

常问问题 • 10/2016

博途 V14 下的 V90 PN 调试

TIA Portal V14、V 90 PN

<https://support.industry.siemens.com/cs/cn/zh/view/109742762>

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1 概述

从博途 V14 版本开始，用户可以通过使用硬件支持包（HSP）在 TIA 博途中添加和组态 SINAMICS V90 PN 驱动装置。本文介绍了 TIA 博途中如何组态 SIMATIC S7-1500（固件版本 = > V2.0）和 V90 PN 的 PROFINET 通信，并创建了位置运动技术对象 T0 来实现运动控制。

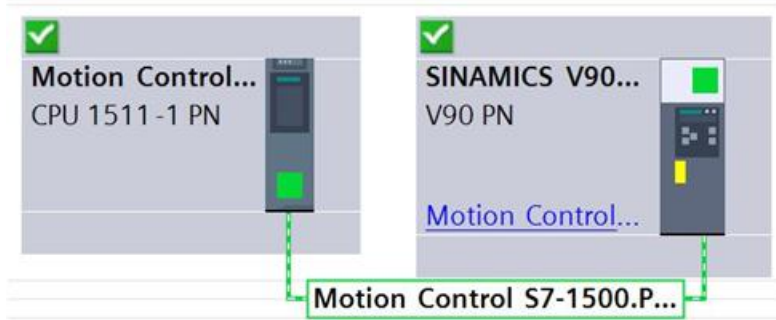


图 1-1 PLC 和驱动器在博途软件中的集成

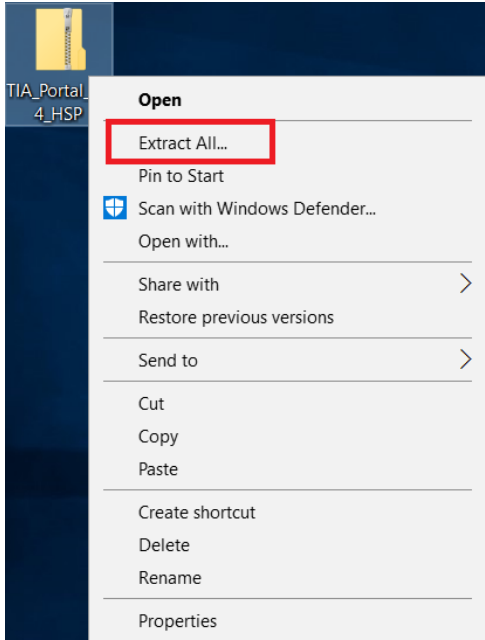
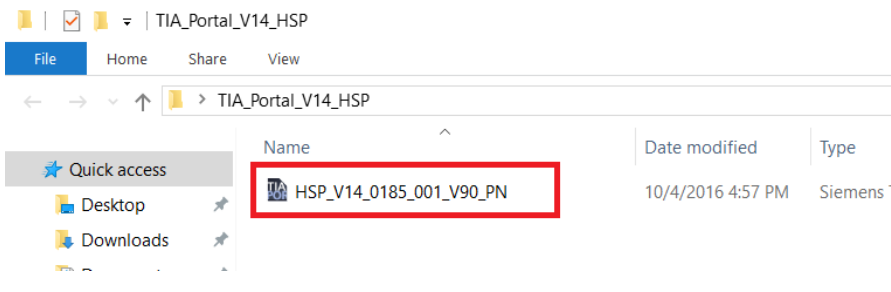
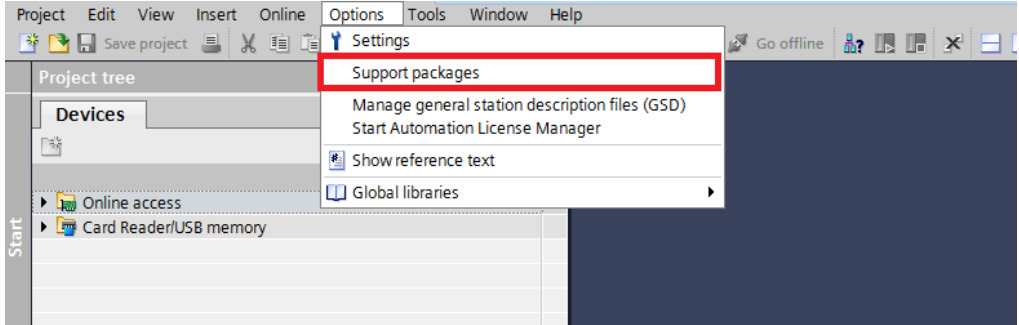
相关的 V90 HSP 可以通过如下链接进行下载（TIA_Portal_V14_HSP.zip）：

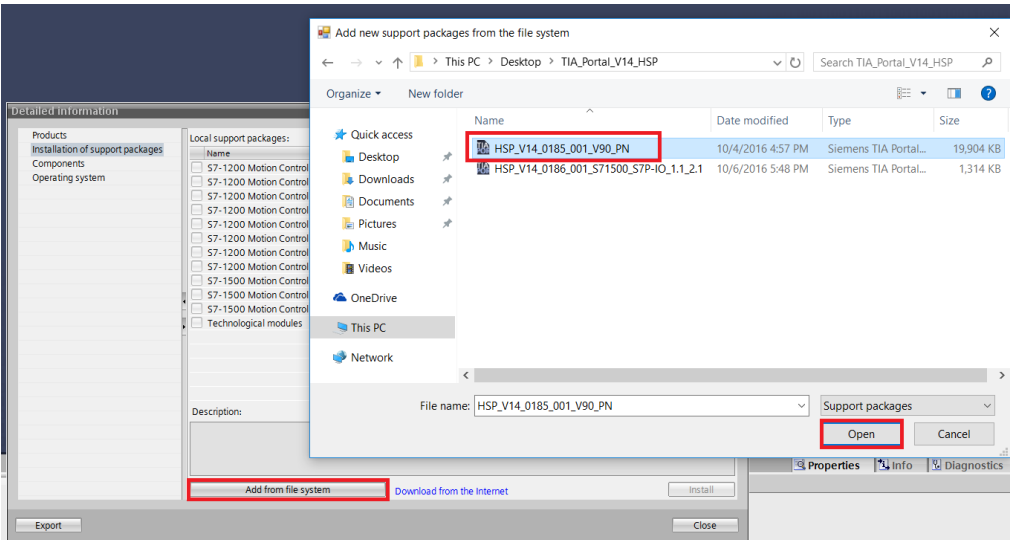
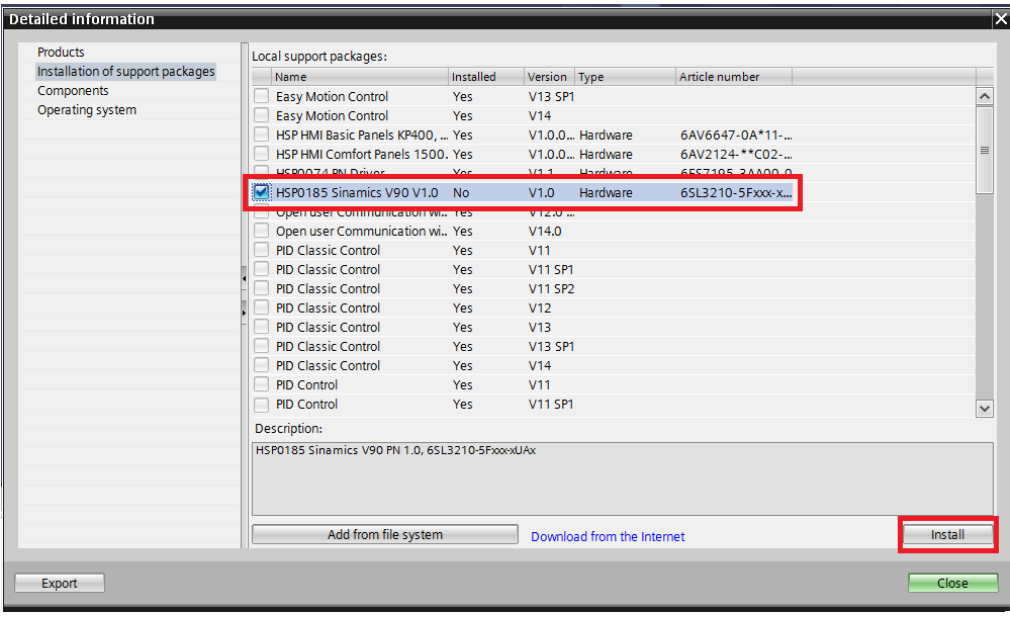
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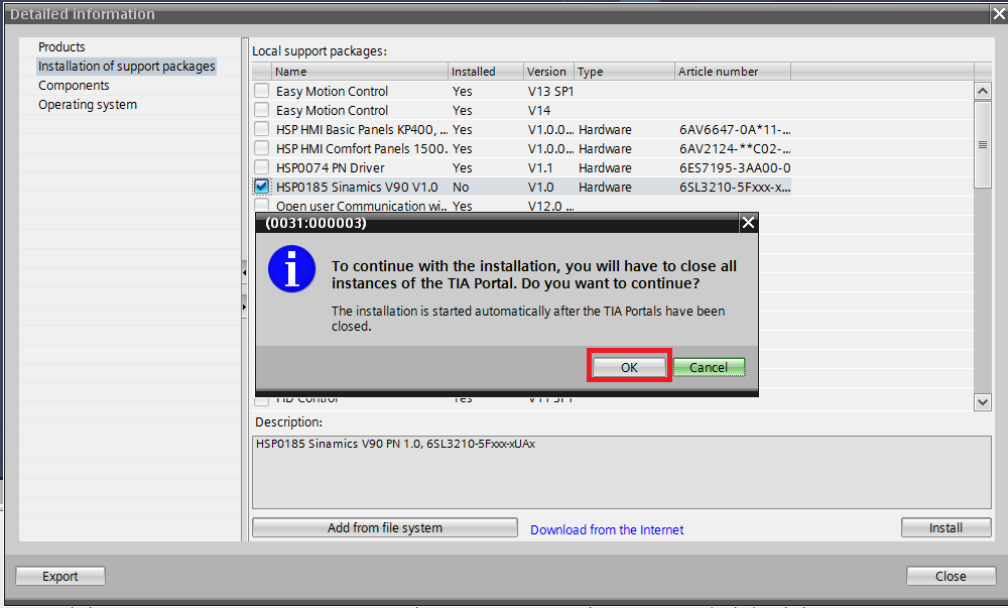
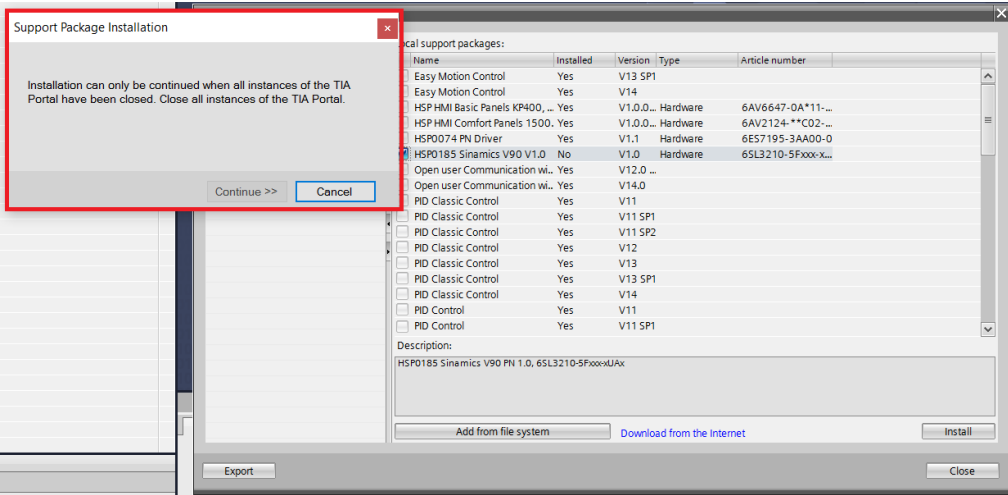
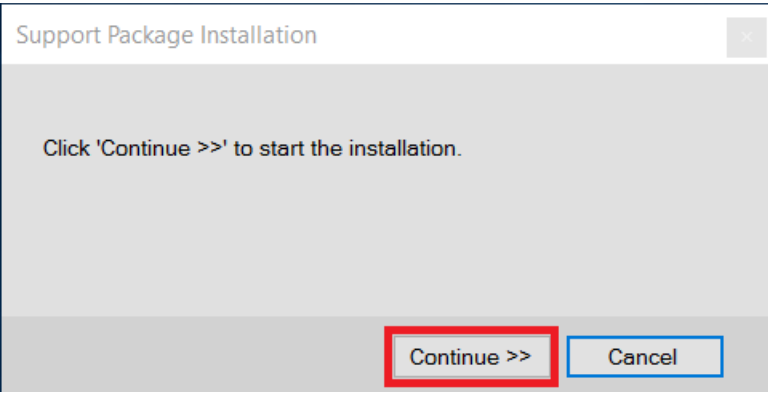
2 在博途软件中安装 V90 HSP 文件

