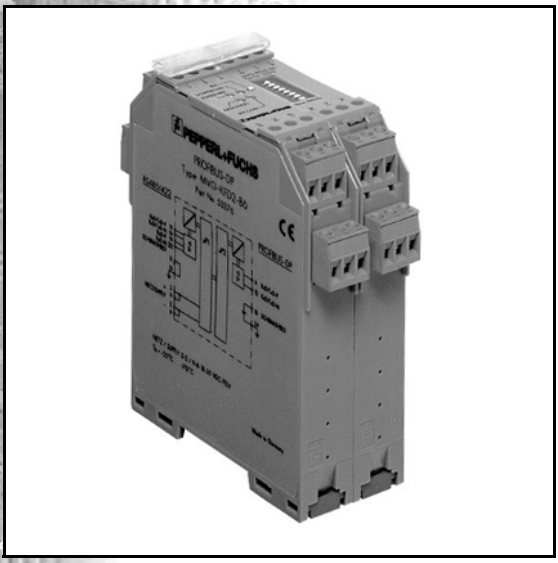
FACTORY AUTOMATION

Handbook

MVG-KFD2-B6

Bus Coupler

IDENT-M System V ↔ PROFIBUS-DP



PEPPERL+FUCHS

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1 Declaration of Conformity

The bus coupler MVG-KFD2-B6 within the microwave identification system Ident-M System V has been developed and produced in accordance with the applicable European standards and directives.

Note

A corresponding declaration of conformity can be requested from the manufacturer.

The manufacturer of the product, Pepperl & Fuchs GmbH in D-68307 Mannheim, possesses a certified quality assurance system in accordance with ISO 9001.

CE

ISO**9001**

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2 The Symbols Used

Warning

This symbol warns the user of possible danger.
Failure to heed this warning can lead to personal injury or death and/or damage to equipment.

Attention

This symbol warns the user of a possible failure.
Failure to heed this warning can lead to total failure of the equipment or any other connected equipment.

Note

This symbol indicates an important hint.

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3 Safety

3.1 Intended use

The bus coupler MVG-KFD2-B6 is used within the microwave identification system Ident-M System V from Pepperl+Fuchs to link the control interface unit MVI-D2-2HRX to a higher-order computer (PLC, PC) via the standard PROFIBUS-DP. The bus coupler must only be operated with the system components of the Ident-M System V from Pepperl+Fuchs.

Warning

The safety of the operating personnel and the system are not guaranteed when the bus coupler is not used in accordance with its intended use.

The device MVG-KFD2-B6 must only be operated by appropriately qualified personnel in accordance with this operating manual.

3.2 General safety information

Warning

Safety and correct functioning of the device cannot be guaranteed if operated in any way other than that described in this operating manual.

The connection of the equipment and any maintenance work to be carried out while voltage is applied to the equipment must only be performed by appropriately qualified electro-technical personnel.

In the case that a failure cannot be repaired, the device must be taken out of operation and protected against inadvertently being put back into operation.

Repair work must only be carried out by the manufacturer. Additions or modifications to the equipment are not allowed and void the warranty.

The responsibility for the adherence to local safety standards lies with the operator.

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3.3 Functional safety / monitoring

The bus coupler MVG-KFD2-B6 functions on a microprocessor basis. Device states, functional disturbances and equipment errors/faults are signalled with the LEDs on the front of the device.

It is also possible to perform a function control via the PROFIBUS-DP by querying the status information or by, for example, using special commands for testing the device and components connected to it. Device failure or, for example, breakdown of a read/write head can be detected and indicated by the master unit.

Note

More detailed information can be found in Chapter 8 'Fault diagnostics'.

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4 Product Description

4.1 Scope of delivery

The following are included with the delivery of the device:

- 1 operating manual
- 1 device MVG-KFD2-B6
- 1 diskette with GSD file

4.2 System description

Bus systems, the PROFIBUS in particular, make it possible to reduce the amount of cabling used and allow extensive data exchange over long distances.

The bus coupler MVG-KFD2-B6 establishes the connection between the PROFIBUS-DP and a control interface unit MVI-D2-2HRX to which up to two write/read heads can be connected.

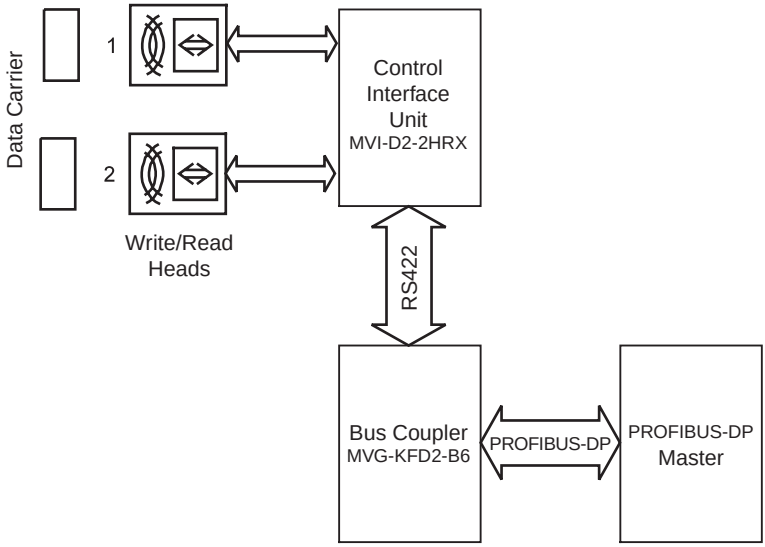

Fig. 4.1: Function of the bus coupler MVG-KFD2-B6 within the microwave identification system Ident-M System V

Up to 127 bus couplers can be connected to one PROFIBUS-DP segment. It follows that up to 254 write/read heads can be addressed.

