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全力打造冲压自动化行业第一品牌

TwinCAT3 通过 TF6280 授权与 AB 1769-L33ERM 建立 EtherNetIP 通讯

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概 述

本文描述了如何使用 TwinCAT3 提供的TF6280 TC3 EtherNet/IP Adapter (Slave)将一台PC或CX控制器配置为具有EtherNet IP通讯的Slave站。

文档中包含的文件

文件名称	文件说明
TC3_AB_EtherNetI.sln	CP2291 配置文件
Box 1 (TC EtherNet_IP Slave)_20211113_103225.eds	CP2291 生成的 EDS 文件
TC3_AB_EtherNetIP.ACD	RS Logix 5000 文件

关键字：EtherNet IP TwinCAT3 TF6280

目录

一、说明

本文以 AB 公司的 1769-L33ERM PLC 作为 EtherNet IP 主站，CP2291 面板型触摸屏作为 EtherNet IP 从站来描述如何通过 TF6280 TC3 EtherNet/IP Adapter (Slave)实现两者的通讯。

二、条件准备

1.硬件准备

1)、AB 1769-L33ERM：用作EtherNet IP主站，本身带有以太网口。
2)、CP2291：自带网口。
3)、以太网交换机一台及网线若干：采用交换机将CP2291、AB PLC和编程用计算机相连。

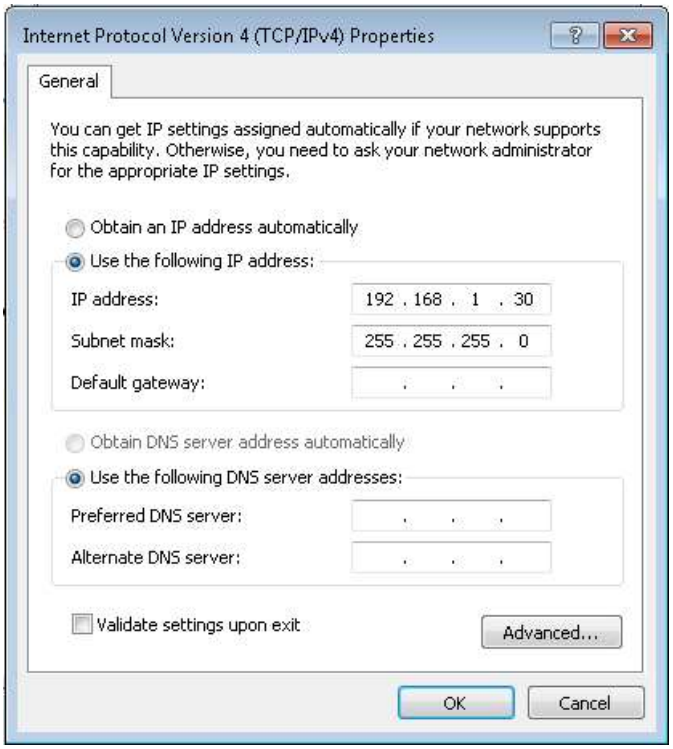
2.软件准备

1)、AB PLC编程软件：RS Logix 5000。
2)、CP2291中已购买了TF6280 TC3 EtherNet/IP Adapter (Slave)授权。

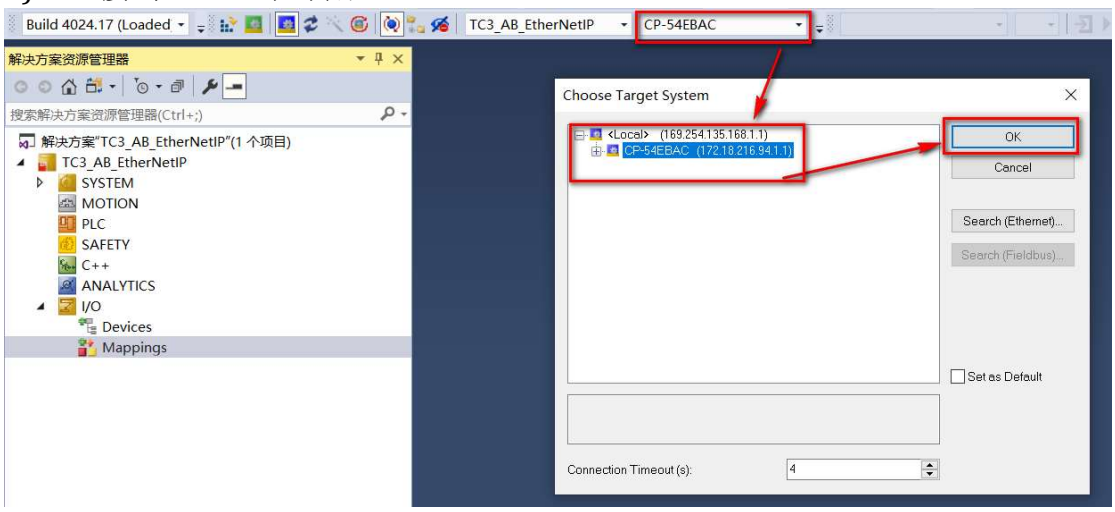
三、配置步骤

1.倍福 CP2291 从站侧配置

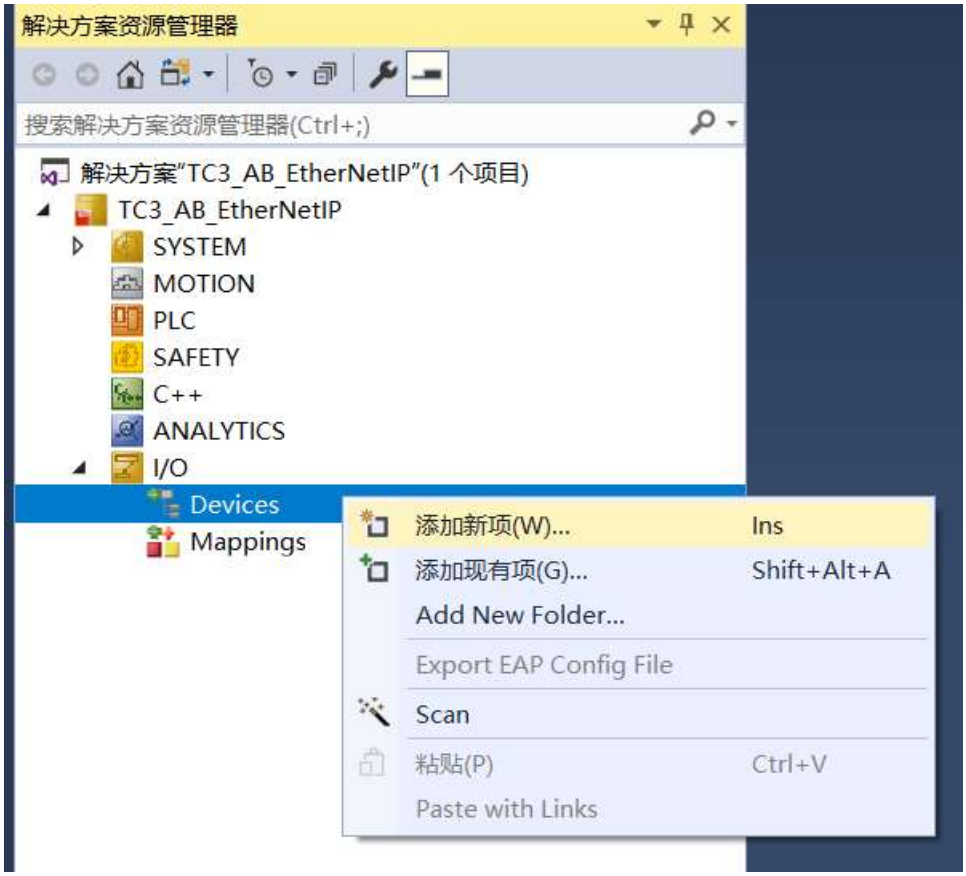
1)、将CP2291网卡IP地址设为固定IP（如下图），本例中设为192.168.1.30。