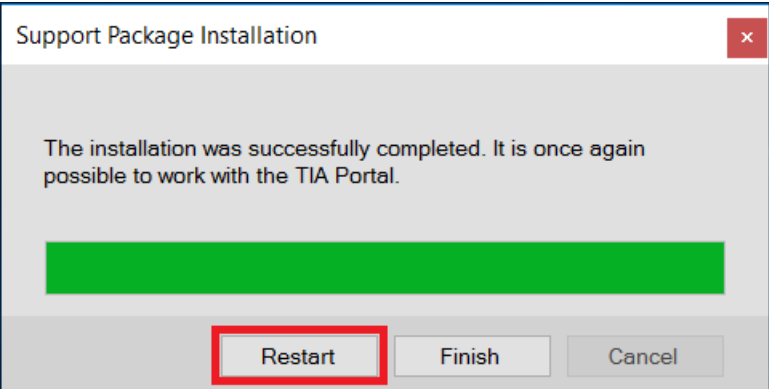
安装 HSP 到博途软件中，操作步骤如表 2-1 所示。

表 2-1 安装 HSP 到博途软件中的操作步骤

序号	说明
1.	<p>下载 HSP 并且解压缩到计算机中，如下图所示：</p>  <p>解压后的文件为：</p> 
2.	<p>打开博途软件，在项目视图下点击选项菜单（“Options”）->硬件支持包 Support packages 安装 V90 HSP 文件：</p> 

序号	说明																																																																																										
3.	<p>选择从文件系统添加（“Add from file system”）：</p> 																																																																																										
4.	<p>选中文件后勾选 HSP0185 Sinamics V90 V1.0 选项进行安装：</p>  <table border="1" data-bbox="582 929 1340 1299"> <thead> <tr> <th>Name</th> <th>Installed</th> <th>Version</th> <th>Type</th> <th>Article number</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> Easy Motion Control</td><td>Yes</td><td>V13 SP1</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> Easy Motion Control</td><td>Yes</td><td>V14</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> HSP HMI Basic Panels KP400, ...</td><td>Yes</td><td>V1.0.0...</td><td>Hardware</td><td>6AV6647-0A*11-...</td></tr> <tr><td><input type="checkbox"/> HSP HMI Comfort Panels 1500, ...</td><td>Yes</td><td>V1.0.0...</td><td>Hardware</td><td>6AV2124-**C02-...</td></tr> <tr><td><input type="checkbox"/> HSP0074 PN Driver</td><td>Yes</td><td>V1.1</td><td>Hardware</td><td>6ES7305-2AA00-0...</td></tr> <tr><td><input checked="" type="checkbox"/> HSP0185 Sinamics V90 V1.0</td><td>No</td><td>V1.0</td><td>Hardware</td><td>6SL3210-5Fxxx-x...</td></tr> <tr><td><input type="checkbox"/> Open user Communication wi...</td><td>Yes</td><td>V12.0...</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> Open user Communication wi...</td><td>Yes</td><td>V14.0</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V11</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V11 SP1</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V11 SP2</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V12</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V13</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V13 SP1</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Classic Control</td><td>Yes</td><td>V14</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Control</td><td>Yes</td><td>V11</td><td></td><td></td></tr> <tr><td><input type="checkbox"/> PID Control</td><td>Yes</td><td>V11 SP1</td><td></td><td></td></tr> </tbody> </table>	Name	Installed	Version	Type	Article number	<input type="checkbox"/> Easy Motion Control	Yes	V13 SP1			<input type="checkbox"/> Easy Motion Control	Yes	V14			<input type="checkbox"/> HSP HMI Basic Panels KP400, ...	Yes	V1.0.0...	Hardware	6AV6647-0A*11-...	<input type="checkbox"/> HSP HMI Comfort Panels 1500, ...	Yes	V1.0.0...	Hardware	6AV2124-**C02-...	<input type="checkbox"/> HSP0074 PN Driver	Yes	V1.1	Hardware	6ES7305-2AA00-0...	<input checked="" type="checkbox"/> HSP0185 Sinamics V90 V1.0	No	V1.0	Hardware	6SL3210-5Fxxx-x...	<input type="checkbox"/> Open user Communication wi...	Yes	V12.0...			<input type="checkbox"/> Open user Communication wi...	Yes	V14.0			<input type="checkbox"/> PID Classic Control	Yes	V11			<input type="checkbox"/> PID Classic Control	Yes	V11 SP1			<input type="checkbox"/> PID Classic Control	Yes	V11 SP2			<input type="checkbox"/> PID Classic Control	Yes	V12			<input type="checkbox"/> PID Classic Control	Yes	V13			<input type="checkbox"/> PID Classic Control	Yes	V13 SP1			<input type="checkbox"/> PID Classic Control	Yes	V14			<input type="checkbox"/> PID Control	Yes	V11			<input type="checkbox"/> PID Control	Yes	V11 SP1		
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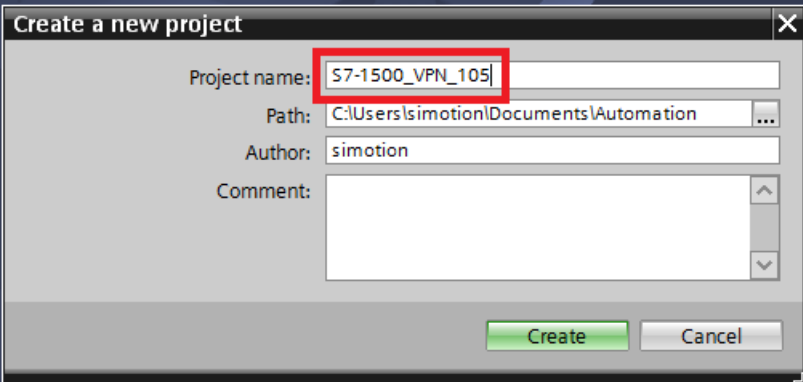
序号	说明
5.	<p>提示需要关闭博途软件，点击“OK”按钮：</p> 
6.	<p>在关闭博途软件之前，安装无法继续进行，用户需要手动关闭博途软件：</p> 
7.	<p>当关闭博途软件后，继续按钮（“Continue”）变成可以点击，随后继续进行安装：</p> 

