

MTC200 Fast Signal Transferring 19VRS

Functional Description

SYSTEM200

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Fast Signal Transferring
19VRS

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Purpose of Documentation This documentation describes the function "Fast Signal Transferring" which is valid from Version 19V02 onwards.

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1 Overview

1.1 Availability

The “Fast signal transmission” function is available with version 19V02 and higher.

1.2 Function and Application

Function	The “Fast signal transmission” function allows the real-time data transfer of drive signals to the PLC. Current signal values are available in each PLC cycle. If the fast PLC implementation is used, the drive signals can be emitted via an I/O module with a transmission cycle of 10 msec.
Application	For instance, the “Fast signal transmission” can be used to transmit the actual torque of a spindle cyclically to a tool break monitoring system via the PLC.

1.3 Selecting the Drive Signals

The following drive signals can be transmitted via the real-time channels:

- Actual torque with mean value generation
- Actual torque without mean value generation (S-0-0084)
- Actual position 1 (S-0-0051 or S-0-0053, depending on Cxx.060)
- Actual position 2 (S-0-0053, only if an additional encoder is configured in the AT)
- Actual speed (S-0-0040)
- Set position (S-0-0047)
- Set speed (internal signal value)

Mean value generation The actual torque can be smoothed by mean value generation.

1.4 Parameter Value Assignment

The parameter assignment of the transmission channels is executed using the machine data page 092.

1.5 Boundary Conditions

- The number of real-time transmission channels is limited to 6.
- One signal can be transmitted per axis.
- All signals are delivered as 32-bit double-word values with sign.

Note: If the fast 2-msec PLC implementation is used, the 32-bit data consistency is not possible. For that reason, only the 16-bit low word of the transmission channel must be evaluated in the fast PLC implementation. Hence, accelerated emission via an I/O module is possible for the actual torque only.

2 Parameter Value Assignment via Machine Data

2.1 Machine Data Page 092

The parameter assignment of the real-time transmission channels is executed via the machine data page 092.

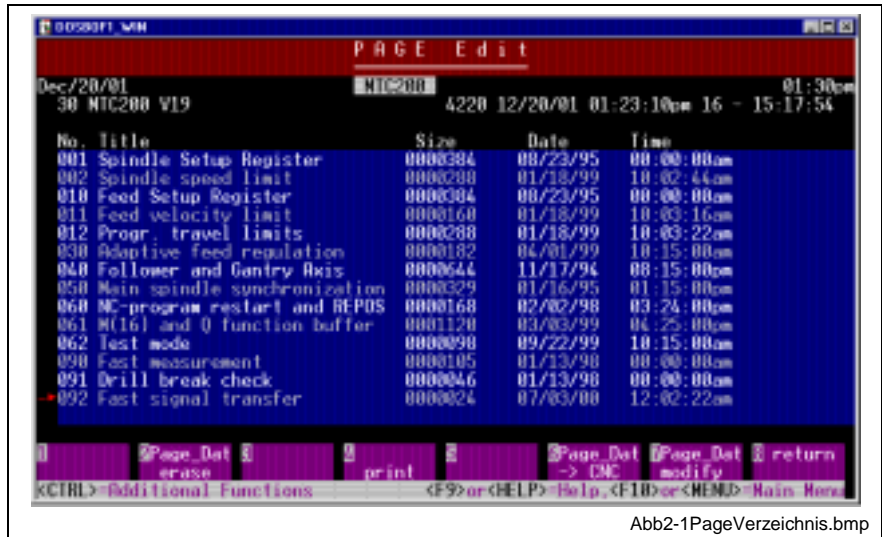


Abb2-1PageVerzeichnis.bmp

Fig. 2-1: Page directory with page 092

2.2 Selecting the Real-Time Transmission Channels

Using the page run variable 1, the six transmission channels can be selected.