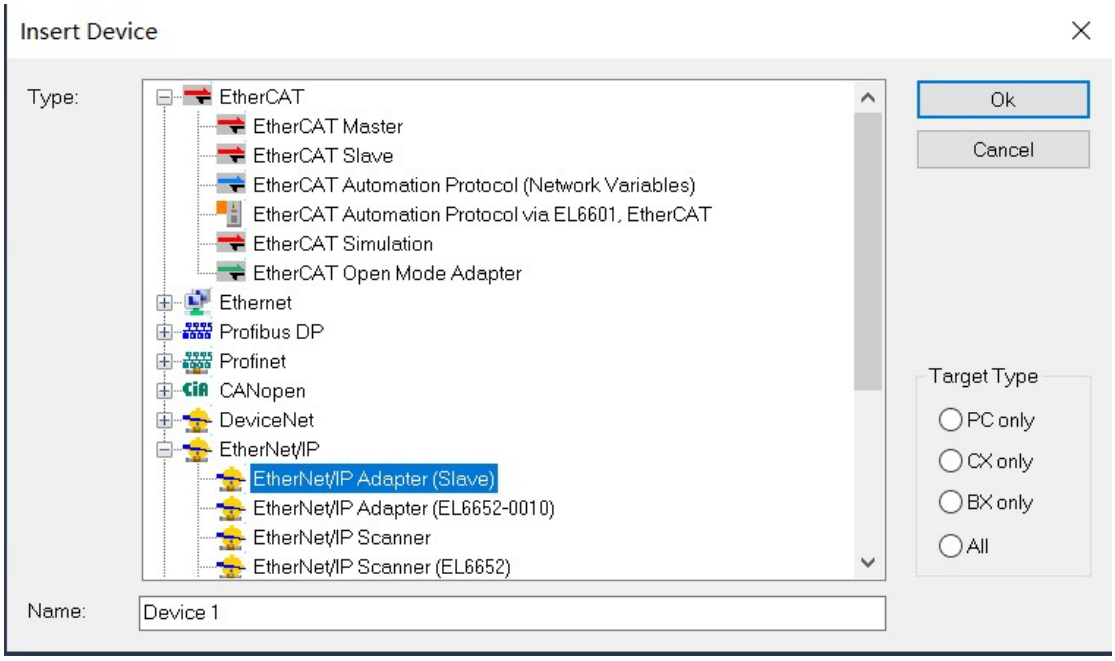
2)、连接到CP2291控制器



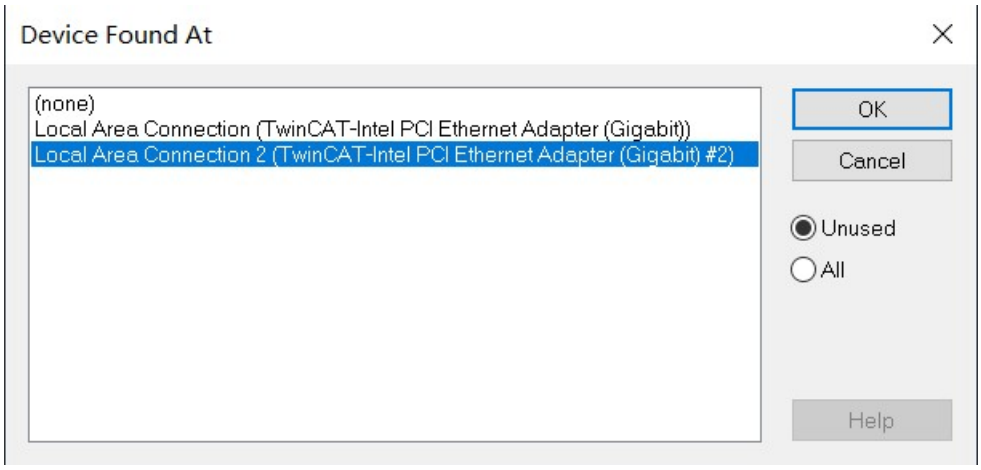
3)、在设备中添加EtherNet/IP从站，具体步骤：右击Devices后，点击添加新项。



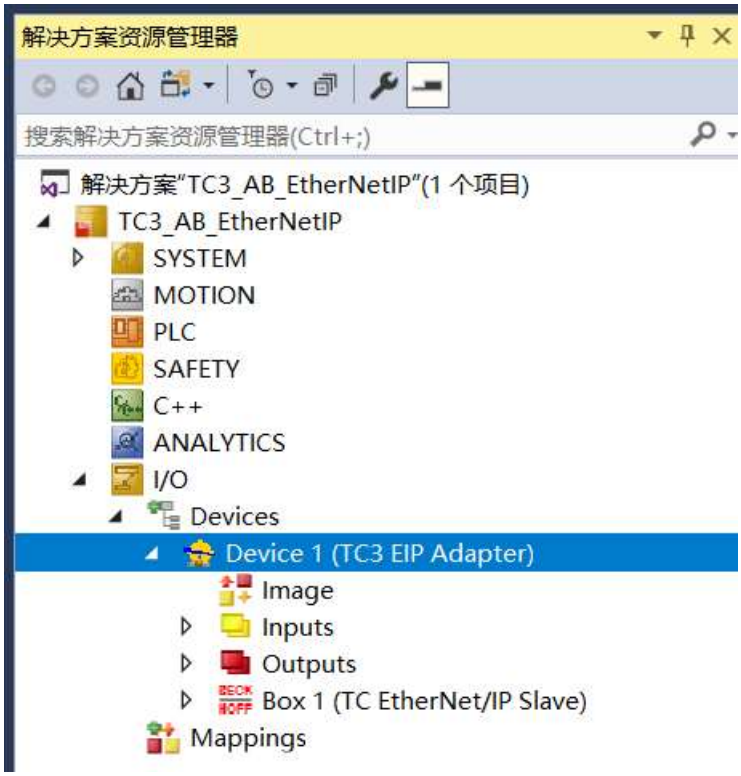
在Insert Device列表中添加Ether/IP Adpter(Slave)。



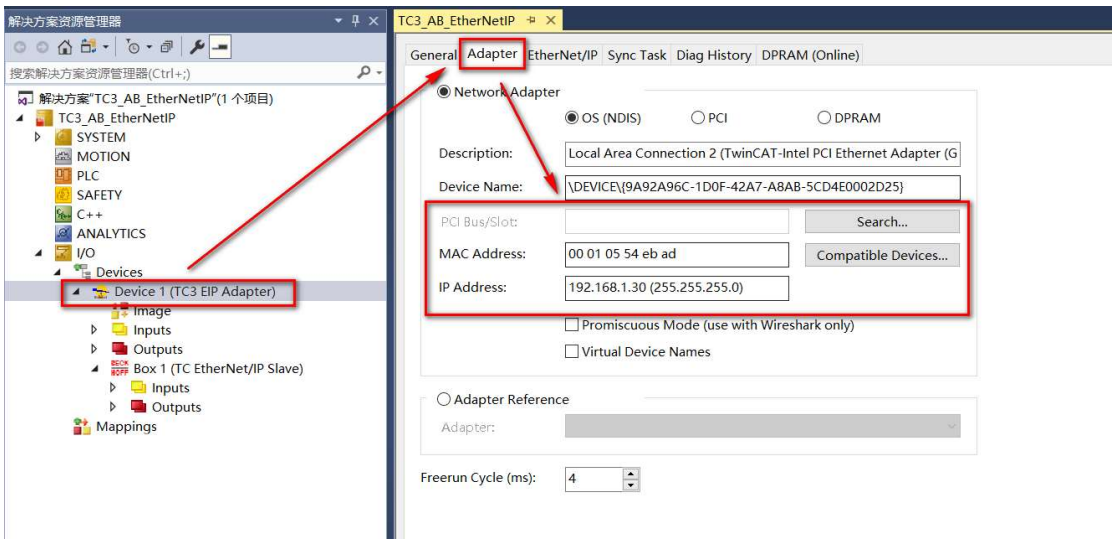
4)、在Device Found At设备查找使用的网络中，选择在第1)步中设定IP的网口。