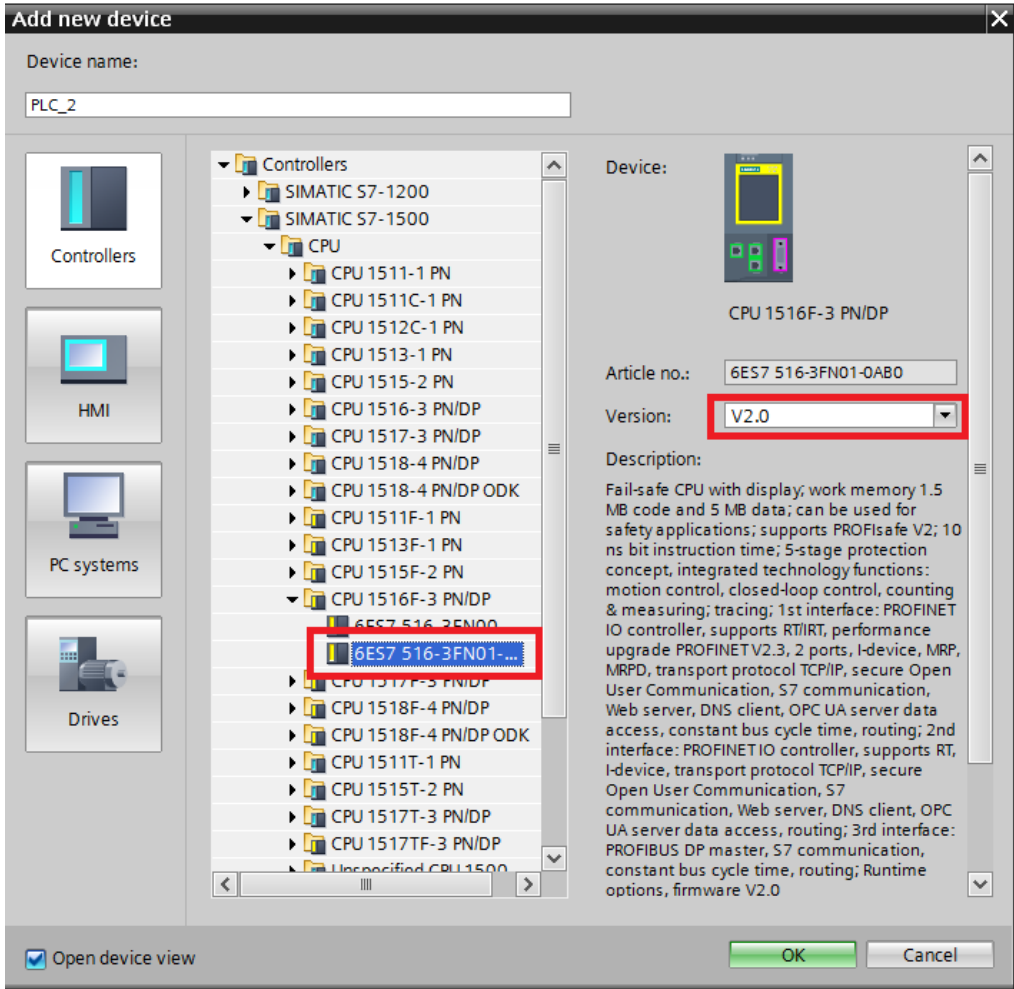

序号	说明
8.	<p>安装后点击重启“Restart”，完成 HSP 的安装过程：</p> 

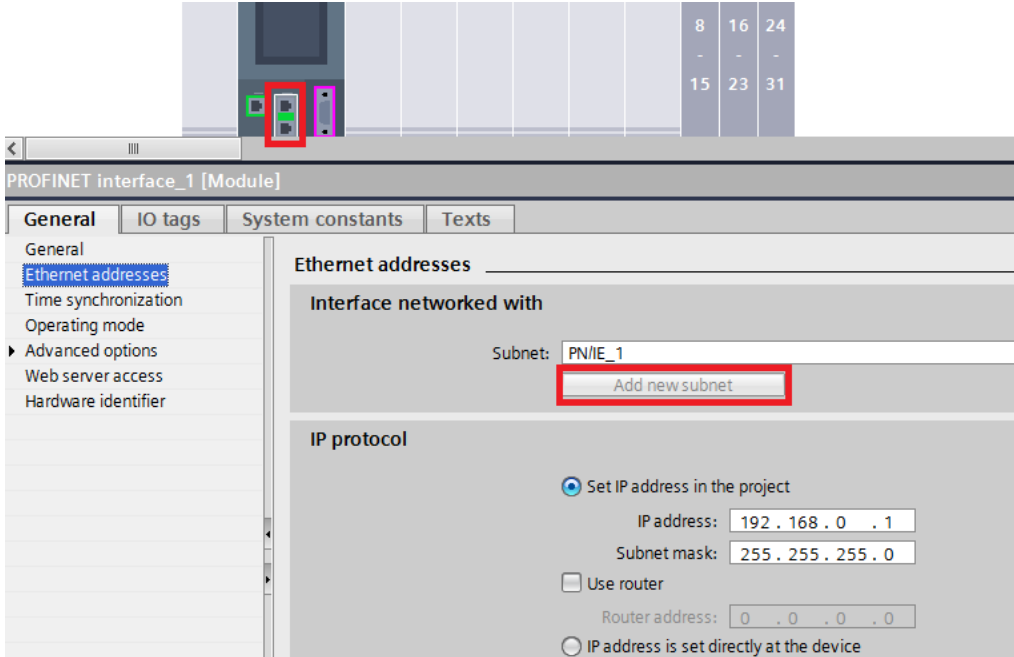
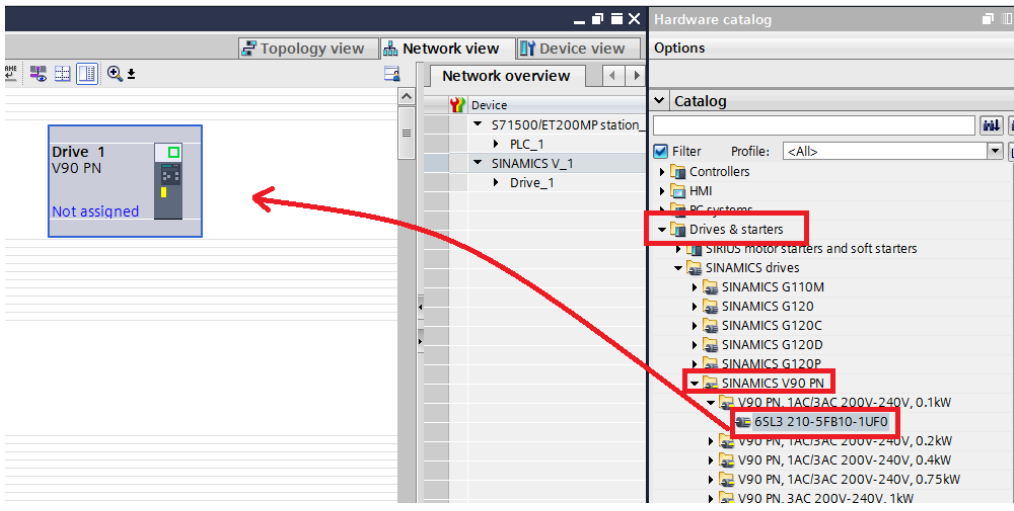
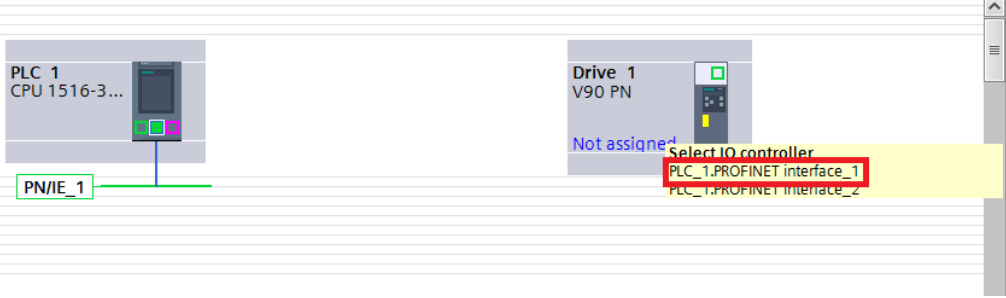
3 硬件组态

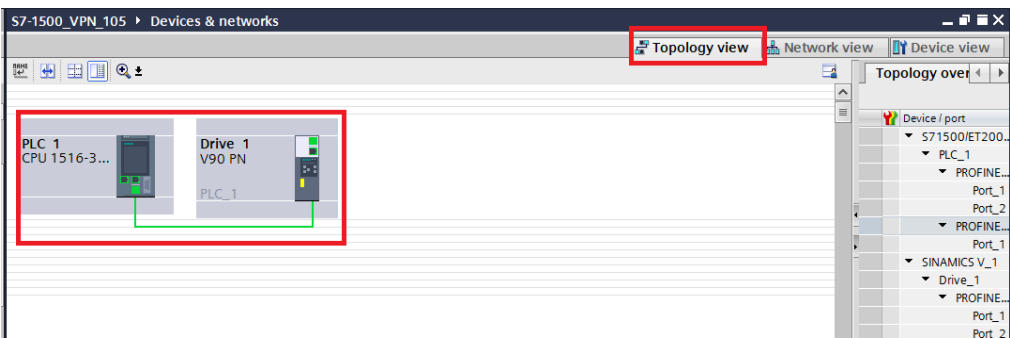
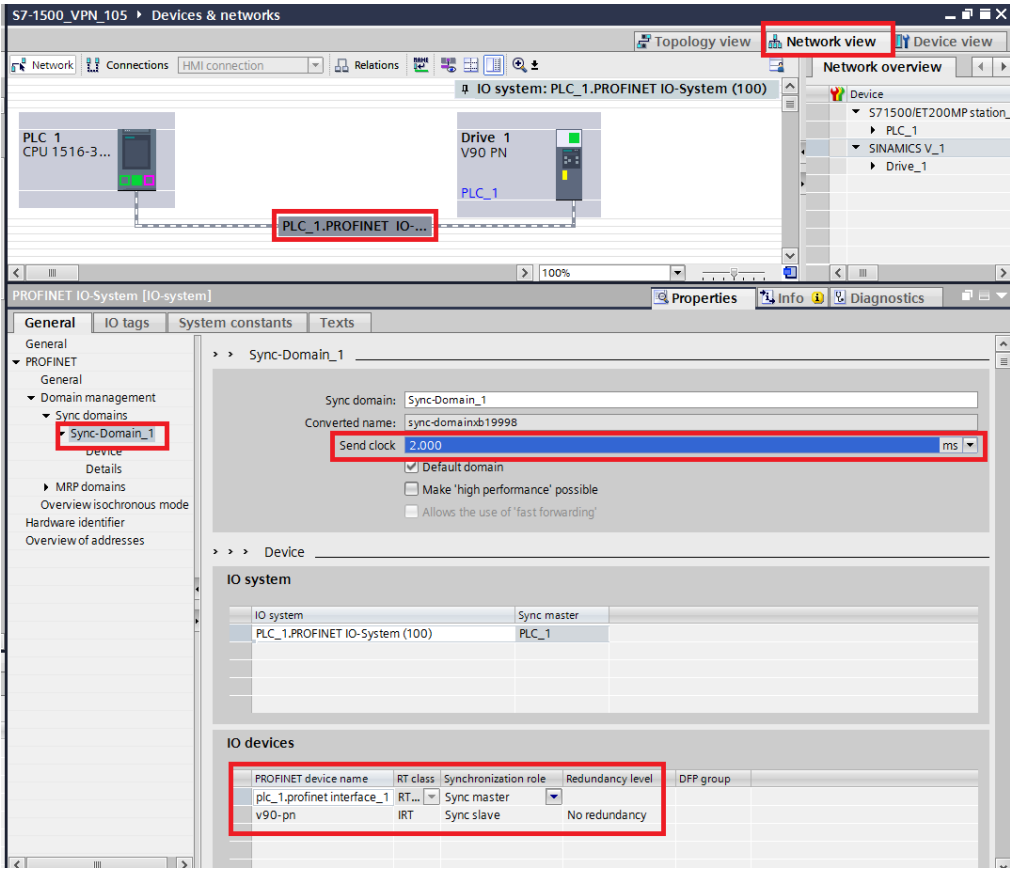
完成安装 HSP 之后，需要进行博途软件下的 PLC 硬件组态和在网络视图添加 V90PN 驱动装置和组态报文，操作步骤如表 3-1 所示。

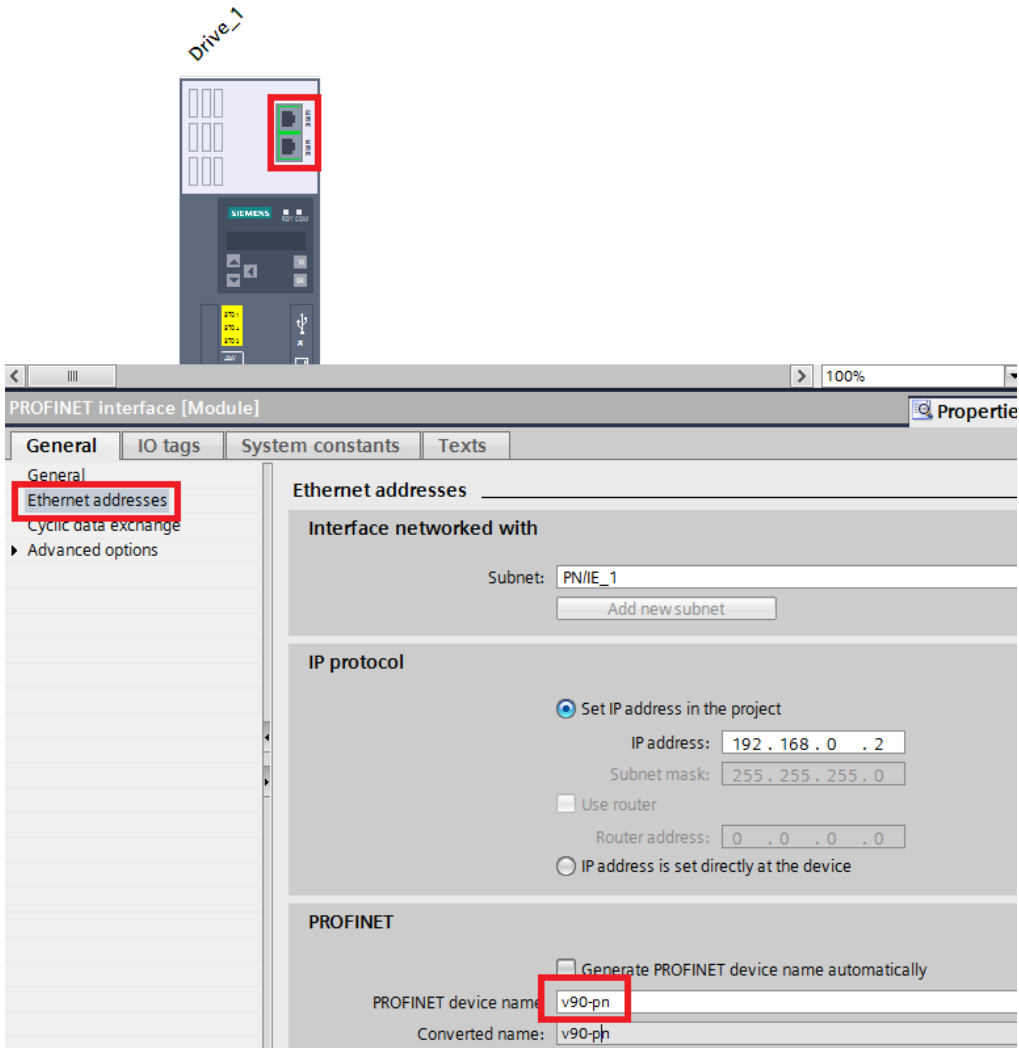
表 3-1 硬件组态步骤

序号	说明
1.	<p>在项目视图中，创建新的项目：</p> 

序号	说明
2.	<p>添加 PLC 到项目中，本文使用的 PLC 为 S7-1516F V2.0:</p>  <p>Add new device</p> <p>Device name: <input type="text" value="PLC_2"/></p> <p>Device:  CPU 1516F-3 PN/DP</p> <p>Article no.: <input type="text" value="6ES7 516-3FN01-0AB0"/></p> <p>Version: <input type="text" value="V2.0"/></p> <p>Description: Fail-safe CPU with display; work memory 1.5 MB code and 5 MB data; can be used for safety applications; supports PROFIsafe V2; 10 ns bit instruction time; 5-stage protection concept; integrated technology functions: motion control, closed-loop control, counting & measuring; tracing; 1st interface: PROFINET IO controller, supports RT/IRT, performance upgrade PROFINET V2.3, 2 ports, I-device, MRP, MRPD, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, DNS client, OPC UA server data access, constant bus cycle time, routing; 2nd interface: PROFINET IO controller, supports RT, I-device, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, DNS client, OPC UA server data access, routing; 3rd interface: PROFIBUS DP master, S7 communication, constant bus cycle time, routing; Runtime options, firmware V2.0</p> <p><input checked="" type="checkbox"/> Open device view <input type="button" value="OK"/> <input type="button" value="Cancel"/></p>

