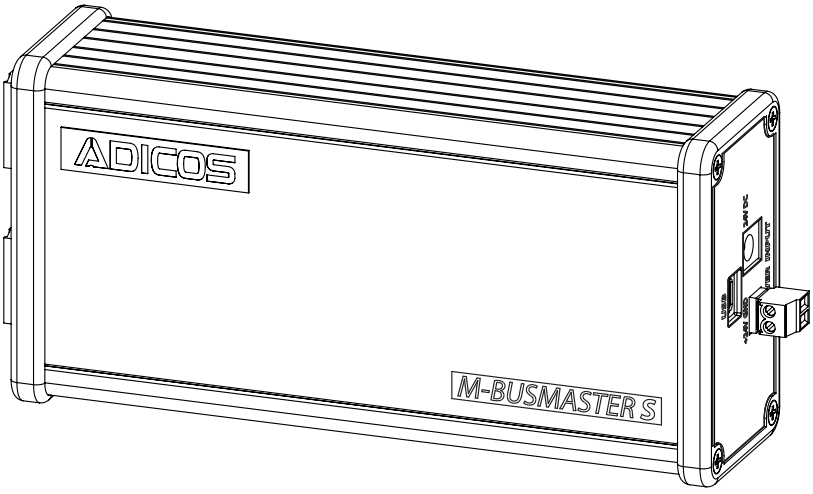


EN CE IP20

Operating Manual

M-BUSMASTER S

GTE Industrieelektronik GmbH | Helmholtzstr. 21, 38–40 41747 Viersen | Germany | +49 2162 3703-0 | info@gte.de

ADICOS M-BUSMASTER S – Operating manual
Article number: 420-2410-002-EN-13
Release date: 05.03.2024

– Translation –

Manufacturer:
GTE Industrieelektronik GmbH
Helmholtzstr. 21, 38-40
41747 Viersen
GERMANY

Support hotline: +49 2162 3703-0
E-Mail: support.adicos@gte.de

Abstract

The Advanced Discovery System (ADICOS) is used for early detection of fires in industrial environments. It is comprised of various separate detector units. With aid of suitable arrangement and parameterization the system meets a specified detection goal, without being susceptible to interference.

The detector units are connected to the ADICOS System Software with aid of the M-Bus. It allows the parameterization of each individual detector and the storage of all sensor data for statistical evaluation.

The ADICOS M-BUSMASTER S is a level converter and serves as the interface between the ADICOS Service Software and the M-Bus system. Up to 20 ADICOS detectors can be connected to the M-Bus output.
Depending on the model, the device can have its own USB, RS-232 or Ethernet interfaces.

Table of Contents

1 About this Manual

1.1 Objective

This manual describes how to properly attach, wire, start up and operate the ADICOS M-BUSMASTER S. Once the device has been successfully started up, this document serves as a reference in the event of malfunctions.
It is intended to be used only by properly qualified personnel (–› chap. 2, For Your Safety).

1.2 Explanation of Symbols

This manual follows a certain structure to make it easy to work with and understand. The following designations are used throughout.

Operational objectives

Operational objectives specify the result to be achieved by following the subsequent instructions. Operational objectives are shown in **bold print**.

Instructions

Instructions are the steps to be taken in order to achieve the previously stated operational objective.
Instructions appear like this

► Indicates a single instruction

1 First of a series of instructions
2 Second of a series of instructions
3 etc.

Intermediate states

When it is possible to describe intermediate states or events resulting from the instruction steps (e.g. screens, internal function steps, etc.), they are shown like this.

▷ Intermediate state

Warnings

The following types of notes are used through this manual.

DANGER!
This combination of symbol and signal word indicates an immediately dangerous situation which could lead to death or severe injuries if it is not avoided.

WARNING!
This combination of symbol and signal word indicates a possibly dangerous situation which could lead to death or severe injuries if it is not avoided.

CAUTION!
This combination of symbol and signal word indicates a possibly dangerous situation which could lead to minor injuries if it is not avoided.