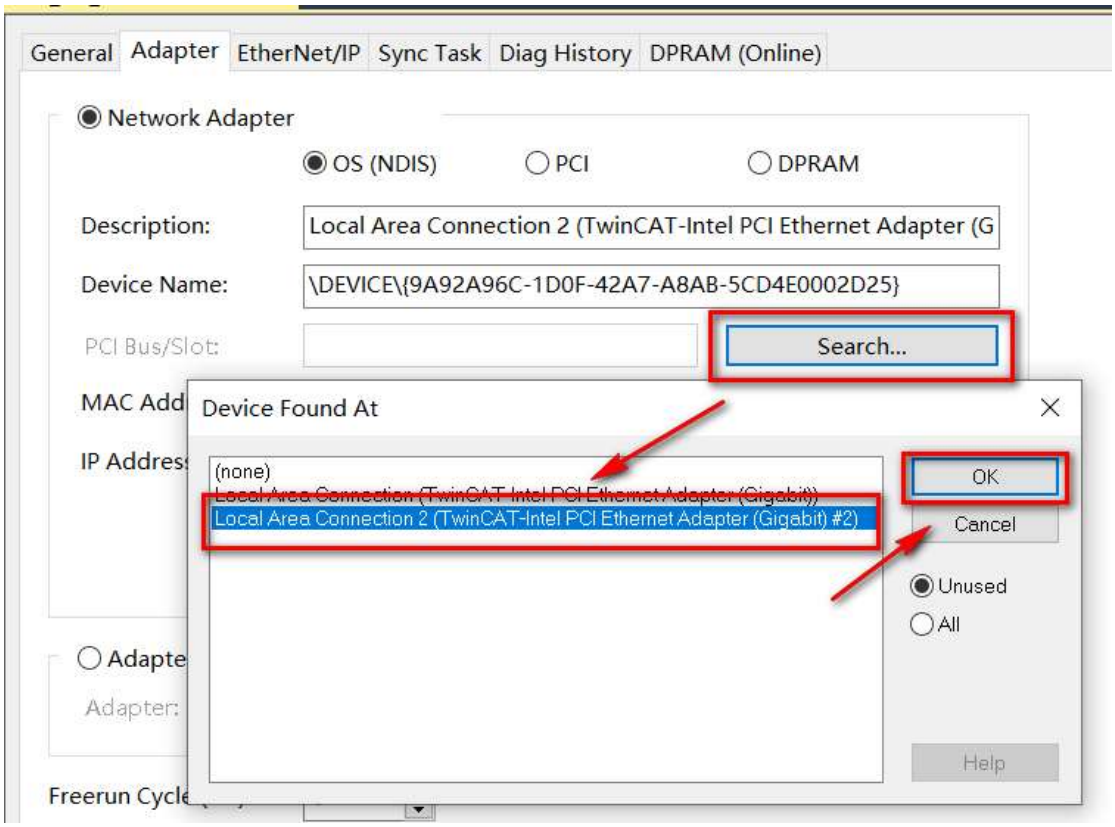


点击OK后的状态。

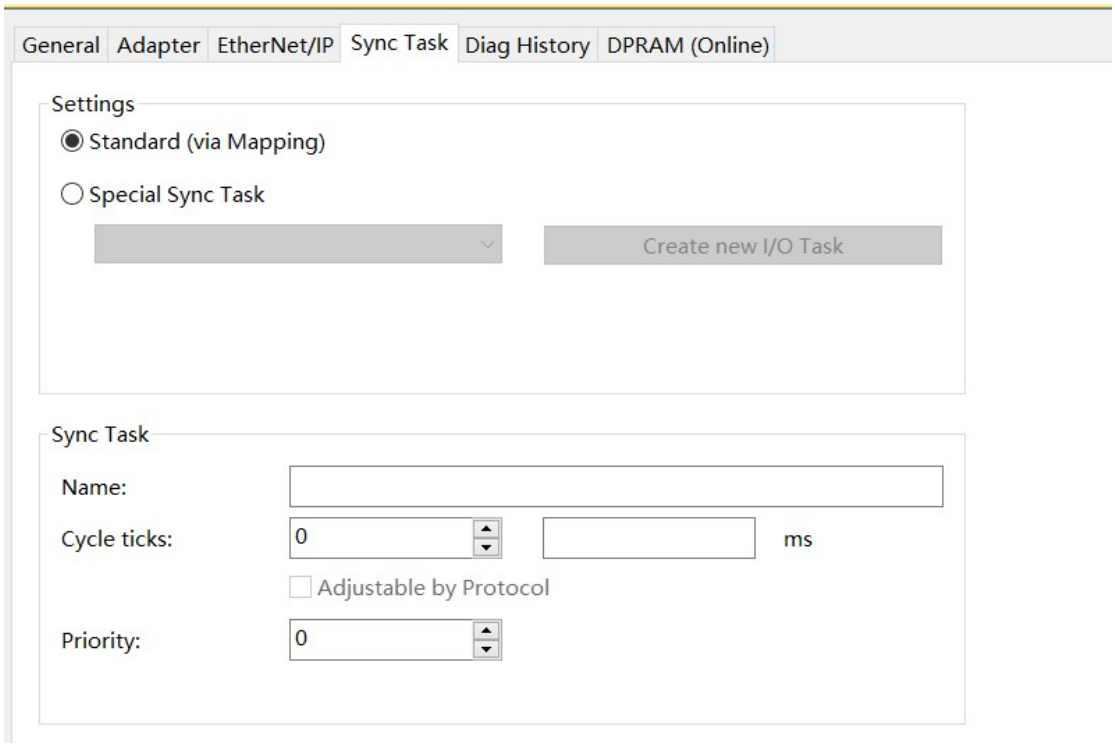


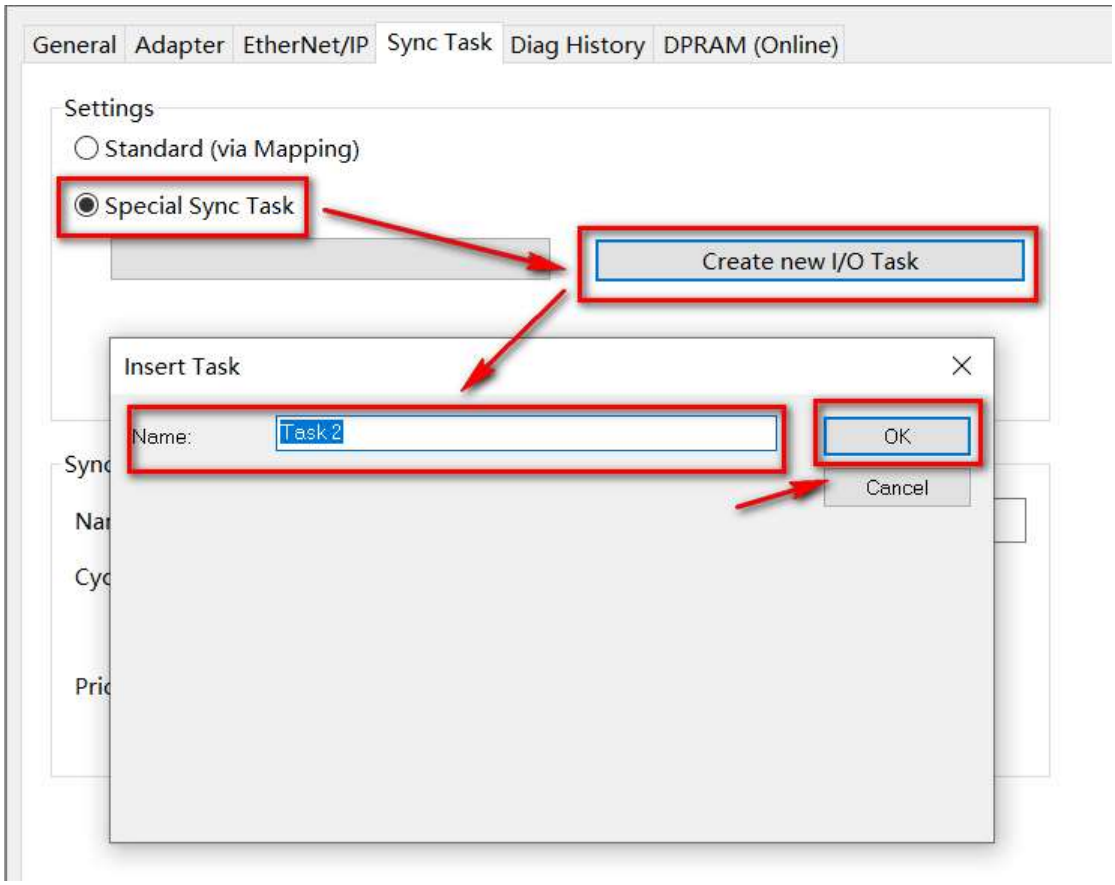
4)、设定设备的Adapter，如果在Device Found At设备查找中选择了网口，MAC Address及IP Address处后显示地址。如果没有选择，可以点击Search，搜索到相应的网口，进行选择。