序号	说明
3.	<p>配置 PLC 接口 IP 地址并且分配网络，本例 PLC 的 IP 地址为 192.168.0.1 :</p> 
4.	<p>在网络视图中的“Drives & starters”文件夹选择添加 V90 PN 到网络中，注意添加的产品型号需要和实际使用的一致，本文使用的产品为：6SL3210-5FB10-1UF0:</p> 
5.	<p>点击 V90PN 的“Not assigned”蓝色选项，与 PLC 的接口 1 进行 PN 通信连接:</p> 

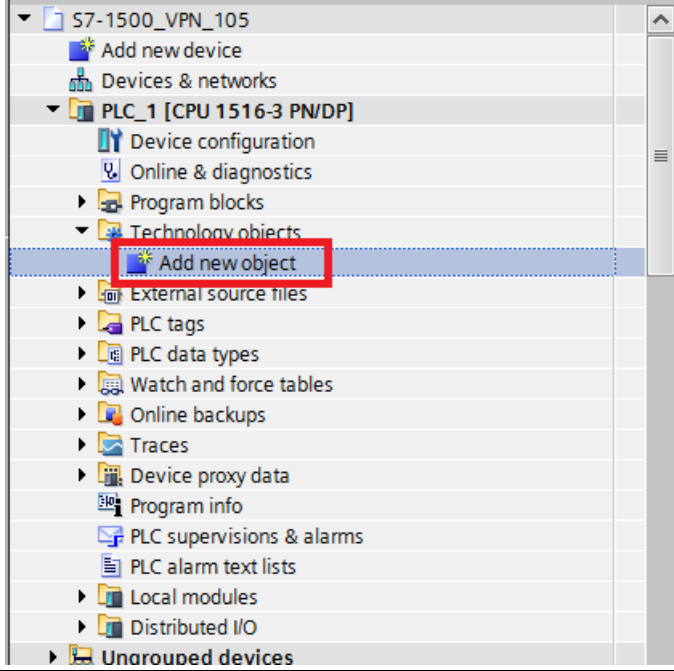
序号	说明															
6.	<p>在拓扑视图中配置通信的接口连接，本例为 PLC 的 Port2 连接 V90 PN 的 Port2:</p> 															
7.	<p>在网络视图中配置 Profinet IRT 通信，需要注意当前 V90 PN 的通信时间最短为 2ms:</p>  <p>The screenshot shows the 'PROFINET IO-System [IO-system]' properties window. The 'Sync-Domain_1' section is expanded, showing 'Send clock' set to 2.000 ms. The 'IO devices' table is also visible, showing the synchronization role for the V90-pn interface.</p> <table border="1" data-bbox="558 1444 997 1512"> <thead> <tr> <th>PROFINET device name</th> <th>RT class</th> <th>Synchronization role</th> <th>Redundancy level</th> <th>DFF group</th> </tr> </thead> <tbody> <tr> <td>plc_1.profinet interface_1</td> <td>RT...</td> <td>Sync master</td> <td></td> <td></td> </tr> <tr> <td>v90-pn</td> <td>IRT</td> <td>Sync slave</td> <td>No redundancy</td> <td></td> </tr> </tbody> </table>	PROFINET device name	RT class	Synchronization role	Redundancy level	DFF group	plc_1.profinet interface_1	RT...	Sync master			v90-pn	IRT	Sync slave	No redundancy	
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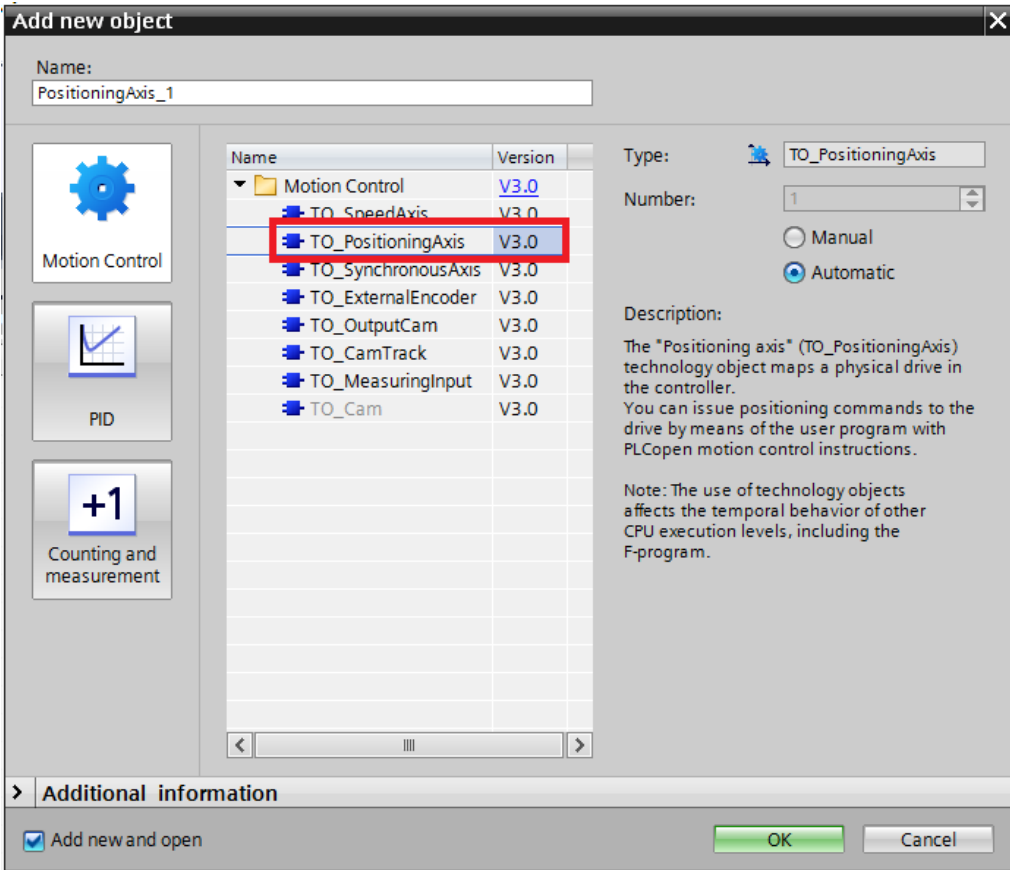
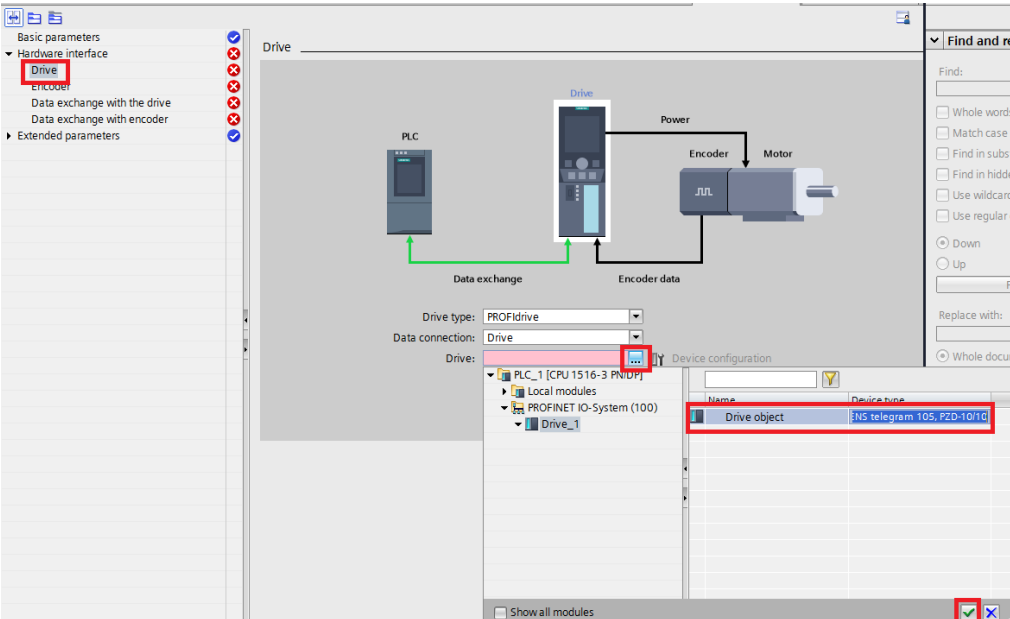
序号	说明
8.	<p>双击 Drive_1 V90 PN 进入设备视图，进行 V90 PN 的 IP 地址和 Profinet Device Name 的设置，本例的 V90 PN IP 地址为 192.168.0.2，device name 为 v90-pn，默认采用的报文为 105 报文（支持 DSC 功能）：</p>  <p>The screenshot displays the configuration interface for a PROFINET interface. The left sidebar shows the 'Ethernet addresses' tab selected. The main area is divided into three sections: 'Interface networked with' (Subnet: PN/IE_1), 'IP protocol' (Set IP address in the project, IP address: 192.168.0.2, Subnet mask: 255.255.255.0), and 'PROFINET' (Generate PROFINET device name automatically: unchecked, PROFINET device name: v90-pn, Converted name: v90-pn).</p>

