

IO-LINK 接口编码器快速手册



▶ 样品: UCD-LK00B-1516-L10S-PRM

▶ PLC: 西门子 S7-1200

▶ IO-Link 通讯模块: 西门子 SM1278

软硬件配置

BOM

项目	名称	制造商	型号	版本
1	IO-Link 编码器	POSITAL	UCD-LK00B-1516-L10S-PRM	软件版本V1.2 编码器版本（标签上） V01
2	编码器电缆线	POSITAL	POS M12 5pin-A 母头+2m PUR电缆	N/A
3	CPU	西门子	6ES7 215-1AG40-0XB0	V4.2
4	SM1278	西门子	6ES7 278-4BD32-0XB0	V2.0

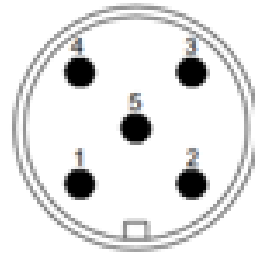
Software

项目	名称	制造商	版本
1	IODD	POSITAL	Posital-Fraba-LK_MT-20220202-IODD1.1
2	TIA	西门子	版本V15
3	S7-PCT	西门子	V3.5 SP2 Upd1

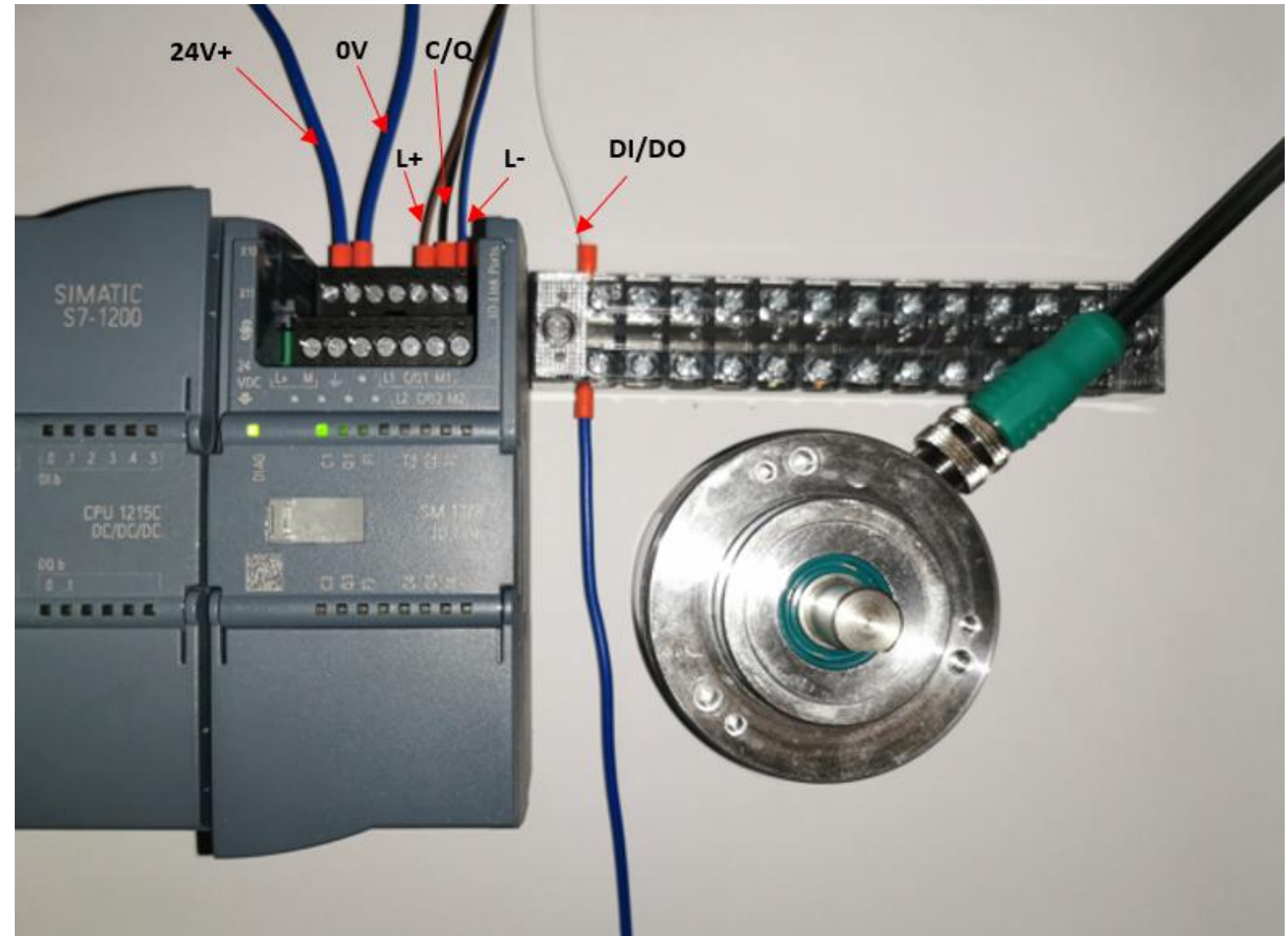
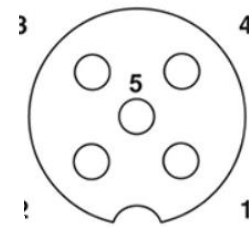
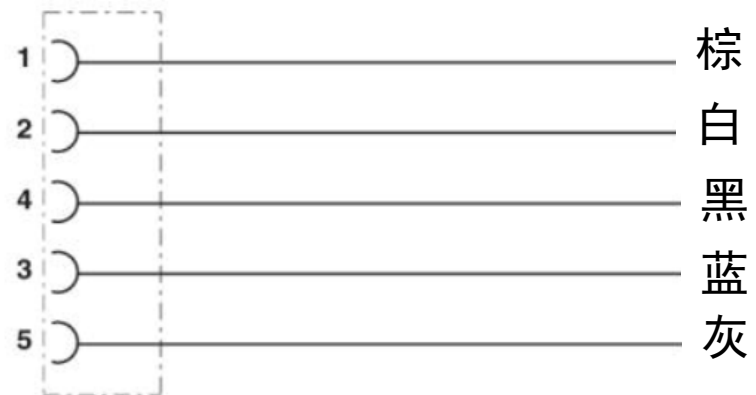
1. 接线

