

## 如何在 Sysmac Studio 中通过 Ethernet/IP 将 CMMT 连接到 OMRON PLC

本文档将分步介绍要通过 Ethernet/IP 将 CMMT 连接到 OMRON PLC 时必须执行的操作以及如何通过 ProfiDrive 协议进行控制。

CMMT

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# 目录

<b>1</b>	<b>使用的元件/软件</b> .....	<b>5</b>
<b>2</b>	<b>FAS 配置</b> .....	<b>6</b>
2.1	在 FAS 中创建新项目 .....	6
2.2	与 PLC 集成时的 CMMT 驱动器参数设置 .....	6
2.2.1	在 FAS 中进行 IP 扫描和设置 .....	6
2.2.2	Factor group 设置 .....	6
2.2.3	Reference values 设置 .....	7
2.2.4	EtherNet/IP interface 设置.....	7
2.2.5	Telegram selection 设置 .....	8
2.2.6	存储参数.....	8
<b>3</b>	<b>测试与 PLC 的连接</b> .....	<b>9</b>
<b>4</b>	<b>Sysmac Studio 配置</b> .....	<b>10</b>
4.1	创建新项目 .....	10
4.2	PLC Ethernet/IP 端口配置 .....	10
4.2.1	IP 地址 .....	10
4.2.2	PLC 模块配置.....	11
4.3	创建数据类型和全局变量 .....	13
4.4	添加 EDS 文件.....	14
<b>5</b>	<b>传输到控制器并通过 Watch 表控制</b> .....	<b>17</b>
5.1	符合报文 111 的 CMMT 控制序列 .....	18
<b>6</b>	<b>简介: EtherNet/IP 过程数据</b> .....	<b>24</b>



## 使用的元件/软件

类型/名称	软件/固件版本	生产日期
CMMT-AS	V018.0.5.62_release	2020
Festo Automation Suite	2.0.1.9	2020
CMMT-AS 插件	20.01.8	2020
NJ301-1100 Omron PLC	1.10	--
Sysmac Studio 标准版	Ver.1.16	--

表 0.1: 1 使用的元件/软件

**信息**

本应用说明介绍了 CMMT-AS 伺服驱动器相关操作程序。适用于 CMMT-AS 伺服驱动控制器和 CMMT-ST 伺服驱动控制器均基于相同的软件平台。因此，所述设置还可用作其参数化参考。我们在此明确指出，尚未对上述内容进行明确测试，因此无法保证功能正常！

## 1 FAS 配置

### 1.1 在 FAS 中创建新项目

在 FAS 中创建表示所需 HW 元件的新项目。

### 1.2 与 PLC 集成时的 CMMT 驱动器参数设置

#### 1.2.1 在 FAS 中进行 IP 扫描和设置

The screenshot shows the 'Device Communication' dialog box in the FAS software. The 'Path' field is set to '192.168.1.1'. The 'Connect' button is highlighted. The 'Available Devices' table shows a device with IP 192.168.1.1. The 'Use IP Address for Device Communication' button is also visible.

Status	Identify	Device Name	Device Type	Address
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CMMT-AS-C2-3A-E...	CMMT-AS-C2-3...	192.168.1.1

1. 在工具栏中单击 IP 地址“Path”。
2. 根据 IP 地址选择正确的驱动器，然后单击“Use IP Address for Device Communication”按钮分配路径地址。
3. 单击“Connect”按钮建立通信，驱动器的状态随即从 Disconnected 更改为 Connected。

#### 1.2.2 Factor group 设置

##### Factor group

Current user unit	Rev [rev, rpm, ...] (3)	■
Position	<input type="text" value="-6"/>	■
Velocity	<input type="text" value="-3"/>	■

输入现场总线的 Position 和 Velocity 命令缩放因子值。可在 Automation Suite 中从 **PARAMETERISATION > Fieldbus > Factor group** 访问 Factor group。

示例 - 1 下面的 PLC 缩放值是基于以 1 m/s 的速度将直线驱动轴移动 10 mm 计算得出的。

Position 因子 (-6) =  $10^{-6} = 0.000001 = 1\mu\text{m}$  随即得出 10 mm = PLC 中的 1000000 增量值

Velocity 因子 (-3) =  $10^{-3} = 0.001 = 1\text{mm/s}$  随即得出 1 m/s = PLC 中的 1000 增量值

示例 - 2 下面的 PLC 缩放值是基于以 100 RPM 的速度将旋转轴移动 5 Rev 计算得出的。

Position 因子 (-6) =  $10^{-6} = 0.000001 \text{ Rev}$  随即得出 5 Rev = PLC 中的 5000000 增量值

Velocity 因子 (-3) =  $10^{-3} = 0.001 \text{ RPM}$  随即得出 100 RPM = PLC 中的 100000 增量值

### 1.2.3 Reference values 设置

#### Reference values

Base value velocity (user unit)	<input type="text" value="3000.00"/>	rpm	■
Base value speed (controller)	<input type="text" value="3000.00"/>	rpm	■
Base value acceleration	<input type="text" value="600.00"/>	rpm/s	■
Base value deceleration	<input type="text" value="600.00"/>	rpm/s	■

在相应的数值字段中输入应用的实际 Base value velocity、Base value acceleration 和 Base value deceleration 值。



#### 注意

- Base value velocity 不会影响驱动器的速度，但是会影响驱动器的显示值。
- AOI 标签“**BaseSpeedValue**”的值必须与 FAS 参数值相同，即 FAS 参数 P1.11280701.0.0。

### 1.2.4 EtherNet/IP interface 设置

#### EtherNet/IP interface

#### Configuration

Activate DHCP	<input type="checkbox"/> Active	■
IP address	<input type="text" value="192 . 168 . 1 . 2"/>	■
Subnet mask	<input type="text" value="255 . 255 . 255 . 0"/>	■
Gateway address	<input type="text" value="0 . 0 . 0 . 0"/>	■

输入 EtherNet/IP 接口的 IP address 和 Subnet mask。此通信接口用于建立与 PLC 的连接，以接受控制命令以及发送信号反馈。它在 CMMT 重启后生效



**注意**

EtherNet/IP 接口的 IP 地址系列必须与 PLC IP 地址系列一致，才能建立连接。

### 1.2.5 Telegram selection 设置

#### Connection properties

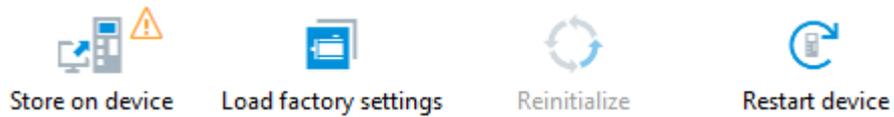
Telegram selection

Telegram (111)

Current application class

Application class 1 (1)

### 1.2.6 存储参数



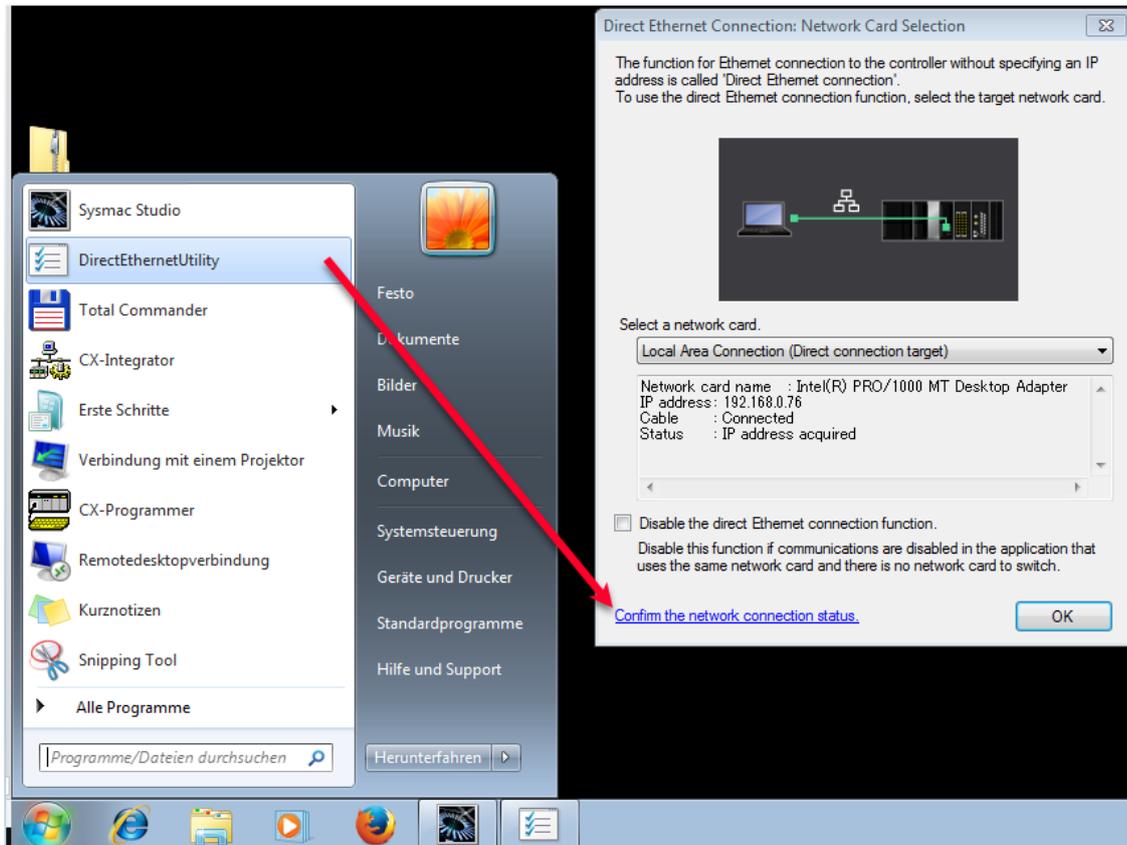
要在驱动器存储器上存储所有参数，单击“**Store on device**”按钮。

## 2 测试与 PLC 的连接

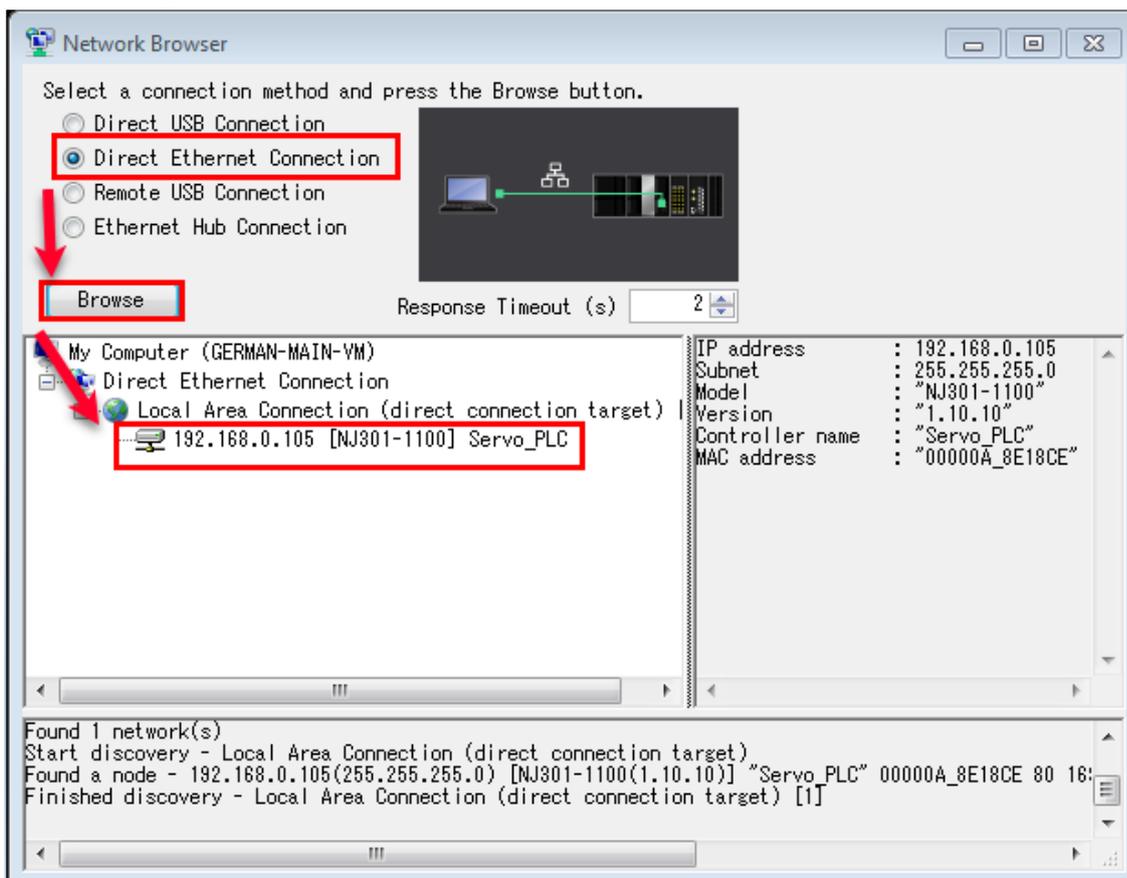
在安装 Sysmac Studio 后，Omron 将提供名为 DirectEthernetUtility 的 IP 扫描软件。