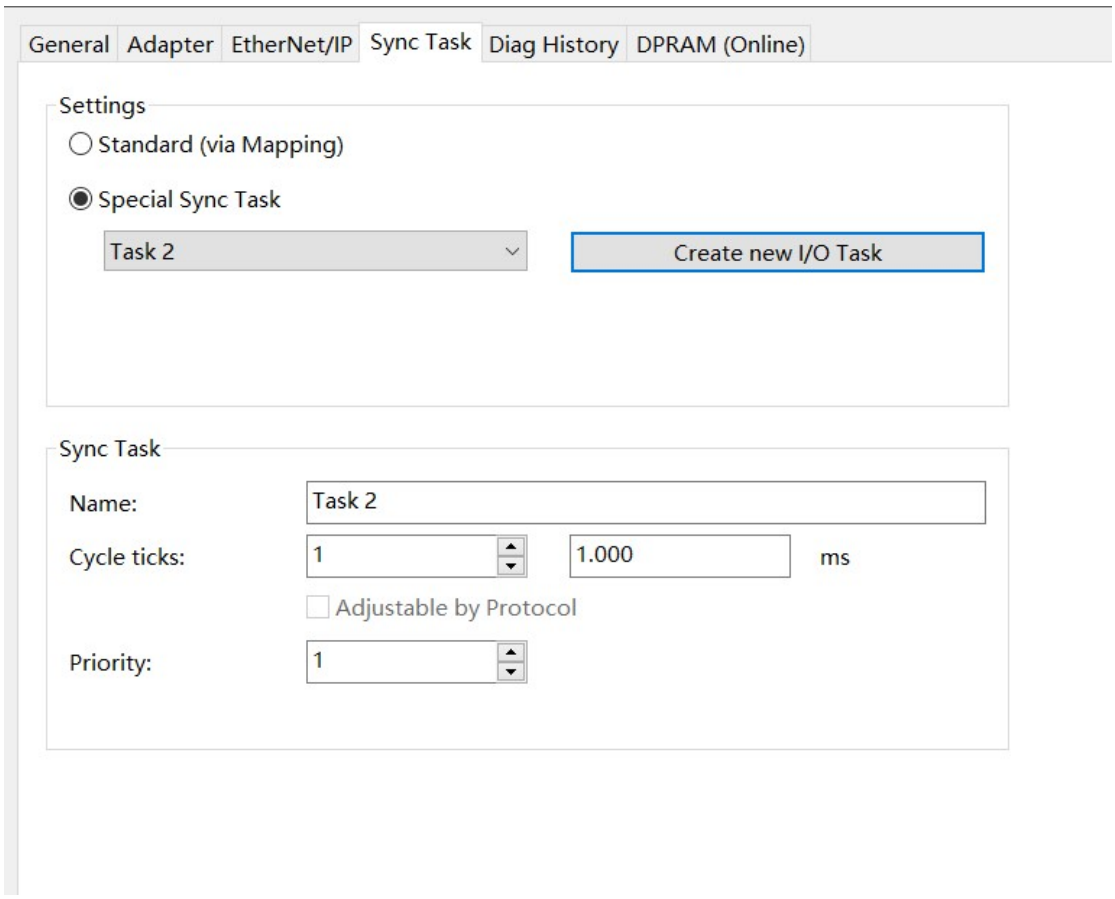


5)、Sync Task 同步任务设定


General
Adapter
EtherNet/IP
Sync Task
Diag History
DPRAM (Online)
Settings
Standard (via Mapping)
Special Sync Task
Create new I/O Task
Sync Task
Name:
Cycle ticks:
0
ms
Adjustable by Protocol
Priority:
0

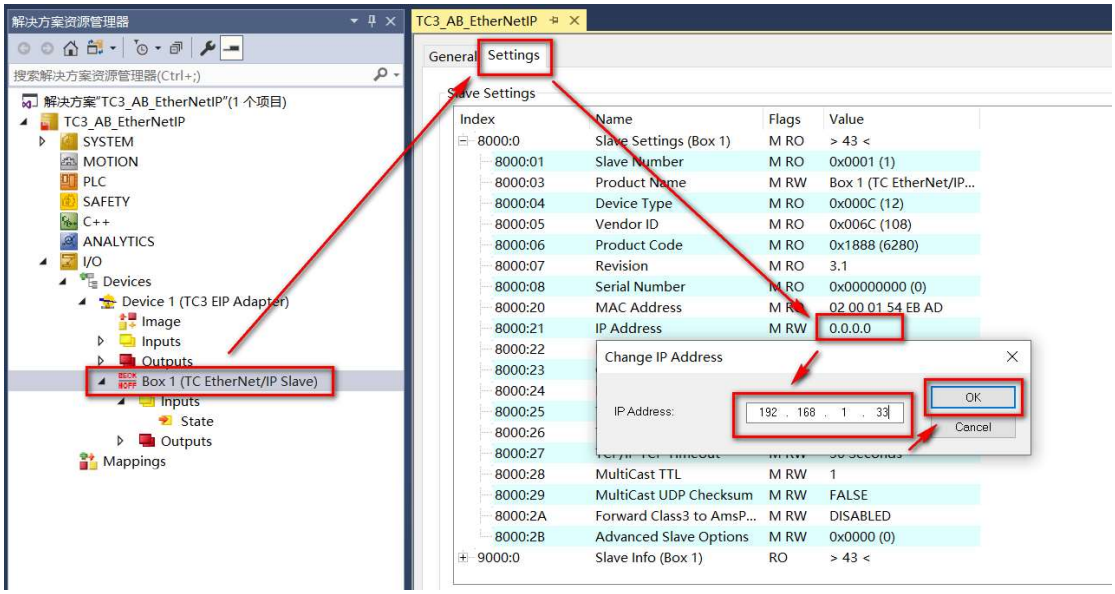

General
Adapter
EtherNet/IP
Sync Task
Diag History
DPRAM (Online)
Settings
Standard (via Mapping)
Special Sync Task
Create new I/O Task
Insert Task
Name:
Task 2
OK
Cancel

