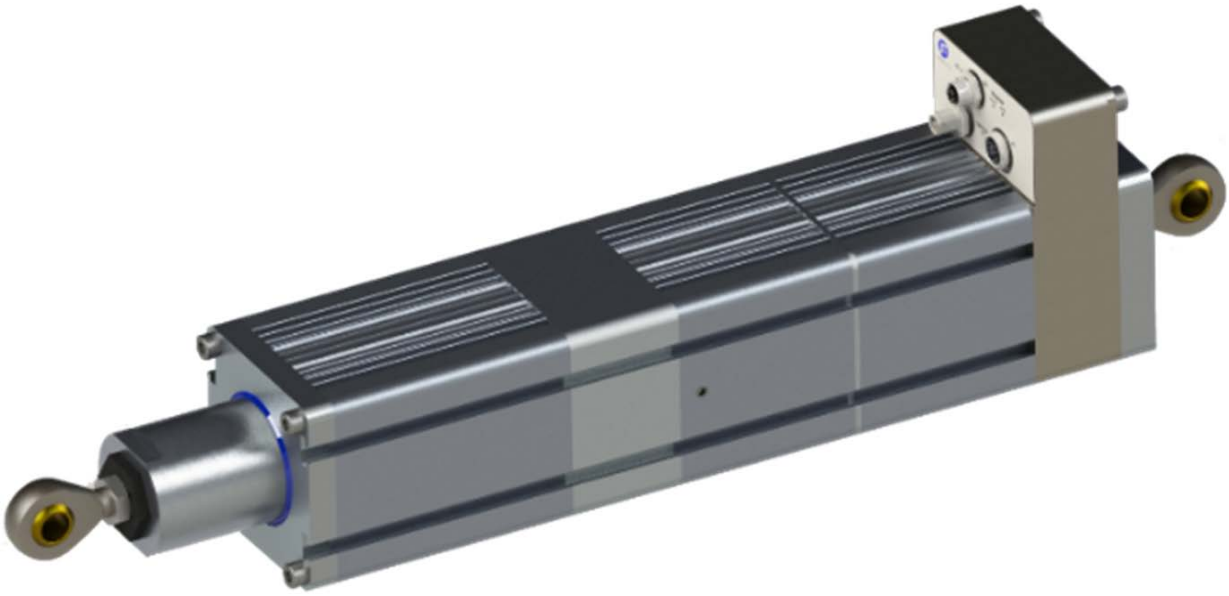
FIFE GUIDING SOLUTIONS

A MAXCESS BRAND

FIFE SMARTDRIVE ACTUATOR – 1200N/2450N

Fieldbus Instruction Manual



EN

Versions 1200N/2450N
Edition 3/2025

MI 1-950

1 INSTRUCTIONS

Fieldbus Communication Mapping

Default Data Map for SDA Modbus TCP. This can be configured through a SW matrix based on the customer requirement.

All data words are 16-bits in length.

ID	Size	Type	Range
INT	16-bit	Signed integer	-32768 to +32767
UINT	16-bit	Unsigned integer	0 to 65535

The SmartDrive Actuator accepts 12 input data words (24 bytes) and sends 12 output data words (24 bytes) to the network host.

Modbus TCP mode

In Modbus TCP mode, the SmartDrive Actuator acts as a Modbus TCP slave. The Modbus master must use the IP address configured in the SmartDrive Actuator menu. All register addresses start at 0. It supports these Modbus TCP function codes:

- Read coils (1)
- Read discrete inputs (2)
- Read holding register (3)
- read input registers (4)
- write single coil (5)
- write single register (6)
- Write Multiple Coils (15)
- Write Multiple Registers (16)
- Mask Write Register (22)
- Function code “Read/Write” Multiple Register (23)

Remote Control via Fieldbus

I/O Modules

Customer -> FIFE: 12 DW
FIFE -> Customer: 12 DW
(1DW = 1Data Word = 2 Byte = 16 Bit)

Assignment of Data Words

DW	Customer -> FIFE	FIFE -> Customer
00	Commands	System Status
01	Job Selection	Currently Selected Job
02	Reserved	Sensor Matrix High
03	Reserved	Sensor Matrix Low
04	Guidepoint High	Guidepoint High
05	Guidepoint Low	Guidepoint Low
06	Gain (integer part)	Gain (integer part)
07	Gain (fractional part)	Gain (fractional part)
08	Reserved	Drive Status
09	Reserved	Actuator Position Hi
10	Reserved	Actuator Position Lo
11	Reserved	Reserved

Data Exchange Customer -> FIFE

Commands (DW 00)

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Lock guide (In “Automatic” mode)																1
Automatic mode													0	0	1	
Manual mode													0	1	0	
Servo center mode													1	0	0	
Jog guide left* (In “Manual” mode)											0	1				
Jog guide right* (In “Manual” mode)											1	0				
Shift guidepoint left* (In “Automatic” mode)											0	1				
Shift guidepoint right (In “Automatic” mode)											1	0				
Reset guidepoint (In “Automatic” mode)											1	1				
Use guidepoint direct value										1						
Togglebit / Connection check		X														
Enable fieldbus control	1															

*) “Right” and “Left” refer to the movement that would occur when the corresponding arrow key on the operating device is pressed. If the direction is inverted on the operating device, this also effects the direction movement through remote control.