如果不知道或忘记了 IP 地址，建议使用此工具。

启动 DirectErhernetUtility，然后单击 Confirm the network connection status



选择连接方法，然后单击 Browse 查找设备。



## 3 Sysmac Studio 配置

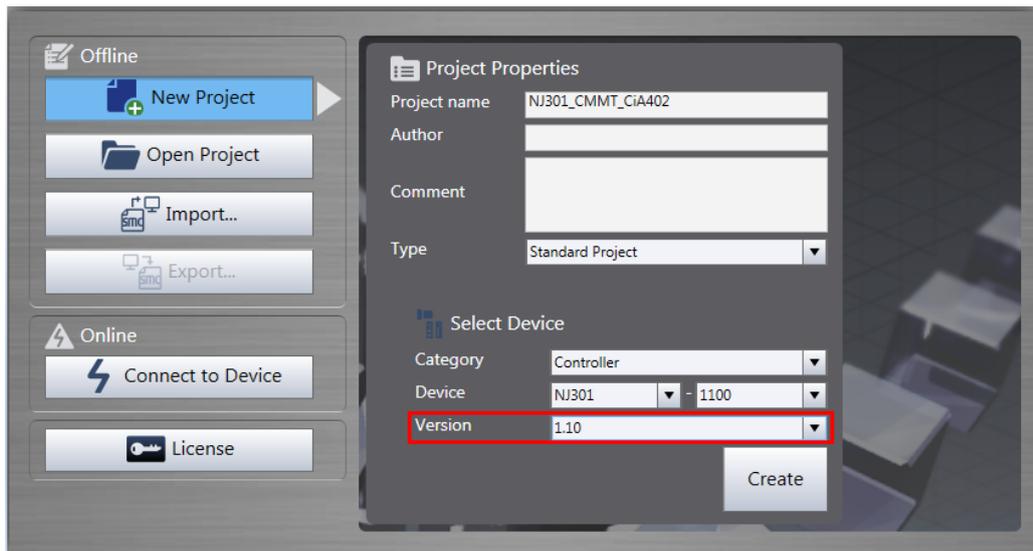
### 3.1 创建新项目

选择您拥有的设备类型和版本创建新项目。



#### 注意

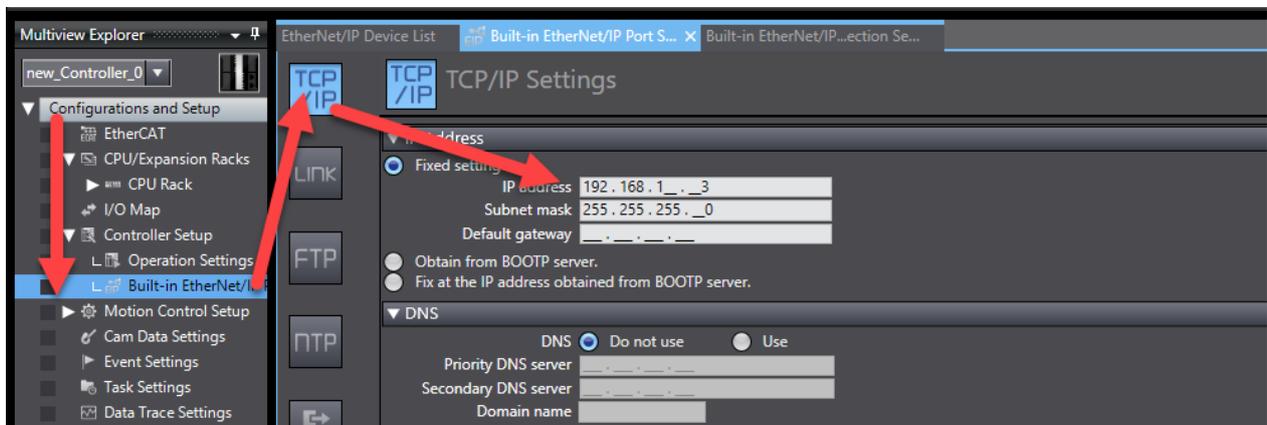
设备版本必须为 **1.10 或更高版本**。较早的控制器不兼容 Festo\_MotionControl 库。请联系 OMRON 了解 FW 更新。



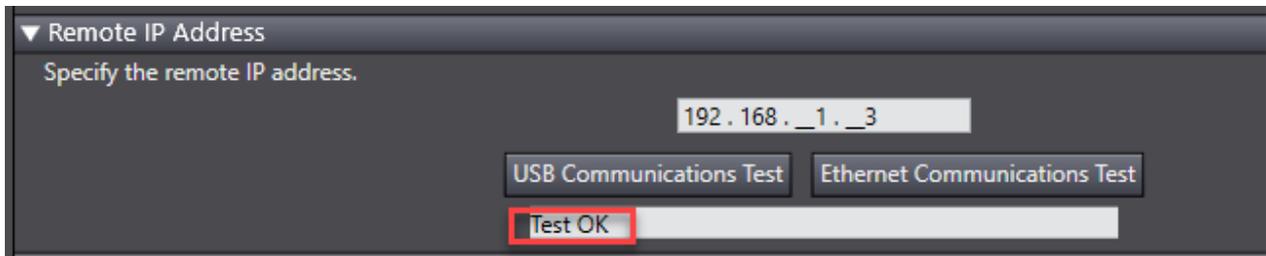
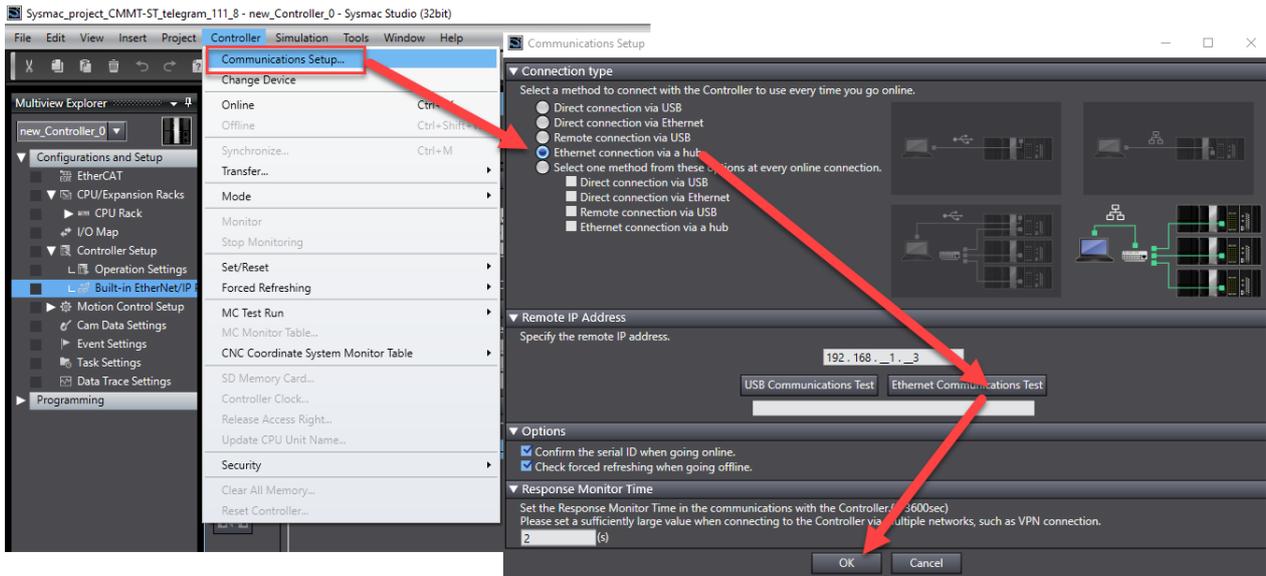
### 3.2 PLC Ethernet/IP 端口配置

#### 3.2.1 IP 地址

在项目中设置 PLC 的 IP 地址，方法为打开 Configurations and Setup 菜单 -> Controller Setup -> Built-in Ethernet/IP Port Settings -> TPC/IP -> Fixed Setting



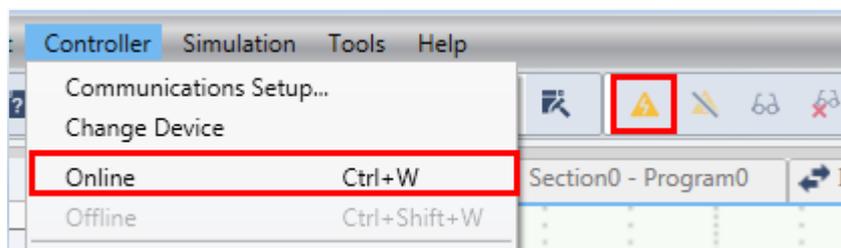
进行通信设置，方法为单击 Controller -> Communication Setup... > Select connection method -> Communications Test。