设定完成后状态

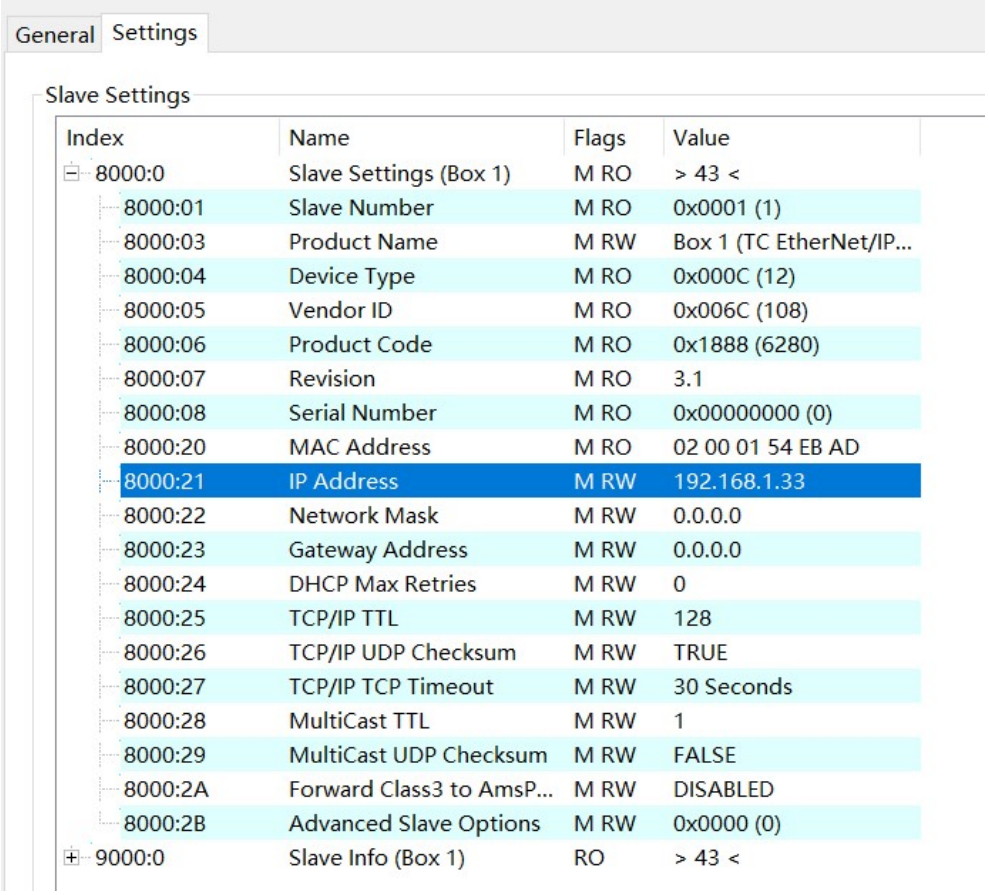


6)、从站参数设定

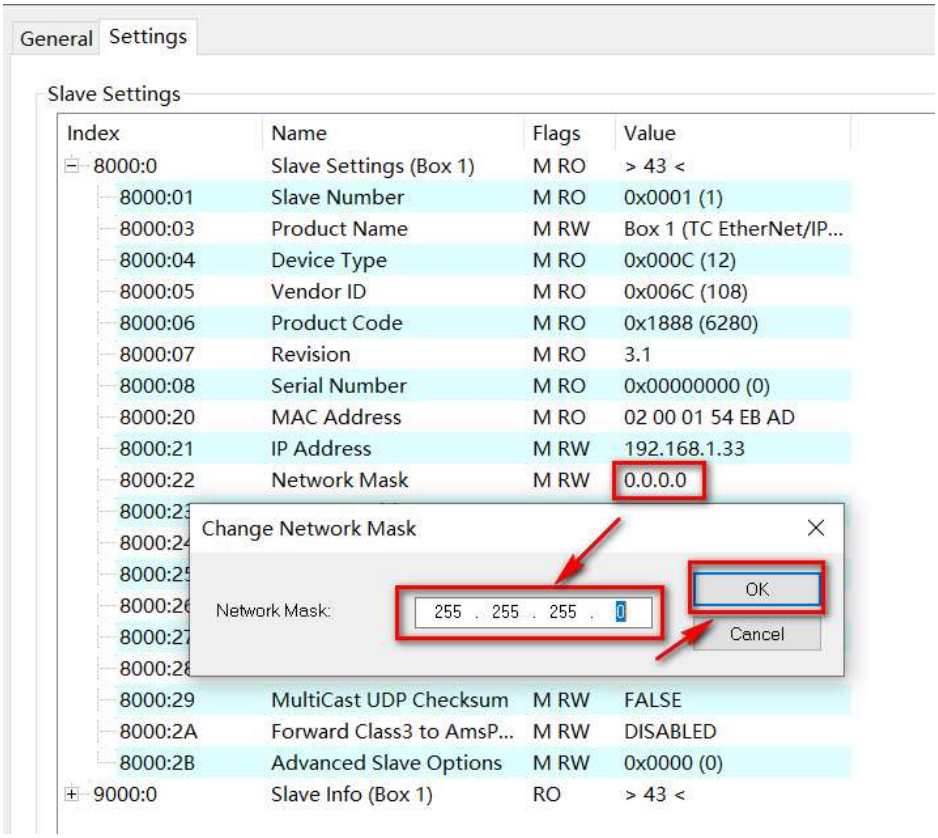
IP地址设定



IP地址设定完成后状态



Network Mask设定



Network Mask设定完成后状态

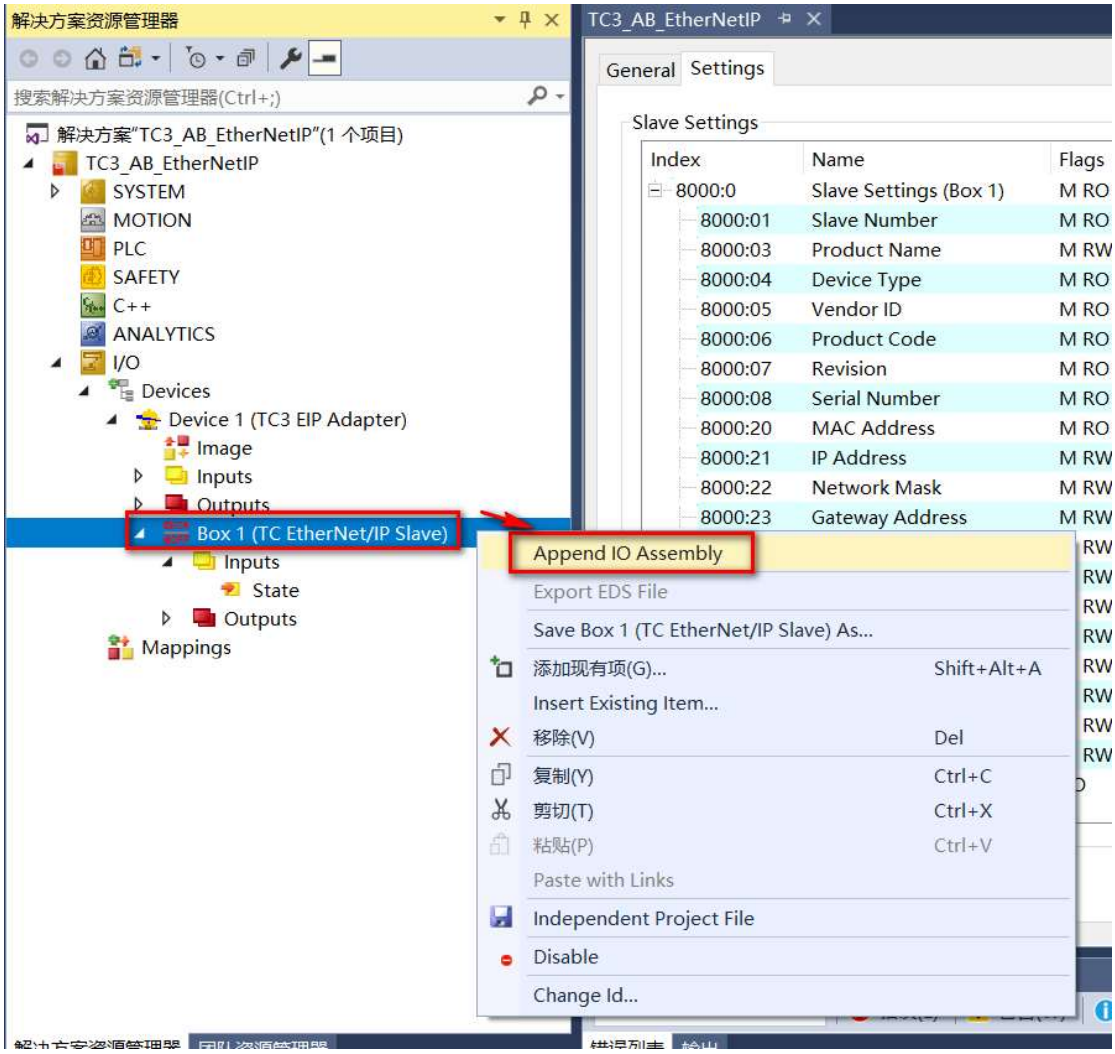
General | Settings

Slave Settings

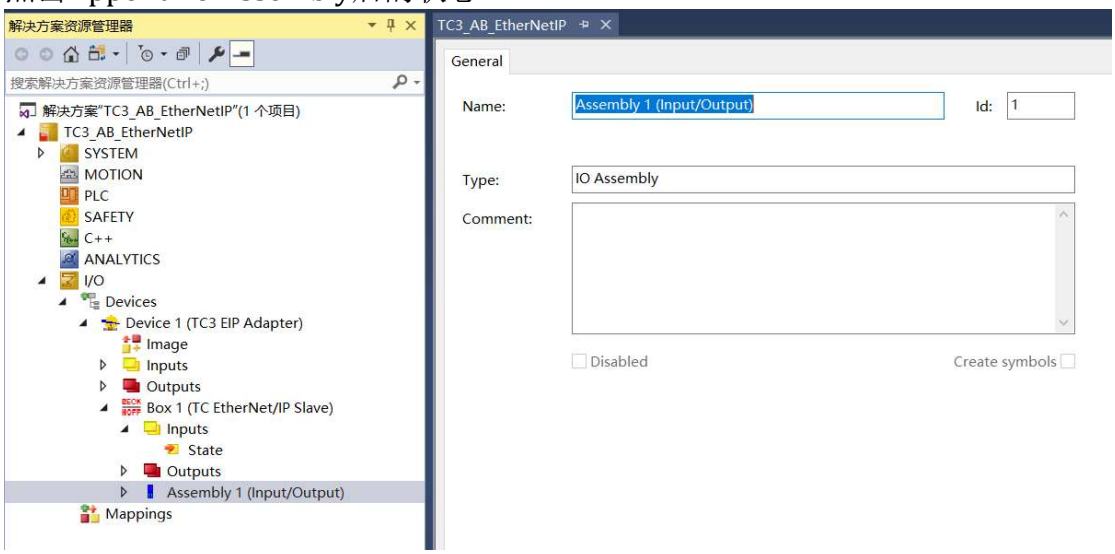
Index	Name	Flags	Value
8000:0	Slave Settings (Box 1)	M RO	> 43 <
8000:01	Slave Number	M RO	0x0001 (1)
8000:03	Product Name	M RW	Box 1 (TC EtherNet/IP...
8000:04	Device Type	M RO	0x000C (12)
8000:05	Vendor ID	M RO	0x006C (108)
8000:06	Product Code	M RO	0x1888 (6280)
8000:07	Revision	M RO	3.1
8000:08	Serial Number	M RO	0x00000000 (0)
8000:20	MAC Address	M RO	02 00 01 54 EB AD
8000:21	IP Address	M RW	192.168.1.33
8000:22	Network Mask	M RW	255.255.255.0
8000:23	Gateway Address	M RW	0.0.0.0
8000:24	DHCP Max Retries	M RW	0
8000:25	TCP/IP TTL	M RW	128
8000:26	TCP/IP UDP Checksum	M RW	TRUE
8000:27	TCP/IP TCP Timeout	M RW	30 Seconds
8000:28	MultiCast TTL	M RW	1
8000:29	MultiCast UDP Checksum	M RW	FALSE
8000:2A	Forward Class3 to AmsP...	M RW	DISABLED
8000:2B	Advanced Slave Options	M RW	0x0000 (0)
9000:0	Slave Info (Box 1)	RO	> 43 <