Togglebit / Connection check

This bit can be used by the PLC to monitor the connection status with the SmartDrive Actuator. The value of this bit will be returned in the corresponding bit of the status data word and can be checked by the PLC.

Enable fieldbus control

If this bit is set to (0), all commands from the fieldbus interface are ignored. This includes the remaining bits of the command data word, the job selection data word and all values that are activated by a bit in the command data word. If this bit is (1), operation through the operator interface is not possible.

Job Selection (DW 01)

Numeric value

0: Job selection enabled on the operator interface.
>0: Selects the specified job.

Guidepoint High (DW 04)
Guidepoint Low (DW 05)

The high and low words combine into a signed 32-bit value. Depending on the system unit setting, this is either 0.001 mm or 0.0001 inch.

Before setting the DW 4 & 5 set DW01 bit 6 to (0)
*DW 4 & 5 must be set properly before setting bit 6 to (1)

The value will only be used if Bit 6 in DW 01 is set to (1).

Gain Integer (DW 06)
Gain Fractional (DW 07)

The integer and fractional parts are used together to determine the gain multiplicator. The integer part represents what's to the left of the decimal point and the fractional part represents what's to the right of the decimal point, with the highest bit representing 1/2, the next bit representing 1/4 and so on.

The sign of the integral part indicates guiding loop polarity.

Example:
Integral part: -2
Fractional part 0x8000
Gain is 2.5, polarity negative

Data exchange FIFE -> Customer

System status (DW 00)

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Guiding locked																1
Automatic mode															1	
Manual mode														1		
Servo center mode													1			
Guidepoint direct used										1						
Motor OK				1												
Controller OK			1													
Toggle bit / Connection check		X														
Fieldbus control active	1															

Bits that are set correspond to the actual system status.

Togglebit / Connection Check

This bit returns the value of the corresponding bit in the command data word. (See description there).

Motor OK

This bit is (1), when a valid motor type is detected, the motor is powered and there is no short circuit or external force on the motor resulting in an overvoltage. If this bit is (0), an icon and/ or message text will be visible on the operator interface, explaining the reason.

Controller OK

This bit is (1), when all temperature and voltage levels (except for the motor power supply) are normal. If this bit is (0), an icon and/or message text will be visible on the operator interface, explaining the reason.

Fieldbus Control Active

This bit is (1), when the system is controlled through the fieldbus interface. The operator interface will be locked. The drive must in “limited local control” status (remote control on), otherwise this bit will remain (0) to indicate that the PLC does not control the drive.

Currently Selected Job (DW 01)

The currently selected job is returned. (Possible values are described as part of the description for selecting jobs.)

Sensor Matrix High (DW 02)
Sensor Matrix Low (DW03)

Represents the current position of the material relative to the sensor.
The value is expressed in 0.001 mm or 0.0001 inch, depending on system setting. A value of 0 means that no guidepoint value has been set.

Guidepoint High (DW 04)
Guidepoint Low (DW 05)

The current guidepoint of the main drive is returned.
The value is expressed in It's 0.001 mm or 0.0001 inch, depending on system setting.

Gain Integer (DW 06)
Gain Fractional (DW 07)

The integer part represents what's to the left of the decimal point and the fractional part represents what's to the right of the decimal point, with the highest bit representing 1/2, the next bit representing 1/4 and so on.

The sign of the integral part indicates guiding loop polarity.

Actuator Position High (DW 09)
Actuator Position Low (DW 10)

Represents the current position of the actuator.
The value is expressed in 0.001 mm or 0.0001 inch, depending on system setting.

Drive Status (DW 08)

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Usage					Encoder				Speed						ASC	
ASC not used															0	0
ASC in use															0	1
ASC Alarm															1	0
ASC lock															1	1
Loss of Null														1		
Centered											1					
Maximum speed extending										1						
Maximum speed retracting									1							
Drive in setup								1								
Inner stroke limit						1										
Outer stroke limit					1											
Remote control blocked	1															

Installation.fm