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4.3 Device features and function

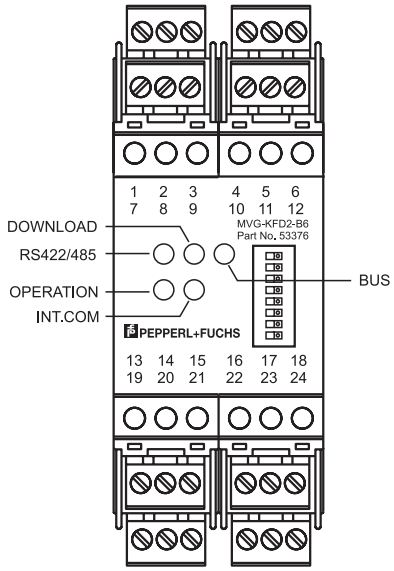

Fig. 4.2: Front view of the bus coupler MVG-KFD2-B6

Device features

- 40 mm wide KF-housing (terminal housing for top-hat-rail mounting)
- Supply voltage 18…35 VDC without electrical isolation.
- Combined RS422/RS485 interface: the RS422 interface is connected to the RS422 interface of the control interface unit.
- Bus coupler interfaces with electrical isolation from the device
- Connecting the field bus and the serial interfaces via detachable screw terminals.
- Address setting for PROFIBUS-DP via DIP switch on the device front
- Ident-side - 4 two-colour LEDs for
  - bus coupler voltage supply / device malfunctions
  - serial interface to the identification system
  - device-internal communication
  - download
- Field-bus-side - 1 two-colour LED for
  - bus-communication status

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Function

To couple the identification system IDENT-M System V to the PROFIBUS-DP, the serial interface (RS 422) of the bus coupler is connected to the control interface unit MVI-D2-2HRX of the identification system and the field bus connection of the bus coupler to the PROFIBUS-DP.

The bus coupler MVG-KFD2-B6 converts the commands sent via the PROFIBUS-DP into the command syntax of the control interface unit and outputs corresponding command responses from the control interface unit to the PROFIBUS-DP.

Note

At many points throughout this manual, cross references are made to specific locations in the "Microwave Identification System" handbook, Edition '95, at which the commands, operating modes and error messages are documented in detail.

In order to achieve the fastest possible communication, many command parameters, e.g. "Communication Startup System", attributes and ID-code are preset and are inserted into the commands sent to the control interface unit only for read and write commands. The means that the commands that are transmitted via the PROFIBUS-DP are more compact than commands which are then sent to the control interface unit.

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4.4 Accessories / product family

The microwave identification system Ident-M System V from Pepperl+Fuchs offers various possibilities to combine the individual components.

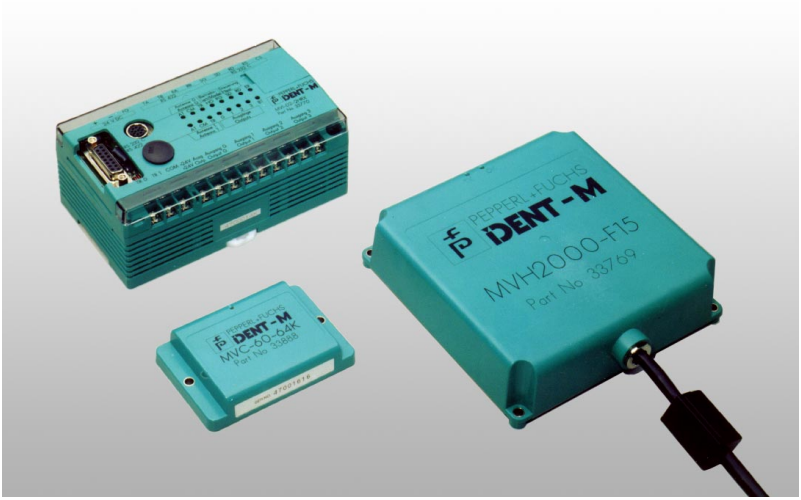

Fig. 4.3: Overview of the microwave identification system Ident-M System V

Depending on installation requirements, read/write distance, environmental conditions and memory requirements, you can select appropriate data carriers and read/write heads.

Note

Further information on the components of the microwave identification system Ident-M System V can be found in the Sensor Systems 1 catalogue.

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5 Installation

5.1 Storage and transport

The device must be packed for storage and transport so that it is shock-resistant and protected against humidity. The original packaging offers optimal protection. The necessary environmental conditions also must be satisfied (see chapter 9 'Technical Data').

5.2 Unpacking

Check that the contents are not damaged. In case of damage, notify the postal service or the forwarding agent and inform the deliverer.

Check the contents of delivery with respect to your order and the delivery papers for:

- quantity delivered
- device type and version according to the name plate
- accessories
- handbook(s)

Keep the original packaging in case the device must be repacked and stored or reshipped.

For any further questions please contact Pepperl+Fuchs GmbH.

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5.3 Installation

5.3.1 Mounting on a top-hat rail

As with all systems in K-system housings from Pepperl+Fuchs, the bus coupler MVG-KFD2-B6 can be snapped onto the 35 mm, standard top-hat rail according to DIN EN 50022.

Hang the unit over the top part of the top-hat rail and press the bottom part of the housing against the rail until it snaps onto the railing. Check that the unit sits firmly on the railing.

5.3.2 Wall mounting

The bus coupler can also be mounted on the wall using four screws. Simply pull out the four outer brackets on the back side of the unit. The unit can be easily screwed onto the wall through the holes in the brackets. The screw pair spacing is 90 mm (max. screw diameter M5).

5.4 Electrical connection

Warning

Only qualified personnel are permitted to carry out work under voltage and make electrical connection to the mains.

Before connecting the device, ensure that the correct voltage is applied as indicated on the name plate .

A mains isolating device must be installed close to the device and labeled as such for the MVG-KFD2-B6.

5.4.1 Device connection

The electrical connection of the bus coupler is made with the detatchable, self-opening screw terminals on the top and bottom of the unit, max. cross section 2 x 2.5 mm^2.

Connect the control interface unit, the PROFIBUS-DP and the supply voltage according to the connection diagram and the labelled configuration of the terminals.