1. IO-Link 编码器接头

信号	5针M12插头
24V 电源 (L+)	1
数字量输入/输出 (DI/DO)	2
GND (L-)	3
IO-Link通讯 (C/Q)	4
无连接	5




2. POSITAL 编码器电缆 (订货号: 10048547)



2. 创建项目

1. 创建项目



2. 输入项目名称

3. 点击创建

Siemens Totally Integrated Automation PORTAL

创建新项目

项目名称： IO_LINK_快速手册

路径： E:\IO-LINK

版本： V15

作者： POSITAL

注释：

创建

启动

设备与网络

PLC 编程

运动控制 & 技术

可视化

在线与诊断

打开现有项目

创建新项目

移植项目

关闭项目

欢迎光临

新手上路

已安装的软件

帮助

用户界面语言

项目视图

3.硬件组态

Siemens - E:\IO-LINK\IO_LINK_快速手册\IO_LINK_快速手册

Totally Integrated Automation
PORTAL

启动

- 设备与网络
- PLC 编程
- 运动控制 & 技术
- 可视化
- 在线与诊断

- 打开现有项目
- 创建新项目
- 移植项目
- 关闭项目
- 欢迎光临
- 新手上路
- 已安装的软件
- 帮助
- 用户界面语言

新手上路

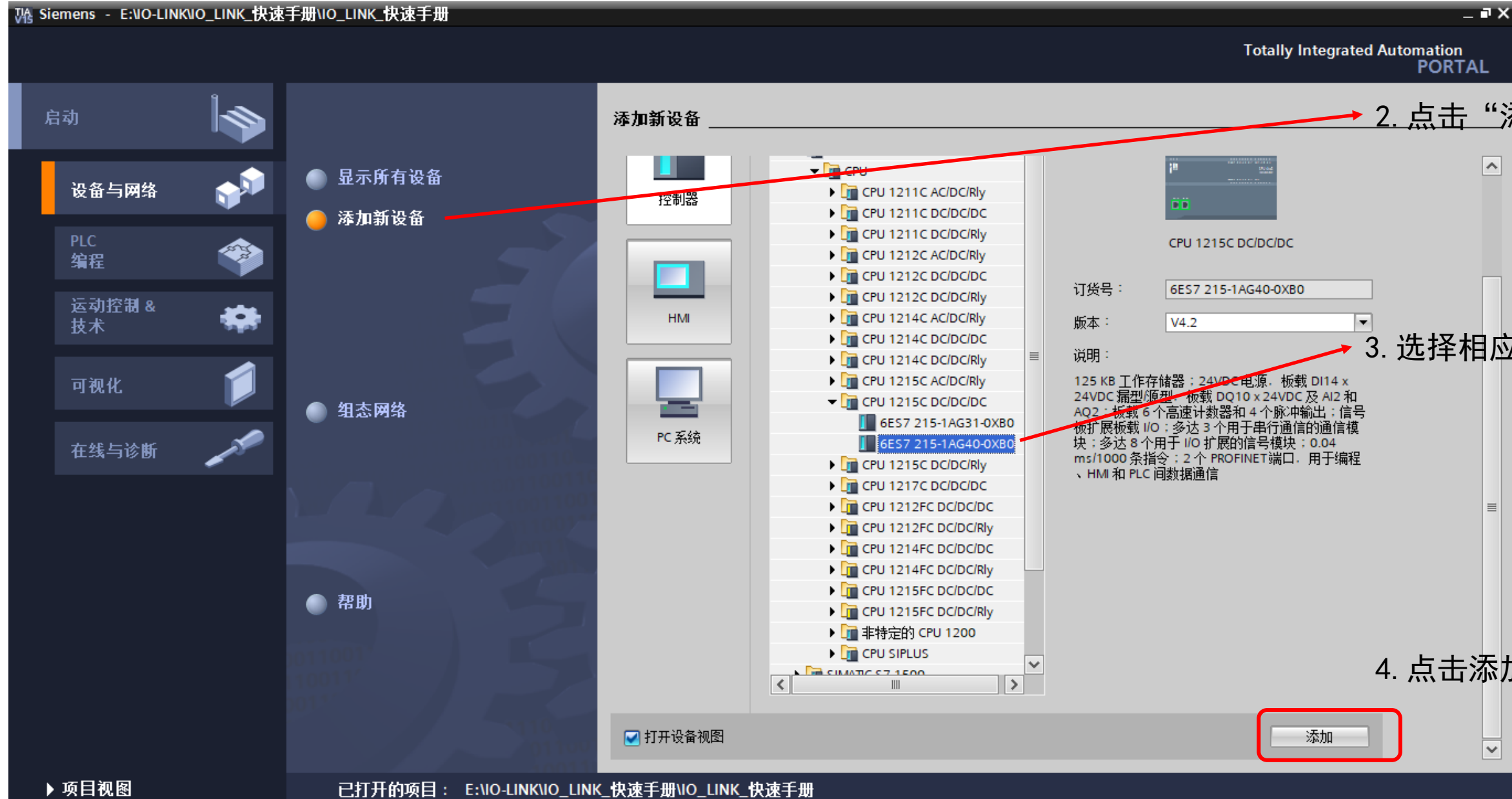
项目：“IO_LINK_快速手册”已成功打开。请选择下一步：

开始		
设备和网络	组态设备	1. 点击“设备组态”
PLC 编程	创建 PLC 程序	
运动控制 & 技术	组态工艺对象	
可视化	组态 HMI 画面	
项目视图	打开项目视图	

已打开的项目：E:\IO-LINK\IO_LINK_快速手册\IO_LINK_快速手册

▶ 项目视图

3.硬件组态



Siemens - E:\IO-LINK\IO_LINK_快速手册\IO_LINK_快速手册

Totally Integrated Automation PORTAL

启动

设备与网络

PLC 编程

运动控制 & 技术

可视化

在线与诊断

添加新设备

显示所有设备

添加新设备

组态网络

帮助

添加新设备

控制器

HMI

PC 系统

CPU

CPU 1211C AC/DC/Rly

CPU 1211C DC/DC/DC

CPU 1211C DC/DC/Rly

CPU 1212C AC/DC/Rly

CPU 1212C DC/DC/DC

CPU 1212C DC/DC/Rly

CPU 1214C AC/DC/Rly

CPU 1214C DC/DC/DC

CPU 1214C DC/DC/Rly

CPU 1215C AC/DC/Rly

CPU 1215C DC/DC/DC

6ES7 215-1AG31-0XB0

6ES7 215-1AG40-0XB0

CPU 1215C DC/DC/Rly

CPU 1217C DC/DC/DC

CPU 1212FC DC/DC/DC

CPU 1212FC DC/DC/Rly

CPU 1214FC DC/DC/DC

CPU 1214FC DC/DC/Rly

CPU 1215FC DC/DC/DC

CPU 1215FC DC/DC/Rly

非特定的 CPU 1200

CPU SIPLUS

订货号: 6ES7 215-1AG40-0XB0

版本: V4.2

说明: 125 KB 工作存储器; 24VDC 电源, 板载 DI14 x 24VDC 漏型/源型, 板载 DQ10 x 24VDC 及 AI2 和 AQ2; 板载 6 个高速计数器和 4 个脉冲输出; 信号板扩展板载 I/O: 多达 3 个用于串行通信的通信模块; 多达 8 个用于 I/O 扩展的信号模块; 0.04 ms/1000 条指令; 2 个 PROFINET 端口, 用于编程、HMI 和 PLC 间数据通信

打开设备视图

添加

2. 点击“添加新设备”

