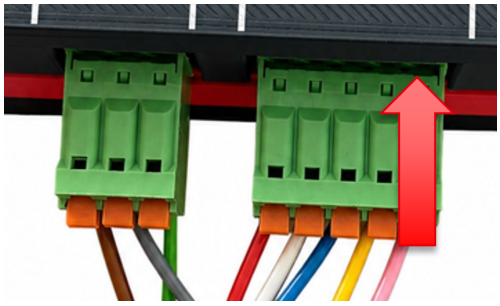
Pin No.	Wire color	Assignment	WR-TBL connector position (left to right)
1	White	Analog Channel 1	5-pin connector, pin 2
2	Brown	Signal GND	3-pin connector, pin 1
3	Green	Analog Channel 2	3-pin connector, pin 3
4	Yellow	RS485+/A	5-pin connector, pin 4
5	Gray	Analog Channel 3 / Teach-in[1]	3-pin connector, pin 2
6	Pink	Supply GND	5-pin connector, pin 5
7	Blue	RS485-/B	5-pin connector, pin 3
8	Red	24 V Supply Voltage	5-pin connector, pin 1

[1] Only operational if the sensor features an analog teach-in port.

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To connect the cable wires properly to the connector clamps, strip approximately 3 to 4 mm of insulation from each wire. Each wire clamp at the connector is individually spring-loaded. Press the orange clip inwards (see figure below) to open the clamp, then feed the stripped end of the wire into the matching hole and release the orange clip. Check if the cable is properly clamped by gently pulling on the wire.



3.2.2 Micro-Hybrid Gas Sensors with RS232 Interface

Micro-Hybrid gas sensors that feature an RS232 interface and a 5-pin M9 connector can be connected with any standard A-coded 5-pin M9 sensor-actuator cable. Alternatively, a standard cable with a 5-pin M9 connector and an appropriate connector clamp for the communication adapter is available for purchase from Micro-Hybrid.

The pin and wire assembly should be as follows:

Pin No.	Wire color	Assignment	WR-TBL connector position (left to right)
1	White	24V	5-pin connector, pin 1
2	Brown	RX	5-pin connector, pin 3
3	Black	TX	5-pin connector, pin 4
4	Blue	GND	5-pin connector, pin 5
5	Grey	Current out	5-pin connector, pin 2

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3.2.3 Micro-Hybrid Gas Sensors with RS485 Interface

Micro-Hybrid inertial sensors that feature an RS485 interface and a 5-pin M12 connector can be connected with any standard A-coded 5-pin M12 sensor-actuator cable. Alternatively, a standard cable with a 5-pin M12 connector and an appropriate connector clamp for the communication adapter is available for purchase from Micro-Hybrid.

The pin and wire assembly should be as follows:

Pin No.	Wire color	Assignment	WR-TBL connector position (left to right)
1	Brown	RS485+/A	5-pin connector, pin 3
2	White	RS485-/B	5-pin connector, pin 2
3	Blue	GND	5-pin connector, pin 4
4	Black	VCC	5-pin connector, pin 5
5	Gray	Current out	5-pin connector, pin 1

3.3 Connection to PC

After properly preparing the cables and plugging all necessary connectors[2], make sure the interface selection switch is in the correct position for your intended sensor and connect the Communication Adapter's USB port to your PC. The power supply LED "+24 V" on top should indicate proper connection with a steady green light. The connected sensor is now powered on and the Communication Adapter is ready for operation.



Further operational details depend on the individual sensor. Please refer to their respective manuals to proceed.

[2] Connector (d) is mandatory. Connectors (c) and (e) are optional, depending on the sensor and measurement task.

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