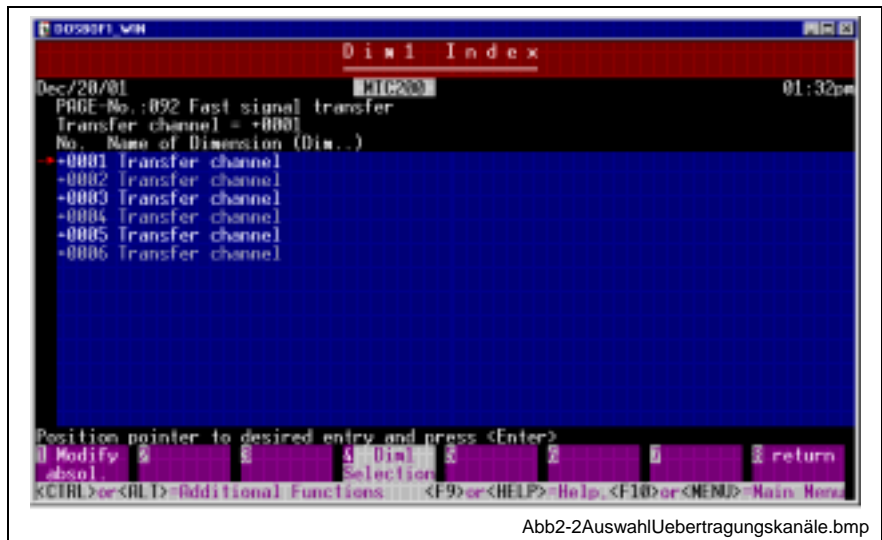


Abb2-2AuswahlUebertragungskanäle.bmp

Fig. 2-2: Selecting the six transmission channels

2.3 Page Variables

The machine data page 092 “Fast signal transmission” is used to define the “Axis number”, the “Signal selection” and the “Time base for average value” for each of the six transmission channels.

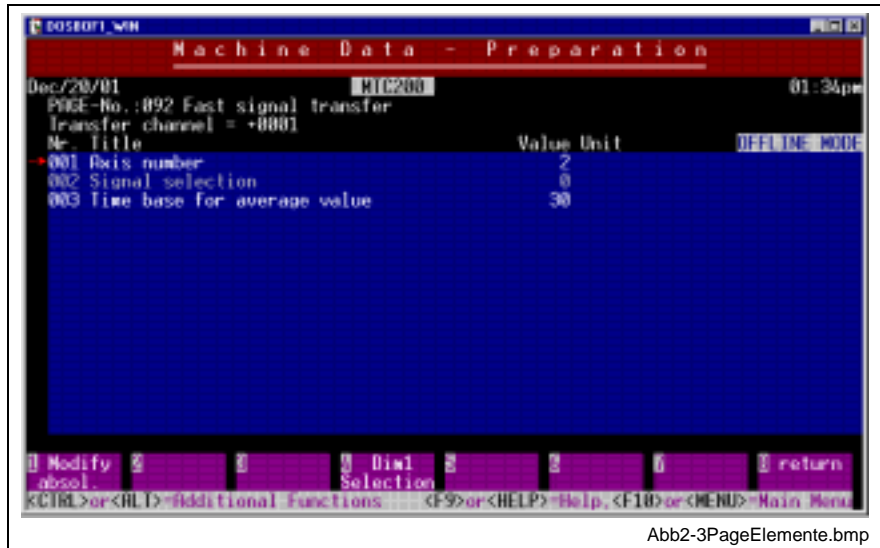


Fig. 2-3: Page elements of the transmission channel page

2.4 Axis Number

The “Axis number” defines the assignment of the real-time transmission channel to an axis. The same numbering is used as is the case in the control parameters. Value range: 0..32. The value 0 deactivates the corresponding transmission channel.

2.5 Signal Selection

The “Signal selection” can be used to select the signal for the fast data transfer. Value range: 0..6.

SIGN. NO.	SIGNAL	STANDARDIZATION
0	Actual torque with mean value generation	SERCOS torque standardization * 5
1	Actual torque without mean value generation (S-0-0084)	SERCOS torque standardization
2	Actual position 1 (S-0-0051 or S-0-0053, depending on Cxx.060)	SERCOS position standardization
3	Actual position 2 (S-0-0053, only if an additional encoder is configured in the AT)	SERCOS position standardization
4	Actual speed (S-0-0040)	SERCOS speed standardization

5	Set position (S-0-0047)	SERCOS position standardization
6	Set speed (internal signal value)	SERCOS speed standardization

Fig. 2-4: Selection of signals

The actual position 1 corresponds to the encoder position which is used on the drive for controlling the position (motor encoder or external encoder). The actual position 2 can only be used if a second encoder is connected to the drive, with the position of the encoder being also configured in the cyclic SERCOS telegram.

The actual torque can be transmitted with (signal selection 0) and without (signal selection 1) mean value generation. If the actual torque with mean value generation is preselected, the "Time base for average value" parameter must also be set to the desired value. Moreover, the standardization of the transmitted actual-torque signal value is a different one: as compared with the SERCOS standardization, the signal value is multiplied by a factor of 5.

2.6 Standardization of Signals

Signal type	Axis type	Unit	Decimal points
Actual torque averaged	Linear / rotary axis	%	1
Actual torque	Linear / rotary axis	%	1
Speed	Linear axis	m/min	6
Speed	Rotary axis	rpm	4
Position	Linear axis	mm	4
Position	Rotary axis	°	4

Fig. 2-5: Standardization of signals

Standardization examples:

- The actual speed of the linear axis is -2.551687 m/min. The signal value -2551687 is transmitted.
- Assuming the averaged actual torque is 14.44%: $5 * 14.4 = 72.2$. The signal value 722 is transmitted.