NOTICE!
This combination of symbol and signal word indicates a possibly dangerous situation which could lead to property damage if it is not avoided.

Tips and recommendations
This type of note provides information that is directly relevant for the further operation of the device.

1.3 Abbreviations

The following abbreviations are used through this manual.

Abbr.	Meaning
ADICOS	Advanced Discovery System
AAB	ADICOS branching and connection box
M-BM	ADICOS M-BUSMASTER
NT	ADICOS power supply unit NT V40-A3
BMA	ADICOS fire detection system

1.4 Storing this Manual

Store this manual near the equipment, in a place where it can easily be accessed when needed for reference.

2 Safety Instructions

When properly installed, started up, operated and serviced, the ADICOS M-BUSMASTER S ensures operational safety at your facility. But it is imperative that the manual, including all safety notes, be read, understood and followed completely.

WARNING!
Personal injury and property damage!
Incorrect installation and operating errors can cause death, serious injury and damage to industrial equipment.
- **Read the entire manual and follow the instructions!**

2.1 Intended Use

The ADICOS M-BUSMASTER S is a communication interface used to operate ADICOS detectors that detect fire in industrial environments. It also serves as the interface to a service-PC with the ADICOS service software.

Intended use includes following the instructions in this manual and complying with all relevant local regulations.

2.2 Standards and Regulations

The safety and accident prevention regulations relevant to the specific application must be complied with when installing, starting up, servicing and inspecting the M-BUSMASTER S.

The following standards and directives in their current version are particularly important when working with fire detection systems:

Regulation	Description
VDE 0100	Erection of power installations with rated voltages below 1000 V
VDE 0800	Telecommunications **–** general concepts; requirements and tests for the safety of facilities and apparatus
VDE 0833	Alarm systems for fire
VDE 0845	Protection of telecommunication systems against lightning, electrostatic discharges and overvoltages from electric power installations - provisions against overvoltages
VdS 2095	Guidelines for automatic fire detection and fire alarm systems **–** planning and installation
DIN 14675	Fire detection and fire alarm systems **–** setup and operation

2.3 Personnel Qualification

Any work on ADICOS systems may only be performed by qualified personnel. Persons, who can perform work on electrical systems and recognize possible dangers based on their professional education, knowledge, and experience as well as knowledge of the applicable provisions, are considered qualified personnel.

WARNING!
Personal injury and property damage!
Improperly performed work on and with the device can lead to malfunctions.
- **Installation, startup, parameterization and maintenance may be performed only by authorized and properly trained personnel.**

2.4 Modifications

WARNING!
Property damage or detector failure by any form of unauthorized modification!
Any form of unauthorized modification or extension can lead to a failure of the detector system. The warranty claim expires.
- **Never make unauthorized modifications on your own authority.**

2.5 Accessories and Spare Parts

WARNING!
Property damage due to short circuit or failure of the detector system
The use of parts other than the manufacturer's original spare parts and original accessories may result in property damage due to short circuits.
- **Only use original spare parts and original accessories!**
- **Original spare parts and accessories may only be installed by trained specialist personnel.**
- **Qualified personnel are persons as described in Chap. 2.3.**