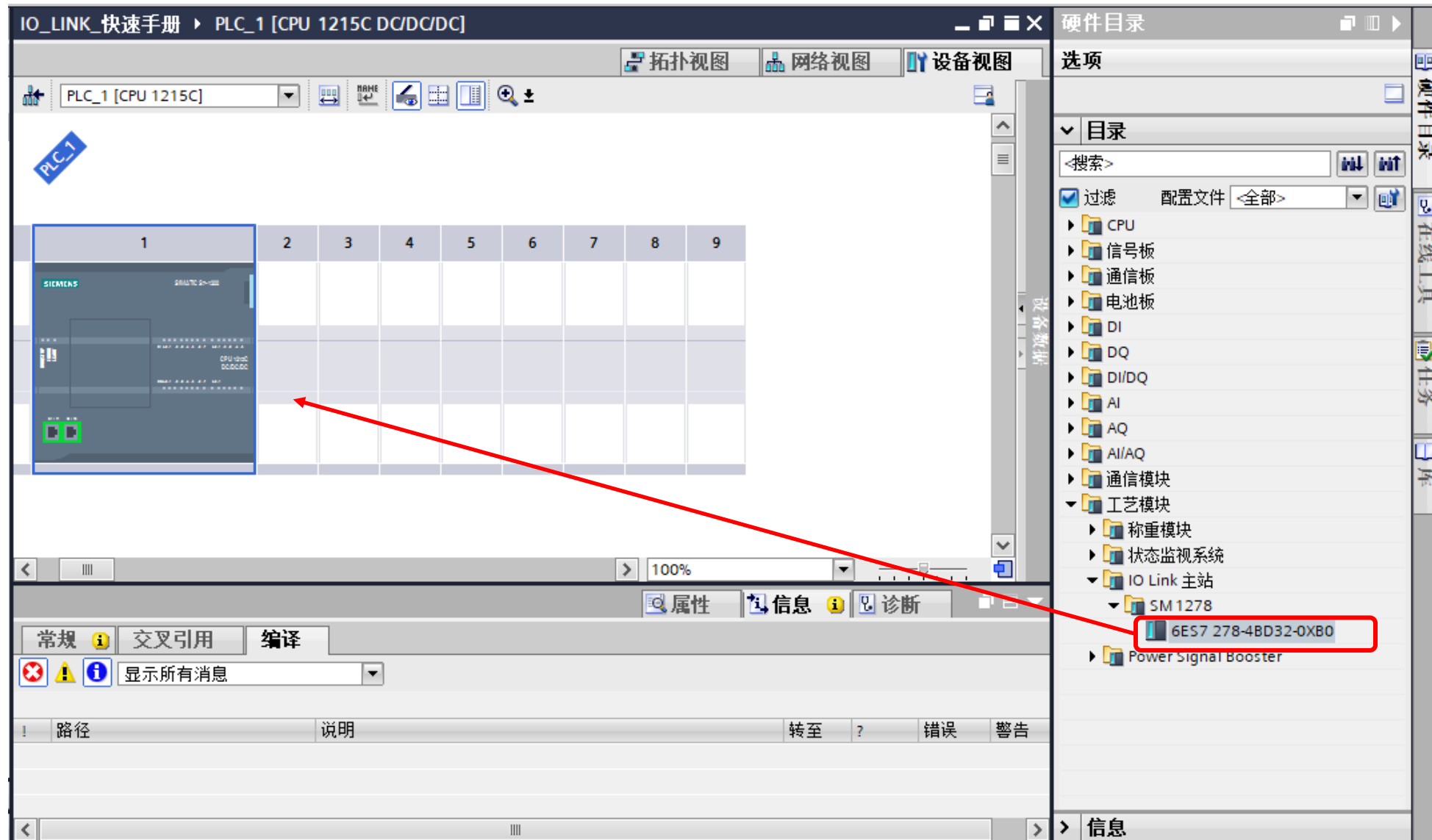
3. 选择相应的CPU模块

4. 点击添加

已打开的项目: E:\IO-LINK\IO_LINK_快速手册\IO_LINK_快速手册

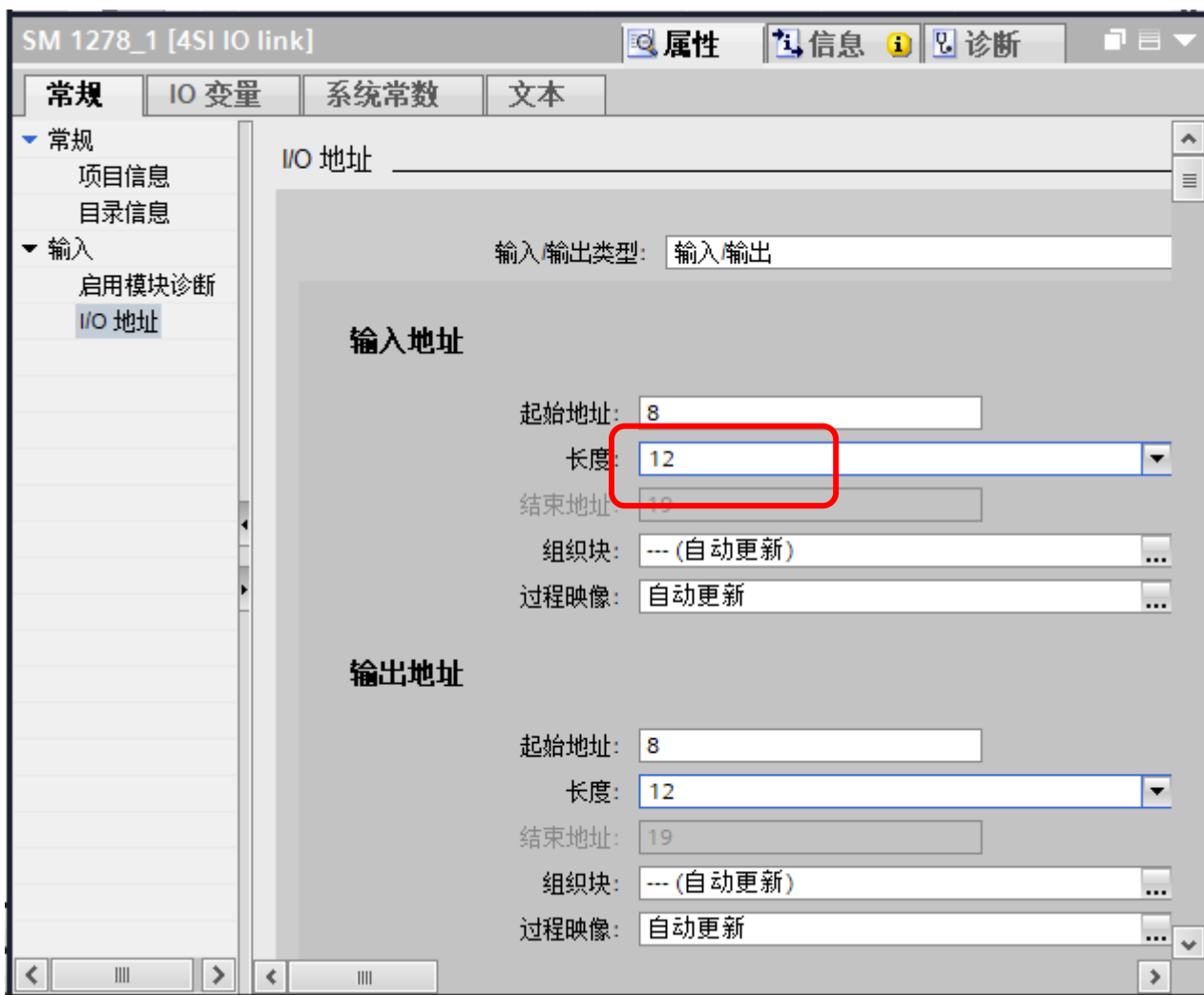
4.IO-LINK主站设置

1. 在“设备界面”选择相应通讯模块并拖拽至控制器机架中。



4.IO-LINK主站设置

- 在“常规”标签中，为SM1278模块选择合适的IO地址长度（12个字节）。本手册中将起始地址设为 8。编码器的过程数据是由12个字节组成。因此IO地址长度应选择12。