7)、添加IO点通讯组

右击BOX1(TC EtherNet/IP Slave)，点击Append IO Assembly。



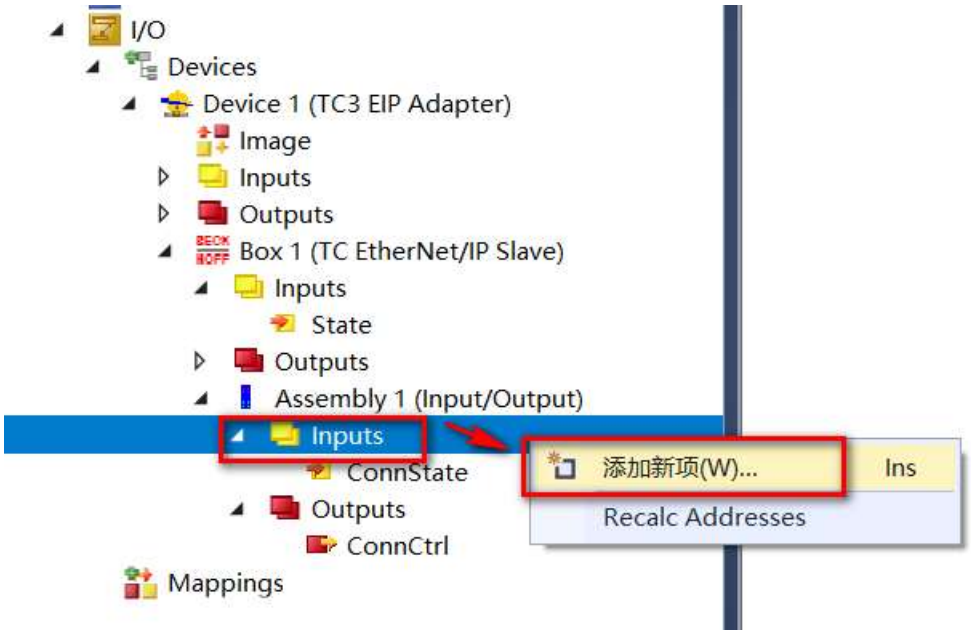
点击Append IO Assembly后的状态。



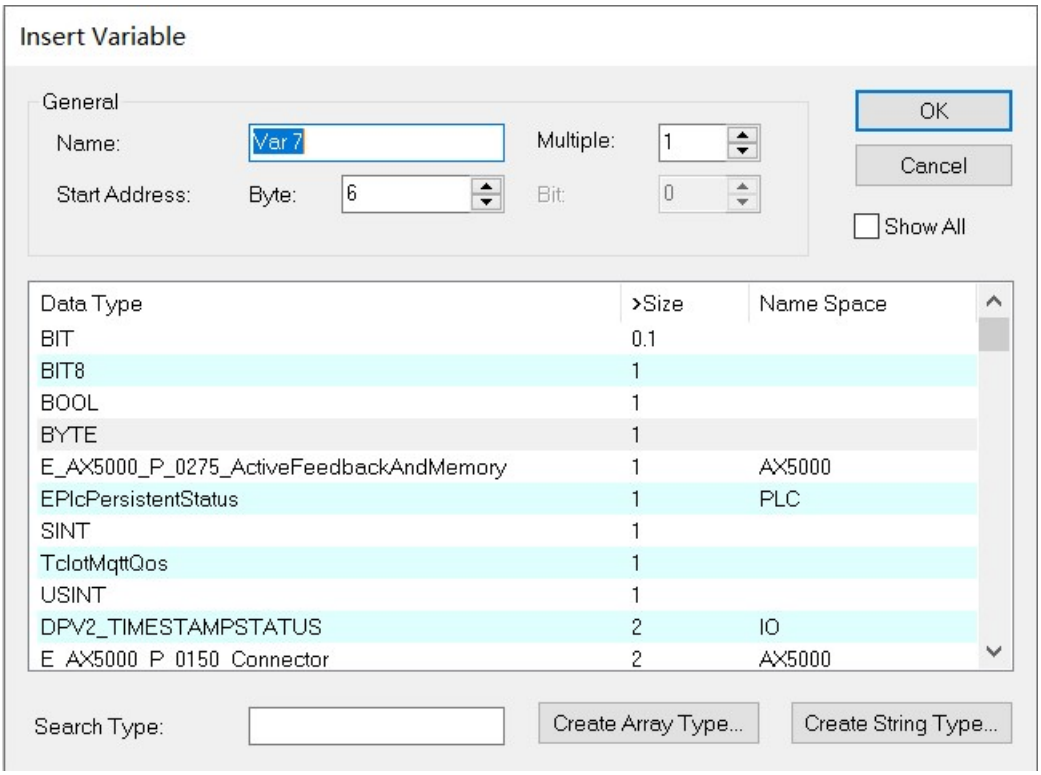
8)、添加Inputs和Outputs

添加Inputs输入

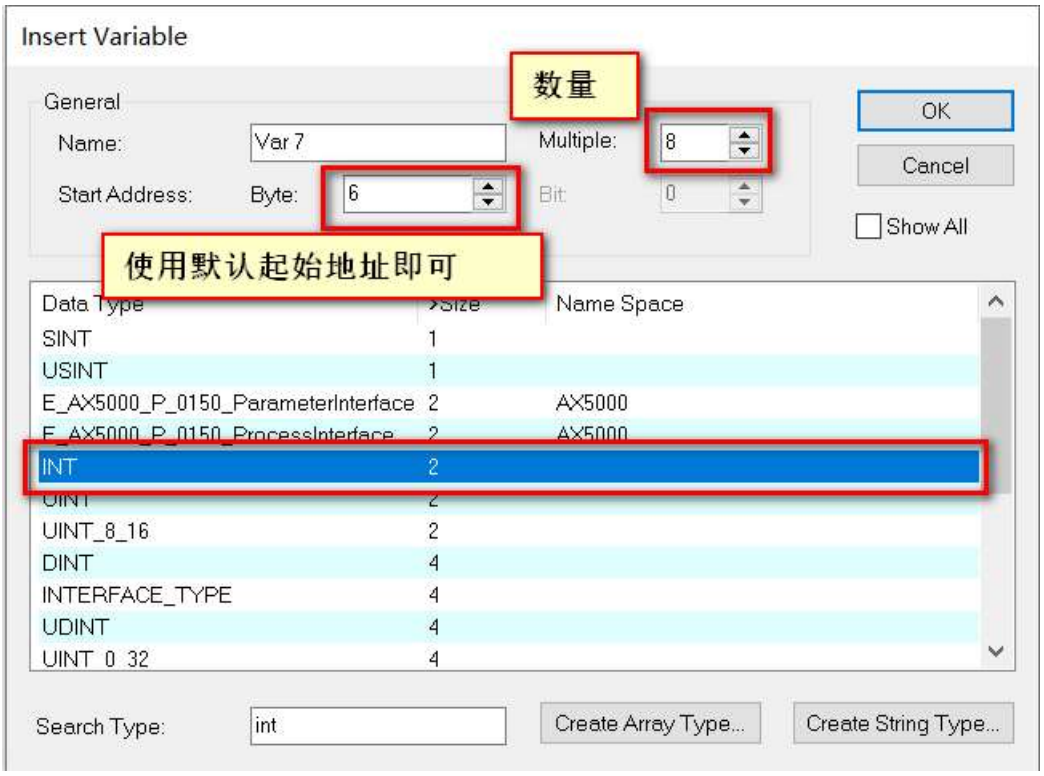
右击Inputs，点击添加新项。



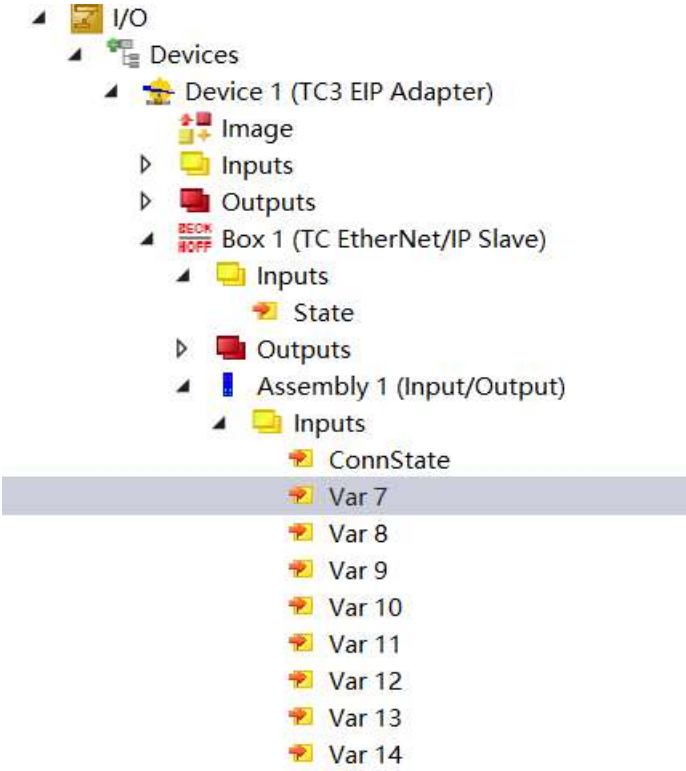
点击添加新项后的状态。



具体设定根据需求设定输入数量。例子中设定了8个INT类型的输入。

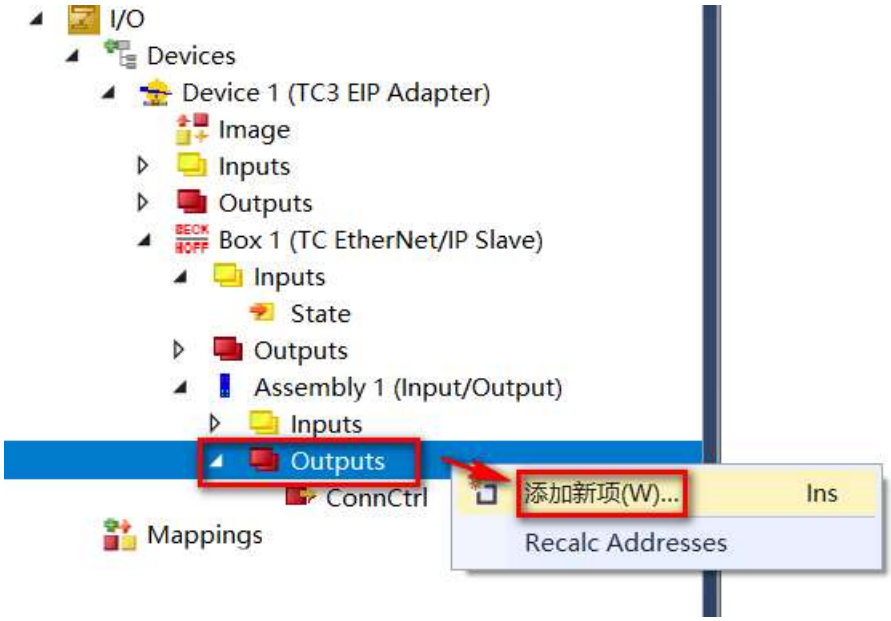


设定完成后的状态。

