Table of Contents

5.18 Idec Micro3 ..... 5.18-3
5.18.1 General Information 5.18-3
5.18.2 Technical Description 5.18-3
5.18.3 Protocol Parameters IDEC Micro 3 ..... 5.18-4
5.18.3.1 Parameter Maximum Waiting Time for Response 5.18-4
5.18.3.2 Parameter Delay Until Connection Setup 5.18-4
5.18.4 Data Type Structure 5.18-4
5.18.4.1 Data Types 5.18-5
5.18.5 Additional Functions 5.18-6
5.18.6 Physical Interfacing 5.18-7
5.18.6.1 Connecting Cable RS485 - IDEC Micro 3 ..... 5.18-8
5.18.6.2 Connecting Cable Universal Interface SER1 RS485 - IDEC Micro 3 ..... 5.18-9
5.18.7 Error Messages 5.18-10

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5.18 Idec Micro3

5.18.1 General Information

The operating terminals can be easily connected to Idec Micro3 controllers.
The programming interface is used to connect the operating terminal.

Data traffic on the interface is handled by the 1:N protocol.
The operating terminal is capable of addressing several controllers simultaneously.

The software components of the system are fully adapted to the parameters and marginal conditions of the programming unit (PU) interface.

This offers the user the following advantages:

- Random read and write access to all data within the PLC.
- The operating terminal automatically polls the freely definable data areas for cyclic data.
- No configuration effort required within the PLC.
- The PU protocol is handled entirely by the operating system of the controller. A PLC program (function blocks, etc.) in the PLC is not required for communication handling.
- The protocol provides error control. Transmission errors are detected and, if possible, eliminated by repeating the transmission. An electrically isolated, noise-immune interface hardware in accordance with the RS485 half-duplex standard permits the application even in a harsh industrial environment.
- The parameters of the interface SER1 are assigned in the programming software in a protocol-specific manner and are stored in the application description. Modifying of the parameters is also possible in the setup mask or each other I/O mask of the terminal at any time.
- The programming system provides a maximum of support to the operator in programming the operating terminal. The definitions (abbreviations) used here are identical with the definitions used within the PLC program.

5.18.2 Technical Description

The 1:N protocol is used to connect the operating terminal to Idec Micro3 controllers.

This protocol allows random read and write access - in bit, byte and word-mode - to all PLC data.

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5.18.3 Protocol Parameters IDEC Micro 3

The operating terminal adapts to the default parameters of the PU interface. It is therefore **not** necessary to adapt the interface parameters in the PLC.
To ensure proper connection, do **not** modify the parameters.

Baud rate:	300, 600, 1200, 2400, 4800, **9600**, 19200, 38400, 375000, 500000 Baud
Parity:	none, odd, **even**
Data bits:	5, 6, **7**, 8
Stop bits:	**1**, 1.5, 2
Handshake:	**no handshake**, hardware, software

5.18.3.1 Parameter Maximum Waiting Time for Response

This parameter indicates the length of time that the operating terminal waits for the response from the PLC.
Permitted values are in the range of 10 ms and 2550 ms.
The default value is 500 ms.

5.18.3.2 Parameter Delay Until Connection Setup

This parameter is not evaluated.

5.18.4 Data Type Structure

a) Alphanumerical Texts
Are stored in the memory byte for byte in ascending address order.

b) Binary Variables with a Length of 1, 2 or 4 Bytes
Data with a length of 2 bytes are interpreted in the PLC-conforming byte order for words.
Data with a length of 4 bytes are interpreted in the PLC-conforming byte order for long-words.

c) Timer
For access to the timer, the corresponding mode of representation TIMER must be selected.

d) Counter
For access to the counter, the corresponding mode of representation COUNTER must be selected.