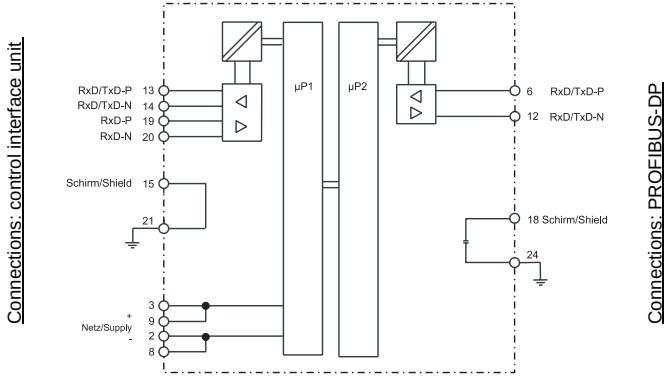

Fig. 5.1: Connection diagram of the bus coupler MVG-KFD2-B6

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Terminal assignment list

1 reserved
2 supply voltage GND (connected internally to terminal 8)
3 supply voltage +24 V DC (connected internally to terminal 9)
4 reserved
5 reserved
6 PROFIBUS-DP, RxD / TxD - P
7 reserved
8 supply voltage GND (connected internally to terminal 2)
9 supply voltage +24 V DC (connected internally to terminal 3)
10 reserved
11 reserved
12 PROFIBUS-DP, RxD / TxD - N
13 RS 422 interface, control interface unit, TxD-P
14 RS 422 interface, control interface unit, TxD-N
15 RS 422 interface, control interface unit, shielding (connected internally to terminal 21)
16 reserved
17 reserved
18 PROFIBUS-DP, shielding (connected internally capactively to terminal 24)
19 RS 422 interface to control interface unit RxD-P
20 RS 422 interface to control interface unit RxD-N
21 RS 422 interface, control interface unit, ground (connected internally to terminal 15)
22 reserved
23 reserved
24 PROFIBUS-DP, gound (connected internally capactively to terminal 18)

Location of the connection terminals

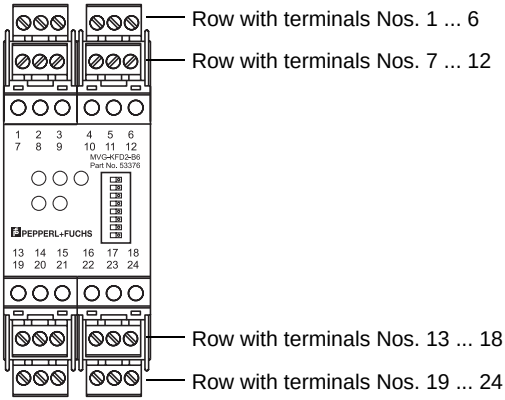

Fig. 5.2: Assignment of connection terminals

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5.4.2 Connecting to the control interface unit MVI-D2-2HRX

The control interface unit MVI-D2-2HRX is provided with a 15-channel Sub-D socket for the RS 422 interface. This means that you require a shielded, 4-wire cable (max. cable length 1200 m) with a 15-channel Sub-D plug on one end for the connection between the control interface unit and bus coupler.

RS 422 connection between bus coupler and control interface unit

Terminal, bus coupler			15-channel Sub-D plug, control interface unit	
13	TxD-P	↔	Pin 9	RA
14	TxD-N	↔	Pin 10	RB
19	RxD-P	↔	Pin 3	TA
20	RxD-N	↔	Pin 11	TB

Achtung

The signals RS (Pin 12) and CS (Pin 8) of the interface control unit MVI-D2-2HRX must be connected.

To easily connect these pins, use a solder bridge in the 15-pin Sub-D connector of the RS 422 connecting cable.

Transmission parameters

The control interface unit MVI-D2-2HRX is equipped with 4 rotary encoder and DIP switches for setting transmission parameters.

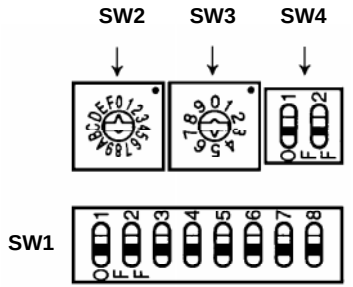

Fig. 5.3: Control interface unit MVI-D2-2HRX rotary encoder and DIP switches

In order to communicate with the bus coupler MVG-KFD2-B6, switches SW1 ... SW4 of the control interface unit MVI-D2-2HRX must be set as follows:

DIP switch SW1

Switch	Switch position	Meaning
SW1-1	ON	8 data bits
SW1-2	OFF	no parity
SW1-3	OFF	no parity
SW1-4	OFF	1 stop bit

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Switch	Switch position	Meaning
SW1-5	OFF	´must always be set on OFF
SW1-6	ON	RS 422 (4 wire system)
SW1-7	OFF	RS 422 (4 wire system)
SW1-8	OFF	must always be set on OFF

Rotary encoder switch SW2

Switch position	Meaning
0	Station number ’0’

Rotary encoder switch SW3

Switch position	Meaning
5	9600 kBit/s

DIP switch SW4

Switch	Switch position	Meaning
SW4-1	ON	terminator RS 422 active (2-wire)
SW4-2	ON	terminator RS 422 active (4-wire)

5.4.3 Special connection information for the PROFIBUS

Cable

The bus lead is specified in the EN 50 170 as cable type A and can be used in accordance with the following table. For the sake of completeness, the cable parameters and lengths are also given in the following table in for cable type B. When designing a system, you should use only cable type A due to the long total cable length.

The cable parameters are as follows:

Parameter	Wire A	Wire B*
Cable construction	twisted pairs, shielded	
capacitance per unit length [pF/m]	< 30	< 60
surge impedance [Ω]	135 ... 165	100 ... 130
loop resistance [Ω]	110	---
lead diameter [mm]	0.64	> 0.53
cross sectional area [mm^2]	> 0.34	> 0.22

Wire B*) if possible, do not use

Use only twisted pair, shielded cable. In this case, the noise immunity will be optimised.

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Transmission rates

The possible transmission rates 9.6 kbit/s, 19.2 kbit/s, 44.44 kbit/s, 93.75 kbit/s, 187.5 kbit/s, 500 kbit/s und 1.5 Mbit/s are self-synchronizing.

Length of leads

The permissible lengths of the transmission leads in a bus segment are determined from the following parameters:

- Type of bus cable used
- Transfer rate
- External sources of interference
- Number of bus subscribers

The maximum total length of a bus segment is, as a function of the transmission rate with a maximum number of bus subscribers (32):

Baud rate in kbit/s	9.6	19.2	93.75	187.5	500	1500
Wire A (in m)	1200	1200	1200	1000	400	200
Wire B (in m)	1200	1200	1200	600	200	---

Note

By breaking into multiple bus segments and the application of repeaters, the transmission length can be increased. A maximum of three repeaters between two communicating bus subscribers can be used.