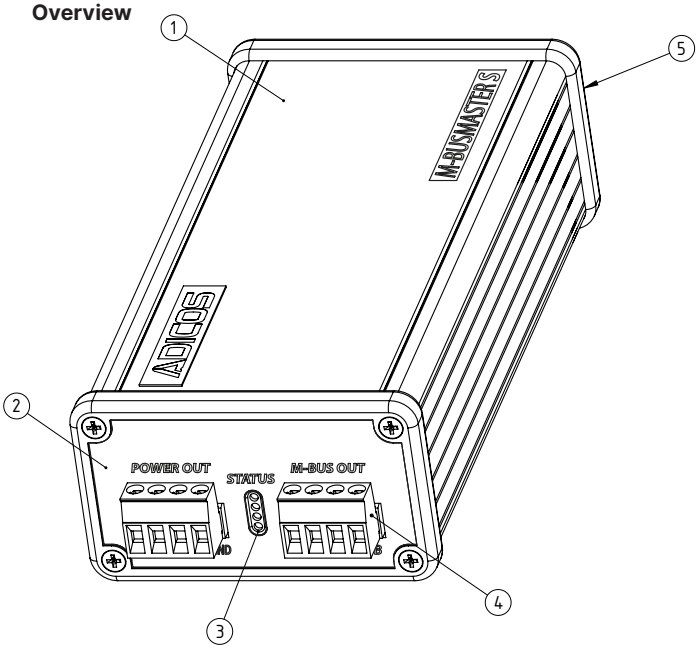
3 Scope of Delivery

The following components are included in delivery of the ADICOS M-BUSMASTER S:

Quantity	Description
1	ADICOS M-BUSMASTER S
1	Plug-in power supply DC 24 V
3	Plug-in terminals
4	Self-adhesive enclosure feet
1	USB connection cable, 1.8 m (only with the model “USB”)
1	RS-232 connection cable, 2 m (only with the model “RS-232”)
1	Top hat rail bracket
1	Flash drive containing M-BUSMASTER S driver software

4 Design

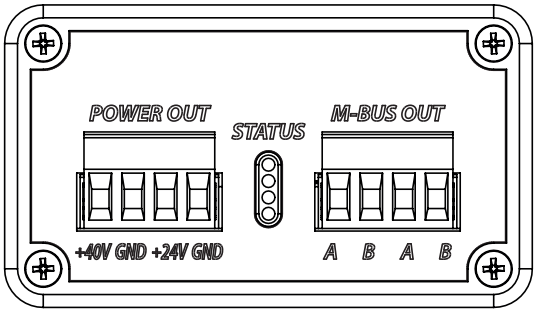
4.1 Overview



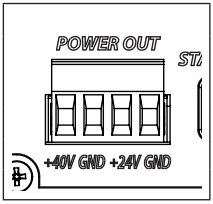
No.	Description
①	Enclosure
②	End panel, field supply side
③	Status LEDs
④	Plug-in terminals for ADICOS M-Bus and power supply
⑤	End panel, interface side (back)
⑥	Screw holes for mounting a top hat rail bracket (on the underside, not visible, see chapter “5.1 Top Hat Rail Mounting”)

4.2 Connections

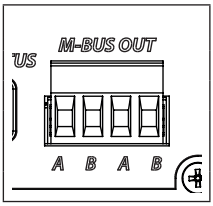
4.2.1 Field Supply Side



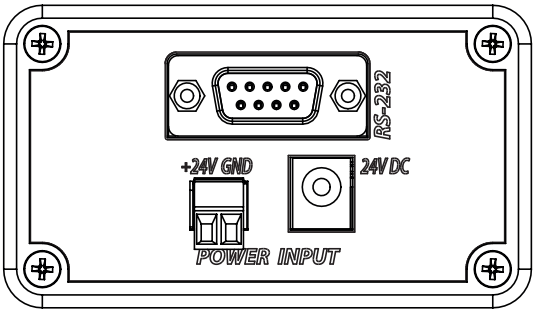
Terminal "Power out" (plug-in)	
+40V	DC +40 V
GND	0 V
+24V	DC +24 V
GND	0 V



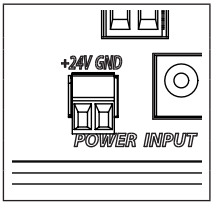
Terminal "M-Bus out" (plug-in)	
A	ADICOS M-Bus A
B	ADICOS M-Bus B
A	ADICOS M-Bus A
B	ADICOS M-Bus B



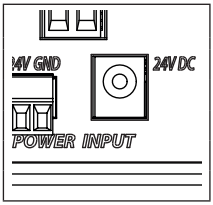
4.2.2 Interface Side



Terminal “Power input”	
+24 V	Input for external power supply (DC +24 V)
GND	Input for external power supply (0 V)

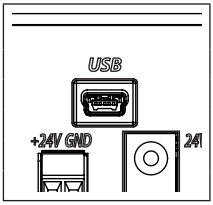


Connection socket for power supply
The socket for the coaxial power connector of the external (included) 24 V power supply is located on the interface side of the device, to the right of the terminal for the external power supply.