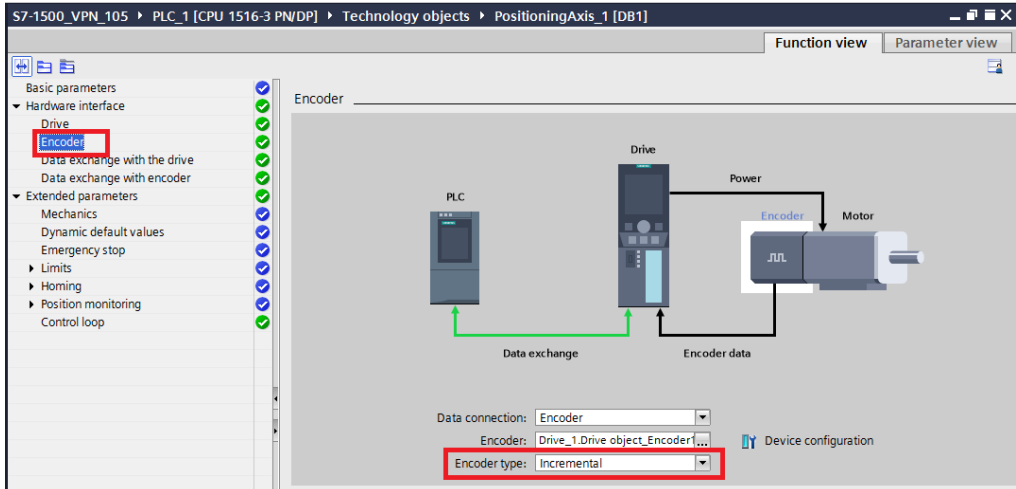
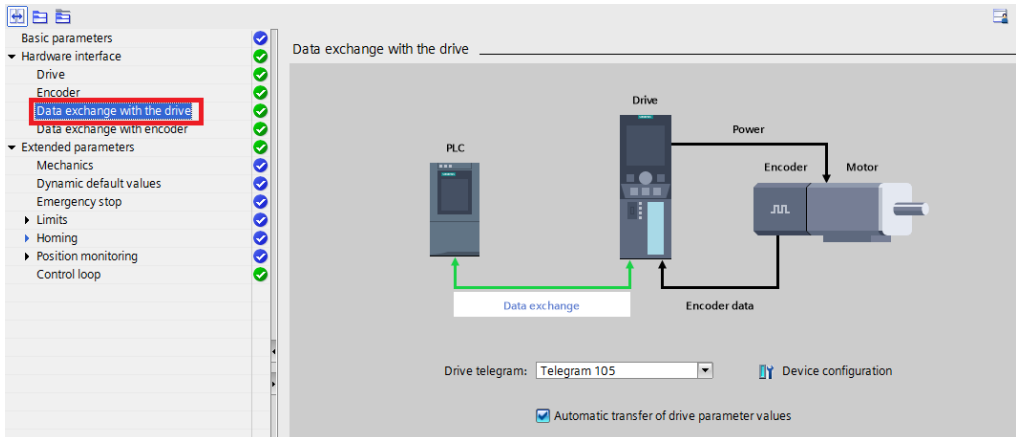
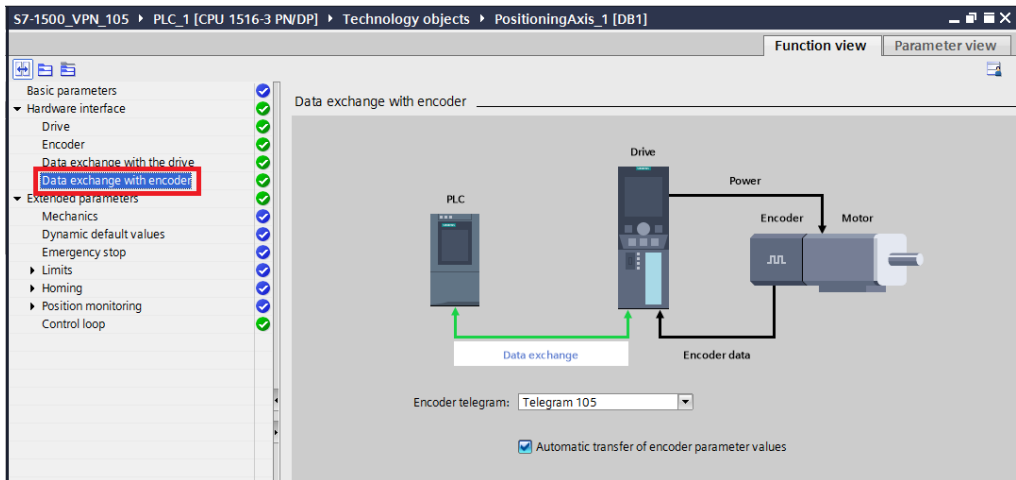
4 轴配置

完成通信组态之后，需要进行博途软件下的定位轴的 TO 配置并且关联到 V90PN 驱动装置，配置步骤如表 4-1 所示。

表 4-1 轴配置步骤

序号	说明
1.	<p>在左侧目录树中，双击“Add new object”创建新的 Technology objects (TO)：</p>  <p>The screenshot shows a project tree for 'S7-1500_VPN_105'. Under the 'PLC_1 [CPU 1516-3 PN/DP]' folder, the 'Technology objects' folder is expanded. The 'Add new object' option is highlighted with a red box, indicating the step to create a new Technology Object (TO).</p>

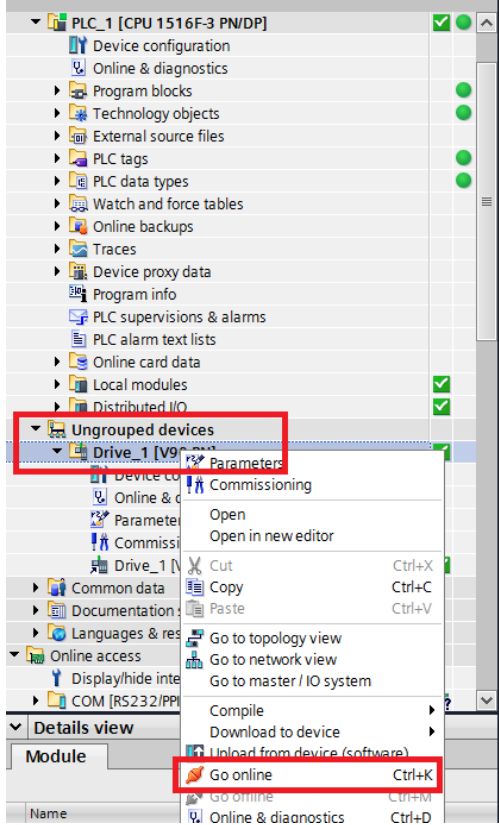
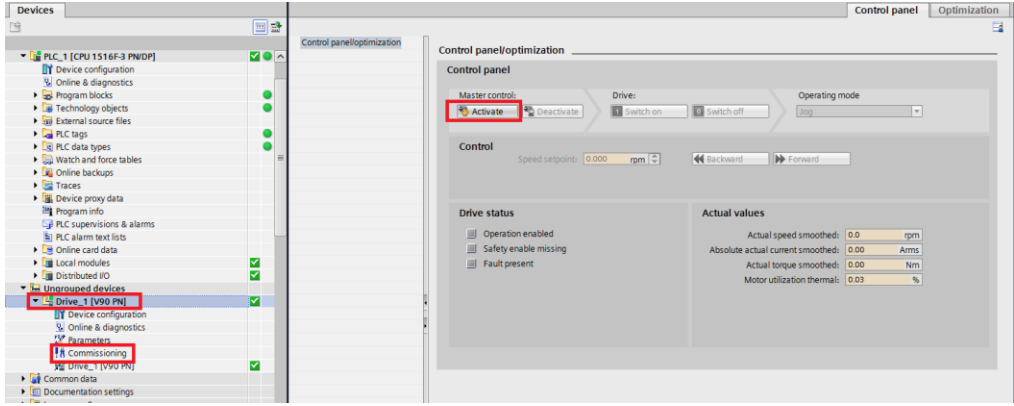
序号	说明
2.	<p>选择定位轴进行组态，用户可以根据实际的需求选择其他的轴类型：</p> 
3.	<p>配置 TO 中的驱动，选择 V90 PN，默认采用的报文为 105 报文：</p> 

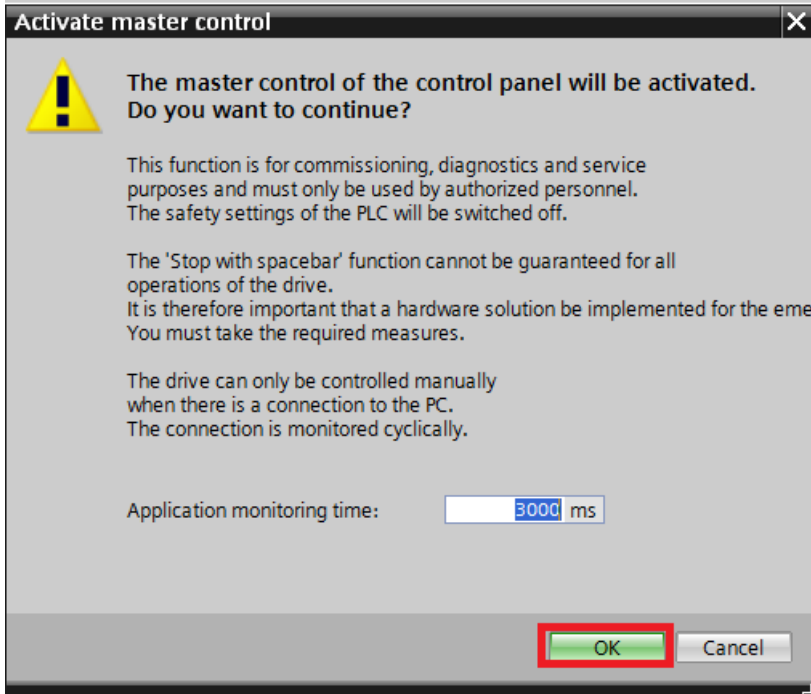
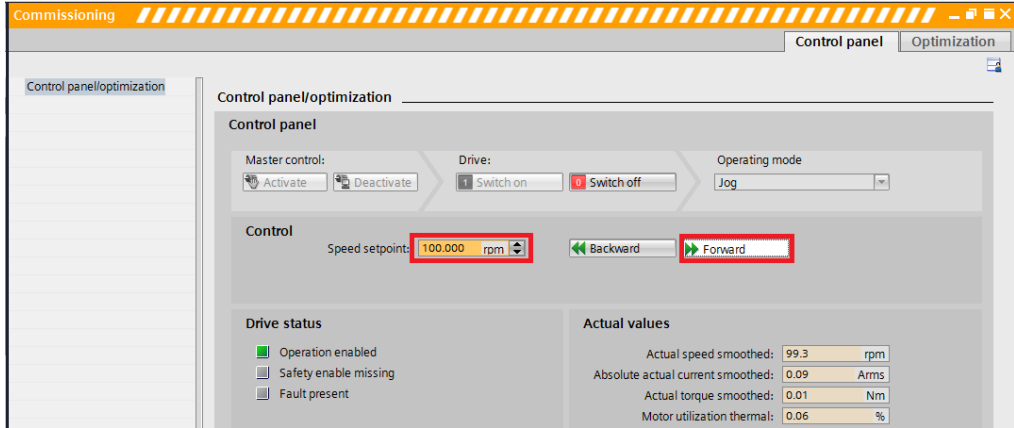
序号	说明
4.	<p>检查编码器的类型和连接，需要和实际使用的产品一致：</p>  <p>The screenshot shows the 'Encoder' configuration window. The 'Encoder type' dropdown menu is highlighted with a red box and set to 'Incremental'. Other settings include 'Data connection: Encoder' and 'Encoder: Drive_1.Drive object_Encoder1...'. The diagram shows a PLC connected to a Drive, which is connected to an Encoder and a Motor. Data exchange is shown between the PLC and Drive, and Encoder data is shown between the Drive and Encoder.</p>
5.	<p>数据交换和信息传递通过集成组态的形式可以实现自动传递，默认采用的报文为 105 报文：</p>  <p>The screenshot shows the 'Data exchange with the drive' configuration window. The 'Drive telegram' dropdown menu is highlighted with a red box and set to 'Telegram 105'. The 'Automatic transfer of drive parameter values' checkbox is checked. The diagram shows a PLC connected to a Drive, which is connected to an Encoder and a Motor. Data exchange is shown between the PLC and Drive, and Encoder data is shown between the Drive and Encoder.</p>
	<p>编码器信息通常不需要用户填写，因为博途软件已经集成了 V90 PN 的信息，默认采用的报文为 105 报文：</p>  <p>The screenshot shows the 'Data exchange with encoder' configuration window. The 'Encoder telegram' dropdown menu is highlighted with a red box and set to 'Telegram 105'. The 'Automatic transfer of encoder parameter values' checkbox is checked. The diagram shows a PLC connected to a Drive, which is connected to an Encoder and a Motor. Data exchange is shown between the PLC and Drive, and Encoder data is shown between the Drive and Encoder.</p>
6.	<p>用户可以根据实际的需要选择和填写后续的信息，具体内容请参考文档： S7-1500 轴参数全面介绍。</p>
7.	<p>保存编译并且下载到 S7-1500 中。</p>