Bus termination

With the PROFIBUS, every bus segment must be terminated by means of terminating resistances at both ends of the bus leads.

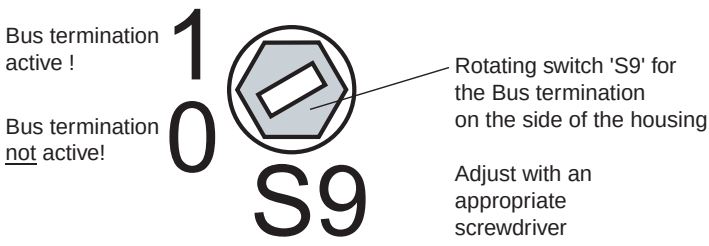

Fig. 5.4: Rotary switch S9 for the termination of the bus.

The bus coupler MVG-KFD2-B6 is provided with an internally connectable bus termination. The bus termination can be activated by turning the rotary switch S9 on the side of the device housing with an appropriate screwdriver.

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5.4.4 EMC shielding concept

The shielding of the cables serves to protect against electromagnetic interference. One end of the shielding is connected to a low-impedance connection to ground, whereas the other side is capacitively coupled. The devices in the K-housing, including the MVG-KFD2-B6, are provided with two ground terminals (21, 24).

When installing, connect these two terminals to ground. This is best carried out using large metallic objects with a galvanic ground connection, e.g. switching cabinets, high-bay storage posts, etc.

Make certain that the shielding of the RS 422- and PROFIBUS-DP cable are connected at the intended terminals (15, 18) of the bus coupler.

Note

If leads with double shielding are used, e.g. metallic wire mesh and metallic foil, they must be connected to each other when preparing the cables using a low impedance connection at one end of the cables.

Many noise impulses come from the supply cables, e.g. switch-on current of a motor. For this reason, running the supply cables parallel to the data/signal cables, especially in the same cable duct, should be avoided.

5.5 Disassembly, packing and disposal

Repacking

The device must be protected against humidity and shock when packing for later use. The original packaging offers optimal protection.

Disposal

Note

Electronic waste can be hazardous. Pay attention to local regulations when disposing of the device.

The bus coupler MVG-KFD2-B6 contains absolutely no internal batteries which would need to be removed prior to disposal.

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6 Commissioning

Warning

Before proceeding with the commissioning, make sure that no danger to the system in which the device is connected can arise, e.g. due to uncontrolled control processes.

Attention

Before proceeding with the commissioning, check all connections for correctness.

Prepare for the commissioning by familiarizing yourself with the communication between the PROFIBUS-DP master and the bus coupler (chapter 7 and 8 of this handbook). The commissioning requires a good knowledge of the PROFIBUS-DP and the programming of the master unit.

6.1 Preparation

Due to the complexity of field bus programming with the PROFIBUS, it is, unfortunately, difficult to give a valid general description on how to perform the commissioning.

A very important aspect for the operation of an expanded microwave identification system using the bus coupler MVG-KFD2-B6 on the PROFIBUS -DP is the response time of the total system. The question "How much time is required for data to be available in my computer or PLC once the data carrier is positioned in front of the read head?" cannot be correctly answered in a general.

The important factors in respect to response time are:

- type of higher-order host system, e.g. PLC or PC
- type of PROFIBUS-DP master, e.g. predefined transmission rate
- communication between the PROFIBUS master and the host system
- number of PROFIBUS subscribers
- number of bus couplers on the PROFIBUS-DP
- number and type of connected read/write heads
- type of data carriers used
- how the communications objects of the control interface unit are accessed
- type of commands sent to the identification system
- structure of the user program

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For this reason, you should construct a test system for your particular application and check the transmission to the PROFIBUS-DP master or host system if you have little experience with the design of a PROFIBUS-DP system.

Note

An entire series of design tools exist that allow a PROFIBUS-DP user to plan and commission a network, even if he/she has no detailed knowledge of the fundamental communication sequences.

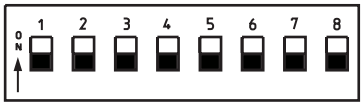
The system software of programmable logic controllers (PLC) with a PROFIBUS-DP communication processor often offer bus configuration and management possibilities.

6.2 Main procedure

In preparing for the commissioning, the device address must be set on the bus coupling and, if necessary, the bus terminator with rotary switch 'S9' on the side of the housing.

Setting the device address

Select a device address not already occupied by another bus subscriber (between 0 and 126) and set this address using the DIP switch on the front of the device.



DIP switch 'SW' on the front side of the unit to adjust the PROFIBUS device address

Device address	S1	S2	S3	S4	S5	S6	S7	S8
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
126	OFF	ON	ON	ON	ON	ON	ON	OFF

Fig. 6.1: Setting the device address

Attention

The device address 127 is reserved for a special PROFIBUS service. If the address 127 is set on a slave unit, the device will not function.

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After connecting to voltage, the control interface unit automatically adjusts its transmission rate to that of the master. The supported rates are:

- 9.6 kbit/s
- 19.2 kbit/s
- 44.44 kBit/s
- 93.75 kBit/s
- 187.5 kBit/s
- 500 kbit/s
- 1.5 Mbit/s

Configuring the network master for DP-operation

The required configuration data for the bus coupler MVG-KFD2-B6 can be found in the enclosed GSD-file and used to configure the network master. If you have a configuration tool, the network master can automatically be configured by reading the GSD file with the configuration tool. You must only provide information about the device address.

Switching on / self-test

After switching on the supply voltage, the bus coupler checks the internal memory area with a self-test.

Note

The LED 'DOWNLOAD' flashes during this procedure for approx. 2 seconds. The bus coupler cannot be addressed via the PROFIBUS-DP during this time.

The LED 'OPERATION' illuminates permanently green when the supply voltage is present at the device. If a hardware malfunction of the bus coupler electronics is detected during the self-test, it illuminates permanently red.

In the event of a device or transmission error, or if an incorrect device address is set, communication will not be activated.

Establishment of connection

The connection via the RS 422 interface with the control interface unit and via the PROFIBUS-DP is established automatically.

Note

The LED 'BUS' illuminates green while data are exchanged with the bus coupler via the PROFIBUS-DP.
If a hardware malfunction has occurred, it illuminates red. If the data exchange is faulty, the LED flashes alternately 5 sec. red and 0.5 sec. green.