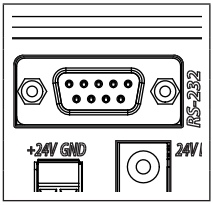
4.2.2.1 Model “USB”

USB connection socket
On the respective models, the (mini) USB socket is in the middle of the interface side of the device, above the power supply connections. **Drivers and notes on installation can be found on the included data medium!**



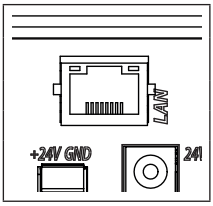
4.2.2.2 Model “RS-232”

RS-232 connection socket
On the respective models, the RS-232 socket for the serial interface is in the middle of the interface side of the device, above the power supply connections.



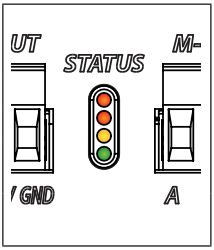
4.2.2.3 Model “Ethernet”

Ethernet connection socket
On the respective models, the Ethernet socket for the network cable is in the middle of the interface side of the device, above the power supply connections. **Drivers and notes on installation can be found on the included data medium!**



4.3 Display Elements

Status LEDs	
The status LEDs of the ADICOS M-BUSMASTER S are located in the middle of the end panel on the field supply side. They indicate the following (from top to bottom):	
Red	40 V bus voltage okay
Red	Overload / M-Bus short-circuit
Yellow	Detector data is being received (RX) (Detector → PC)
Green	Detector data is being transmitted (TX) (Detector → PC)



5 Installation

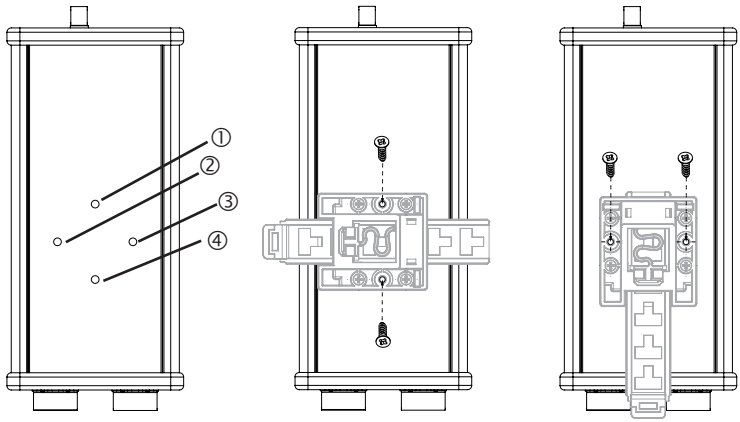
The ADICOS M-BUSMASTER S is a tabletop device that is intended to be used indoors. With the top hat rail bracket, it can be mounted on a top hat rail in an electrical cabinet. If the device is operated as a tabletop unit, the included self-adhesive feet should by stuck to the bottom of the enclosure.

5.1 Top Hat Rail Mounting

The device can be mounted on a top hat rail (e.g., in control cabinets).

1 Mount the supplied top hat rail bracket to the back of the device and use the provided screw holes.

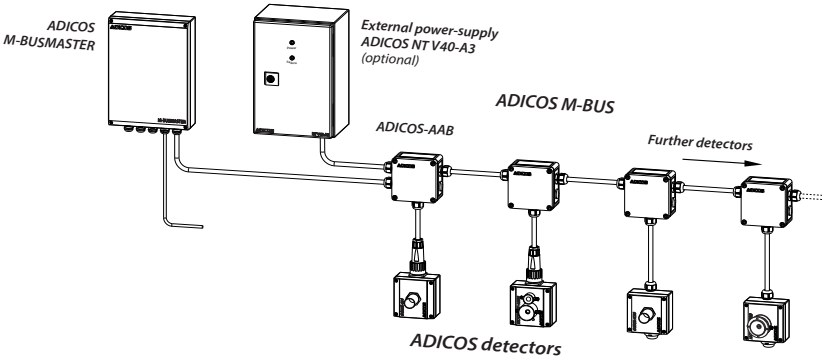
2 The bracket can be mounted horizontally or vertically as needed. Use screw hole ① and ④ or ② and ③respectively.