**注意**

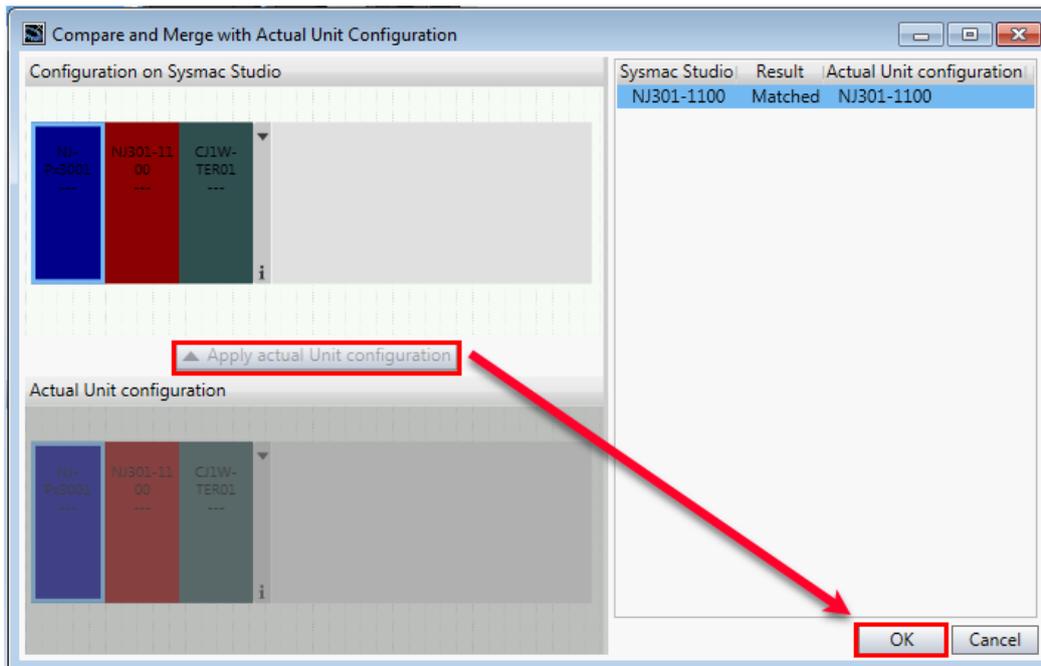
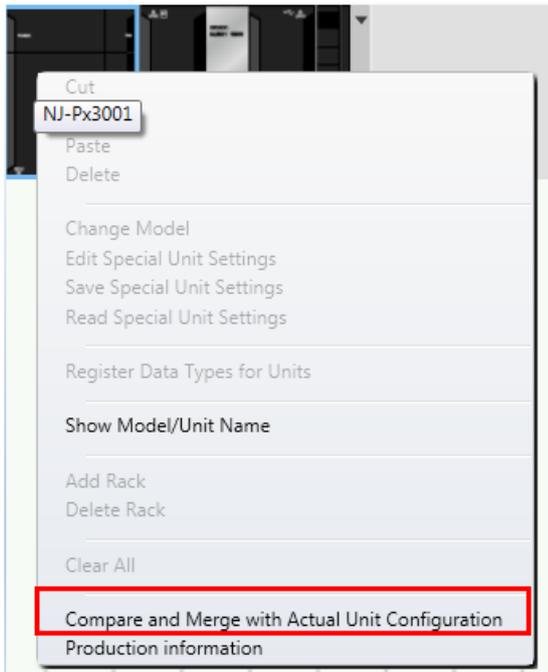
如果测试成功，将显示消息 Test OK。

### 3.2.2 PLC 模块配置

单击 Controller -> Online，与 PLC 建立在线连接。

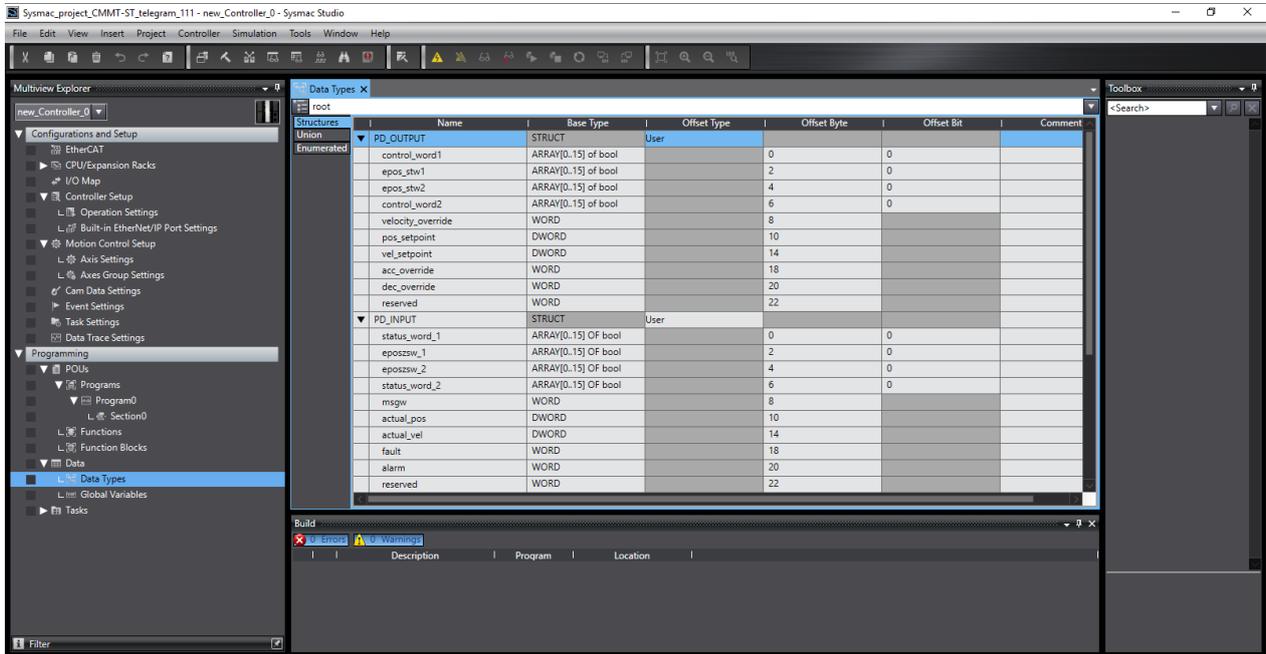


双击 CPU/Expansion Racks。右键单击任意所示模块，然后选择 Compare and Merge with Actual Unit Configuration 选项 -> Apply actual Unit configuration



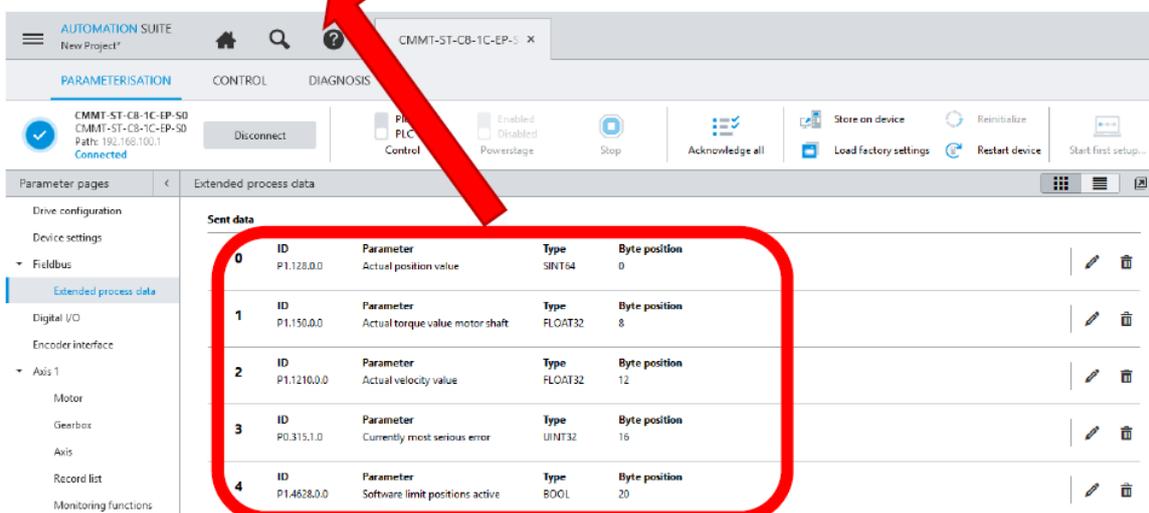
### 3.3 创建数据类型和全局变量

在“Programming”→“Data”部分 →“Data Types”中，符合报文 111 的结构为过程数据创建不同类型的数据输入和输出：



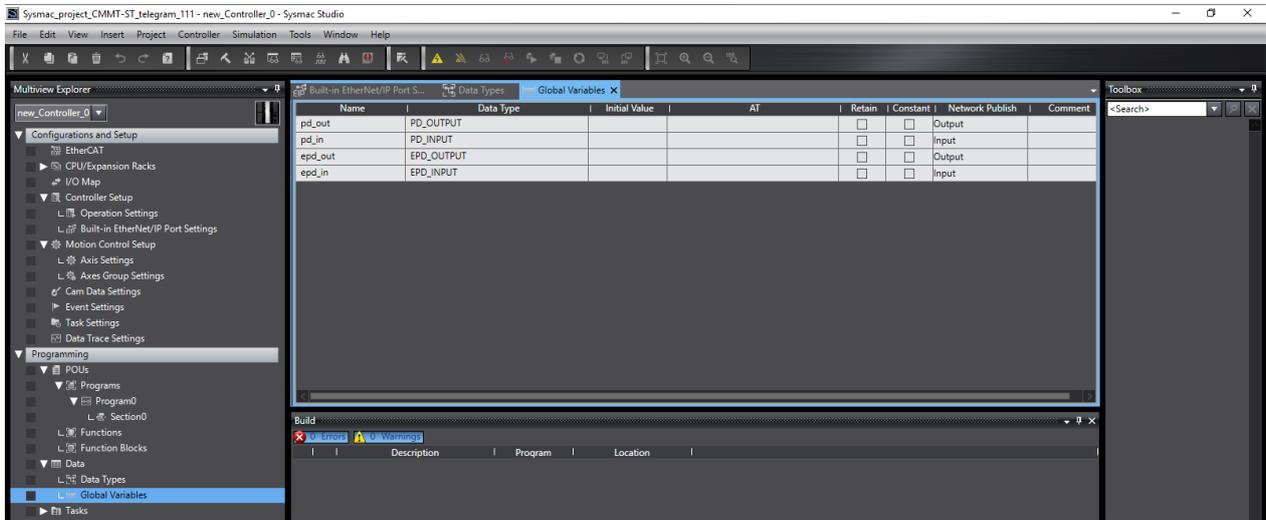
根据通过 Festo Automation Suite 定义的配置，为扩展过程数据创建不同类型的数据输入和输出，注意即使不完全使用所有 32 个字节，也要全部配置：

Structure	Name	Base Type	Offset Type	Offset Byte	Offset Bit	Comment
Union						
Enumerated						
	EPD_OUTPUT	STRUCT	User			
	software_limit_position_active	BYTE		0		
	negative_software_limit_position	LINT		1		
	positive_software_limit_position	LINT		9		
	other	ARRAY[0..14] OF SINT		17		
	EPD_INPUT	STRUCT	User			
	actual_position	LINT		0		
	actual_torque	REAL		8		
	actual_velocity	REAL		12		
	error_id	UDINT		16		
	software_limit_position_active	BYTE		20		
	other	ARRAY[0..10] OF SINT		21		