The LED 'RS422/485' illuminates green while data are exchanged with the identification system via the RS 422 interface.
If faulty telegrams are received from the identification system, it illuminates red.

If the device-internal communication is fault-free, the LED 'INT.COM' illuminates green, otherwise red.

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7 Operation on PROFIBUS-DP

7.1 General information on the PROFIBUS-DP

The PROFIBUS-DP is a standardised field bus that can exchange data between PLCs, PCs, operating and monitoring systems as well as sensors and actuators.

The framework of this operating manual can be considered as an extensive introduction to the PROFIBUS. For detailed information, the reader is referred to the PROFIBUS standard DIN 50 170 and the relevant literature.

Note

Information brochures and a PROFIBUS product catalogue are available from the PROFIBUS User Organisation e.V. (PNO), Karlsruhe.

PROFIBUS-DP PERFORMANCE FEATURES

Listed below are the most important PROFIBUS-DP performance features of the bus coupler MVG-KFD2-B6:

- DP slave functionality with the functions Data_Exchange, RD_Inp, RD_Outp, Slave_Diag, Set_Prm, Chk_Cfg, Get_Cfg, Global_Control
- Modular DP slave device with one module each for write and read data
- Transmission rate 9.6 kbit/s, 19.2 kbit/s, 44.44 kbit/s, 93.75 kbit/s, 187.5 kbit/s, 500 kbit/s and 1.5 Mbit/s self-synchronizing
- switchable bus termination
- adjustable system address 0 ... 126

7.1.1 PROFIBUS-DP communication parameters

The communication parameters can be found in the device master data (GSD).

The (GSD) master-data file name for the MVG-KFD2-B6 is: **`p&f_044b.gsd`**

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7.1.2 PROFIBUS-DP functions

Function	Description	Master
Set_Prm	Passing parameter data to a DP slave	Class 1
Chk_Cfg	Passing the configuration data for testing to a DP slave	Class 1
Get_Cfg	Reading out the configuration data of a DP slave	Class 2
Data_Exchange	Sending output data to a DP-slave unit and reque-sting input data from a DP slave	Class 1
RD_Inp	Reading the input data of a DP slave	Class 2
RD_Outp	Reading the output data of a DP slave	Class 2
Global_Control	Sending special commands to one or more DP slaves	Class 1
Slave_Diag	Reading out diagnosis information of a DP slave	Class 1

7.1.3 Device code / software-version message for PROFIBUS-DP

The device code and the software version are transferred using the DP-function 'de-vice-related diagnosis'.

Header byte <KENNUNG><><SW BUS><IND BUS><><SW ID><IND ID>

Header byte	Length of the diagnosis data in bytes incl. header byte, here '12'
<KENNUNG>	6 characters, 'MVG-B6'
<>	Blank space (ASCII 20hex)
<SW BUS>	1 character, identifier of the bus-side software, here 'K'
<IND BUS>	1 character, index of the bus-side software, 'A' ... 'Z'
<>	Blank space (ASCII 20hex)
<SW ID>	1 character, identifier of the ident-side software, here 'I'
<IND ID>	1 character, index of the ident-side software, 'A' ... 'Z'

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7.1.4 Definition of the PROFIBUS-DP modules

There are a total of 16 modules defined with lengths varying between 2 and 128 bytes, 7 each for input data (read) and output data (write) and 2 header modules (see GSD-file).

Depending on command length and the data to be transferred, you must select the appropriate module.

7.1.5 General communication information

A maximum of 31 words can be read or written. The 'higher-value' bits are ignored.

Before changing the operating mode, the control interface unit must be reset (head-related).

When resuming the Profibus communication, an acknowledge command (command 240, command code 0F0h) must be sent - independent of which telegram is to be sent next. If telegrams are then still queued in the bus coupler, they must be retrieved. The control interface unit must then be reset (see command 60).

Commands can now be executed. For this purpose, as described below, command codes and parameters are written in the Profibus code. With the acknowledge command (command 240), the responses are retrieved on the commands.

The various operating modes should first be set with the appropriate commands. The read and write commands can then be executed.

If too many commands are sent to the bus coupler in succession (without retrieving the responses), the commands are ignored. In this case, the bus coupler reacts only to the acknowledge command.

New commands (head-related) may be sent to the bus coupler only after the confirmation to the command has been retrieved.

An invalid operating mode setting is noticed only after a command is sent to the control interface unit. A parameter error is displayed.

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7.2 Communication and commands

7.2.1 Communication sequence between PROFIBUS-DP and bus coupler

In order to send a new command to the bus coupler or identification system, the PROFIBUS master must first write a command with a toggled, i.e. the opposite status of the preceding command, toggle bit in the Profibus code. The bus coupler recognizes the inverted bit, reads the code, including the command code, and interprets it.

If the command is directed at the identification system, it is processed accordingly and sent to the identification system. If the identification system receives the command correctly, it sends a reception confirmation and, after executing the command, also sends the result to the bus coupler.

If the bus coupler receives a reception confirmation from the identification system, it passes it on by writing the following in the code:

Byte	Contents	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	Command code							
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	STATUS	STATUS							
Byte 3	Execution counter	0	0	0	0	0	0	0	0
Byte 4	Parameter 0…0FFh	Parameter							
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Protect	Protect							
Byte 10	Attribute	Attribute							
Byte 11	Verify	Verify							

The **toggle bit T** corresponds to the inverted toggle bit from the function call.

The **execution counter** is set to 0 and, starting from this point in time, incremented on every command result for this command. As the control interface unit MVI-D2-2HRX only sends one command result to a command, the maximum value of the execution counter is 1.

If the master has read new data from the identification system, it informs the bus coupler by means of an acknowledge command. Only after this acknowledgment has been received may the bus coupler write new data in the code. If the bus coupler has no new data for the field bus, it deletes the code, i.e. all values in the code are 0. As soon as data are again present, they are written in the code, i.e. a renewed acknowledgement is not necessary.

For correctly executed commands, the **status** is 0. In the event of a warning or an error message, the status is ≠ 0. The status messages can be found in the table in chapter 8.2.