5.2 Wiring

WARNING!
Malfunctioning and failure of the detector system
Incorrect wiring of the ADICOS M-BUSMASTER S can cause malfunctioning, leading to failure of the fire detection system.

- **Only specialist personnel may wire the equipment (–› chap. ‘2.3. Personnel Qualification)**
- **Before beginning any wiring work, deenergize the detection system!**



Wiring M-Bus

As indicated by the the system topology, connect the bipolar ADICOS M-Bus to the terminal M-Bus. The terminal can be detached to make wiring easier.

Wiring detector power supply

► The ADICOS detectors are connected to a separate power supply, e.g. ADICOS-NT V40-A3, with a bipolar connection line.

Connecting power supply

► Connect the coaxial power connector from the power supply to the interface

► Or connect a 24 V DC power supply to the terminal for the external power supply instead

Connecting service PC

► Depending on the device model, connect the interface cable to the service PC.
When using the model “Ethernet,” connect the network cable to the service PC through the respective network infrastructure.

6 Comissioning

WARNING!
Equipment damage
ADICOS systems work with electrical current that can damage the equipment if installed incorrectly.

- **Before switching on the system, verify that all ADICOS components are properly installed and wired!**
- **Startup may be performed only by properly trained personnel.**

► Supply voltage to the device to start up the ADICOS M-BUSMASTER S.

Once all of the connections have been made as required, the entire wiring configuration can be checked as follows:

6.1 Measuring Resistance

As long as no detector or repeater is connected to the bus wiring, the resistance of the entire bus wiring can be checked with the aid of a resistance meter at the installation location of the ADICOS M-BUSMASTER S. The measured resistance is ∞.
The single branch lines wired parallel to one another can now be individually short-circuited at the respective end, one after the other. This has to appear on the resistance meter at the end of the bus trunk line. This ensures that there are no interruptions or short circuiting in the bus line.

6.2 Measuring Voltage

After the bus wiring has been checked and proven to be correct, the voltage supply to the ADICOS M-BUSMASTER S can be switched on. The green LED (normal) should light up to indicate that the device is ready for operation.
There should be voltage of approx. 40 V at the output terminals of the ADICOS M-BUSMASTER S. The voltage can be measured with a multimeter.
When using ADICOS detectors, measure the voltage at terminals on the connector assemblies or the respective contacts on the connection cables.

6.3 Integrating M-BUSMASTER S into a Network

First connect a service PC to the ADICOS central unit and install the ADICOS System Software on the service PC.

6.3.1 Integrating M-BUSMASTER S via Interface RS-232 / USB

Prerequisite
The customer has to have a service PC with ADICOS System Software installed.

A serial RS-232 / USB interface is standard on the ADICOS M-BUSMASTER S. Connect the ADICOS M-BUSMASTER S to the COM port on the service PC and start the GSME central software.

1 First set the interface parameters in the software as needed. Select the COM port used and a baud rate of 4800 baud.

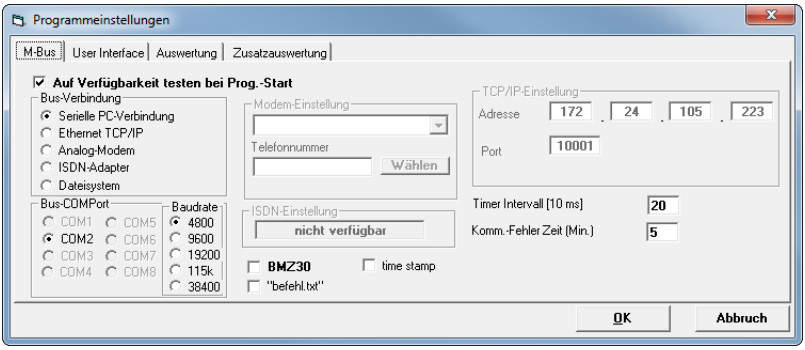


Fig. 8

2 Add one or more ADICOS detectors to the query, e.g. using the autoscan feature.

▷ While the service PC is communicating with the detectors connected in the field, the green LED (reply) as well as the yellow LED (query) should be flashing.