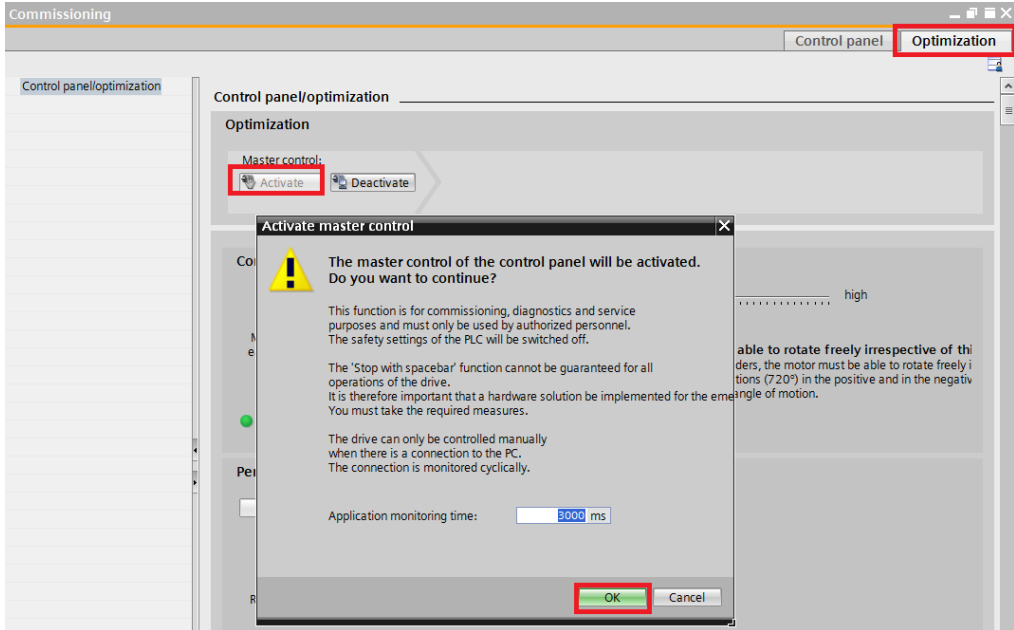
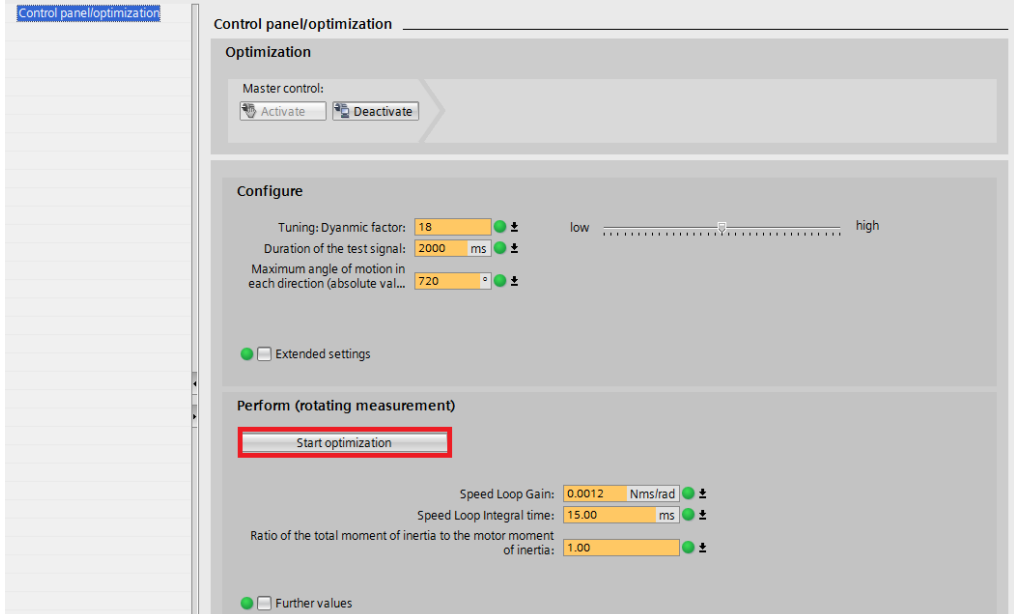
5 V90 PN 的在线测试和优化

通过如上步骤建立通信并且下载到 PLC 后，可以进行驱动和 PLC 的在线调试和优化，操作步骤如表 5-1 所示。

表 5-1 测试及优化

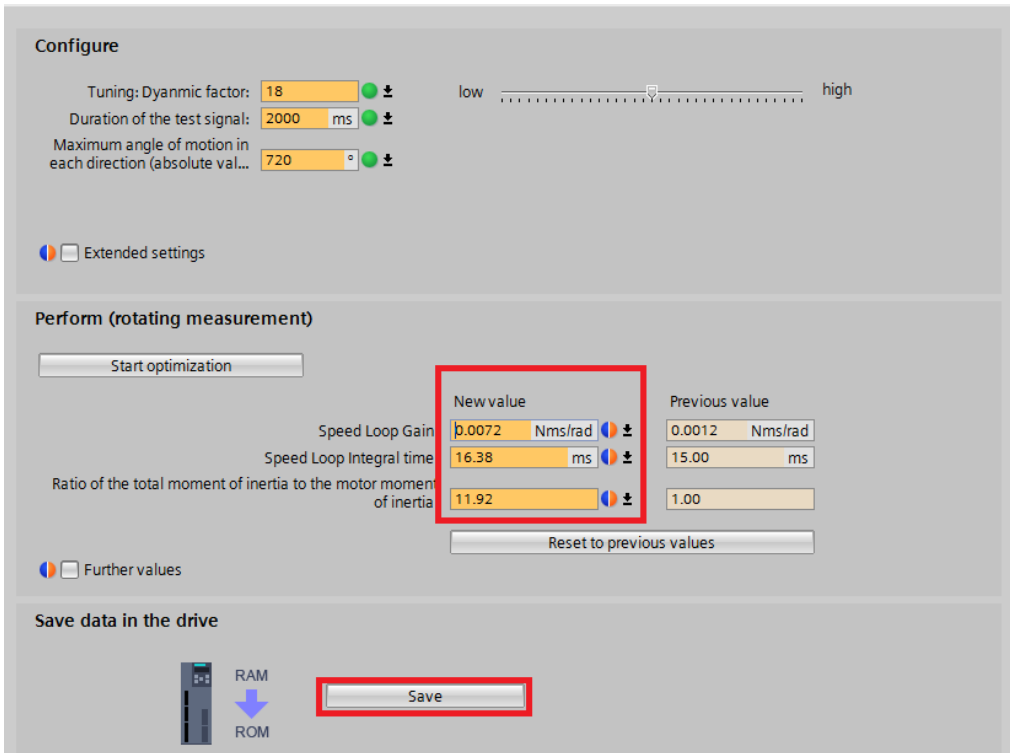
序号	说明
1.	<p>首先对 V90 PN 进行在线，右键点击下图中 Drive_1，并且选择“Go online”：</p>  <p>随后进行控制面板的测试，可以使用博途集成的控制面板进行操作，点击“Active”按钮：</p> 

序号	说明
2.	<p>通过控制面板获取控制权时需要点击“OK”按钮进行确认：</p> 
3.	<p>点击“Switch on”按钮使能驱动，通过 JOG 按钮进行驱动测试：</p> 

序号	说明
4.	<p>切换面板到优化界面，并且选择激活控制权：</p> 
5.	<p>填写移动距离为 720 度，随后点击启动优化按钮进行优化，如果用户对于系统的特性有特殊的需求，可以提高 Dynamic factor 系数，或者点击 Extended settings 扩展设定进行独立设置，在 Further values 中可以进行滤波器设置：</p> 

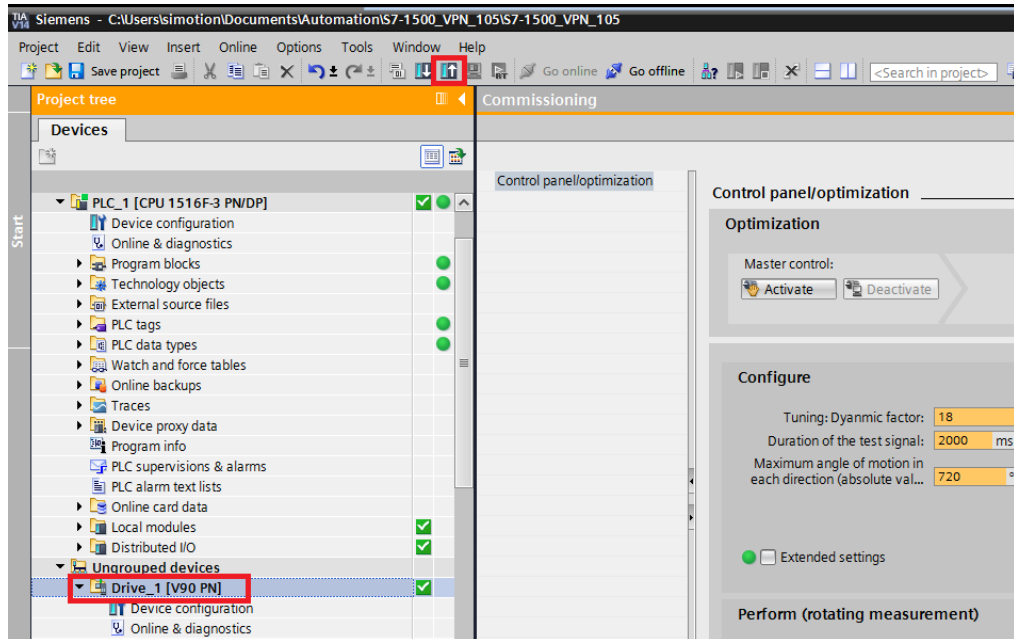
序号	说明
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6. 经过一段测试过程，系统会出现优化后的参数和之前的参数对比等信息，点击 **Save** 按钮保存参数：



经过如上操作后，还需要把优化好的参数保存到离线的计算机项目中，可以首先放弃控制权

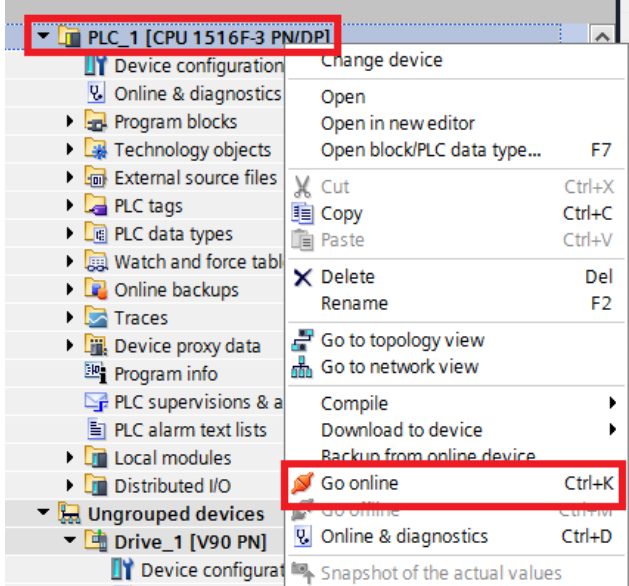
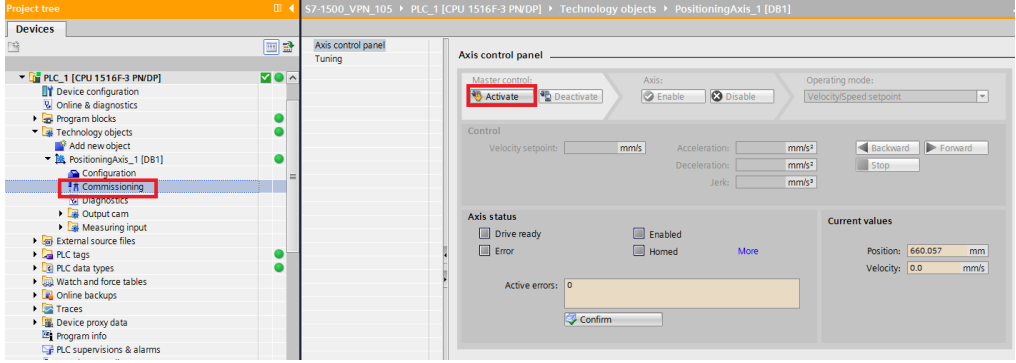
Deactivate，然后选择 Drive_1[V 90 PN]后点击上载按钮保存参数：