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A command result has the following format for all commands:

byte	Contents	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	Command code							
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	STATUS	STATUS							
Byte 3	Execution counter	Execution counter							
Byte 4	Parameter 00…0FFh	Parameter							
Byte 5	ID-Code/data 00…0FFh	ID-Code/data							
Byte 6	ID-Code/data 00…0FFh	ID-Code/data							
Byte 7	ID-Code/data 00…0FFh	ID-Code/data							
Byte 8	ID-Code/data 00…0FFh	ID-Code/data							
…	Data 00…0FFh	Data							
Byte N	Data 00…0FFh	Data							

If, for example, an ID-code is to be read, it is located in bytes 5…8; if data were requested, they occupy the fields starting at byte 4. If the specified field-bus telegram length is < N bytes, the data area is truncated, i.e. in this case not all read data bytes are visible from the field bus.

In principle, the data in the telegram from the control interface unit behind the data code (DCD) are written in the data area.

The commands which are directed directly at the bus coupler (e.g. operating mode settings) do, for reasons of consistency, also generate a reception confirmation and command result and are passed on to the field bus. They are synchronized with the reset command which is sent to the control interface unit to delete stored commands and have the same structure as the standard commands.

If an error occurs, i.e. if an incorrect command code is used or if a parameter lies outside of the valid range, the reception confirmation - command result sequence can be interrupted depending on whether the error is detected on reception or during execution.. If the error is registered during reception, no command result is sent..

Errors which have occurred are displayed in the "Status" field. An error detected by the control interface unit is represented as follows:

Byte	Contents	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	Command code							
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	STATUS	STATUS							
Byte 3	Execution counter	Execution counter							
Byte 4	Parameter	Parameter							
Byte 5	Error position (page 13/4[1])	Error position							
Byte 6	Error code (page 13/4[1])	Error code							
Byte 7	No meaning	-							
…	No meaning	-							

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Byte	Contents	Bit No.							
		7	6	5	4	3	2	1	0
Byte N	No meaning	-							

[1] see handbook "Microwave Identification System", Edition '95

Error positions and error codes are identification-system-specific data. If the bus coupler and not the control interface unit generates an error message, both of these fields remain empty.

7.2.2 Command overview

In the following table, all available commands for the IDENT-M System V are listed. For reasons of clarity, the commands are organized by category.

The abbreviations used have the following meanings:

Command code command code (decimal) with which the corresponding identification function can be called.

Bit pattern the bit pattern corresponding to the bus-coupler command code

P setting in the 'Protect' operating mode is taken into account (*)

A setting in the 'Attribute' operating mode is taken into account (*)

I setting in the 'ID-Code' operating mode is taken into account (*), or the ID-code must be written in the PROFIBUS-DP-code (K), setting in the ID-code operating mode is overwritten

V setting in the 'Verify' operating mode is taken into account (*)

IDENT-M System V command code of the identification systems (hexadecimal)

Category	Command	Bus coupler - command code	Bit pattern	P	A	I	V	Ident-M System V-command code
Special command	No command	0	00000000					-
Special command	Acknowledge	240	11110000					-
R/W	ID-Code read, single read fixcode	1	00000001		*	K		12
R/W	ID-Code write	43	00101011	*	*	*		22
R/W	Read data medium, single read	16	00010000		*	K	*	11/10
R/W	Write data medium, single write	64	01000000	*	*	*	*	20/21
Copy	Copy data medium	52	00110100	*	*	*	*	40/41
Modes of operation	Mode of operation - Comm.-System	33	00100001					

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Category	Command	Bus coupler - command code	Bit pattern	P	A	I	V	Ident-M System V-command code
Modes of operation	Mode of operation - Memory Protection (P)	34	00100010					Internal
Modes of operation	Mode of operation - Attribute (A)	35	00100011					Internal
Modes of operation	Mode of operation - ID-Code (I)	37	00100101					Internal
Modes of operation	Mode of operation - Verify (V)	38	00100110					Internal
Transfer	Data medium ◊ read control interface unit	40	00101000		*	*	*	13/14
Transfer	Control interface unit ◊ write data medium	44	00101100	*	*	*	*	23/24
Transfer	Control interface unit - read memory	41	00101001					15
Transfer	Control interface unit - write memory	45	00101101					25
Time	Read date/time	42	00101010					16
Time	Write date/time	46	00101110					26
Reset/Init	Erase data medium	47	00101111	*	*	*		30
Reset/Init	Initialize data medium	49	00110001		*	K		31
Reset/Init	Erase control interface unit	50	00110010					35
Reset/Init	Initialize control interface unit	48	00110000					36
Reset/Init	Erase log	51	00110011					37
Reset/Init	Reset control interface unit	60	00111100					70
Test	Test data medium	53	00110101		*	K		50
Test	Test ROM	54	00110110		*	K		51
Test	Test RAM	55	00110111		*	K		52
Test	Test battery of the data medium	56	00111000		*	K		53
Test	Block test	58	00111010		*	K		60
Test	Test control interface unit	57	00111001					55
Output	Set outputs	62	00111110					72
Other		59	00111011					
Other	Query command result	61	00111101					71

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7.2.3 Detail description of the commands

Below, all available commands are listed by command code. Where:

Command code command code (bit pattern) with which the corresponding identification function can be called

A number of the read/write head (antenna)

T toggle bit

ID-code ID-code of the data carrier in the address range 8040…8043h

Address memory address in the data medium or control interface unit

Word count number of words which are to be read or written

Note

In the following tables of the command descriptions, you will find in the header line behind the command names in brackets a reference to the appropriate page in the handbook "Microwave Identification System", Edition '95, e.g. '(11/26)' in table which follows.

1	Read ID-code (11/26)	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	0	0	0	0	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	ID-Code 00…0FFh (Adr. 8040h)	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh (Adr. 8041h)	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh (Adr. 8042h)	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh (Adr. 8043h)	ID 1				ID 0			

16	Read data carrier (11/25)	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	0	1	0	0	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			

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33	Mode of operation - Communication Startup System (9/4)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	0	0	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Parameter 0…3	Parameter							
…	Empty	-	-	-	-	-	-	-	-

34	Mode of operation - Memory Protection (11/16)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	0	0	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Param. <0 (off)/1…0AH(range)>	Parameter							
…	Empty	-	-	-	-	-	-	-	-

35	Mode of operation - Attribute	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	0	0	1	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Parameter <0…3, A…D>	Parameter							
…	Empty								

Comment: Only the attributes 0…3 should be used. The attribute settings A…D achieve the same results when performed from the field bus. The difference lies in the ID-code which the control interface unit sends along to the bus coupler with attributes A…D with every read/write command but are not passed on to the field bus.

