BK MIKRO9

Tool monitoring system

Getting Started with Profibus
Release 1.00 / 21.4.2008

MICROCOMPUTERS · SYSTEMS · COMPONENTS · TUTTLINGEN GMBH

General Notice

Safety guidelines

These operating instructions contain notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger:

Danger

Immediate danger

to life and limb of personnel and others.

Non-compliance may cause death or serious (crippling) injury.

Warning

Hazardous situation

to life and limb of personnel and others.

Non-compliance may cause death or serious injury.

Caution

Potentially hazardous situation

Non-compliance may cause slight injury;

possible damage to property.

Notes on correct handling

Non-compliance may cause damage to the product and/or damage to parts/items in the vicinity.

Environmental protection

Non-compliance may have an impact on the environment.

Intended use

Warning

BK MIKRO is a control system suitable for tool as well as for object and free space monitoring applications. It may only be used for the applications described in the technical documents, and only in connection with devices or components from other manufacturers which have been approved or recommended by us.

This product can only function correctly and safely if it is transported, stored, set up, and installed correctly, and operated and maintained as recommended.

Qualification of personnel

Only qualified personnel may carry out the following activities on the control system: installation, commissioning, operation, maintenance.

Qualified persons in accordance with the safety guidelines are defined as persons who are authorized to commission, to ground, and to tag circuits, equipment, and systems in accordance with established safety practices and standards.

Disclaimer of liability

We have checked the contents of this document for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

EEC directive EMC 89/336/EEC

The following applies to BK MIKRO control system:

$C\epsilon$ Products which carry the CE symbol meet the requirements of the EEC directive 89/336/EEC on electromagnetic compatibility.

The EEC declarations of conformity and the related documentation will be maintained at the following address for inspection by the responsible officials in accordance with article 10(1) of the above stated EEC directive:

MSC Tuttlingen GmbH
Rudolf-Diesel-Straße 17
78532 Tuttlingen

BK MIKRO9 corresponds the specification of UL 508.

Areas of use

Control systems of the BK MIKRO series meet the applicable, harmonized, European standards for the respective area of applications.

Warranty

For the devices of MSC Tuttlingen GmbH, the agreements determined in the General Terms and Conditions (AGB) are valid.

Fitting conditions

The fitting conditions and safety notes in the operating instructions must be adhered to when commissioning and operating the devices.

Copyright

These operating instructions are intended for the operator and the operator's personnel only. This document and its contents may not be disclosed to third parties, either in full or in part, by reproduction, transmission or any other means without express written authority.

Non-compliance may lead to prosecution under criminal law.

Contents

Purpose

These operating instructions are part of the documentation of the BK MIKRO9. They provide service personnel and system advisors with the information required to install, commission, operate and maintain the BK MIKRO9.

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These operating instructions are available as article no. **68 36 268**.

Subject to change without notice.

1   Characteristics

BK MIKRO9 is a control system suitable for tool as well as for object and free space monitoring applications.

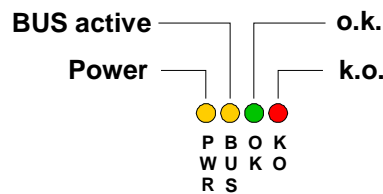The complete BK MIKRO9 system comprises

- a control unit (option: an expansion module),

- a sensor (scanner),

a connection cable.

2   Interfacing to the PLC

First: apply power

Apply 24V DC to the power connector. Refer to the according hardware manual.

Four light-emitting diodes (LEDs) on the front panel of the BK MIKRO9 control board are used to indicate status information.

LED	Color	Designation	Function	Status
Bus	**yellow**	**BUS active**	**USB active**	on
			Data transmission (USB/Profibus)	**flashing**
			Bus not active	out
PWR	yellow	Power	Power supply 24 VDC	on
O.K.	green	O.K.	Scanning "O.K."	on
K.O.	red	K.O.	Scanning "K.O."	on

If you plugged in the power correctly, the power LED will light permanently.

Second: connect Profibus

Connect the BK MIKRO9 controller to the PLC. Please use a cable within the specification of Profibus. Use the pin assignment according to the Controller manual. Please do not plug in the scanner before configuring the scanner type.