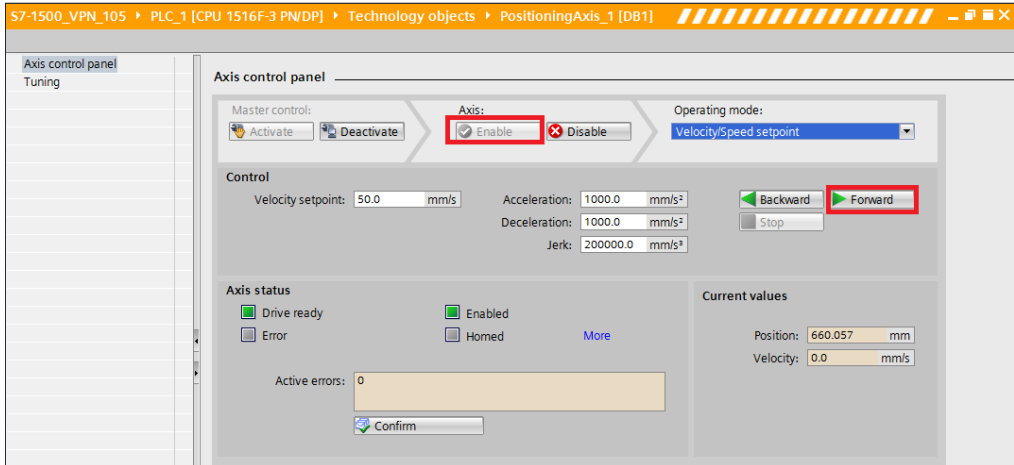
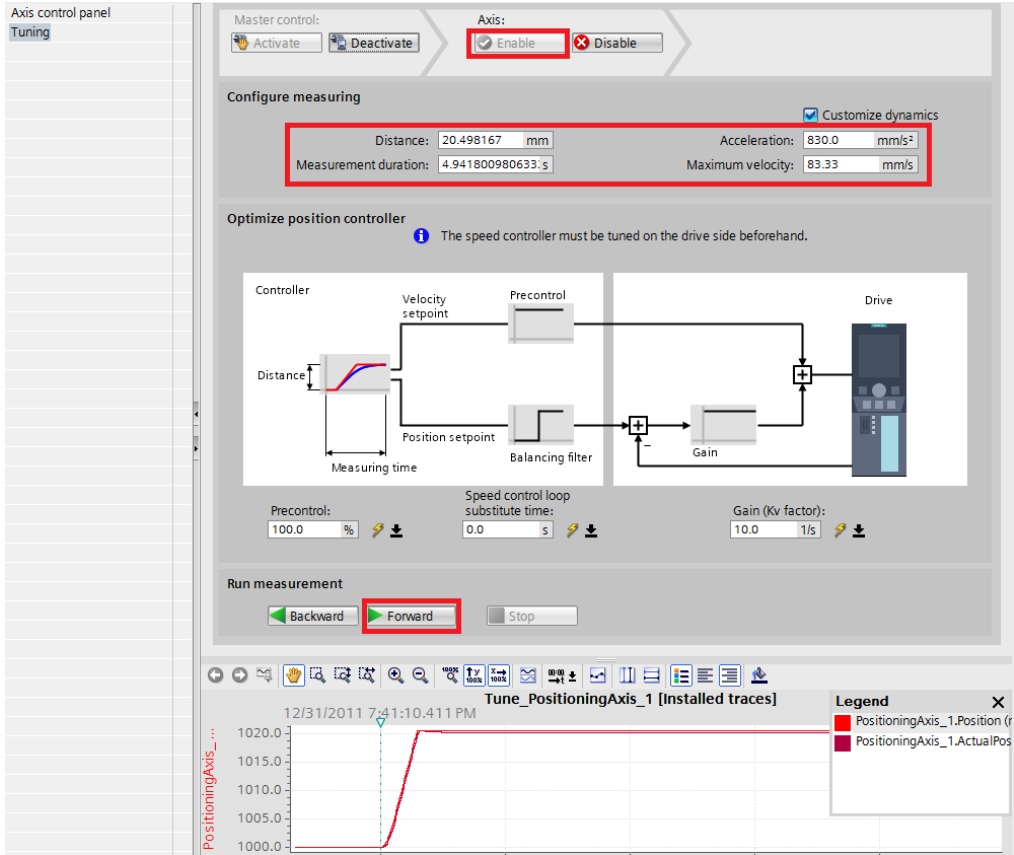


6 轴 TO 功能的测试

通过如上步骤完成驱动测试和优化后，可以进行 PLC 的轴 TO 的测试操作，操作步骤如表 6-1 所示。

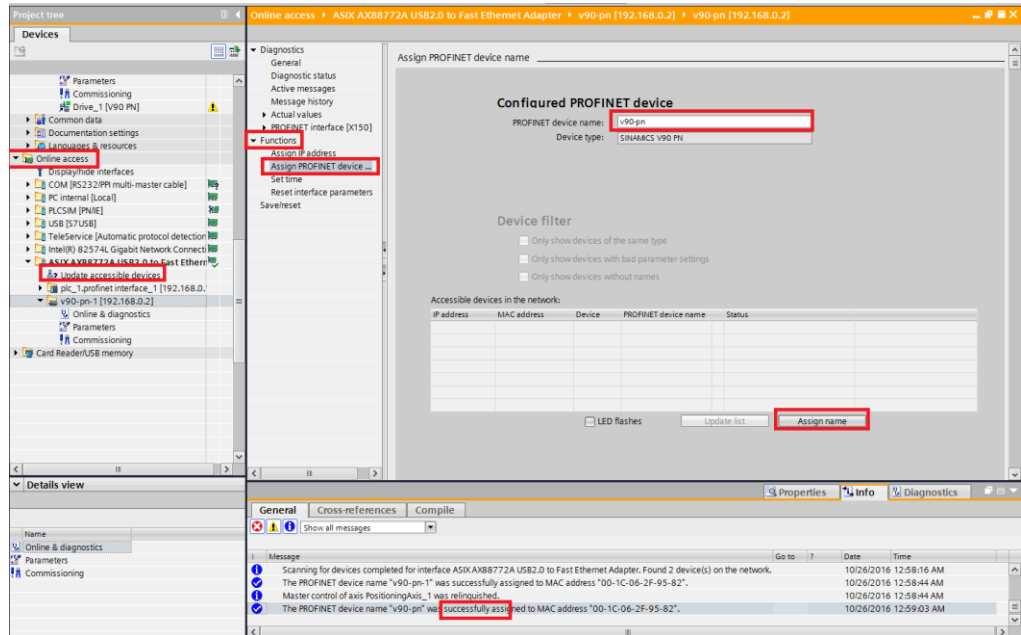
表 6-1 轴 TO 测试步骤

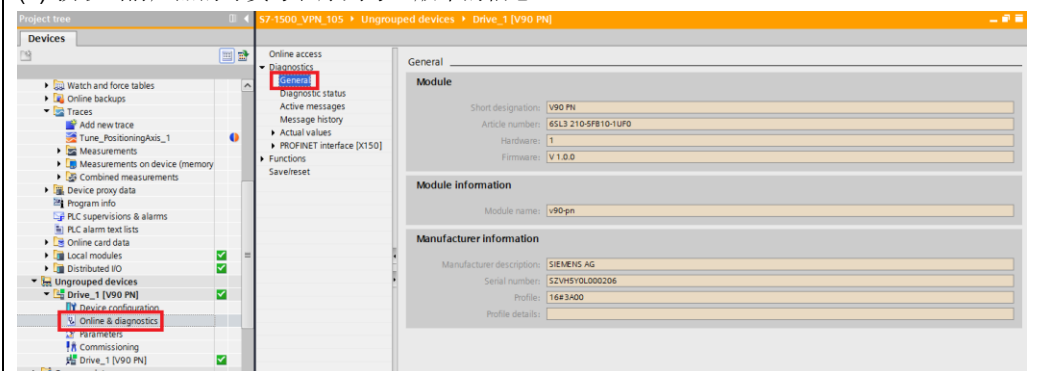
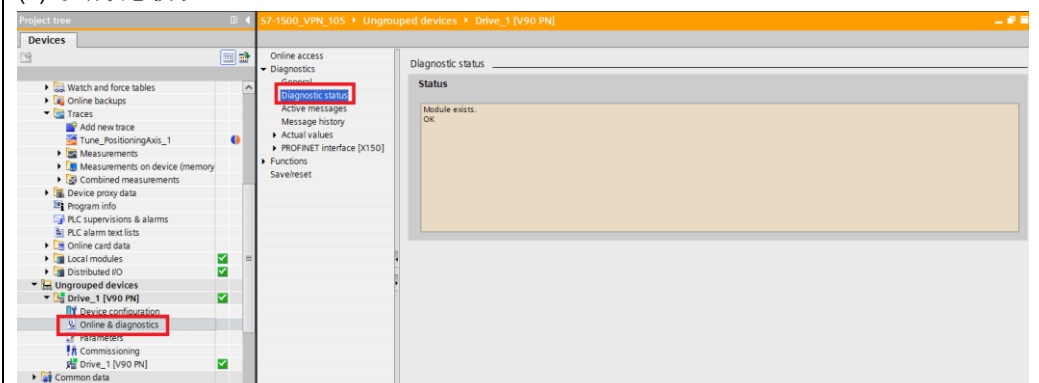
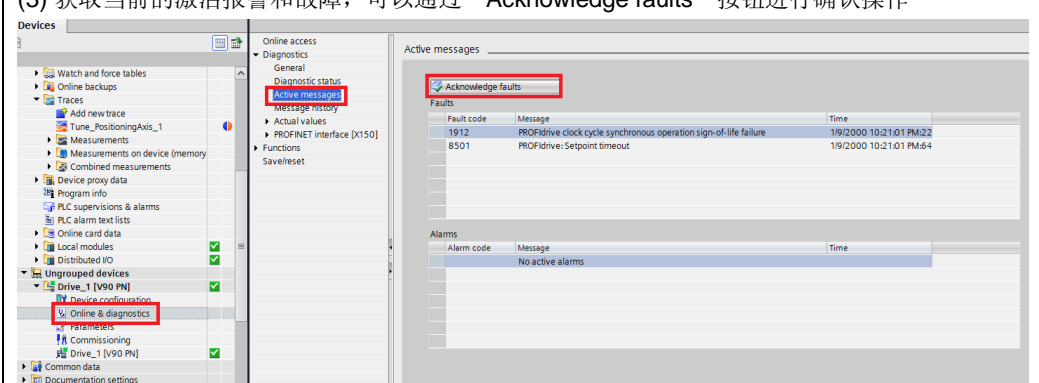
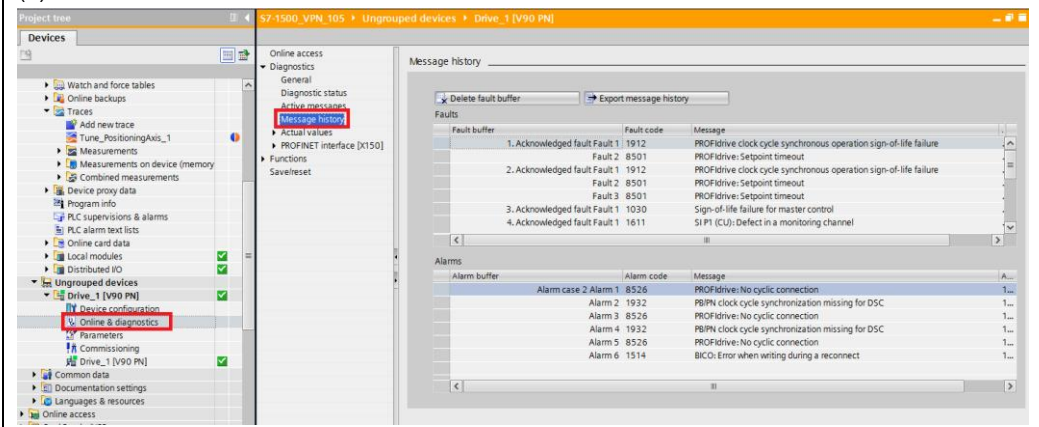
序号	说明
1.	<p>首先对 PLC 进行在线，右键点击下图中 PLC_1，并且选择“Go online”：</p> 
	<p>随后进行轴控制面板的测试，可以使用博途集成的控制面板进行操作，点击“Active”按钮：</p> 