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37	Mode of operation - ID-Code	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	0	1	0	1
Byte 1	-/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			

Comment: The ID-code must be specified when calling commands marked in the overview in field 1 with (K). The setting in the ID-code operating mode is then overwritten.

If no ID-code is specified with these commands (ID-code 00000000), the ID-code in the operating mode setting is also overwritten.

38	Mode of operation - Verify	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	0	1	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Verify <1(on)/0(off)>	Parameter							
…	Empty	-	-	-	-	-	-	-	-

Comment: Affects the commands marked in the overview in field V with an asterisk.

40	Data medium → control interface unit (11/27)	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	0	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Target address 0000…0FFFFh	Target address (high byte)							
Byte 3	Target address 0000…0FFFFh	Target address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	Source address 0000…0FFFFh	Source address (high byte)							
Byte 6	Source address 0000…0FFFFh	Source address (low byte)							
Byte 7	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

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41	Read control interface unit	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	0	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
…	Empty	-	-	-	-	-	-	-	-

42	Read date / time	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	0	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

The command result receives the following data as response to this command:

Byte 5	Year	BCD 00…99
Byte 6	Month	BCD 01…12
Byte 7	Day	BCD 01…31
Byte 8	Weekday	BCD 00…06 (Su...Sa)
Byte 9	Hours	BCD 00…23
Byte 10	Minutes	BCD 00…59
Byte 11	Seconds	BCD 00…59

43	Write ID-Code	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	0	1	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 8	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

An ID-code previously set with the command "operating mode ID-code" is overwritten..

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44	Control interface unit → Data carrier	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	0	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Source address 00…0FFh	Source address (high byte)							
Byte 3	Source address 00…0FFh	Source address(low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	Target address	Target address (high byte)							
Byte 6	Target address	Target address (low byte)							
Byte 7	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

45	Write control interface unit	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	1	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address 00…0FFh	Address (high byte)							
Byte 3	Address 00…0FFh	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	Data 00…0FFh	Data							
Byte 6	Data 00…0FFh	Data							
…	Data 00…0FFh	Data							
Byte N	Data 00…0FFh	Data							

46	Write date/time (11/34)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	1	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Year	BCD 0 …99							
Byte 3	Month	BCD 01…12							
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	Day	BCD 01…31							
Byte 6	Weekday (Su...Sa)	BCD 00…06							
Byte 7	Hours	BCD 00…23							
Byte 8	Minutes	BCD 00…59							
…	Empty	-	-	-	-	-	-	-	-

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47	Erase data carrier (11/35)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	0	1	1	1	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	Deletion pattern 00…0FFh	Deletion pattern							
Byte 6	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

48	Initialize control interface unit	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	0	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T

49	Initialize data carrier (11/36)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	0	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

50	Erase control interface unit (11/37)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	0	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
…	Empty	-	-	-	-	-	-	-	-

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51	Erase log (11/39)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	0	1	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Range 0…2	Range							
…	Empty	-	-	-	-	-	-	-	-

52	Copy data carrier (11/40)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	1	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Source address 0000…0FFFFh	Source address (high byte)							
Byte 3	Source address 0000…0FFFFh	Source address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	Target address 0000…0FFFFh	Target address (high byte)							
Byte 6	Target address 0000…0FFFFh	Target address (low byte)							
Byte 7	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

53	Test data carrier (11/43)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	1	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

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54	Test ROM (11/44)	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	1	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

55	Test RAM (11/44)	Bit No. 7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	0	1	1	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

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56	**Test battery (11/45)**	**Bit No.**							
		7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Byte 0	Command code	0	0	1	1	1	0	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Empty	-	-	-	-	-	-	-	-
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

57	**Test control interface unit (11/45)**	**Bit No.**							
		7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Byte 0	Command code	0	0	1	1	1	0	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
…	Empty	-	-	-	-	-	-	-	-

58	**Block test (11/44)**	**Bit No.**							
		7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Byte 0	Command code	0	0	1	1	1	0	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	ID-Code 00…0FFh	ID 7				ID 6			
Byte 6	ID-Code 00…0FFh	ID 5				ID 4			
Byte 7	ID-Code 00…0FFh	ID 3				ID 2			
Byte 8	ID-Code 00…0FFh	ID 1				ID 0			
Byte 9	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

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59	Read status (11/47)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	1	0	1	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

60	Reset control interface unit	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	1	1	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

61	Query command result (11/46)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	1	1	0	1
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
…	Empty	-	-	-	-	-	-	-	-

62	Set outputs (11/47)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	0	1	1	1	1	1	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Empty	-	-	-	-	-	-	-	-
Byte 3	Empty	-	-	-	-	-	-	-	-
Byte 4	Output <-,-,-,-A1,A2,A3,A4>	-	-	-	-	A1	A2	A3	A4
…	Empty	-	-	-	-	-	-	-	-

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64	Write data carrier (11/30)	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	0	1	0	0	0	0	0	0
Byte 1	Reserved/antenna<A>/toggle<T>	Reserved						A	T
Byte 2	Address	Address (high byte)							
Byte 3	Address	Address (low byte)							
Byte 4	Word count 0…31 (decimal)	Word count							
Byte 5	Data 00…0FFh	Data							
Byte 6	Data 00…0FFh	Data							
…	Data 00…0FFh	Data							
Byte N	Data 00…0FFh	Data							

If data are to be overwritten in only one data carrier with a specific ID-code, the bus coupler must first be informed of the ID-code by means of command 37 "operating mode ID-code".