The control unit BK MIKRO9 supports several scanners, e.g.TK7, TK8, TK9. Those can be selected with the configuration software BK Konfig9 or Profibus. Characteristics and technical data can be seen in the according documentation.

By default the scanner TK8 is selected. The scanner type has to be modified before connecting a scanner which does not correspond to the settings of the control unit. Due to different solution as well as gear ratio can be set off movements which the maximum load limit exceeds and can be damage the scanner.

Note:

Connecting a scanner, which does not correspond to the settings of the control unit, can damage the scanner

Warning

3   Profibus address

The PROFIBUS address can be changed – preset is the address 50 dec.

You can change it:

- ▪ by using the I/O module (refer to the hardware manual FSW1.11 or higher) or

- ▪ by using the software "System Setup BK MIKRO9" which runs via USB on a computer.
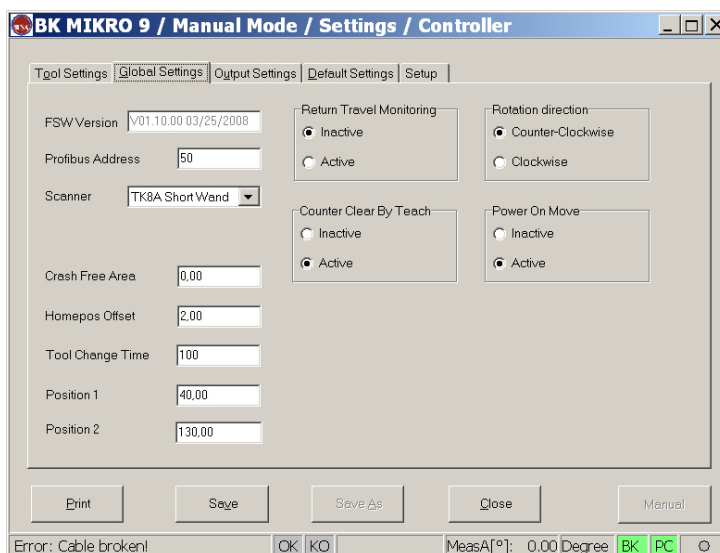

Print screen of setting the Profibus address.

4   GSD File

Use the specific GSD file of BK MIKRO9 to make a project of the Profibus. The correct version is named with: MSCT05CF.gsd.
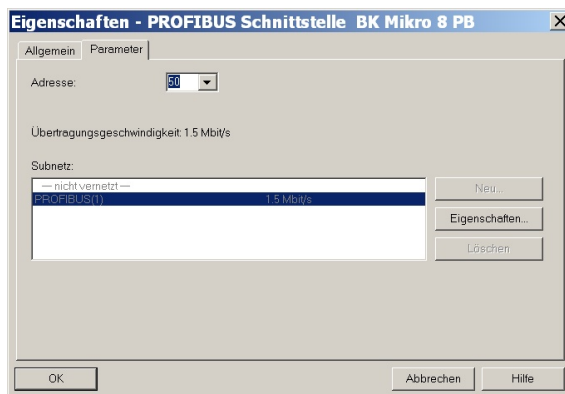
Depending on your PLC the installation differs. Please follow the instructions of the PLC-manual. Normally an installation has the following steps.