5.18.4.1 Data Types

Direct user access is possible to the following data types:

Type	Description	Access
I	Input	Bit
IB	Input	Byte
IW	Input	Word
Q	Output	Bit
QB	Output	Byte
QW	Output	Word
M	Flag	Bit
MB	Flag	Byte
MW	Flag	Word
R	Register	Bit
RB	Register	Byte
RW	Register	Word
DW	Data Register	Word
TP	Timer PRESET Value Constant or Data Register No. Use the Data Register to Set the Timer	Word (Read-Only)
TC	Timer CURRENT Value	Word (Read-Only)
CP	Counter PRESET Value Constant or Data Register No. Use the Data Register to Set the Counter	Word (Read Only)
CC	Counter CURRENT Value	Word (Read-Only)
HP	Highspeed Counter Preset Constant or Data Register No. Do Not Use in a Table	Double Word (Read-Only)
HC	Highspeed Counter Current Do Not Use in a Table	Double Word (Read-Only)

Table 5.18-1: Data types

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5.18.5 Additional Functions

In addition to the random read and write access to controller variables, a 12 byte memory area is specified in the mask definition as a poll area.

The only marginal conditions regarding this memory area are that the PLC must be able to access in bit-mode and the terminal in word-mode and the memory area must be contiguous. This memory area must reside in the data register (DW).

The maximum data area size is 6 words.

Example: The cyclic poll area is set to DW21 in the programming system.

Word Address	Reference	High Byte	Low Byte
Word Address + 0	DW21	Write Coordination byte	Reserved
Word Address + 1	DW22	Message Channel High Byte	Message Channel Low Byte
Word Address + 2	DW23	Function Keys LED 1 to 4	Function Keys LED 5 to 8
Word Address + 3	DW24	Function Keys LED 9 to 12	Function Keys LED 13 to 16
Word Address + 4	DW25	Function Keys LED 17 to 20	Function Keys LED 21 to 24
Word Address + 5	DW26	Function Keys LED 25 to 28	Function Keys LED 29 to 32

Table 5.18-2: Word structured poll area

5.18.6 Physical Interfacing

Pin	Designation	Function
1	Shield	Shielding
2	T(A)	Transmit Data, Channel A
3	R(A)	Receive Data, Channel A
4	RTS(A)	Request To Send, Channel A
5	CTS(A)	Clear To Send, Channel A
6	nc	not connected
7	nc	not connected
8	SG	Signal Ground
9	T(B)	Transmit Data, Channel B
10	R(B)	Receive Data, Channel B
11	RTS(B)	Request To Send, Channel B
12	CTS(B)	Clear To Send, Channel B
13	nc	not connected
14	nc	not connected
15	nc	not connected

Table 5.18-3: Pin assignment X2 RS485

Pin	Designation	Function
8	T(A)	Transmit Data, Channel A
9	T(B)	Transmit Data, Channel B
11	SGND	Signal Ground
22	R(A)	Receive Data, Channel A
23	R(B)	Receive Data, Channel B

Table 5.18-4: Pin assignment universal interface SER1 RS485

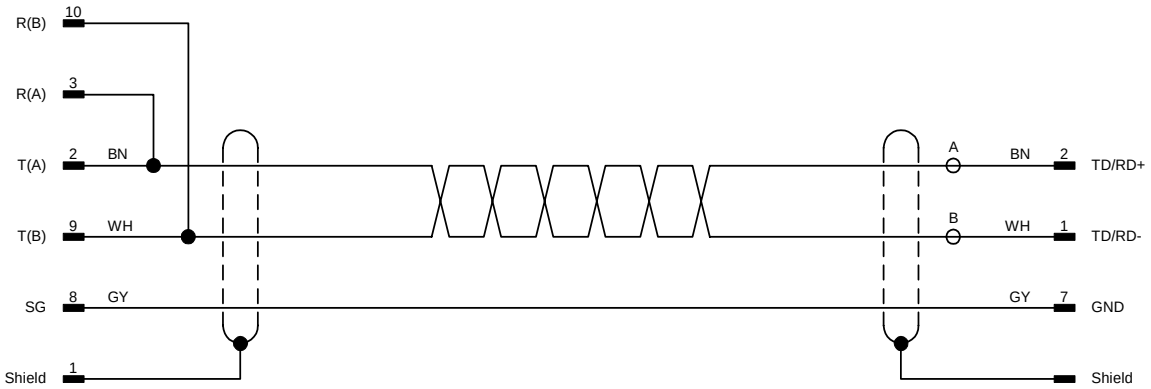
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5.18.6.1 Connecting Cable RS485 - IDEC Micro 3

The following wiring diagram does not apply to terminals with universal interface.