2.7 Time Base for Average Value

The "Time base for average value" parameter is only effective with a signal selection of 0 (averaged actual torque value). Value range: 0..1000 msec.

A value of 0 msec deactivates the mean value generation. If other parameter values are selected, the actual torque of the drive is added over the set time period and then divided by the value of the parameter "Time base for average value".

Note: Internally, only time intervals of $n * 10\text{ms}$, $n = 0, 1, 2..$ are used for mean value generation. The set parameter is then rounded off to multiples of 10 msec.

3 Further Processing of the Signal Values in the PLC

3.1 FB for Fast Signal Transmission

The signal values can be accessed in the PLC using the function block RT_DATA.

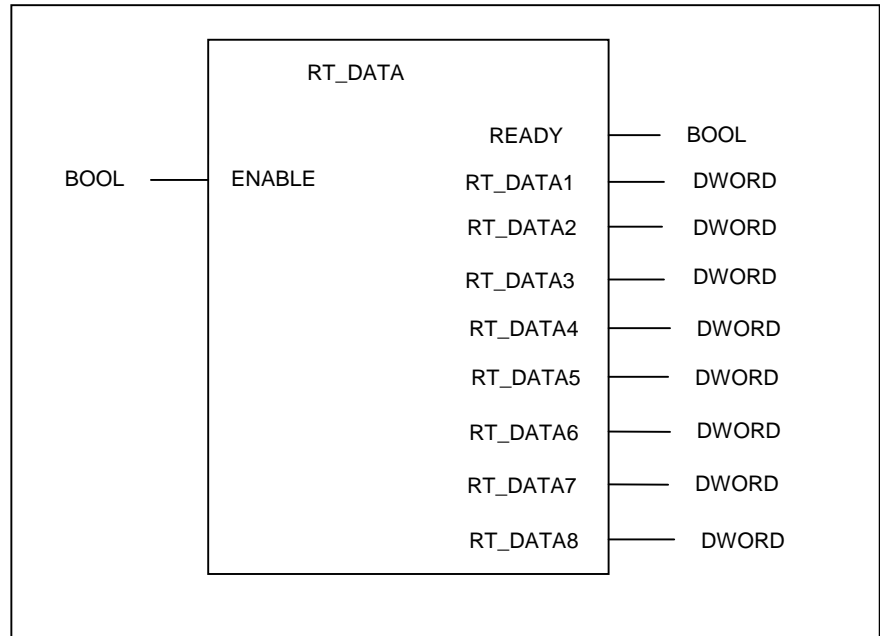


Fig. 3-1: FB for fast transmission of signal values

ENABLE: 0 – FB not active

1 – Transmission of signal values

READY: 0 – Data transfer active or FB not active

1 – Data transferred

RT_DATA1: Signal value of the 1st channel

RT_DATA2: Signal value of the 2nd channel

RT_DATA3: Signal value of the 3rd channel

RT_DATA4: Signal value of the 4th channel

RT_DATA5: Signal value of the 5th channel

RT_DATA6: Signal value of the 6th channel

RT_DATA7: Signal value of the 7th channel

RT_DATA8: Signal value of the 8th channel

Note: In version V19, only the transmission channels 1 to 6 can be used. Channels 7 and 8 can only be used with version 21 and higher.

3.2 Fast Transmission to the I/O Module

If the signal values are to be transmitted to an I/O module as fast as possible, the FB should be called in the fast 2-msec PLC implementation.

In this case, the signal values must be transferred by means of the peripheral access (%QWP...).

Here, it must be noted that the I/O user in the fast implementation may only evaluate the low word transmitted because the 32-bit data consistency is not ensured.

Moreover, the fact that the signals in the NC are, in general, transmitted to the I/O interface at 10-msec intervals must be taken into consideration in the signal transmission. The further transmission from the I/O interface to the I/O module is then implemented asynchronously to the 10-msec cycle. This results in a non-affectable jitter in the signal transmission, which is determined by the cycle of the bus system.

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- per Fax: **+49 (0) 9352 40 49 41**
- per e-Mail: **service@indramat.de**

Our service helpdesk at our headquarters in Lohr am Main, Germany can assist you in all kinds of inquiries. Contact us

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- Niederlassungen mit Kundendienst

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*) <http://www.indramat.de/de/kontakt/adressen>
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- sales agencies
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Data in the present documentation may have become obsolete since printing.

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3. Tel./Faxnummern und e-Mail-Adresse, unter denen Sie für Rückfragen zu erreichen sind.

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