- Start PLC software
- Open the Hardware-Configuration and install the GSD File of the controller BK MIKRO9. Actual it is only the BK MIKRO 8 PB mode available.
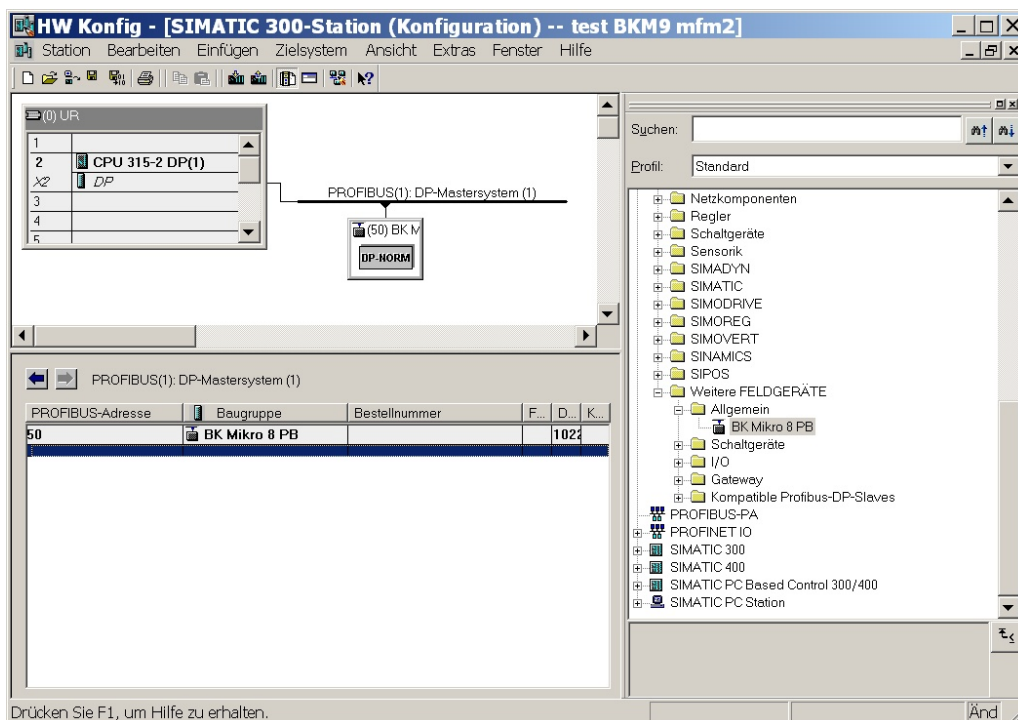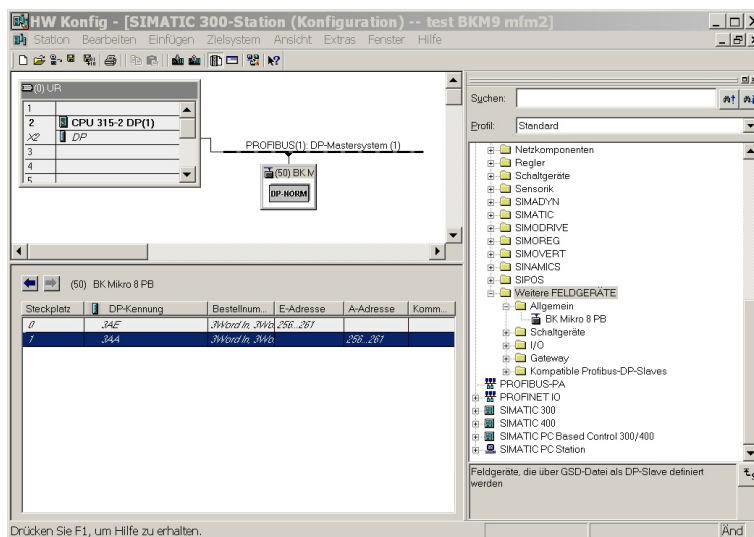

- Allocate the correct Profibus address of the module.
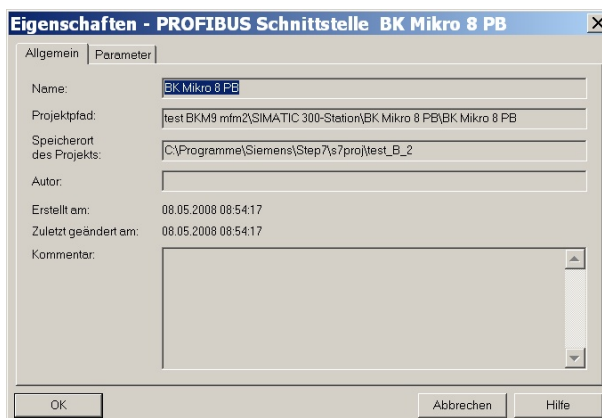
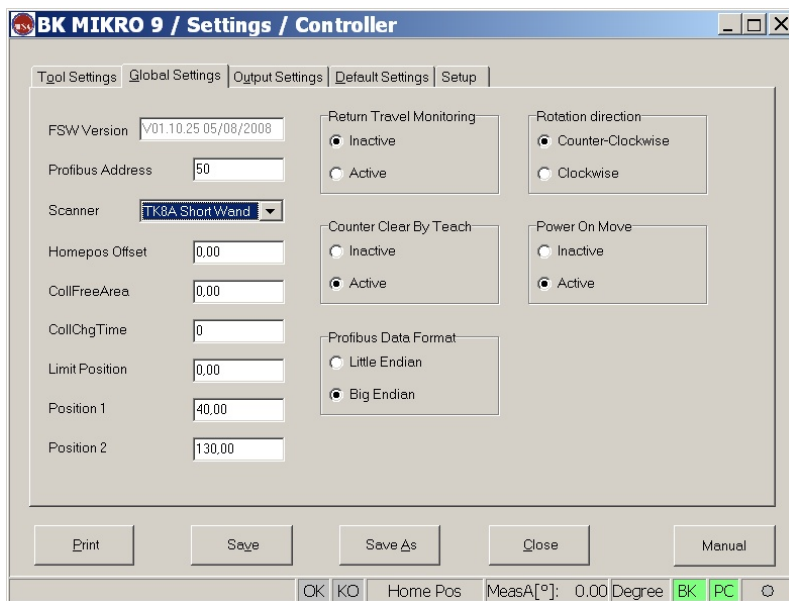- The PLC-Adress of BK MIKRO9 will be shown in the hardware configuration.