Process Data



Scale Position: Scale factor for the process value 'Position' (from WORD 0) is always '1'

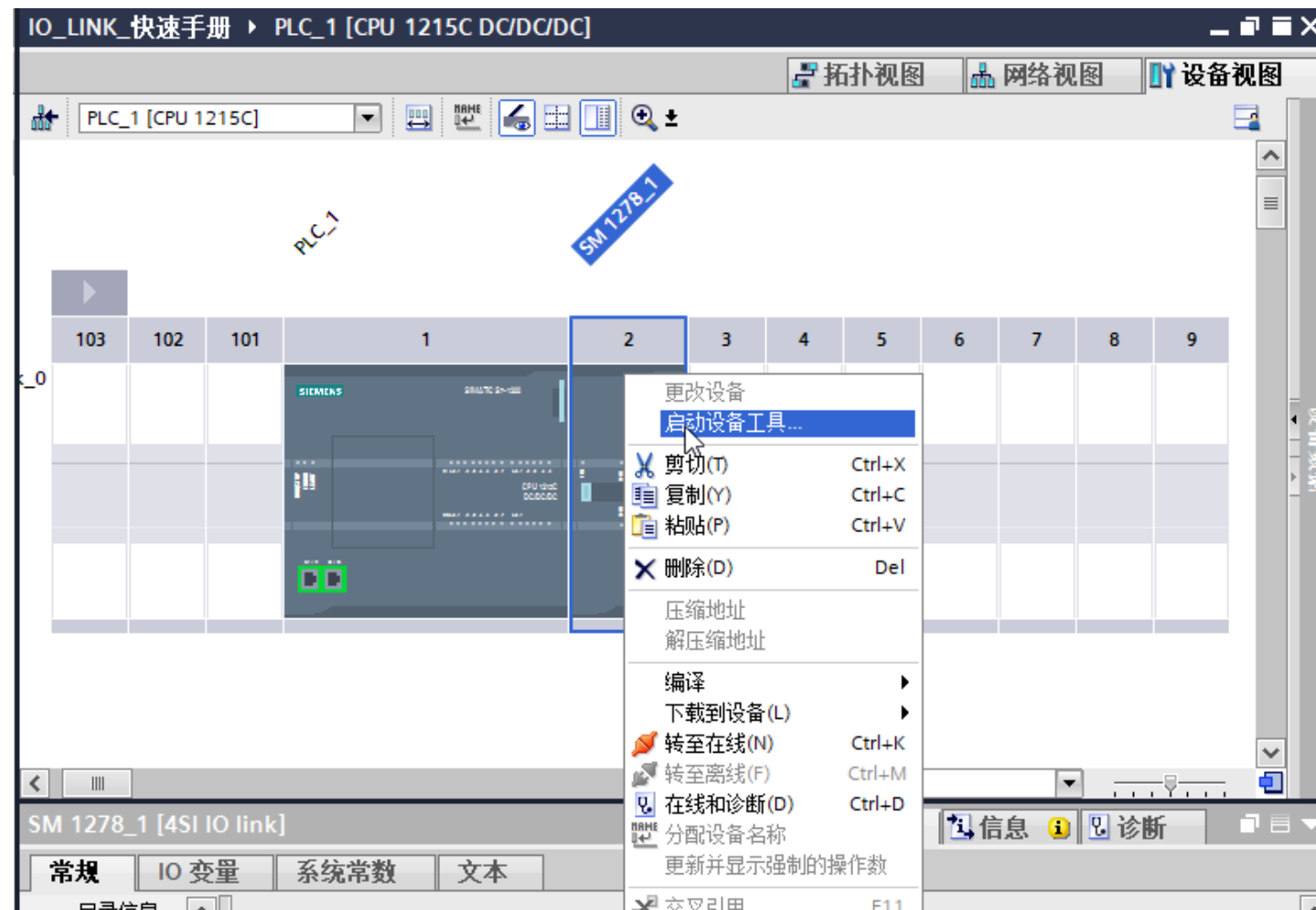
Scale Velocity: A PLC function block calculates the velocity part of the process data (from WORD 6) into the unit [rpm]

n/a: Not available area, used to cover structured process data mapping

5.通过工具S7-PCT配置SM 1278

1. 右键点击SM 1278并选择“启动设备工具” (*)。

2. 选择“S7-PCT”，点击开始。




(*) 注:需要提前安装S7-PCT软件, 否则该选项不可用。

6. 导入IODD文件

1. 在POSTIAL官网产品页面的右侧下载相应的IODD文件。

Downloads

 Datasheet

 2D Drawing

 Manual

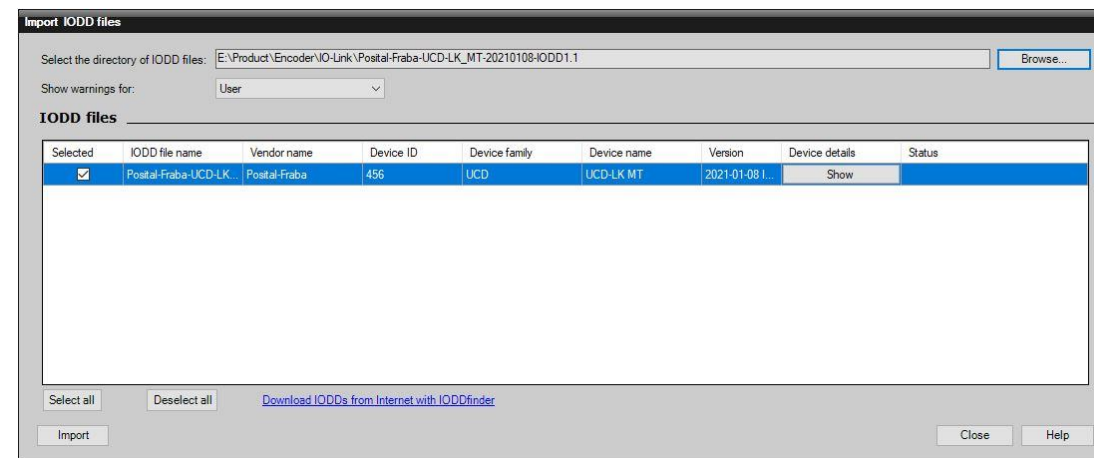
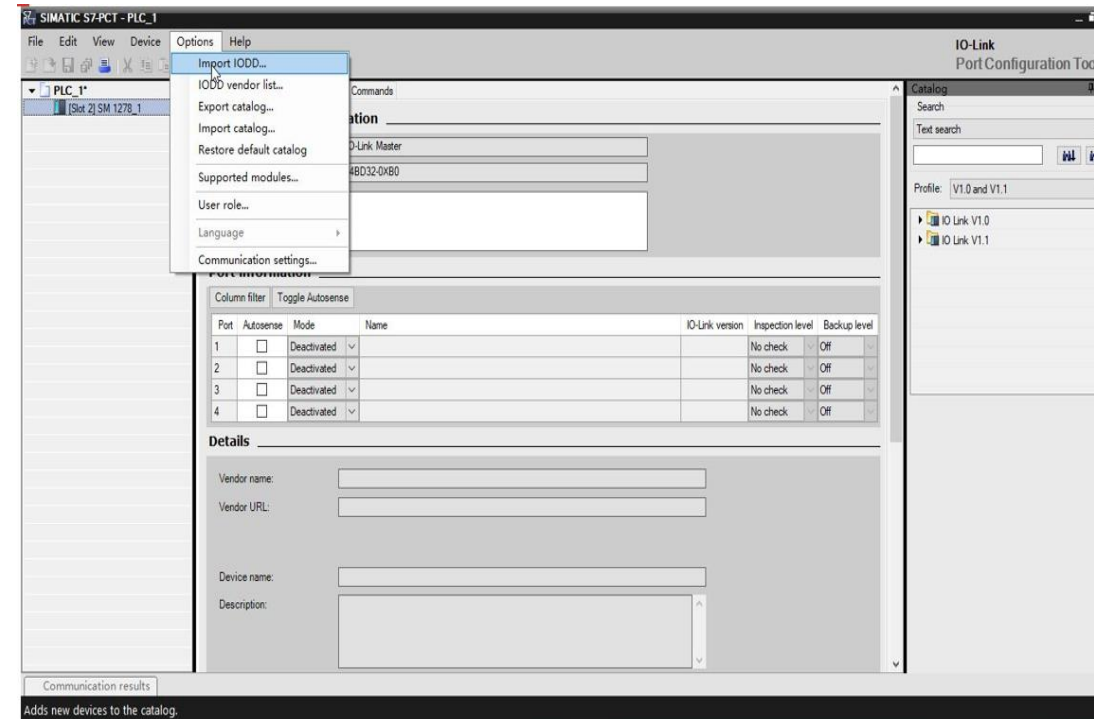
 ZIP Configuration File