TesiMod
Operating Terminal

IDEC
Micro 3



D-Subminiatur
Male Connector
15-pin

DIN 41524 elbow plug
Male Connector
8-pin

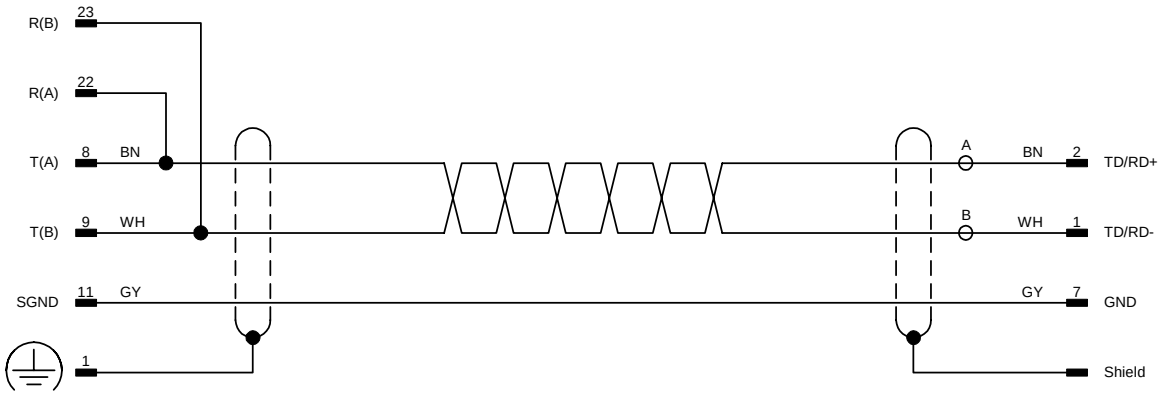
Each end of the shield is connected to the metallic enclosure.

5.18.6.2 Connecting Cable Universal Interface SER1 RS485 - IDEC Micro 3

The following wiring diagram applies to terminals with universal interface only.

TesiMod
Operating Terminal

IDEC
Micro 3



D-Subminiatur
Male Connector
25-pin

DIN 41524 elbow plug
Male Connector
8-pin

Each end of the shield is connected to the metallic enclosure.

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5.18.7 Error Messages

Code 1

Subcode

1	E_SLAVE_NOT_READY	Slave not ready
2	E_PROTOKOL	Sequence of the packets
3	E_FRAME	Protocol frame error
4	E_TIMEOUT	Timeout error
5	E_CRC_BCC	CRC error
6	E_PARITY	Parity error
7	E_SEND_ABORT	Send process aborted
8	E_REC_ABORT	Receive process aborted
9	E_BUF_SIZE	Insufficient cyclic buffer
10	E_NO_DEFINE	No cyclic data defined
12	E_DEFINE	Cyclic data already defined
15	E_NO_PROTOCOL	Selected protocol is not supported
16	E_OVERRUN	Receive buffer overrun
40	E_SYS_ADDRESS	Undefined system variable
50	E_RESPONSE_TIMEOUT	No response from PLC

Code 2

Subcode

58	E_RECEIVE_COUNT	Number of received data incorrect. Check if a variable with an odd number of bytes is read from a word or double-word address in the mask in which the error occurs.

Code 3 PLC error

Subcode

6	Data area error	Write-access to flag >= 290. Address does not exist in PLC
7	Illegal write-access to timer and counter	Writing to timer and counter not permitted.
10	Incorrect data coding in the protocol	

Code 17

Subcode

00	BCC error on the PLC-end	
01	Frame error on the PLC-end	
02	Parity error on the PLC-end	
03	Illegal command to PLC	Write-access to highspeed counter.
04	Procedure error on the PLC-end	

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