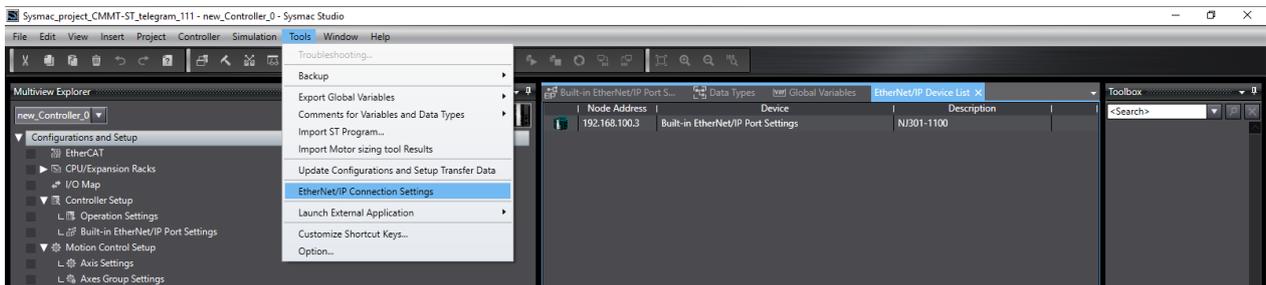
定义全局变量：

在“Programming”→“Data”部分 →“Global variables”中，符合报文 111 的结构为过程数据创建不同类型的数据输入和输出

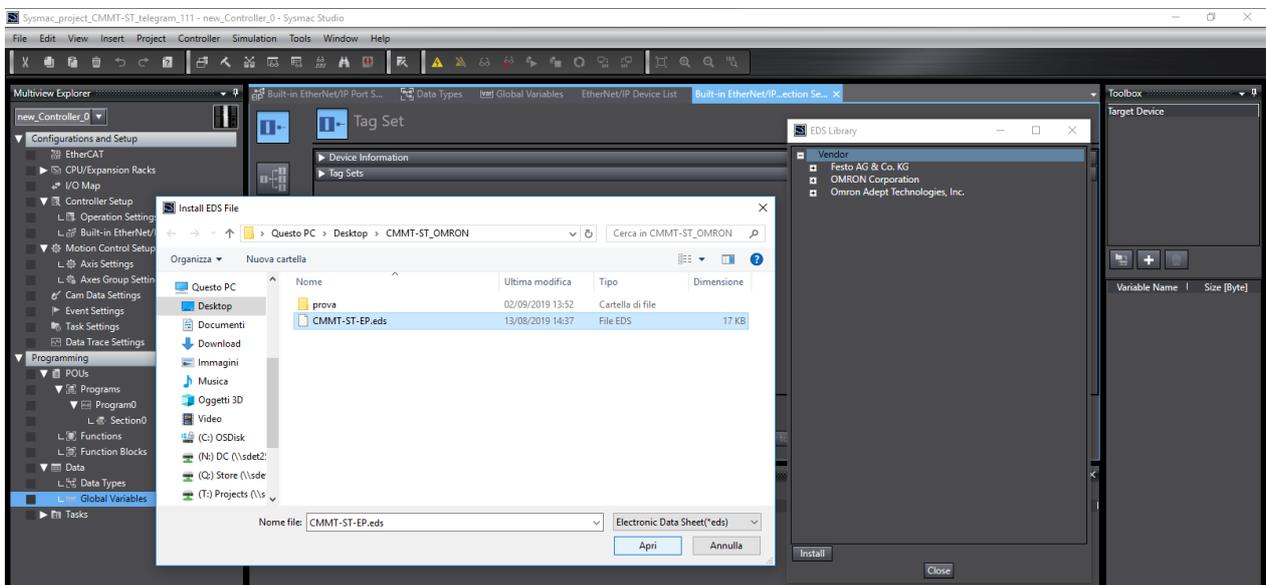


### 3.4 添加 EDS 文件

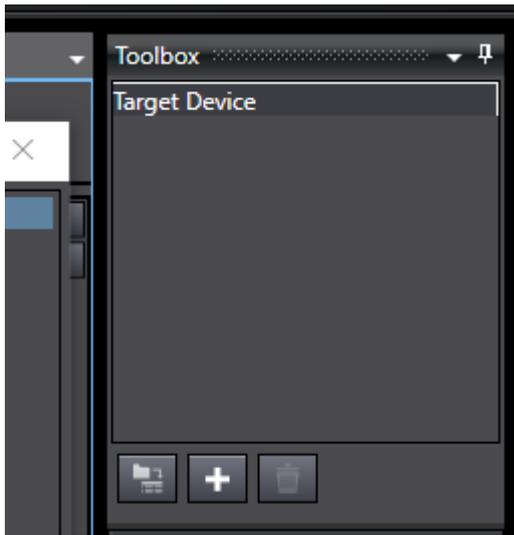
在顶部菜单中：“Tools”→“EtherNet/IP Connection Settings”→ 双击 PLC 图标



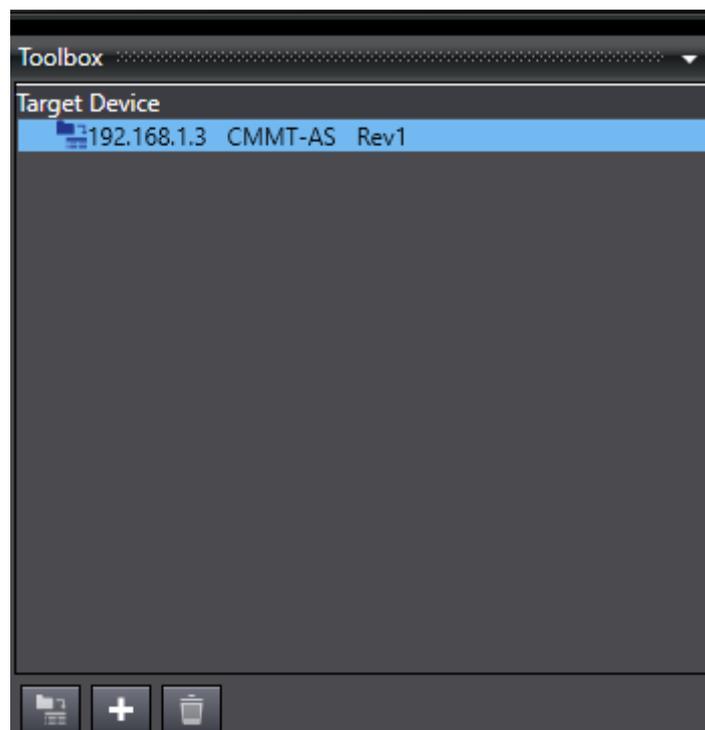
安装 CMMT EDS 描述文件：右键单击“Target Device”窗口 →“Display EDS Library”，然后安装所提供的或位于 Festo 支持与下载上的 EDS 文件。



将 CMMT Device 添加至“Target Device”



输入之前在 Automation Suite 上输入的 Ethernet/IP 地址，然后选择刚刚添加至库的“CMMT festo”模板：



## Sysmac Studio 配置

在“Tag Set”部分中，通过实例定义输入和输出集标签，然后将这些标签与之前创建的全局变量相关联：

The screenshot shows the Sysmac Studio interface with the 'Tag Set' configuration window open. The window displays a table of tag sets with the following data:

Tag Set Name	Bit Selection	Size (Byte)	Size (Bit)	Instance ID	Controller Status
pd_input	<input type="checkbox"/>	24		101	Not included
pd_in	<input type="checkbox"/>	24	0		
epd_input	<input type="checkbox"/>	32		111	Not included
epd_in	<input type="checkbox"/>	32	0		

Below the screenshot, a detailed view of the 'Input Output' table is provided:

Tag Set Name	Bit Selection	Size (Byte)	Size (Bit)	Instance ID	Controller Status	Output at Fatal Err
pd_output	<input type="checkbox"/>	24		100	Not included	
pd_out	<input type="checkbox"/>	24	0			Cleared
epd_output	<input type="checkbox"/>	32		110	Not included	
epd_out	<input type="checkbox"/>	32	0			Cleared

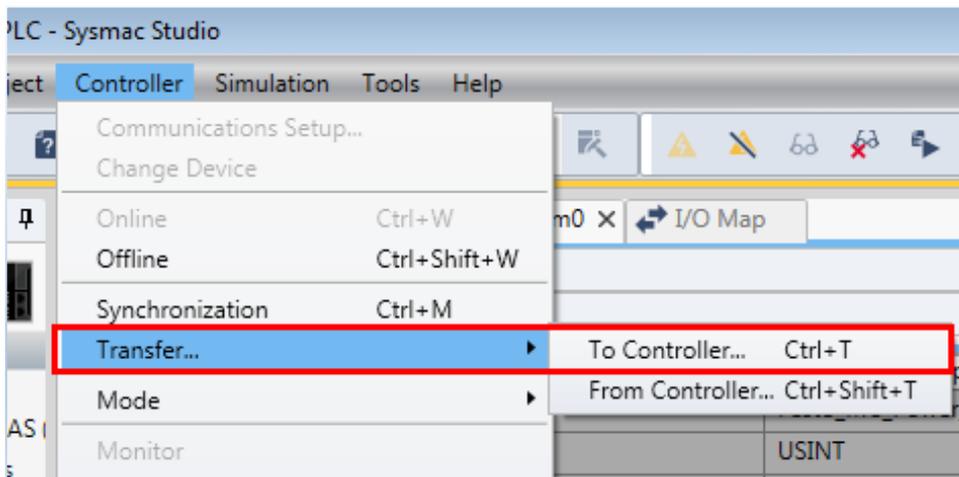
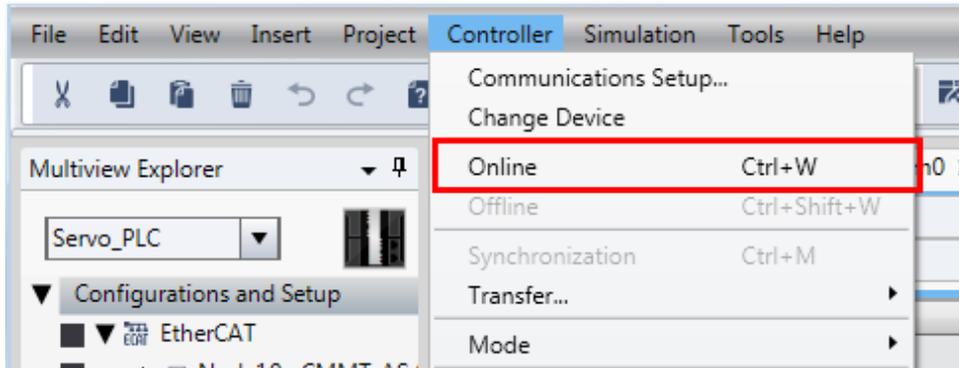
在“Connection”部分中，将 CMMT 与不同的标签相关联，如以下方案所示：

The screenshot shows the Sysmac Studio interface with the 'Connection' configuration window open. The window displays a table of connections with the following data:

Target Device	Connection Name	Connection I/O	Input/Output	Target Variable	Size [Byte]	Originator Variable	Size [Byte]	Connection Type	RPI [ms]	Timeout [V]
192.168.1.3 CMMT-AS Rev	default_001	DriveProfile - Ex	Input	101	24	pd_input	24	Multi-cast con	50.0	RPI x 4
			Output	100	24	pd_output	24	Point to Point c		

## 4 传输到控制器并通过 Watch 表控制

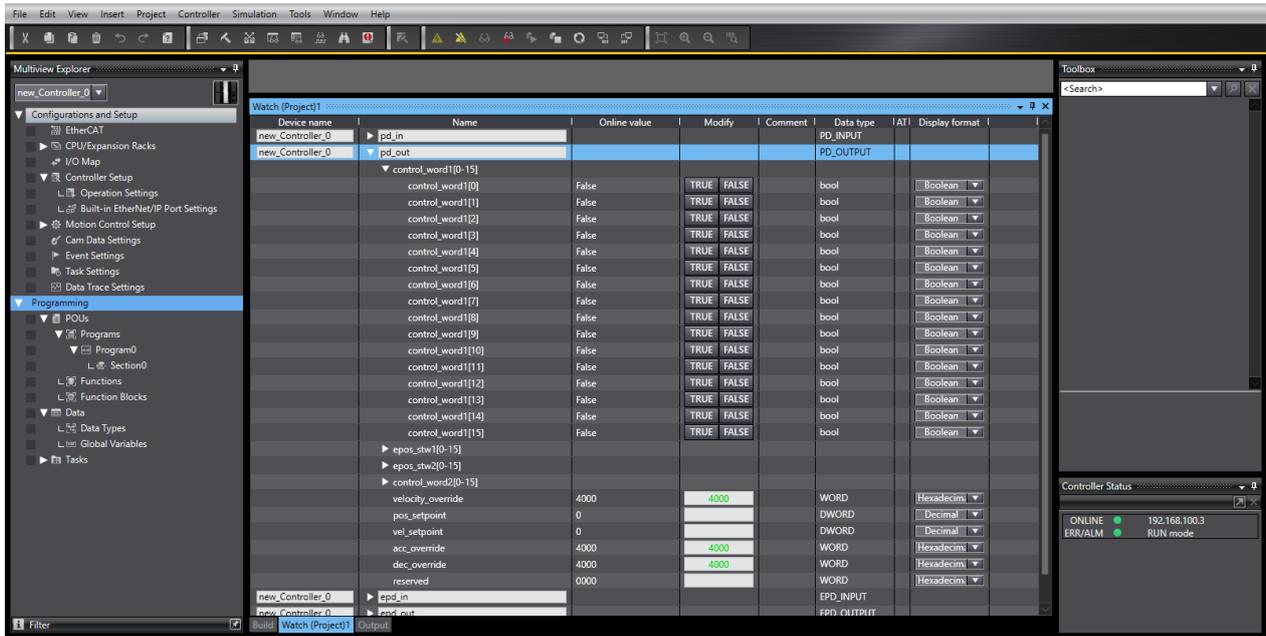
在进行所有更改后，最后一步是上线并将参数传输到 Omron 控制器。



### 注意

如果不想传输整个控制器配置（在正确完成后），则需要使用在线更改指令执行不影响拓扑或 PLC 设置的更改。

可通过使用 Watch Table (Alt + 4) 配置的所有过程数据控制驱动器:



### 4.1 符合报文 111 的 CMMT 控制序列

如果过程数据包含 12 个字输出 [共计 24 个字节] 和 12 个字输入 [共计 24 个字节]。每个位的含义遵循 Siemens 报文 111 的模式。报文的详细图表见本文件尾部。以下序列在 CMMT 的主要命令中用于对其进行控制:

定位任务:

- 使能: 切换 PZD1(STW1) 的以下位

0000 0100 0000 0000 →

0000 0100 0011 1110 →

0000 0100 0011 1111

RPM MODE																	
WORD#	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
WORD0	ZSW1	Device specific	Device specific	Dive Stopped Ack/Speed	Traverse Task Acknowledge	Home Position Set Ack/Ref	PLC Control Requested	Following Error Bit/0	Warning Active/Ack/Error	Switch On/Inhibit/Lockout	Quick Stop Not Active	Coast Stop Not Active	Position Record Selected Bit 5	Position Record Selected Bit 3	Position Record Selected Bit 2	Ready to Operate/Ready	
WORD1	POS_ZSW1 or EPOS_ZSW1	MDI Active Selection 0=Record Mode 1=Drive Mode	-FW Rending: MDI Setup is Active	Posson Record Task is Active	-FW Pending: Flying Reference Active	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected Bit 6	Position Record Selected Bit 5	Position Record Selected Bit 4	Position Record Selected Bit 3	Position Record Selected Bit 2	Ready to Operate/Ready	
WORD2	POS_STW2 or EPOS_STW2	Traversing Task is Active	Travel to Fixed Stop is Active	Fixed EndStop Clamping Torque Reached	Fixed Stop Reached	Direct Output 2 via Possoning Record	Direct Output 1 via Possoning Record	Actual Position = Can-Switch Position 1	Actual Position = Can-Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Axis is Moving Negative	Axis is Moving Positive	-FW Pending: Printing Mark outside window	Ready to Accept new Setpoint	Velocity Limit is Active	
WORD3	ZSW2	Sign-Of-Life	Reserved	Reserved	Controller Enable	Reserved B10	Reserved B9	Speed Setpoint - Actual Deviation Within tolerance	No alarm, thermal overload, power unit	No motor over-temperature alarm	variable signaling function	Reserved B4	Setpoint(i) i speed threshold value 2	Setpoint(i) i speed threshold value 3	Torque [N] torque threshold value 2	0 = Ramping Active 1 = Ramping Completed	
WORD4	MELDW	Reserved B15	Reserved B14	Pulses Enabled	Dive Ready	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD5	ZSW3	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD6	ZSW4	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD7	ZSW5	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD8	FAULT_CODE	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD9	ERR_CODE	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD10	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD11	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	
WORD12	STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake Config:POS.15 FAG-P1.11241200	Home Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge Ack/Error	Traversing Task Activate Execute/Mode	Intermediate Stop Disable Cancel/Traversing	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable Config:POS.11 FAG-P1.11241200	STW1.1 Case Stop Disable Config:POS.11 FAG-P1.11241200	Power Stage Pulses Enable/Disable
WORD13	POS_STW1 or EPOS_STW1	MDI Selection 0=Record Mode 1=Drive Mode	signal Setup Selected	Reserved B13	Constant Takeover	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning Active	Reserved B7	Reserved B6	Position Record Selected Bit 6	Position Record Selected Bit 5	Position Record Selected Bit 4	Position Record Selected Bit 3	Position Record Selected Bit 2	Position Record Selected Bit 1	Tracking Mode Active
WORD14	POS_STW2 or EPOS_STW2	POS_STW2.15 Hardware Limit Enable Config:POS.3 FAG-P1.11241410	POS_STW2.14 Software Limit Enable Config:POS.3 FAG-P1.11241410	Reserved B13	Reserved B12	POS_STW2.11 Touch Probe Edge 0 = Rising edge 1 = Falling edge Config:POS.4 FAG-P1.11241410	POS_STW2.10 Select Touch Probe 0 = Probe 1 Active 1 = Probe 2 Active Config:POS.5 FAG-P1.11241410	Start Reference Search 0 = positive direction 1 = negative direction	Reference Select 1 = Flying Reference 0 = Search Reference	Reserved B7	Reserved B6	IGM/NIGM 1 = incremental 0 = velocity	Reserved B4	Reserved B3	POS_STW2.3 Reference Cam Active Config:POS.4 FAG-P1.11241410	Set Reference Point	Tracking Mode Active
WORD15	STW2	Reserved	Master Sign-Of-Life	Reserved	Motor Switchover Completed	Reserved B10	Global Trigger Command	Reserved	Reserved	Parking Axis Enable	Reset I-Component	Global Start	DD5 Start	DD5 Bit 3	DD5 Bit 2	DD5 Bit 1	DD5 Bit 0
WORD16	OVERRIDE	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
WORD17	MDI_TASPOS	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
WORD18	MDI_VELOCITY	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
WORD19	MDI_VELOCITY	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
WORD20	MDI_ACC	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
WORD21	MDI_DEC	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
WORD22	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

Device name	Name	Online value	Modify	Comment	Data type	AT	Display format
new_Controller_0	pd_in				PD_INPUT		
new_Controller_0	pd_out				PD_OUTPUT		
	control_word1[0-15]						
	control_word1[0]	True	TRUE FALSE		bool		Boolean
	control_word1[1]	True	TRUE FALSE		bool		Boolean
	control_word1[2]	True	TRUE FALSE		bool		Boolean
	control_word1[3]	True	TRUE FALSE		bool		Boolean
	control_word1[4]	False	TRUE FALSE		bool		Boolean
	control_word1[5]	False	TRUE FALSE		bool		Boolean
	control_word1[6]	False	TRUE FALSE		bool		Boolean
	control_word1[7]	False	TRUE FALSE		bool		Boolean
	control_word1[8]	False	TRUE FALSE		bool		Boolean
	control_word1[9]	False	TRUE FALSE		bool		Boolean
	control_word1[10]	True	TRUE FALSE		bool		Boolean
	control_word1[11]	False	TRUE FALSE		bool		Boolean
	control_word1[12]	False	TRUE FALSE		bool		Boolean
	control_word1[13]	False	TRUE FALSE		bool		Boolean
	control_word1[14]	False	TRUE FALSE		bool		Boolean
	control_word1[15]	False	TRUE FALSE		bool		Boolean

• 在启用 CMMT 后，会出现一条警告 Profile velocity=0，需要进行确认和复位

切换 PZD1(STW1) 的以下位以重置

		B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
STATUS	WORD0	ZSW1	Device specific	Drive Stopped	Traverse Task Acknowledge	Home Posicon Set	Target Posicon Reached	PLC Control Requested	Following Error Within Tolerance Range	Warning Active	Switch On Inhibited	Quick Stop	Coast Stop	Fast Active	Operation Enabled	Ready To Operate	Ready to Switch On	
	WORD1	POS_STW1 or Epos_ZSW1	MDI Active Selection	-FW Pending- MDI Setup Active	Reason Record Task is Active	Homing Task is Active	Jogging Task is Activated	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	
	WORD2	POS_STW2 or Epos_ZSW2	Traversing Task is Active	Fixed EndStop Clamping Torque Reached	Fixed Stop Reached	Direct Output 2 via Positioning Record	Direct Output 1 via Positioning Record	Actual Posicon - Cam Switch Position 1	Actual Posicon - Cam Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Axis is Moving	Axis is Moving	Axis is Moving	Axis is Moving	Axis is Moving	Axis is Moving	Axis is Moving
	WORD3	ZSW2	Sign-Of-Life			Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific
	WORD4	MELOW	Reserved B15	Reserved B14	Pulses Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	No alarm, thermal overload, power unit	No motor over-temperature alarm	Variable signaling function	Reserved B4	Segment(0) speed threshold value 2	Segment(0) speed threshold value 3	Segment(0) speed threshold value 3	Torque [%] torque threshold value 2	0 = Ramping Active 1 = Ramping Completed
	WORD5	ZSW1_A	Actual Velocity Value															
	WORD6	ZSW1_B	Actual Velocity Value															
	WORD7	ZSW1_C	Actual Velocity Value															
	WORD8	ZSW1_D	Actual Velocity Value															
	WORD9	FAULT_CODE	Active Fault Number															
WORD10	WARN_CODE	Active Warning Number																
WORD11	Reserved	Not Used																
CONTROL	WORD0	STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake Config:POS.15	Home/Reference Task Stain	Control By PLC	log?	log?	Fail Acknowledge Active	Traversing Task Exclude Mode	Intermediate Stop Disable	Traversing Task Cancel/Traversing	Enable Operation	STW1.2 Quick Stop Disable Config:POS.1	STW1.1 Coast Stop Disable Config:POS.0	Power Stage Pulses Enable/Disable
	WORD1	POS_STW1 or Epos_STW1	MDI Selection	MDI Setup Selected	Reserved B13	Constant Torquer	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning	Reserved B7	Position Record Select B6	Position Record Select B5	Position Record Select B4	Position Record Select B3	Position Record Select B2	Position Record Select B1	Position Record Select B0	
	WORD2	POS_STW2 or Epos_STW2	Hardware Limit Enable Config:POS.3	Software Limit Enable Config:POS.2	Reserved B13	Reserved B12	POS_STW1.11 Touch Probe Edge 0 = Rising edge 1 = Falling edge Config:POS.4	POS_STW1.10 Select Touch Probe 0 = Probe 1 Active 1 = Probe 2 Active Config:POS.5	Start Reference Search 0 = positive direction 1 = negative direction	Reference Select 1 = Flying Reference 0 = Search Reference	Reserved B7	Reserved B6	Jogging 1 = incremental 0 = velocity	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam Active Config:POS.6	Set Reference Point	Tracing Mode Active
	WORD3	STW2	Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	Global	Travel to Fixed EndStop (Torque Mode) Enable Config:POS.30	Parking Axis Enable	Reset I-Component	Global Start	DO5 B4	DO5 B3	DO5 B2	DO5 B1	DO5 B0
	WORD4	OVERSPEED	Position Velocity Overmode															
	WORD5	MDI_TARGET	MDI (Manual) Data Input: Posicon Target															
	WORD6	MDI_VELOCITY	MDI (Manual) Data Input: Velocity Target															
	WORD7	MDI_VELOCITY	MDI (Manual) Data Input: Velocity Target															
	WORD8	MDI_ACC	MDI Percent Acceleration															
	WORD9	MDI_TORQ	MDI Percent Deceleration															
WORD11	Reserved	Not Used																