 ZIP 3D  configuration-iodd-ixarc-ucd-lk-mt.zip

 ZIP 3D Drawing Housing

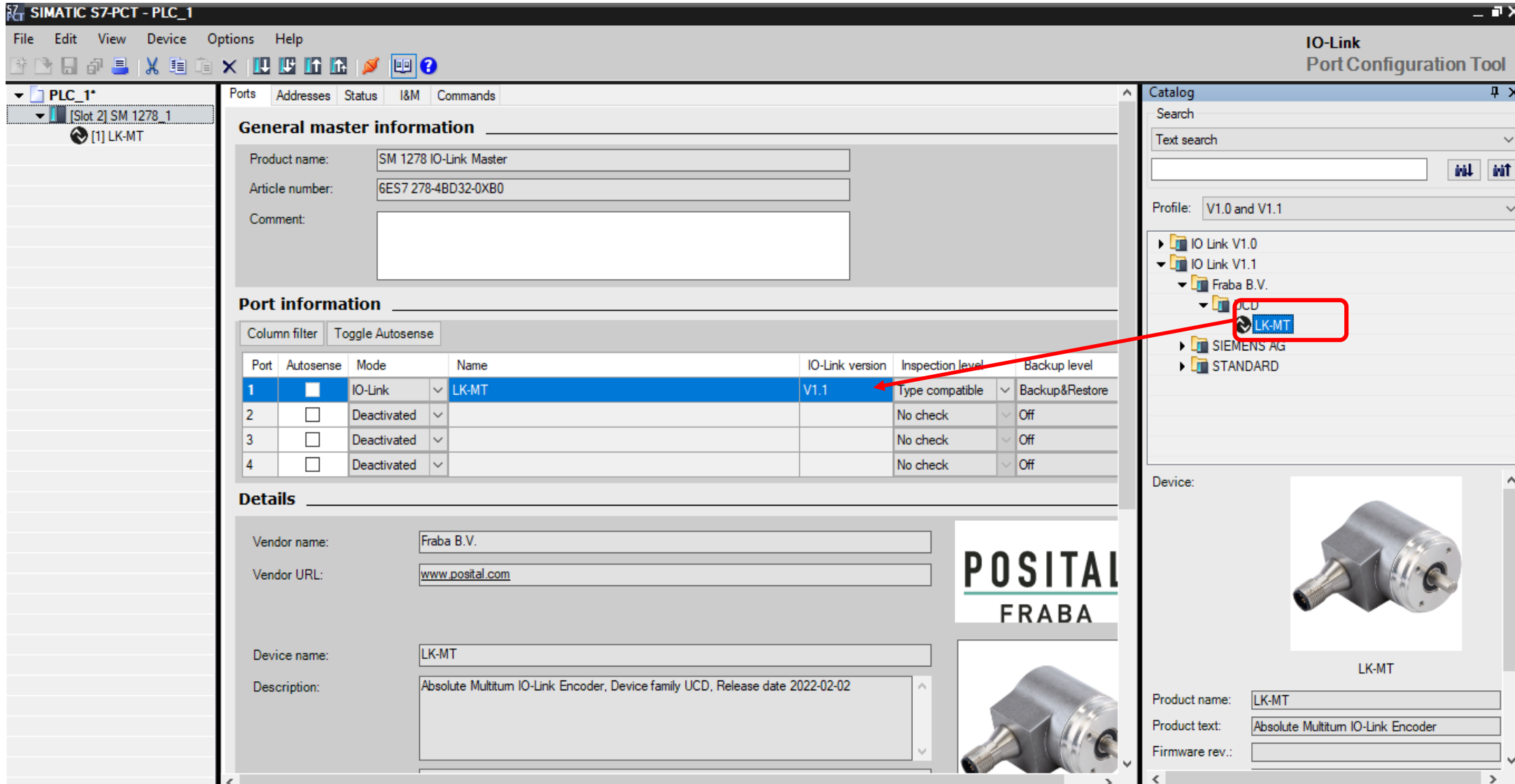
 CE Certificate

2. 点击“选项”，选择“导入IODD”。



3. 选择POSITAL IODD文件并导入。

7.编码器参数设置



General master information

Product name: SM 1278 IO-Link Master
 Article number: 6ES7 278-4BD32-0XB0
 Comment:

Port information

Port	Autosense	Mode	Name	IO-Link version	Inspection level	Backup level
1	<input checked="" type="checkbox"/>	IO-Link	LK-MT	V1.1	Type compatible	Backup&Restore
2	<input type="checkbox"/>	Deactivated			No check	Off
3	<input type="checkbox"/>	Deactivated			No check	Off
4	<input type="checkbox"/>	Deactivated			No check	Off

Details

Vendor name: Fraba B.V.
 Vendor URL: www.posita.com
 Device name: LK-MT
 Description: Absolute Multitum IO-Link Encoder, Device family UCD, Release date 2022-02-02

POSITAL FRABA

IO-Link Port Configuration Tool

Catalog


Search

Text search

Profile: V1.0 and V1.1

- IO Link V1.0
- IO Link V1.1
 - Fraba B.V.
 - UCD
 - LK-MT**
 - SIEMENS AG
 - STANDARD

Device:



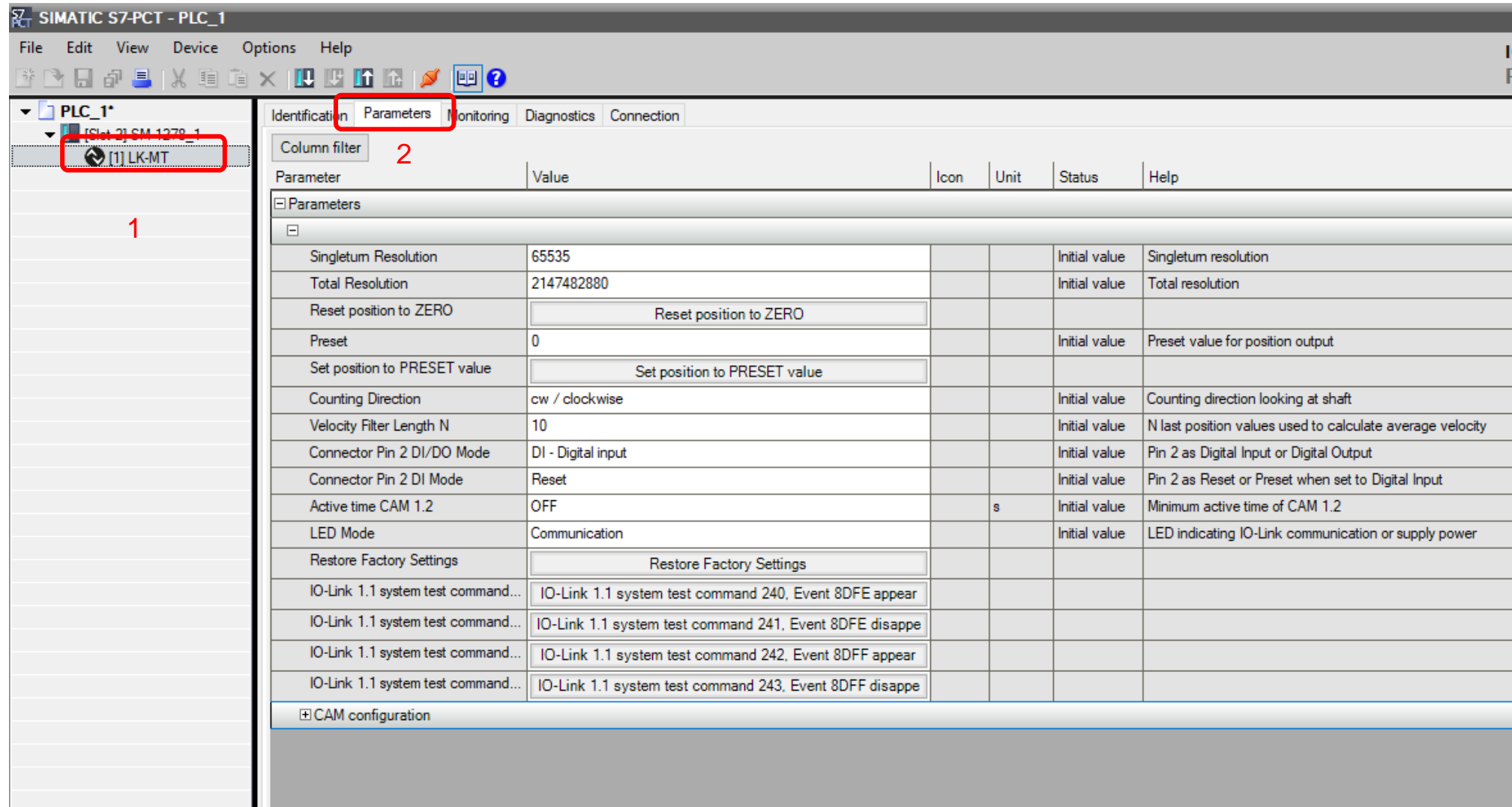
LK-MT

Product name: LK-MT
 Product text: Absolute Multitum IO-Link Encoder
 Firmware rev.:

导入IODD文件后，我们可以在右侧找到 Fraba IO-Link编码器。

IO Link V1.1—> Fraba B.V
 拖拽“LK-MT”至SM1278的1通道

7.编码器参数设置



Column filter 2

Parameter	Value	Icon	Unit	Status	Help
Parameters					
Singleturn Resolution	65535			Initial value	Singleturn resolution
Total Resolution	2147482880			Initial value	Total resolution
Reset position to ZERO	<input type="button" value="Reset position to ZERO"/>				
Preset	0			Initial value	Preset value for position output
Set position to PRESET value	<input type="button" value="Set position to PRESET value"/>				
Counting Direction	cw / clockwise			Initial value	Counting direction looking at shaft
Velocity Filter Length N	10			Initial value	N last position values used to calculate average velocity
Connector Pin 2 DI/DO Mode	DI - Digital input			Initial value	Pin 2 as Digital Input or Digital Output
Connector Pin 2 DI Mode	Reset			Initial value	Pin 2 as Reset or Preset when set to Digital Input
Active time CAM 1.2	OFF		s	Initial value	Minimum active time of CAM 1.2
LED Mode	Communication			Initial value	LED indicating IO-Link communication or supply power
Restore Factory Settings	<input type="button" value="Restore Factory Settings"/>				
IO-Link 1.1 system test command...	<input type="button" value="IO-Link 1.1 system test command 240, Event 8DFE appear"/>				
IO-Link 1.1 system test command...	<input type="button" value="IO-Link 1.1 system test command 241, Event 8DFE disappe"/>				
IO-Link 1.1 system test command...	<input type="button" value="IO-Link 1.1 system test command 242, Event 8DFF appear"/>				
IO-Link 1.1 system test command...	<input type="button" value="IO-Link 1.1 system test command 243, Event 8DFF disappe"/>				
CAM configuration					

点击左侧IO-Link编码器图标。在“参数”页面有编码器各项参数的设置：

- 1. 单圈分辨率
- 2. 总分辨率
- 3. 复位位置到0
- 4. 预设值
- 5. 将当前位置设为预设值
- 6. 计数方向
- 7. 速度过滤器长度
- 8. 引脚2 DI/DO模式
- 9. 引脚2 DI模式
- 10. CAM 1.2激活时间。默认为 OFF
- 11. LED模式
- 12. 恢复出厂设置.
- 13. 测试命令
- 14. CAM配置

7.编码器参数设置

在“ID”页面有编码器的相关设备信息，如制造商名称，产品名称等等。

Parameter	Value	Icon	Unit	Status	Help
[-] Identification					
[-]					
Vendor Name	Posital-Fraba			loaded	The vendor name that is assigned to a Vendor ID.
Vendor Text	www.posital.com			loaded	Additional information about the vendor.
Product Name	UCD-LK			loaded	Complete product name.
Product Text	Magnetic IO-Link Multiturn Encoder			loaded	Additional product information for the device.
Product ID	UCD-LK			loaded	Vendor-specific product or type identification (e.g., item number or model nu...
Serial Number	005371292			loaded	Unique, vendor-specific identifier of the individual device.
Hardware Revision	V3 (*)			loaded	Unique, vendor-specific identifier of the hardware revision of the individual d...
Firmware Revision	V1.2 (*)			loaded	Unique, vendor-specific identifier of the firmware revision of the individual de...
Application-specific Tag	***			loaded	Possibility to mark a device with user- or application-specific information.
Function Tag	***			loaded	Plant designation, describes the device functionality
Location Tag	***			loaded	Location designation, identifies the device location
LED Flash On					
LED Flash Off					