6.3.2 Integrating M-BUSMASTER S via LAN Connection / Ethernet

The ADICOS M-BUSMASTER S can be equipped with an Ethernet connection upon request. The network card is based on a module XPort supplied by Lantronix.

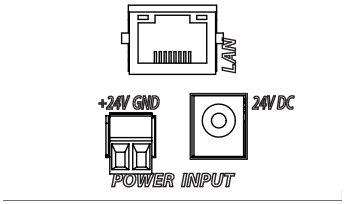


Fig. 9

The Ethernet module automatically obtains its IP address from the DHCP server of the network. Using the "Lantronix DeviceInstaller" (https://www.lantronix.com/products/deviceinstaller/), a software tool provided by the manufacturer of the XPort, the IP address of the ADICOS M-BUSMASTER S can be found or adapted as required.

Finding Connected Devices

1 Check that all components are connected properly and supplied with voltage.

2 Start the Lantronix DeviceInstaller on a computer in the same network.

▷ The software automatically lists all Ethernet modules within the network as “XPort Direct” or “XPort Direct+.”

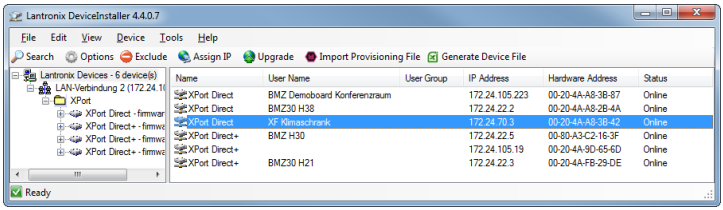


Fig. 10

Changing IP Address

1 Select the device to be changed from the list.

2 Then click “Assign IP.”

▷ The wizard used to adapt the IP address opens.

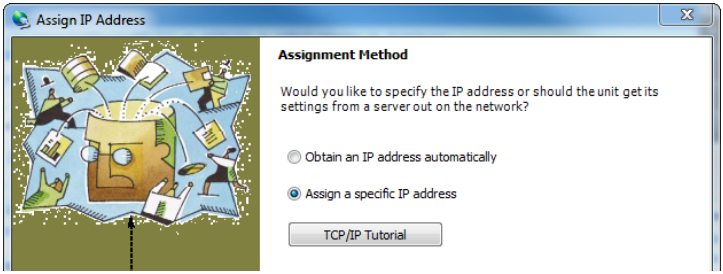


Fig. 11

3 Select “Assign a specific IP address“ and click “Next.”

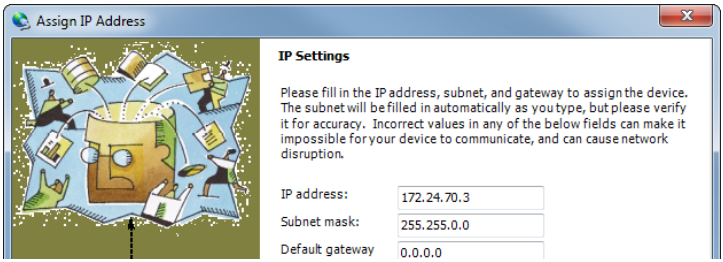


Fig. 12

4 Enter the desired IP address and the subnet mask, then click “Next.”

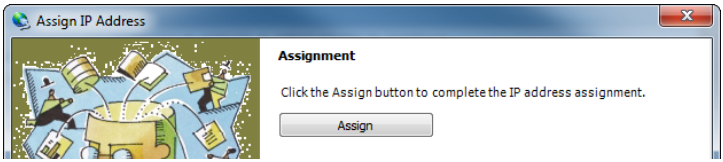


Fig. 13

5 Click “Assign.”

▷ The new IP address is programmed.