- Load the Configuration into the PLC.

5   PLC

Some PLC's have different ways to sequence words on the Profibus. Most SIEMENS PLC's are matching perfectly to our Byte/Word-Arrangement. Some FANUC PLC's are changing "Little and Big endian". This means that the two bytes of a word are swapped. Some PLC's are interchanging Words and Bytes in other ways. Please refer to the manual of your PLC to check interchanging.

The controller BK MIKRO9 (FSW1.11 or higher) has the ability to adapt "Little and Big endian".

Please adjust "Little and Big endian" with the software "System Setup BK MIKRO9".

Example of AW2 "Little and Big endian":

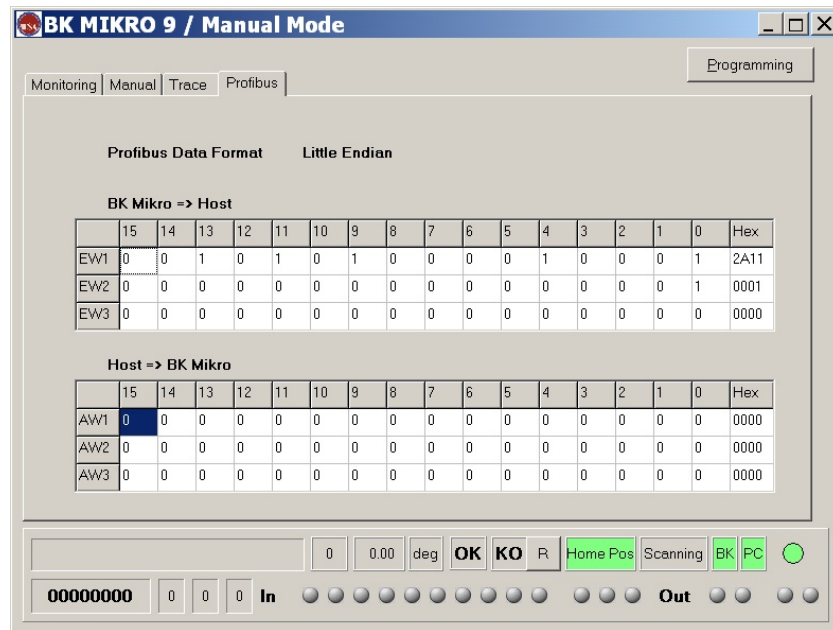The software "System Setup BK MIKRO9" has a Diagnosis to check interchanging.

BK MIKRO 9 / Manual Mode

Monitoring | Manual | Trace | Profibus

Programming

Profibus Data Format   Little Endian

BK Mikro => Host

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Hex
EW1	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	1	2A11
EW2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0001
EW3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000

Host => BK Mikro

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Hex
AW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
AW2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
AW3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000

0   0.00   deg   **OK** **KO** R   Home Pos   Scanning   BK PC   ◯

00000000   0   0   0   **In**   ◯◯◯◯◯◯◯◯◯◯   ◯◯◯   **Out**   ◯◯   ◯◯

6   Profibus Protocol

Refer in detail to the manual.