(*) 注：硬件版本和软件版本取决于所用的编码器。本手册中所用编码器硬件版本为V3，软件版本为V1.2。
从2022年2月1日起，软件版本将变为V1.4

7.编码器参数设置

在“监控”页面有编码器的过程数据，如位置值，速度值等等。

Parameter	Value	Icon	Unit	Status	Help
Monitoring					
Process Data Input/Output					
Position					
Process Data Input/Output - P...	20.0			loaded	Current position value
Angular Velocity					
Process Data Input/Output - A...	0.0		rpm	loaded	Current angular velocity value
Process Data Input/Output - AUX	OFF			loaded	Current status of the digital signal [AUX]
Process Data Input/Output - CA...	OFF			loaded	Current status of the digital signal [CAM 1.3]
Process Data Input/Output - CA...	OFF			loaded	Current status of the digital signal [CAM 1.2]
Process Data Input/Output - CA...	OFF			loaded	Current status of the digital signal [CAM 1.1]
Process Data Input/Output - De...	Device is OK			loaded	Current device status, a copy of the parameter [Device Status, Index 36] in ...
Process Data Input/Output - CA...	OFF			loaded	Current status of the digital signal [CAM 2.2]
Process Data Input/Output - CA...	On			loaded	Current status of the digital signal [CAM 2.1]

8. 下载项目至SM1278

1. 下载项目至SM1278

SIMATIC S7-PCT - IO-Link encoder quick start block

File Edit View Device Options Help

IO-Link Port Configuration Tool

IO-Link encoder quick start block [Slot 2] SM 1278_1 [1] LK-MT

Identification Parameters Monitoring Diagnostics Connection

Column filter

Parameter	Value	Icon	Unit	Status	Help
[-] Identification					
Vendor Name	Posital-Fraba			loaded	The vendor name that is assigned to a Vendor ID.
Vendor Text	www.posital.com			loaded	Additional information about the vendor.
Product Name				Initial value	Complete product name.
Product Text	Magnetic IO-Link Multitum Encoder			Initial value	Additional product information for the device.
Product ID				Initial value	Vendor-specific product or type identification (e.g., item number or mod...)
Serial Number				Initial value	Unique, vendor-specific identifier of the individual device.
Hardware Revision				Initial value	Unique, vendor-specific identifier of the hardware revision of the individ...
Firmware Revision				Initial value	Unique, vendor-specific identifier of the firmware revision of the individu...
Application-specific Tag	***			Initial value	Possibility to mark a device with user- or application-specific information.
Function Tag	***			Initial value	Plant designation, describes the device functionality
Location Tag	***			Initial value	Location designation, identifies the device location
LED Flash On	LED Flash On				
LED Flash Off	LED Flash Off				


Catalog

Search

Text search

Profile: V1.0 and V1.1

- IO Link V1.0
- IO Link V1.1
 - Fraba B.V.
 - UCD
 - LK-MT
 - SIEMENS AG
 - STANDARD



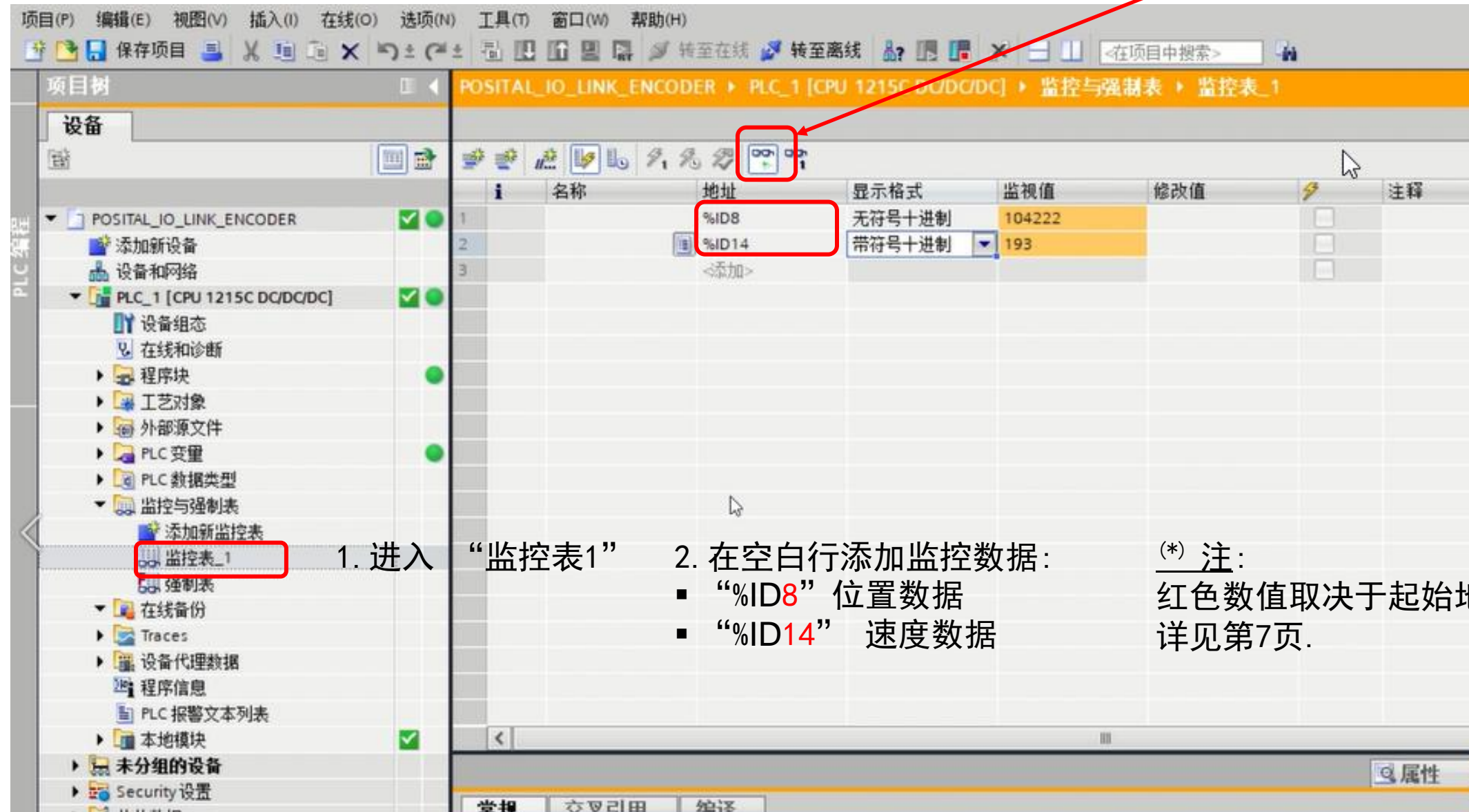
LK-MT

...-MT

...olute Multitum IO-Link Encoder

9. 监控位置 & 速度数值(*)

3. 点击“监视全部”



1. 进入“监控表1”

2. 在空白行添加监控数据:

- “%ID8” 位置数据
- “%ID14” 速度数据

(*) 注:
红色数值取决于起始地址, 详见第7页.