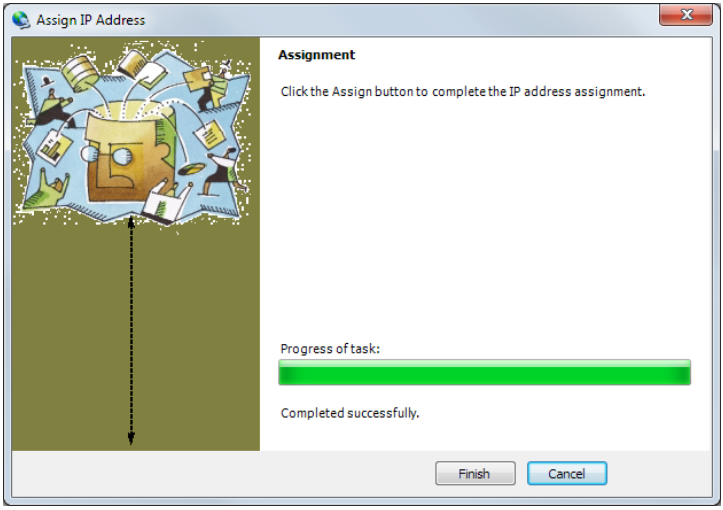


Fig. 14

6 Click “Finish” and close the Device Installer.

Setting up M-BUSMASTER in ADICOS System Software

1 Adjust the interface parameters in the software as follows:

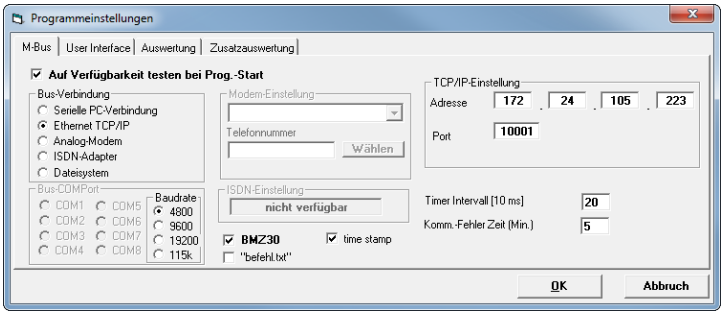


Fig. 15

Bus connection: Ethernet TCP/IP
TCP/IP setting: the preset or programmed IP address
Port: 10001

2 Click “OK” to confirm the settings.

3 Add ADICOS detectors to the query, e.g. using the autoscan feature.

▷ While the service PC is communicating with the connected detectors, the green LED (reply) as well as the yellow LED (query) should be flashing.

6.4 Checking Bus Communication

Once all of the devices have been started up and the central (host) computer and ADICOS M-BUSMASTER S have been switched on, the ADICOS System Software can be opened.
The software enables each separate device to be integrated and checked using the central computer. While the service PC is communicating with the connected detectors, the green LED (reply) as well as the yellow LED (query) should be flashing.

7 Operation

The ADICOS M-BUSMASTER S does not have a switch. It is started up by connecting the included external plug-in power supply to the 230 V supply or by connecting it to a DC 24V power supply.

▷ The top red status LED is illuminated during operation.

▷ If the service PC is connected, the green and yellow status LEDs light up to indicate the respective communication.

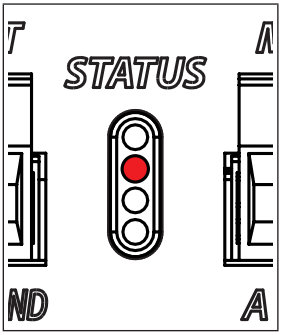
Switching off device

► Unplug the plug-in power supply from the electrical outlet.