Device name	Name	Online value	Modify	Comment	Data type	AT	Display format
	actual_vel	4294904047			DWORD		Decimal
	fault	0000			WORD		Hexadecimal
	alarm	0000			WORD		Hexadecimal
	reserved	0000			WORD		Hexadecimal
new_Controller_0	pd_out				PD_OUTPUT		
	control_word1[0-15]						
	control_word1[0]	True	TRUE FALSE		bool		Boolean
	control_word1[1]	True	TRUE FALSE		bool		Boolean
	control_word1[2]	True	TRUE FALSE		bool		Boolean
	control_word1[3]	True	TRUE FALSE		bool		Boolean
	control_word1[4]	True	TRUE FALSE		bool		Boolean
	control_word1[5]	True	TRUE FALSE		bool		Boolean
	control_word1[6]	False	TRUE FALSE		bool		Boolean
	control_word1[7]	True	TRUE FALSE		bool		Boolean
	control_word1[8]	False	TRUE FALSE		bool		Boolean
	control_word1[9]	False	TRUE FALSE		bool		Boolean
	control_word1[10]	True	TRUE FALSE		bool		Boolean
	control_word1[11]	False	TRUE FALSE		bool		Boolean
	control_word1[12]	False	TRUE FALSE		bool		Boolean
	control_word1[13]	False	TRUE FALSE		bool		Boolean
	control_word1[14]	False	TRUE FALSE		bool		Boolean
	control_word1[15]	False	TRUE FALSE		bool		Boolean

• 启用硬件和软件限位：切换 PZD3 (POS\_STW2 或 Epos\_STW2) 的以下位 - 位 14 和位 15

NOTE: Telegram 111 is a Siemens specific extension of PROFDrive (Siemens telegram 111)																	
	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
WORD0	ZSW1	Device specific	Device specific	Drive Stopped	Traverse Task Acknowledge	Home Position Set	Target Position Reached	PLC Control Requested	Following Error Warning	Warning Active	Switch On Inhibited	Coast Stop	Coast Stop	Fault Active	Ready To Operate	Ready To Switch On	
WORD1	POS_STW1 or Epos_STW1	MDI Active Selection	-FW Ramping	Position Record Task is Active	FW Ramping-Run Reference Active	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	
WORD2	POS_STW2 or Epos_STW2	Traversing Task is Active	Travel to Fixed Stop is Active	Fixed EndStop Clamping Torque Reached	Fixed Stop Reached	Direct Output 2 via Positioning Record	Direct Output 1 via Positioning Record	Actual Position - Can Switch Position 0	Actual Position - Can Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Aux is Moving	Aux is Moving	-FW Ramping-Run Reference Active	Ready to Accept new Setpoint	Velocity Limit is Active	
WORD3	ZSW2	Sign-Of-Life			Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	
WORD4	MELW	Reserved B15	Reserved B14	Pulses Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	Speed Setpoint - Actual Deviation Within tolerance	No alarm, thermal overload, power unit	No motor over-temperature alarm	Variable signaling function	Reserved B4	Setpoint(0) speed threshold value 2	Setpoint(0) speed threshold value 3	Torque [Nm] torque threshold value 2	
WORD5	STST_A	Actual Position Value															
WORD6	STST_B	Actual Velocity Value															
WORD7	STST_C	Active Fault Number															
WORD8	STST_D	Active Warning Number															
WORD9	STST_CODE	Not Used															
WORD10	WARN_CODE	Not Used															
WORD11	Reserved	Not Used															
WORD0	STW1	Device specific	Device specific	Device specific	STW1.L2 Release Holding Brake	Home/Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge	Traversing Task Activate	Intermediate Step Disable	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable	STW1.1 Coast Stop Disable	Power Stage/Pulse Enable
WORD1	POS_STW1 or Epos_STW1	MDI Selection	signal Setup Selected	Reserved B13	Constant Takeover	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning	Reserved B7	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select
WORD2	POS_STW2 or Epos_STW2	POS_STW2.15 Hardware Limits Enable	POS_STW2.14 Software Limits Enable	Reserved B13	Reserved B12	POS_STW2.11 Touch Probe Edge	POS_STW2.10 Select Touch Probe	Scan Reference Search	Reference Select	Reserved B7	Reserved B6	JOGING 1 = incremental 0 = velocity	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam Active	Set Reference Point	Tracing Mode Active
WORD3	STW2	Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	STW2.8 Travel to Fixed EndStop (Force Mode) Enable	Parking Axis Enable	Reset I-Component	Global Start	DDS Bit 4	DDS Bit 3	DDS Bit 2	DDS Bit 1	DDS Bit 0	
WORD4	OVERRIDE	Position Velocity Override															
WORD5	MDI_TARGETPOS	MDI (Manual Data Input) Position Targets															
WORD6	MDI_TARGETPOS	MDI (Manual Data Input) Velocity Targets															
WORD7	MDI_VELOCITY	MDI (Manual Data Input) Velocity Targets															
WORD8	MDI_VELOCITY	MDI Percent Acceleration															
WORD9	MDI_ACC	MDI Percent Deceleration															
WORD10	MDI_DEC	Not Used															
WORD11	Reserved	Not Used															

Device name	Name	Online value	Modify	Comment	Data type	AT	Display format
	control_word1[15]	False	TRUE FALSE		bool		Boolean
	epos_stw1[0-15]						
	epos_stw2[0-15]						
	epos_stw2[0]	False	TRUE FALSE		bool		Boolean
	epos_stw2[1]	False	TRUE FALSE		bool		Boolean
	epos_stw2[2]	False	TRUE FALSE		bool		Boolean
	epos_stw2[3]	False	TRUE FALSE		bool		Boolean
	epos_stw2[4]	False	TRUE FALSE		bool		Boolean
	epos_stw2[5]	False	TRUE FALSE		bool		Boolean
	epos_stw2[6]	False	TRUE FALSE		bool		Boolean
	epos_stw2[7]	False	TRUE FALSE		bool		Boolean
	epos_stw2[8]	False	TRUE FALSE		bool		Boolean
	epos_stw2[9]	False	TRUE FALSE		bool		Boolean
	epos_stw2[10]	False	TRUE FALSE		bool		Boolean
	epos_stw2[11]	False	TRUE FALSE		bool		Boolean
	epos_stw2[12]	False	TRUE FALSE		bool		Boolean
	epos_stw2[13]	False	TRUE FALSE		bool		Boolean
	epos_stw2[14]	True	TRUE FALSE		bool		Boolean
	epos_stw2[15]	True	TRUE FALSE		bool		Boolean

• 设置速度超驰值 (100%=16#4000 或 10#16384)

RIP MODE																
NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive. (Siemens telegram 111)																
WORD0	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
ZSW1	Device specific	Device specific	Drive Stopped Acknowledge	Traverse Task Acknowledge	Home Position Set	Target Position Reached	PLC Control Requested	Following Error Tolerance Range	Warning Active	Switch On/Inhibited Lockout	Quick Stop Not Active	Coast Stop Not Active	Fault Active	Operation Enabled	Ready To Operate	Ready to Switch On
POS_ZSW1 or Epos_ZSW1	MDI Active Selection	-FW Pending-MDI Setup	Position Record Task is Active	-FW Pending-Rung Reference Active	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected
POS_ZSW2 or Epos_ZSW2	Traversing Task is Active	Travel to Fixed Stop is Active	Fixed EndStop Clamping Torque Reached	Fixed Stop Reached	Direct Output 2 via Positioning Record	Direct Output 1 via Positioning Record	Actual Position = Can Switch Position 1	Actual Position = Can Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Auxiliary Moving Negative	Auxiliary Moving Positive	-FW Pending-Printing Mark outside window	Ready to Accept new Setpoint	Velocity Limit is Active	Tracking Mode is Active
ZSW2	Sign-Of-Life			Device specific	Device specific	Device specific	Device specific	Device specific	Speed Setpoint - Actual Deviation Watch-tolerance	No alarm, thermal overload, power unit	No motor over-temperature alarm	variable signaling function	Reserved B4	Setpoint(n) i speed threshold value 2	Setpoint(n) i speed threshold value 3	Torque[%] torque threshold value 3
MELOW	Reserved B15	Reserved B14	Relays Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	Reserved B8	Reserved B7	Reserved B6	Reserved B5	Reserved B4	Reserved B3	Reserved B2	Reserved B1	Reserved B0
ZSW1_A	Actual Position value															
ZSW1_B	Actual Position value															
ZSW1_C	Actual Position value															
ZSW1_D	Actual Position value															
ZSW1_E	Actual Position value															
ZSW1_F	Actual Position value															
ZSW1_G	Actual Position value															
ZSW1_H	Actual Position value															
ZSW1_I	Actual Position value															
ZSW1_J	Actual Position value															
ZSW1_K	Actual Position value															
ZSW1_L	Actual Position value															
ZSW1_M	Actual Position value															
ZSW1_N	Actual Position value															
ZSW1_O	Actual Position value															
ZSW1_P	Actual Position value															
ZSW1_Q	Actual Position value															
ZSW1_R	Actual Position value															
ZSW1_S	Actual Position value															
ZSW1_T	Actual Position value															
ZSW1_U	Actual Position value															
ZSW1_V	Actual Position value															
ZSW1_W	Actual Position value															
ZSW1_X	Actual Position value															
ZSW1_Y	Actual Position value															
ZSW1_Z	Actual Position value															
FAULT_CODE	Active Fault Number															
WARN_CODE	Active Warning Number															
Reserved	No Use															

RIP MODE																
NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive. (Siemens telegram 111)																
WORD0	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake	Home/Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge	Traversing Task Activate	Intermediate Stop Disable	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable	STW1.1 Coast Stop Disable	Power Stage Pulses Enable
POS_STW1 or Epos_STW1	MDI Selection	signal Setup Selected	Reserved B13	Constant Takeover	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected
POS_STW2 or Epos_STW2	POS_STW2.15 Hardware Limits Enable	POS_STW2.14 Software Limits Enable	Reserved B13	Reserved B12	POS_STW2.11 Touch Probe Edge	POS_STW2.10 Select Touch Probe	Start Reference Search	Reference Selects	Reserved B7	Reserved B6	Reserved B5	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam Active	Set Reference Point	Tracking Mode Active
STW2	Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	Reserved B10	Reserved B9	Reserved B8	Reserved B7	Reserved B6	Reserved B5	Reserved B4	Reserved B3	Reserved B2	Reserved B1
OVERWRITE	Position Velocity Override															
TARPOS	MDI (Manual Data Input) Position Targets															
TARPOS	MDI (Manual Data Input) Position Targets															
VELOCITY	MDI (Manual Data Input) Velocity Targets															
VELOCITY	MDI (Manual Data Input) Velocity Targets															
ACC	MDI (Manual Data Input) Acceleration															
ACC	MDI (Manual Data Input) Acceleration															
DEC	MDI (Manual Data Input) Deceleration															
DEC	MDI (Manual Data Input) Deceleration															
Reserved	No Use															