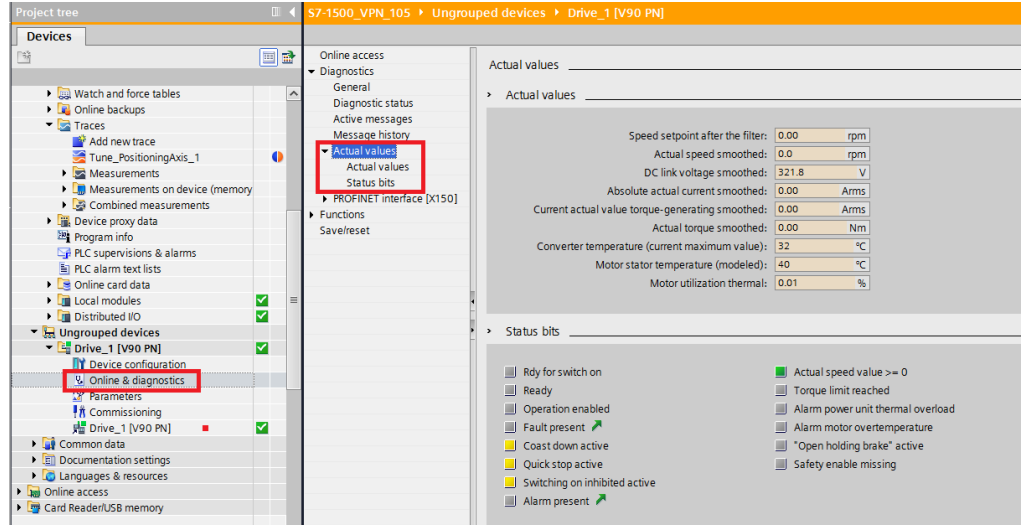
序号	说明
2.	<p>通过“Enable”按钮使能轴 TO 后，可以通过点动的方式进行测试：</p> 
3.	<p>在确定轴 TO 正常工作后，可以通过优化界面进行测试，即可以通过设定速度和加速度以及目标距离等信息，观察设定位置和实际位置之间的关系，如果跟随特性不理想可通过调整增益 Gain 或者前馈分量 Precontrol 的百分比进行测试：</p> 
4.	<p>如果优化过程满足需要后，用户可以编写 PLC Open 程序进行工艺相关的编程操作。</p>

7 其他相关介绍

用户在使用 V90PN 的博途调试过程中，可能需要设置 V90 的 Profinet 设备名称、检查驱动的报警信息、历史故障、确认故障等操作，介绍如下：

序号	说明															
1.	<p>如何通过博途软件设置 V90 PN 设备名称：</p>  <p>The screenshot shows the Siemens TIA Portal interface. In the Project Tree on the left, the 'v90-pn-1' device is selected under the 'v90-pn-1 [192.168.0.2]' folder. The 'Update accessible devices' button is highlighted with a red box. The central workspace displays the 'Assign PROFINET device' dialog box, where the 'PROFINET device name' is set to 'v90-pn' and the 'Device type' is 'SINAMICS V90 PN'. The 'Assign PROFINET device...' button is highlighted with a red box. Below the dialog box, the 'Device filter' section is visible, and the 'Assign name' button is highlighted with a red box. The message log at the bottom shows the following messages:</p> <table border="1" data-bbox="571 1048 1351 1142"> <thead> <tr> <th>Message</th> <th>Date</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>Scanning for devices completed for interface ASIX AX88772A USB2.0 to Fast Ethernet Adapter. Found 2 device(s) on the network.</td> <td>10/26/2016</td> <td>12:58:16 AM</td> </tr> <tr> <td>The PROFINET device name "v90-pn-1" was successfully assigned to MAC address "00-1C-06-2F-95-82".</td> <td>10/26/2016</td> <td>12:58:44 AM</td> </tr> <tr> <td>Master control of axis PositioningAxis_1 was relinquished.</td> <td>10/26/2016</td> <td>12:58:44 AM</td> </tr> <tr> <td>The PROFINET device name "v90-pn" was successfully assigned to MAC address "00-1C-06-2F-95-82".</td> <td>10/26/2016</td> <td>12:59:03 AM</td> </tr> </tbody> </table>	Message	Date	Time	Scanning for devices completed for interface ASIX AX88772A USB2.0 to Fast Ethernet Adapter. Found 2 device(s) on the network.	10/26/2016	12:58:16 AM	The PROFINET device name "v90-pn-1" was successfully assigned to MAC address "00-1C-06-2F-95-82".	10/26/2016	12:58:44 AM	Master control of axis PositioningAxis_1 was relinquished.	10/26/2016	12:58:44 AM	The PROFINET device name "v90-pn" was successfully assigned to MAC address "00-1C-06-2F-95-82".	10/26/2016	12:59:03 AM
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2.	<p>可以通过软件获取 V90 PN 产品的相关诊断信息：</p> <p>(1) 获取当前产品的订货号和序列号、版本的信息</p>  <p>(2) 诊断状态获取</p>  <p>(3) 获取当前的激活报警和故障，可以通过“Acknowledge faults”按钮进行确认操作</p>  <table border="1" data-bbox="718 1232 1356 1523"> <thead> <tr> <th>Fault code</th> <th>Message</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1912</td> <td>PROFdrive clock cycle synchronous operation sign-of-life failure</td> <td>19/2000 10:21:01 PM:22</td> </tr> <tr> <td>8501</td> <td>PROFdrive: Setpoint timeout</td> <td>19/2000 10:21:01 PM:44</td> </tr> </tbody> </table> <table border="1" data-bbox="718 1366 1356 1523"> <thead> <tr> <th>Alarm code</th> <th>Message</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td colspan="3">No active alarms</td> </tr> </tbody> </table> <p>(4) 获取历史故障和报警信息，可以进行删除和导出操作</p>  <table border="1" data-bbox="718 1612 1356 1982"> <thead> <tr> <th>Fault buffer</th> <th>Fault code</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td>1. Acknowledged fault</td> <td>Fault 1 1912</td> <td>PROFdrive clock cycle synchronous operation sign-of-life failure</td> </tr> <tr> <td></td> <td>Fault 2 8501</td> <td>PROFdrive: Setpoint timeout</td> </tr> <tr> <td>2. Acknowledged fault</td> <td>Fault 1 1912</td> <td>PROFdrive clock cycle synchronous operation sign-of-life failure</td> </tr> <tr> <td></td> <td>Fault 2 8501</td> <td>PROFdrive: Setpoint timeout</td> </tr> <tr> <td>3. Acknowledged fault</td> <td>Fault 1 1030</td> <td>Sign-of-life failure for master control</td> </tr> <tr> <td>4. Acknowledged fault</td> <td>Fault 1 1611</td> <td>SI P1 (CL): Defect in a monitoring channel</td> </tr> </tbody> </table> <table border="1" data-bbox="718 1814 1356 1982"> <thead> <tr> <th>Alarm buffer</th> <th>Alarm code</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td>Alarm case 2</td> <td>Alarm 1 8526</td> <td>PROFdrive: No cyclic connection</td> </tr> <tr> <td></td> <td>Alarm 2 1932</td> <td>PBPN clock cycle synchronization missing for DSC</td> </tr> <tr> <td></td> <td>Alarm 3 8526</td> <td>PROFdrive: No cyclic connection</td> </tr> <tr> <td></td> <td>Alarm 4 1932</td> <td>PBPN clock cycle synchronization missing for DSC</td> </tr> <tr> <td></td> <td>Alarm 5 8526</td> <td>PROFdrive: No cyclic connection</td> </tr> <tr> <td></td> <td>Alarm 6 1514</td> <td>BICO: Error when writing during a reconnect</td> </tr> </tbody> </table>	Fault code	Message	Time	1912	PROFdrive clock cycle synchronous operation sign-of-life failure	19/2000 10:21:01 PM:22	8501	PROFdrive: Setpoint timeout	19/2000 10:21:01 PM:44	Alarm code	Message	Time	No active alarms			Fault buffer	Fault code	Message	1. Acknowledged fault	Fault 1 1912	PROFdrive clock cycle synchronous operation sign-of-life failure		Fault 2 8501	PROFdrive: Setpoint timeout	2. Acknowledged fault	Fault 1 1912	PROFdrive clock cycle synchronous operation sign-of-life failure		Fault 2 8501	PROFdrive: Setpoint timeout	3. Acknowledged fault	Fault 1 1030	Sign-of-life failure for master control	4. Acknowledged fault	Fault 1 1611	SI P1 (CL): Defect in a monitoring channel	Alarm buffer	Alarm code	Message	Alarm case 2	Alarm 1 8526	PROFdrive: No cyclic connection		Alarm 2 1932	PBPN clock cycle synchronization missing for DSC		Alarm 3 8526	PROFdrive: No cyclic connection		Alarm 4 1932	PBPN clock cycle synchronization missing for DSC		Alarm 5 8526	PROFdrive: No cyclic connection		Alarm 6 1514	BICO: Error when writing during a reconnect
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3.	<p>V90 的实际状态监控:</p>  <p>The screenshot displays the SIMATIC Manager interface for monitoring a V90 drive. The project tree on the left shows the hierarchy: S7-1500_VPN_105 > Ungrouped devices > Drive_1 [V90 PN]. The 'Actual values' menu item is highlighted in the central pane. The main display area shows the following data:</p> <table border="1"> <thead> <tr> <th colspan="2">Actual values</th> </tr> </thead> <tbody> <tr> <td>Speed setpoint after the filter:</td> <td>0.00 rpm</td> </tr> <tr> <td>Actual speed smoothed:</td> <td>0.0 rpm</td> </tr> <tr> <td>DC link voltage smoothed:</td> <td>321.8 V</td> </tr> <tr> <td>Absolute actual current smoothed:</td> <td>0.00 Arms</td> </tr> <tr> <td>Current actual value torque-generating smoothed:</td> <td>0.00 Arms</td> </tr> <tr> <td>Actual torque smoothed:</td> <td>0.00 Nm</td> </tr> <tr> <td>Converter temperature (current maximum value):</td> <td>32 °C</td> </tr> <tr> <td>Motor stator temperature (modeled):</td> <td>40 °C</td> </tr> <tr> <td>Motor utilization thermal:</td> <td>0.01 %</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Status bits</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Rdy for switch on</td> <td><input checked="" type="checkbox"/> Actual speed value >= 0</td> </tr> <tr> <td><input type="checkbox"/> Ready</td> <td><input type="checkbox"/> Torque limit reached</td> </tr> <tr> <td><input type="checkbox"/> Operation enabled</td> <td><input type="checkbox"/> Alarm power unit thermal overload</td> </tr> <tr> <td><input type="checkbox"/> Fault present</td> <td><input type="checkbox"/> Alarm motor overtemperature</td> </tr> <tr> <td><input type="checkbox"/> Coast down active</td> <td><input type="checkbox"/> "Open holding brake" active</td> </tr> <tr> <td><input type="checkbox"/> Quick stop active</td> <td><input type="checkbox"/> Safety enable missing</td> </tr> <tr> <td><input type="checkbox"/> Switching on inhibited active</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Alarm present</td> <td></td> </tr> </tbody> </table>	Actual values		Speed setpoint after the filter:	0.00 rpm	Actual speed smoothed:	0.0 rpm	DC link voltage smoothed:	321.8 V	Absolute actual current smoothed:	0.00 Arms	Current actual value torque-generating smoothed:	0.00 Arms	Actual torque smoothed:	0.00 Nm	Converter temperature (current maximum value):	32 °C	Motor stator temperature (modeled):	40 °C	Motor utilization thermal:	0.01 %	Status bits		<input type="checkbox"/> Rdy for switch on	<input checked="" type="checkbox"/> Actual speed value >= 0	<input type="checkbox"/> Ready	<input type="checkbox"/> Torque limit reached	<input type="checkbox"/> Operation enabled	<input type="checkbox"/> Alarm power unit thermal overload	<input type="checkbox"/> Fault present	<input type="checkbox"/> Alarm motor overtemperature	<input type="checkbox"/> Coast down active	<input type="checkbox"/> "Open holding brake" active	<input type="checkbox"/> Quick stop active	<input type="checkbox"/> Safety enable missing	<input type="checkbox"/> Switching on inhibited active		<input type="checkbox"/> Alarm present	
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