8 Failure

If the lower red signal LED “Overload/short-circuit” lights up, it means there is a malfunction:

Error indication
► Check wiring for short-circuit! ► Reduce load! Do this by detaching single detectors. ► Restart the device by unplugging the voltage supply.



9 Maintenance

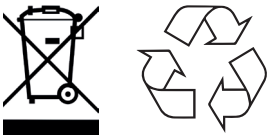
When used as intended, the ADICOS M-BUSMASTER S requires no maintenance.

9.1 Cleaning

Wipe the enclosure with a clean cloth as needed. Never use aggressive cleaning agents!

10 Disposal

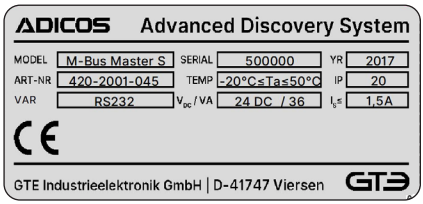
Return the device to the manufacturer when it reaches the end of its serviceable life. The manufacturer will ensure that the components are disposed of properly, in an environmentally friendly manner.



11 Technical Data

General data	
Dimensions	78 mm x 43 mm x 168 mm (W x H x D)
Weight	0.39 kg
Enclosure	Aluminum extrusion enclosure
Mounting	Tabletop device Top hat rail mounting 35 mm Rail thickness 1...2.3 mm according to DIN EN 60715
Electrical properties	
Input voltage range	22 ... 28.5 V
Power consumption	Max. 36 W
Input fuse	1.5A (Polyfuse)
Maximum current “Power out” connection	0.1A (Polyfuse) at DC 24/40 V
Maximum cross-section	2.5 mm²
Ambient conditions	
Temperature range	–20 ... +50 °C
Moisture range	≤ 95 % (non-condensing)
Mounting environment	Free of vibrations
Degree of protection	IP20
Communication properties	
Protocol (field supply side)	ADICOS M-Bus
Maximum number of detectors	20
Interface model RS-232	4800 baud
Interface model USB	2.0 standard
Interface model Ethernet	100 MBit

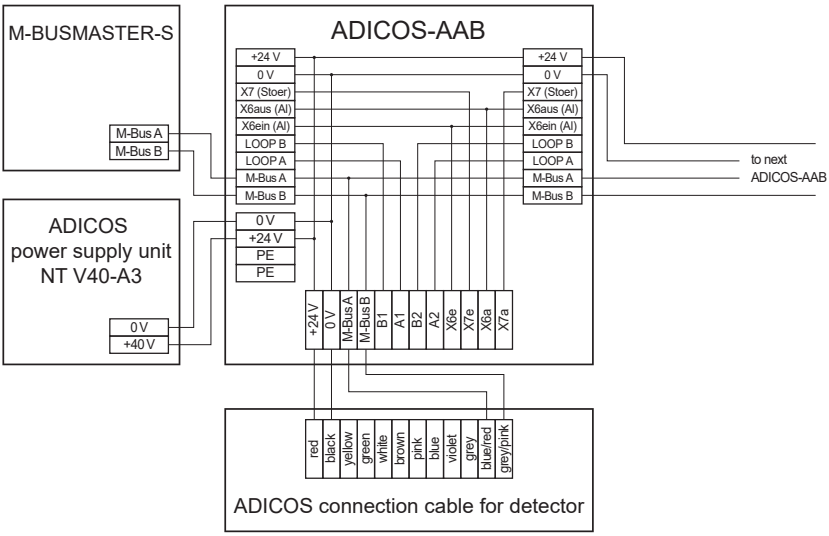
11.1 ID Plate



Model:	Device model	SERIAL:	Serial number (variable)	YR:	Year of production (variable)
ART-Nr:	Article number (variable)	TEMP:	Ambient temperature	IP:	Degree of protection
VAR:	Interface	V_{DC}/VA:	Voltage range / maximum power consumption	I_s:	Input fuse
	CE marking				

12 Annex

12.1 ADICOS M-BUSMASTER and External NT



12.2 Primary Cable Shield