• 开始回零 (FAS 配置) : 切换 PZD11(STW1) 的位

RIP MODE																
NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive. (Siemens telegram 111)																
WORD0	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
ZSW1	Device specific	Device specific	Drive Stopped Acknowledge	Traverse Task Acknowledge	Home Position Set	Target Position Reached	PLC Control Requested	Following Error Tolerance Range	Warning Active	Switch On/Inhibited Lockout	Quick Stop Not Active	Coast Stop Not Active	Fault Active	Operation Enabled	Ready To Operate	Ready to Switch On
POS_ZSW1 or Epos_ZSW1	MDI Active Selection	-FW Pending-MDI Setup	Position Record Task is Active	-FW Pending-Rung Reference Active	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected
POS_ZSW2 or Epos_ZSW2	Traversing Task is Active	Travel to Fixed Stop is Active	Fixed EndStop Clamping Torque Reached	Fixed Stop Reached	Direct Output 2 via Positioning Record	Direct Output 1 via Positioning Record	Actual Position = Can Switch Position 1	Actual Position = Can Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Auxiliary Moving Negative	Auxiliary Moving Positive	-FW Pending-Printing Mark outside window	Ready to Accept new Setpoint	Velocity Limit is Active	Tracking Mode is Active
ZSW2	Sign-Of-Life			Device specific	Device specific	Device specific	Device specific	Device specific	Speed Setpoint - Actual Deviation Watch-tolerance	No alarm, thermal overload, power unit	No motor over-temperature alarm	variable signaling function	Reserved B4	Setpoint(n) i speed threshold value 2	Setpoint(n) i speed threshold value 3	Torque[%] torque threshold value 3
MELOW	Reserved B15	Reserved B14	Relays Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	Reserved B8	Reserved B7	Reserved B6	Reserved B5	Reserved B4	Reserved B3	Reserved B2	Reserved B1	Reserved B0
ZSW1_A	Actual Position value															
ZSW1_B	Actual Position value															
ZSW1_C	Actual Position value															
ZSW1_D	Actual Position value															
ZSW1_E	Actual Position value															
ZSW1_F	Actual Position value															
ZSW1_G	Actual Position value															
ZSW1_H	Actual Position value															
ZSW1_I	Actual Position value															
ZSW1_J	Actual Position value															
ZSW1_K	Actual Position value															
ZSW1_L	Actual Position value															
ZSW1_M	Actual Position value															
ZSW1_N	Actual Position value															
ZSW1_O	Actual Position value															
ZSW1_P	Actual Position value															
ZSW1_Q	Actual Position value															
ZSW1_R	Actual Position value															
ZSW1_S	Actual Position value															
ZSW1_T	Actual Position value															
ZSW1_U	Actual Position value															
ZSW1_V	Actual Position value															
ZSW1_W	Actual Position value															
ZSW1_X	Actual Position value															
ZSW1_Y	Actual Position value															
ZSW1_Z	Actual Position value															
FAULT_CODE	Active Fault Number															
WARN_CODE	Active Warning Number															
Reserved	No Use															

new_Controller_0		pd_out		PD_OUTPUT	
control_word1[0-15]					
control_word1[0]	True	TRUE	FALSE	bool	Boolean
control_word1[1]	True	TRUE	FALSE	bool	Boolean
control_word1[2]	True	TRUE	FALSE	bool	Boolean
control_word1[3]	True	TRUE	FALSE	bool	Boolean
control_word1[4]	False	TRUE	FALSE	bool	Boolean
control_word1[5]	False	TRUE	FALSE	bool	Boolean
control_word1[6]	False	TRUE	FALSE	bool	Boolean
control_word1[7]	False	TRUE	FALSE	bool	Boolean
control_word1[8]	False	TRUE	FALSE	bool	Boolean
control_word1[9]	False	TRUE	FALSE	bool	Boolean
control_word1[10]	True	TRUE	FALSE	bool	Boolean
control_word1[11]	True	TRUE	FALSE	bool	Boolean
control_word1[12]	False	TRUE	FALSE	bool	Boolean
control_word1[13]	False	TRUE	FALSE	bool	Boolean
control_word1[14]	False	TRUE	FALSE	bool	Boolean
control_word1[15]	False	TRUE	FALSE	bool	Boolean

• 绝对定位:

1. 激活 MDI 功能和直接模式绝对定位, 方法为切换 PZD2 (POS\_STW1 或 Epos\_STW1) 的位 8 和位 15

NOTE: Telegram 111 is a SIEMENS specific extension of PROFDrive (Siemens telegram 111)																	
WORD0	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
STATUS	ZSW1	Device specific	Device specific	Drive Stopped Acknowledge	Travel Task Acknowledge	Home Position Set	Target Reached	PLC Control Requested	Following Error Within Tolerance Range	Warning Active	Switch On Inhibited	Quick Stop Not Active	Coast Stop Not Active	Fault Active	Operation Enabled	Ready To Operate	
WORD1	POS_STW1 or Epos_STW1	MDI Active Selection	-FW Pending-MDI Setup Active	Response Record Task is Active	-FW Banding Rying Reference Active	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	
WORD2	POS_STW2 or Epos_STW2	Traveling Task is Active	Travel to Fixed Stop is Active	Fixed EndStop Cmping/Torque is Reached	Fixed Stop Reached	Direct Output 2 via Poisoning Record	Direct Output 1 via Poisoning Record	Actual Position via Cam Switch	Actual Position via Cam Switch	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	And is Moving	And is Moving	-FW Pending - Printing Mark outside window	Ready to Access new Setpoint	Velocity Limit is Active	
WORD3	ZSW2	Sign-Of-Life			Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	Device specific	
WORD4	MELOW	Reserved B15	Reserved B14	Pulse Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	Speed Setpoint-Actual Deviation Within tolerance	No alarm, thermal overload, power unit	No motor over-temperature alarm	variable signaling function	Reserved B4	Suspension1 speed threshold value 2	Suspension1 speed threshold value 3	Torque [%] torque threshold value 2	
WORD5	JUST_A	Actual Position Value															
WORD6	JUST_B	Actual Velocity Value															
WORD7	JUST_C	Actual Velocity Value															
WORD8	JUST_D	Actual Velocity Value															
WORD9	FAULT_CODE	Active Fault Number															
WORD10	WARN_CODE	Active Warning Number															
WORD11	Reserved	Not Used															
CONTROL	STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake	Home Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge	Traversing Task Activate	Intermediate Stop Disable	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable	STW1.1 Cease Stop Disable	Power Stage Pilose Enable
WORD1	POS_STW1 or Epos_STW1	MDI Selection	signal sensor Selected	Reserved B13	Constant Takeover	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning Active	Reserved B7	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select
WORD2	POS_STW2 or Epos_STW2	POS_STW2.15 Hardware Limits Enable	POS_STW2.14 Software Limits Enable	Reserved B13	Reserved B12	POS_STW2.11 Touch Probe Edge	POS_STW2.10 Setler Touch Probe	Same Reference Search	Reference Select	Reserved B7	Reserved B6	1 = Jogging 0 = velocity	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam	Set Reference Point	Tracking Mode Active
WORD3	STW2	Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	STW2.8 Travel to Fixed EndStop	Parking Axis Enable	Reset i-Component	Global Start	DD5 Bit 4	DD5 Bit 3	DD5 Bit 2	DD5 Bit 1	DD5 Bit 0	
WORD4	OVERRIDE	Position Velocities Override															
WORD5	MDI_TASPOS	MDI (Manual) Data Input Position Target															
WORD6	MDI_TASPOS	MDI (Manual) Data Input Position Target															
WORD7	MDI_VELOCITY	MDI (Manual) Data Input Velocity Target															
WORD8	MDI_VELOCITY	MDI (Manual) Data Input Velocity Target															
WORD9	MDI_ACC	MDI Percent Acceleration															
WORD10	MDI_DECEL	MDI Percent Deceleration															
WORD11	Reserved	Not Used															

epos_stw1[0-15]	epos_stw1[0]	epos_stw1[1]	epos_stw1[2]	epos_stw1[3]	epos_stw1[4]	epos_stw1[5]	epos_stw1[6]	epos_stw1[7]	epos_stw1[8]	epos_stw1[9]	epos_stw1[10]	epos_stw1[11]	epos_stw1[12]	epos_stw1[13]	epos_stw1[14]	epos_stw1[15]
False	False	False	False	False	False	False	False	False	True	False	False	False	False	False	False	True
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool	bool
Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean	Boolean

2. 设置加速度和减速度超驰值 (100%=16#4000 或 10#16384)

NOTE: Telegram 111 is a SIEMENS specific extension of PROFDrive (Siemens telegram 111)																	
WORD0	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
STATUS	ZSW1	Device specific	Device specific	Drive Stopped Acknowledge	Travel Task Acknowledge	Home Position Set	Target Reached	PLC Control Requested	Following Error Within Tolerance Range	Warning Active	Switch On Inhibited	Quick Stop Not Active	Coast Stop Not Active	Fault Active	Operation Enabled	Ready To Operate	
CONTROL	STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake	Home Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge	Traversing Task Activate	Intermediate Stop Disable	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable	STW1.1 Cease Stop Disable	Power Stage Pilose Enable
WORD1	POS_STW1 or Epos_STW1	MDI Selection	signal sensor Selected	Reserved B13	Constant Takeover	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning Active	Reserved B7	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select
WORD2	POS_STW2 or Epos_STW2	POS_STW2.15 Hardware Limits Enable	POS_STW2.14 Software Limits Enable	Reserved B13	Reserved B12	POS_STW2.11 Touch Probe Edge	POS_STW2.10 Setler Touch Probe	Same Reference Search	Reference Select	Reserved B7	Reserved B6	1 = Jogging 0 = velocity	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam	Set Reference Point	Tracking Mode Active
WORD3	STW2	Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	STW2.8 Travel to Fixed EndStop	Parking Axis Enable	Reset i-Component	Global Start	DD5 Bit 4	DD5 Bit 3	DD5 Bit 2	DD5 Bit 1	DD5 Bit 0	
WORD4	OVERRIDE	Position Velocities Override															
WORD5	MDI_TASPOS	MDI (Manual) Data Input Position Target															
WORD6	MDI_TASPOS	MDI (Manual) Data Input Position Target															
WORD7	MDI_VELOCITY	MDI (Manual) Data Input Velocity Target															
WORD8	MDI_VELOCITY	MDI (Manual) Data Input Velocity Target															
WORD9	MDI_ACC	MDI Percent Acceleration															
WORD10	MDI_DECEL	MDI Percent Deceleration															
WORD11	Reserved	Not Used															
control_word2[0-15]	velocity_override	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
pos_setpoint	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
vel_setpoint	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
acc_override	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
dec_override	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
reserved	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
WORD	DWORD	DWORD	DWORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD	WORD
Hexadecimal	Decimal	Decimal	Decimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal	Hexadecimal

### 3. 设置位置命令和速度命令值并注意 FAS 中的系数设置

NOTE: Telegram 111 is a SIEMENS specific extension of PROFDrive. (Siemens telegram 111)																	
	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
WORD0	ZSW1	Device specific	Device specific	Drive Stopped Acknowledge	Traverse Task Acknowledge	Home Position Set	Target Position Reached	PLC Control Requested	Following Error Tolerance Range	Warning Active	Switch On Inhibited	Coast Stop	Quick Stop	Operation Enabled	Ready To Operate	Ready to Switch On	
WORD1	POS_ZSW1 or Epos_ZSW1	MDI Active Selection	-FW Pending- MDI Setup	Position Record Task is Active	-FW Pending- Rung Reference	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	
WORD2	POS_ZSW2 or Epos_ZSW2	Traversing Task is Active	Travel to Fixed Stop is Active	Fixed Endstop Clamping Torque Reached	Feed Stop Reached	Direct Output 2 via Positioning Record	Direct Output 1 via Positioning Record	Actual Position - Can Switch Position 1	Actual Position - Can Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Auxiliary Moving Negative	Auxiliary Moving Positive	-FW Pending- Prising Mark outside window	Ready to Accept new Setpoint	Velocity Limit is Active	
WORD3	ZSW2	Sign-Of-Life		Device specific	Device specific	Device specific	Device specific	Device specific	Speed Setpoint - Actual Deviation Within tolerance	No alarm, thermal overload, power unit	Device specific	Device specific	Device specific	Device specific	Seption(n) i speed threshold value 2	Seption(n) i speed threshold value 3	
WORD4	MEL0W	Reserved B15	Reserved B14	Pulses Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	Speed Setpoint - Actual Deviation Within tolerance	No alarm, thermal overload, power unit	Device specific	Device specific	Device specific	Reserved B4	Seption(n) i speed threshold value 2	Seption(n) i speed threshold value 3	
WORD5	ZST1_A								Actual Position value								
WORD6	ZST1_B								Actual Position value								
WORD7	ZST1_C								Actual Position value								
WORD8	ZST1_D								Actual Position value								
WORD9	FAULT_CODE								Active Fault Number								
WORD10	WARN_CODE								Active Warning Number								
WORD11	Reserved								No Use								
WORD0	STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake	Home/Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge	Traversing Task Activate	Intermediate Stop Disable	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable	STW1.1 Coast Stop Disable	Power Stage Pulses Enable
WORD1	POS_STW1 or Epos_STW1	MDI Selection	signal Setup Selected	Reserved B13	Constant Traverser	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning Active	Reserved B7	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select
WORD2	POS_STW2 or Epos_STW2	POS_STW2.15 Hardware Limits Enable	POS_STW2.14 Software Limits Enable	Reserved B13	Reserved B12	Reserved B11	POS_STW2.11 Touch Probe Edge 0 = Rising edge 1 = Falling edge	POS_STW2.10 Select Touch Probe 0 = Probe 1 Active 1 = Probe 2 Active	Start Reference Search 0 = positive direction 1 = negative direction	Reserved B7	Reserved B6	Jogging 1 = incremental 0 = velocity	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam Active	Set Reference Point	Tracking Mode Active
WORD3	STW2		Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	STW2.8 Travel to Fixed Endstop (Torque Mode) Enable	Parking Axis Enable	Reset I-Component	Global Start	DO5 Bit 4	DO5 Bit 3	DO5 Bit 2	DO5 Bit 1	DO5 Bit 0
WORD4	OVERMODE								Position Velocity Override								
WORD5	MDI_TASPOS								MDI (Manual Data Input) Position Targets								
WORD6	MDI_TASPOS								MDI (Manual Data Input) Velocity Targets								
WORD7	MDI_VEL								MDI (Manual Data Input) Acceleration								
WORD8	MDI_VEL								MDI (Manual Data Input) Deceleration								
WORD9	MDI_ACC								No Use								
WORD10	MDI_DEC								No Use								
WORD11	Reserved								No Use								