240	Acknowledge	Bit No.							
		7	6	5	4	3	2	1	0
Byte 0	Command code	1	1	1	1	0	0	0	0
Byte 1	Reserved/-/toggle<T>	Reserved							T

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8 Fault diagnostics

8.1 LED error indicators

The state of the bus coupler MVG-KFD2-B6 is indicated by means of the 5 LEDs on the front side of the device:

LED	States	Description
OPERATION	Permanent GREEN	Mains on / ready
	Permanent RED	Hardware error on the Ident-coupler circuit board
DOWNLOAD	2 s green flashing after switching on	Initialisation / self-test / software-download
RS422/485	GREEN	Communication with the identification system active and fault-free
	RED	Reception of fault-free telegram from identification system
INT.COM	GREEN	Internal communication active and fault-free
	RED	Fault-free telegram
BUS	GREEN	Communication via the PROFIBUS-DP active and fault-free
	RED	Hardware error
	5 s RED / 0.5 s GREEN, flashing	Interrupted data exchange via the field bus

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8.2 Status messages

The following status messages are defined:

Status	Meaning
00h	Command executed without error
01h	Battery weak (battery-operated code and data carrier only), command correctly executed (see IDENT-M System V handbook, page 13/8)
02h	Reserved
03h	Reserved
04h	Incorrect or incomplete command or parameter not in valid range or timeout
05h	Read or write error, no data carrier
06h	Hardware error, read/write head 0, read/write head missing
07h	Hardware error, read/write head 1, read/write head missing
08h	Reserved
09h	Reserved
0Ah	Reserved
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Reserved
0Fh	Reserved
10h	Reserved

8.3 Identification-system error messages

Note

The detailed description of the error messages for the identification system can be found in the "Microwave Identification System" handbook, Edition '95, starting on page 13/1.

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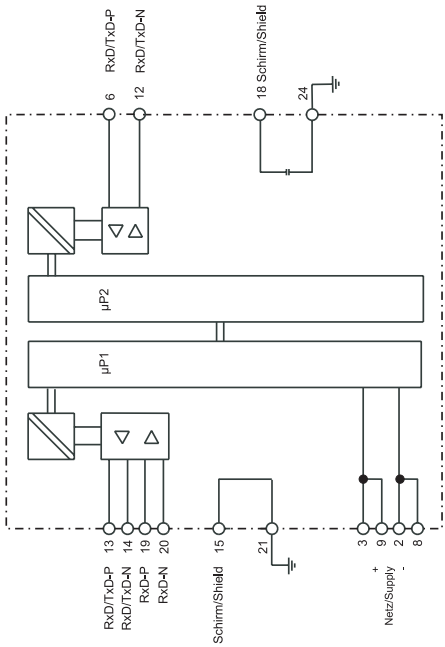
9 Technical Data

Bus Coupler for PROFIBUS-DP

- **can be connected to PROFIBUS-DP**
- **Bus wires electrically isolated from the device power supply**
- **Field bus and serial interfaces connected via withdrawable terminals**

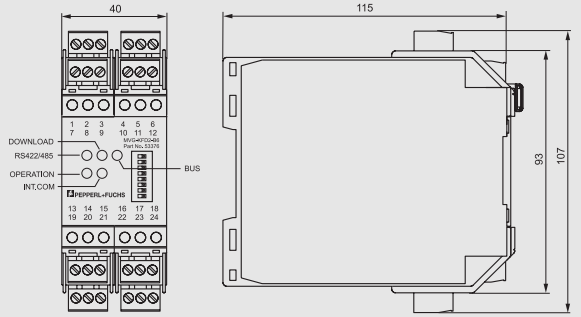
Function:
The bus coupler MVG-KFD2-B6 is a coupling module in the KF-housing via which the identification system Ident-M System V can be operated on the PROFIBUS-DP. For this purpose, the serial interface (RS 422 / RS 485) of the bus coupler is connected to the control interface unit of the identification system and the field bus connection is connected to the PROFIBUS-DP. The identification system is operated as a slave on the PROFIBUS-DP and provides full read/write functionality. Up to 31 words, each 16 bits, can be read and written.

Connections: PROFIBUS-DP



Connections: control interface unit

Dimensions



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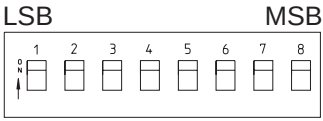
DIP switches:	 Switches 1 ... 7: Subscriber address Switch 8: No function
Bus termination:	 Switch 9: Bus termination 0 = OFF 1 = ON

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Ordering code	MVG-KFD2-B6
Power supply	
Supply voltage	18 V DC ... 35 V DC PELV
Ripple	≤ 10 %
Current consumption	< 180 mA at 24 V DC
Quiescent current	< 110 mA (type)
Indicators	
Ident	4 LEDs (two-colour)
'OPERATION'	Power on / identification device error
'RS422/485'	Serial interface
'INT.COM'	Device-internal communication
'DOWNLOAD'	Initialisation / software-download
Bus	1 LED (two-colour)
'BUS'	Fieldbus communication / device error
Housing	K-system, 40 mm (2 TE)
Bus connection:	accord. to EN 50 170
Transfer rate	9.6; 19.2; 44.44; 93.75; 187.5; 500; 1500 kBit/s self-synchronising
Address setting	DIP switch
Environmental conditions	
Operating temperature	248 Kelvin ... 343 Kelvin (-25 °C ... +70 °C)
Storage temperature	248 Kelvin ... 358 Kelvin (-25 °C ... +85 °C)
Humidity	max. 75% rel. humidity
Protection class	IP 20 accord. to DIN 40050
Mechanical	
Construction	modular terminal housing constructed of Makrolon, combustibility class as per UL 94: V - 0
Mounting	can be snapped onto 35 mm standard rails accord. to DIN EN 50 022 or screwed on with 4 screws in removable brackets in a 90 mm grid.
Connection possibilities	self-opening device terminals, max. cross section 2 x 2.5 mm^2

Issue date 01.07.99

One Company, Two Divisions.

Factory Automation Division

Product Range

- Binary and analog sensors
- in different technologies
  - Inductive and capacitive sensors
  - Magnetic sensors
  - Ultrasonic sensors
  - Photoelectric sensors
- Incremental and absolute rotary encoders
- Counters and control equipment
- ID systems
- AS-Interface

Areas of Application

- Machine engineering
- Conveyor or transport
- Packaging and bottling
- Automobile industry

Process Automation Division

Product Range

- Signal conditioners
- Intrinsically safe interface modules
- Remote process interface
- Intrinsically safe field bus solutions
- Level control sensors
- Process measuring and control systems engineering at the interface level
- Intrinsic safety training

Areas of Application

- Chemical industry
- Industrial and community sewage
- Oil, gas and petrochemical industry
- PLC and process control systems
- Engineering companies for process systems

Service Area

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