名称	地址	显示格式	监视值	修改值	注释
	%ID8	无符号十进制	104222		
	%ID14	带符号十进制	193		
	<添加>				

1. 引脚2 DI模式设置为Preset

Parameter	Value
Parameters	
Singleturn Resolution	65535
Total Resolution	2147482880
Reset position to ZERO	Reset position to ZERO
Preset	0
Set position to PRESET value	Set position to PRESET value
Counting Direction	cw / clockwise
Velocity Filter Length N	10
Connector Pin 2 DI/DO Mode	DI - Digital input
Connector Pin 2 DI Mode	Preset
Active time CAM 1.2	OFF
LED Mode	Communication
Restore Factory Settings	Restore Factory Settings
IO-Link 1.1 system test command...	IO-Link 1.1 system test command 240, Event 8DFE appear
IO-Link 1.1 system test command...	IO-Link 1.1 system test command 241, Event 8DFE disappe

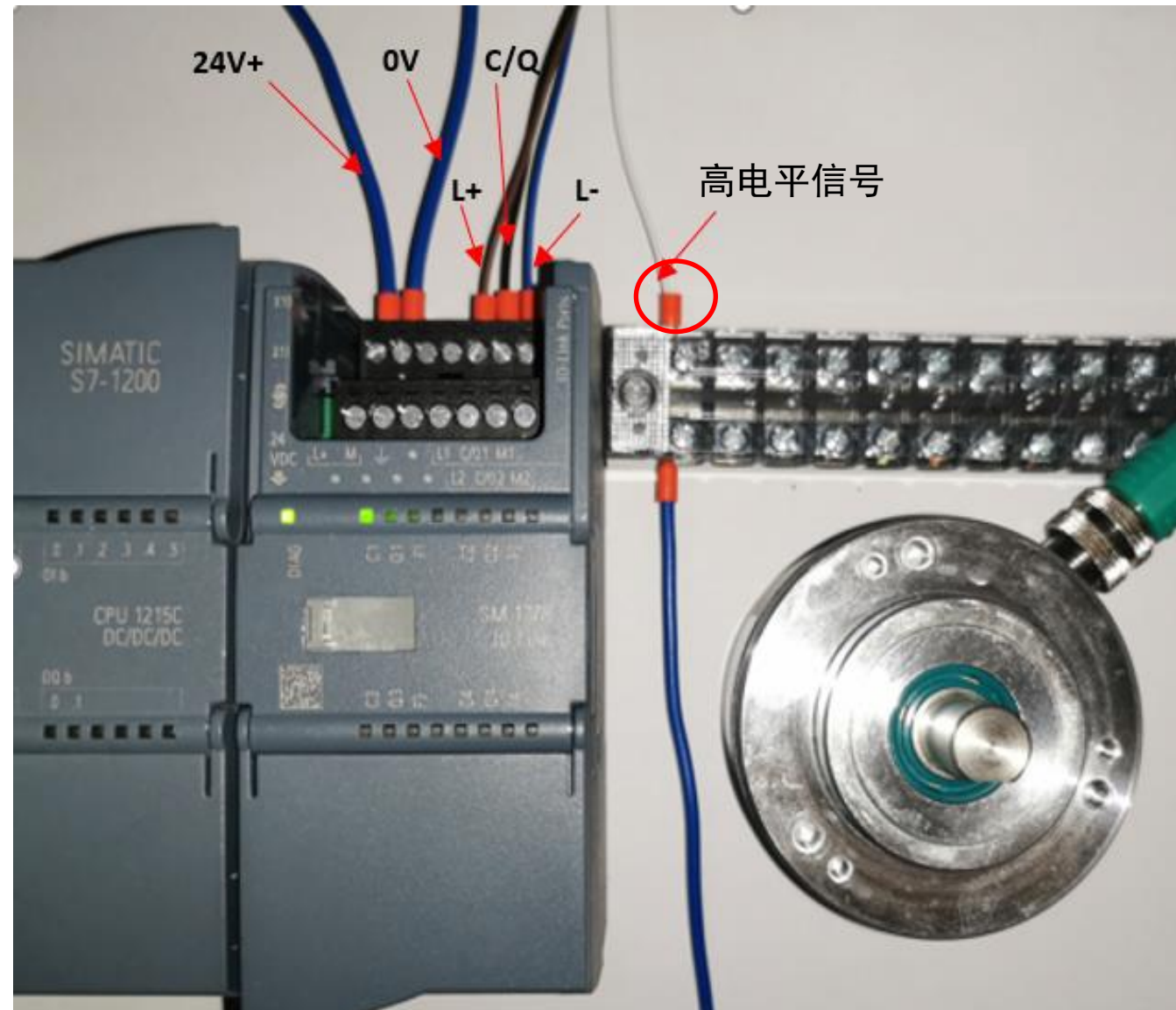
3. 当前位置值变为预设值

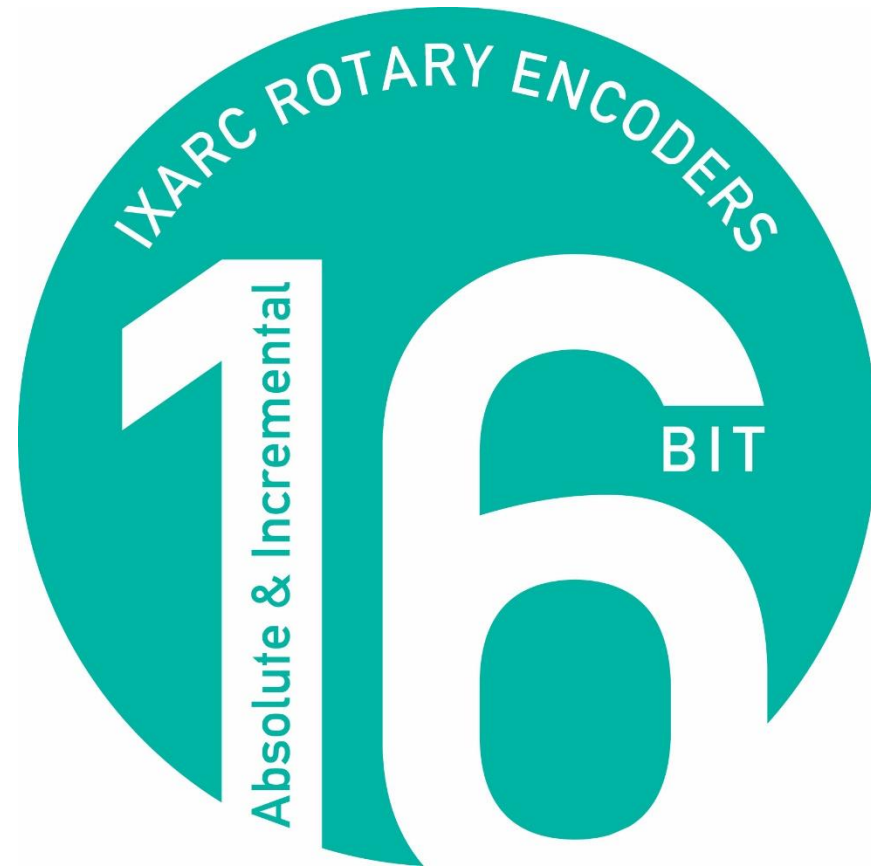
IO-Link encoder quick manual V3 ▶ PLC_1 [CPU 1215C DC/DC/DC] ▶ V

	i	Name	Address	Display format	Monitor valu
1		"Position"	%ID8	DEC	0
2		"Speed"	%ID14	DEC+/-	0

10. 预设值

2. 给引脚2施加高电平信号





www.posita1.cn



POSITAL微信公众号