velocity_override	4000	4000	WORD	Hexadecimal
pos_setpoint	10000000	10000000	DWORD	Decimal
vel_setpoint	100000	100000	DWORD	Decimal
acc_override	4000	4000	WORD	Hexadecimal
dec_override	4000	4000	WORD	Hexadecimal
reserved	0000		WORD	Hexadecimal

### 4. 切换 PZD1(STW1) 的位 6, 开始定位任务

NOTE: Telegram 111 is a SIEMENS specific extension of PROFDrive. (Siemens telegram 111)																	
	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
WORD0	ZSW1	Device specific	Device specific	Drive Stopped Acknowledge	Traverse Task Acknowledge	Home Position Set	Target Position Reached	PLC Control Requested	Following Error Tolerance Range	Warning Active	Switch On Inhibited	Coast Stop	Quick Stop	Operation Enabled	Ready To Operate	Ready to Switch On	
WORD1	POS_ZSW1 or Epos_ZSW1	MDI Active Selection	-FW Pending- MDI Setup	Position Record Task is Active	-FW Pending- Rung Reference	Homing Task is Active	Jogging Task is Active	Positive Hardware Limit Switch is Activated	Negative Hardware Limit Switch is Activated	Reserved B7	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	Position Record Selected	
WORD2	POS_ZSW2 or Epos_ZSW2	Traversing Task is Active	Travel to Fixed Stop is Active	Fixed Endstop Clamping Torque Reached	Feed Stop Reached	Direct Output 2 via Positioning Record	Direct Output 1 via Positioning Record	Actual Position - Can Switch Position 1	Actual Position - Can Switch Position 0	Positive Software Limit Switch is Activated	Negative Software Limit Switch is Activated	Auxiliary Moving Negative	Auxiliary Moving Positive	-FW Pending- Prising Mark outside window	Ready to Accept new Setpoint	Velocity Limit is Active	
WORD3	ZSW2	Sign-Of-Life		Device specific	Device specific	Device specific	Device specific	Device specific	Speed Setpoint - Actual Deviation Within tolerance	No alarm, thermal overload, power unit	Device specific	Device specific	Device specific	Device specific	Seption(n) i speed threshold value 2	Seption(n) i speed threshold value 3	
WORD4	MEL0W	Reserved B15	Reserved B14	Pulses Enabled	Drive Ready	Controller Enable	Reserved B10	Reserved B9	Speed Setpoint - Actual Deviation Within tolerance	No alarm, thermal overload, power unit	Device specific	Device specific	Device specific	Reserved B4	Seption(n) i speed threshold value 2	Seption(n) i speed threshold value 3	
WORD5	ZST1_A								Actual Position value								
WORD6	ZST1_B								Actual Position value								
WORD7	ZST1_C								Actual Position value								
WORD8	ZST1_D								Actual Position value								
WORD9	FAULT_CODE								Active Fault Number								
WORD10	WARN_CODE								Active Warning Number								
WORD11	Reserved								No Use								
WORD0	STW1	Device specific	Device specific	Device specific	STW1.12 Release Holding Brake	Home/Reference Task Start	Control By PLC	log2	log1	Fault Acknowledge	Traversing Task Activate	Intermediate Stop Disable	Traversing Task Enable	Enable Operation	STW1.2 Quick Stop Disable	STW1.1 Coast Stop Disable	Power Stage Pulses Enable
WORD1	POS_STW1 or Epos_STW1	MDI Selection	signal Setup Selected	Reserved B13	Constant Traverser	Reserved B11	0 = Absolute positioning through the shortest distance 1 = Absolute positioning/MDI direction selection, positive 2 = Absolute positioning/MDI direction selection, negative 3 = Absolute positioning through the shortest distance	Direct Mode Absolute Positioning Active	Reserved B7	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select	Position Record Select
WORD2	POS_STW2 or Epos_STW2	POS_STW2.15 Hardware Limits Enable	POS_STW2.14 Software Limits Enable	Reserved B13	Reserved B12	Reserved B11	POS_STW2.11 Touch Probe Edge 0 = Rising edge 1 = Falling edge	POS_STW2.10 Select Touch Probe 0 = Probe 1 Active 1 = Probe 2 Active	Start Reference Search 0 = positive direction 1 = negative direction	Reserved B7	Reserved B6	Jogging 1 = incremental 0 = velocity	Reserved B4	Reserved B3	POS_STW2.2 Reference Cam Active	Set Reference Point	Tracking Mode Active
WORD3	STW2		Master Sign-Of-Life			Motor Switchover Completed	Reserved B10	Global Trigger Command	STW2.8 Travel to Fixed Endstop (Torque Mode) Enable	Parking Axis Enable	Reset I-Component	Global Start	DO5 Bit 4	DO5 Bit 3	DO5 Bit 2	DO5 Bit 1	DO5 Bit 0
WORD4	OVERMODE								Position Velocity Override								
WORD5	MDI_TASPOS								MDI (Manual Data Input) Position Targets								
WORD6	MDI_TASPOS								MDI (Manual Data Input) Velocity Targets								
WORD7	MDI_VEL								MDI (Manual Data Input) Acceleration								
WORD8	MDI_VEL								MDI (Manual Data Input) Deceleration								
WORD9	MDI_ACC								No Use								
WORD10	MDI_DEC								No Use								
WORD11	Reserved								No Use								

pd_out																	
control_word1[0]	True	TRUE	FALSE	bool	Boolean												
control_word1[1]	True	TRUE	FALSE	bool	Boolean												
control_word1[2]	True	TRUE	FALSE	bool	Boolean												
control_word1[3]	True	TRUE	FALSE	bool	Boolean												
control_word1[4]	True	TRUE	FALSE	bool	Boolean												
control_word1[5]	True	TRUE	FALSE	bool	Boolean												
control_word1[6]	True	TRUE	FALSE	bool	Boolean												
control_word1[7]	False	TRUE	FALSE	bool	Boolean												
control_word1[8]	False	TRUE	FALSE	bool	Boolean												
control_word1[9]	False	TRUE	FALSE	bool	Boolean												
control_word1[10]	True	TRUE	FALSE	bool	Boolean												
control_word1[11]	False	TRUE	FALSE	bool	Boolean												
control_word1[12]	False	TRUE	FALSE	bool	Boolean												
control_word1[13]	False	TRUE	FALSE	bool	Boolean												
control_word1[14]	False	TRUE	FALSE	bool	Boolean												

## 5 简介: EtherNet/IP 过程数据

EtherNet/IP 中的 CMMT 使用 PROFIDrive 通信配置文件。可以使用报文 1（简单速度控制）、102（高级速度控制）和 111（位置控制）。所用报文通过 Automation Suite 进行选择。

WORD	INPUT	OUTPUT
1.	Control Word 1	Status Word 1
2.	Speed Setpoint Value	Actual Speed Value

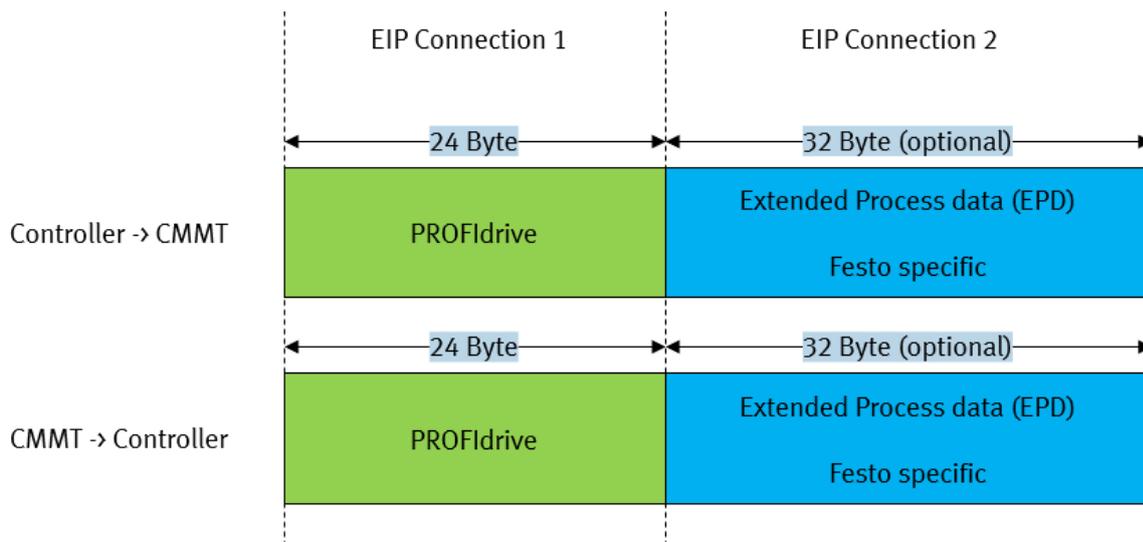
WORD	INPUT	OUTPUT
1.	Control Word 1	Status Word 1
2.	Speed Setpoint	Speed Actual
3.		
4.	Control Word 2	Status Word 2
5.	Torque Reduction	MELDW Status Word
6.	Encoder Control Word 1	Encoder Status Word 1
7.		Encoder Position G1_XIST1
8.		
9.		Encoder Position G1_XIST2
10.		

WORD	INPUT	OUTPUT
1.	Control Word 1	Status Word 1
2.	Pos Control Word 1	Pos Status Word 1
3.	Pos Control Word 2	Pos Status Word 2
4.	Control Word 2	Status Word 2
5.	Velocity Override	MELDW Status Word
6.		
7.	MDI Position Setpoint	Position Actual Value
8.		
9.	MDI Velocity Setpoint	Velocity Actual Value
10.	MDI Percent Acceleration	Active Fault Number
11.	MDI Percent Deceleration	Active Warning Number
12.	User Selectable	User Selectable



过程数据包括:

- PROFdrive Telegram
- Extended Process Data (可选)



Extended Process Data (EPD) 可通过 Festo Automation Suite 进行配置:

- 最多可对 8 个输入和输出进行参数设置。
- 最多 32 个字节输入, 32 个字节输出。
- 在激活后, 长度固定为 32 个字节。