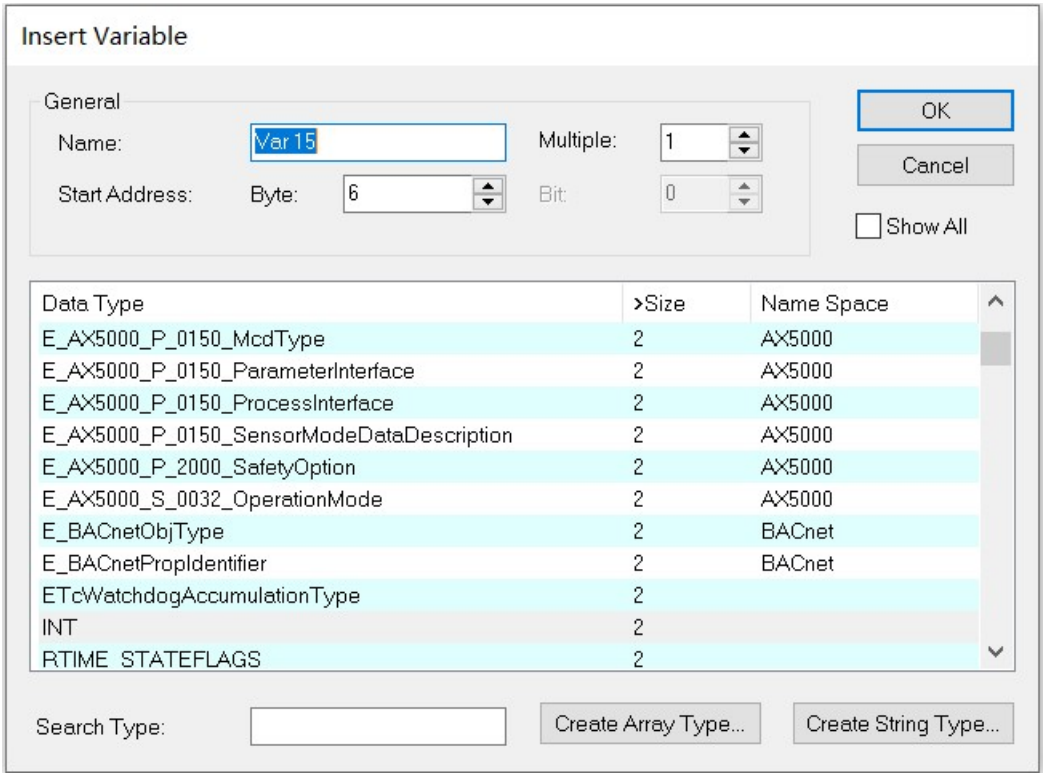


添加Outputs输出

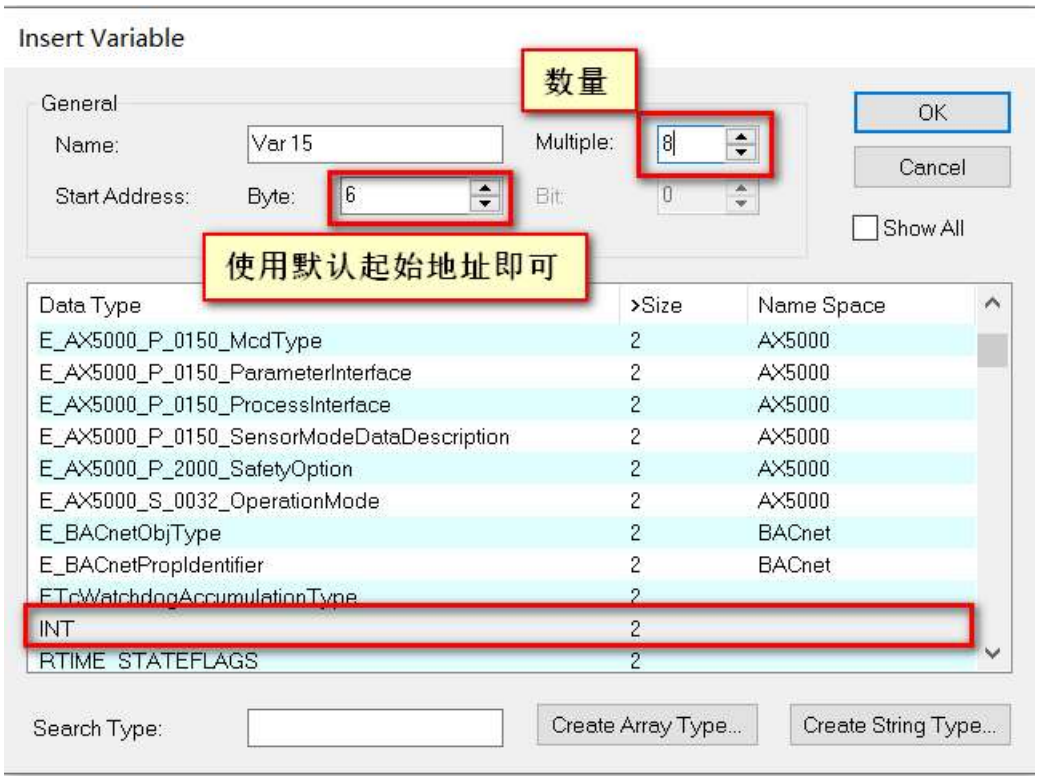
右击Outputs，点击添加新项。



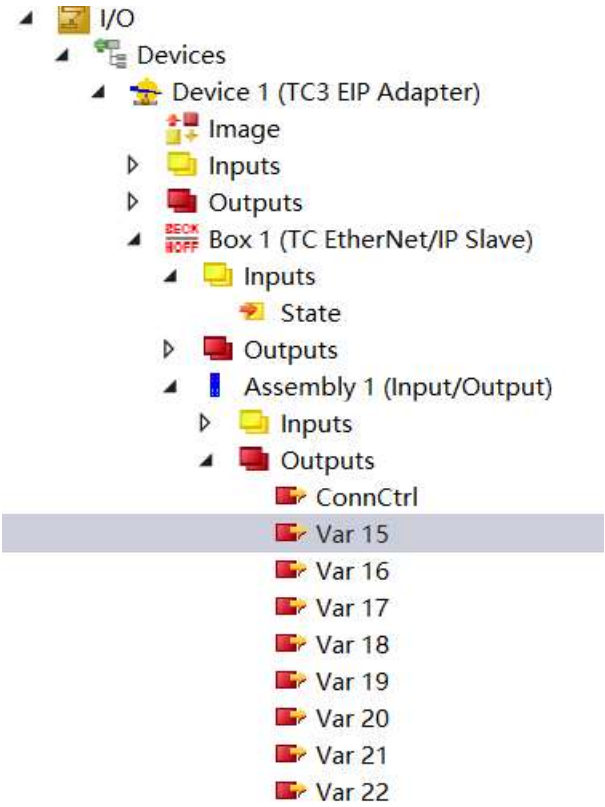
点击添加新项后的状态。



具体设定根据需求设定输出数量。例子中设定了8个INT类型的输出。



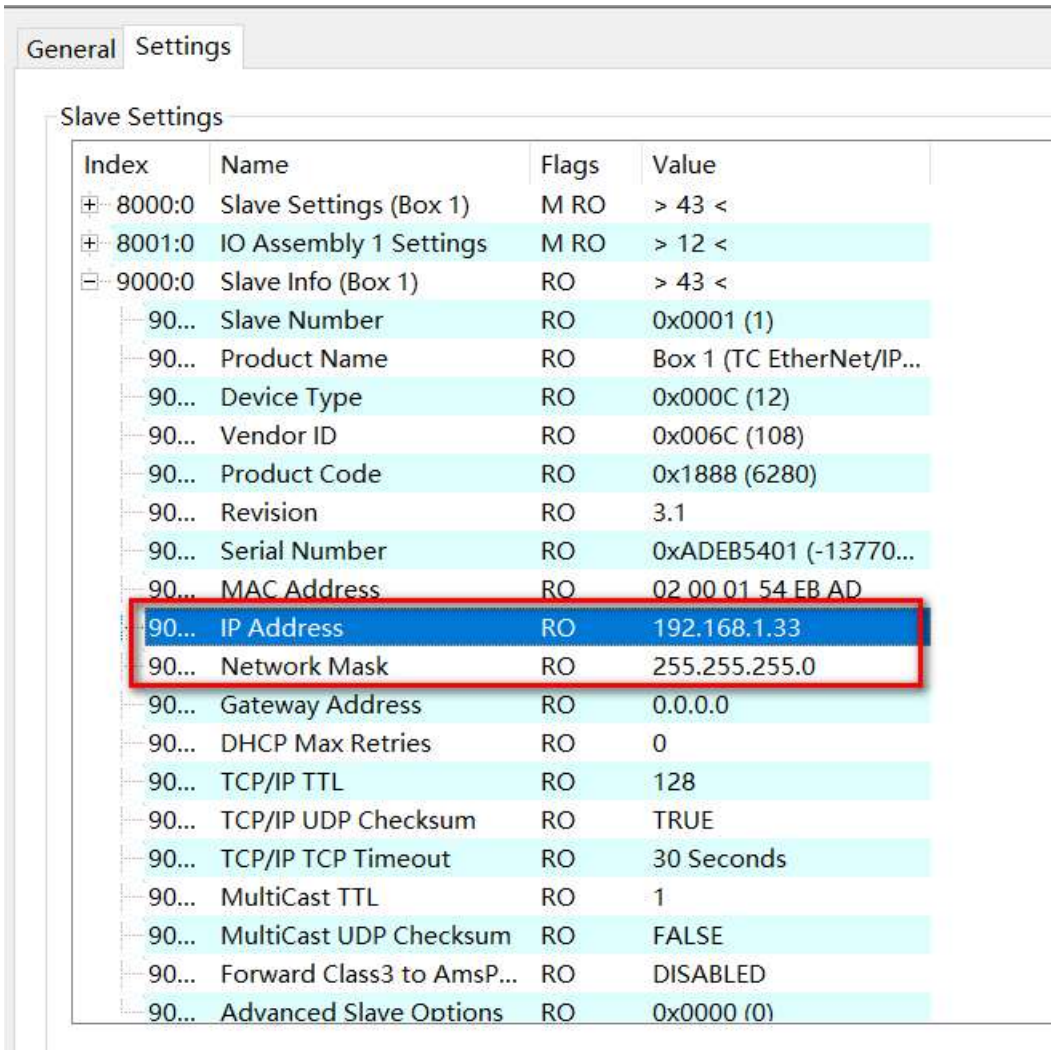
设定完成后的状态。



9)、Reload Devices重新加载设备

将以上参数设定后，Reload Devices重新加载设备。

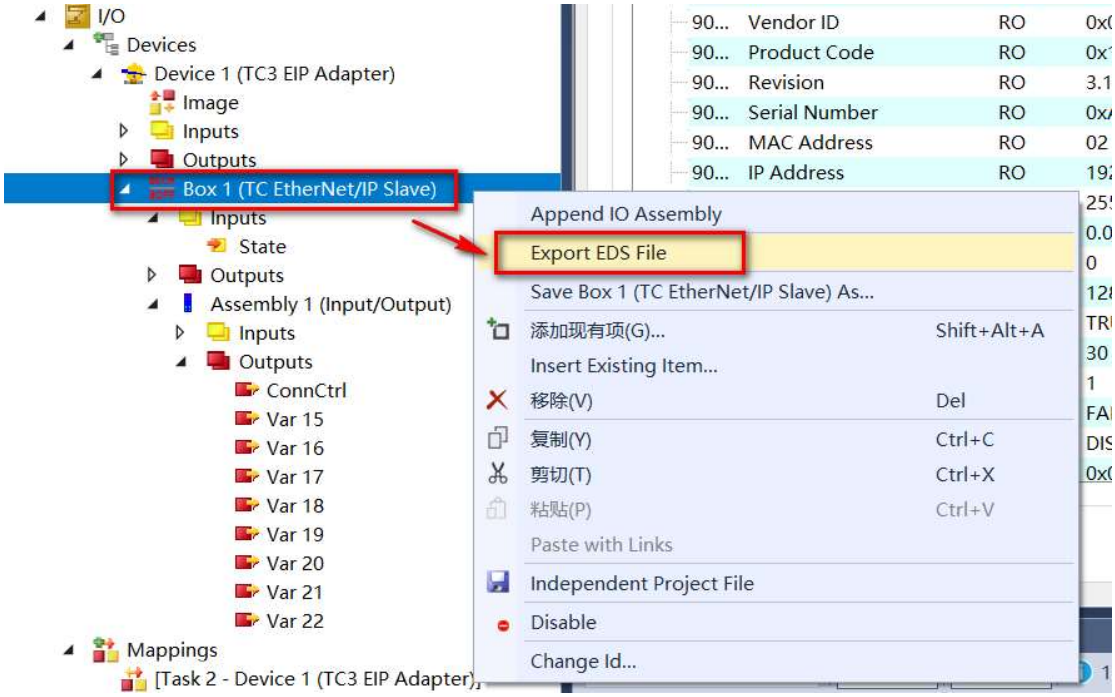
Reload Devices重新加载设备完成后的状态。



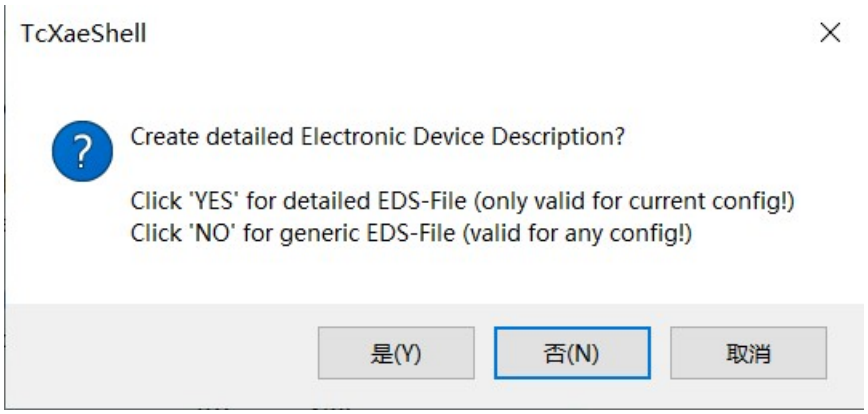
Index	Name	Flags	Value
8000:0	Slave Settings (Box 1)	M RO	> 43 <
8001:0	IO Assembly 1 Settings	M RO	> 12 <
9000:0	Slave Info (Box 1)	RO	> 43 <
90...	Slave Number	RO	0x0001 (1)
90...	Product Name	RO	Box 1 (TC EtherNet/IP...
90...	Device Type	RO	0x000C (12)
90...	Vendor ID	RO	0x006C (108)
90...	Product Code	RO	0x1888 (6280)
90...	Revision	RO	3.1
90...	Serial Number	RO	0xADEB5401 (-13770...
90...	MAC Address	RO	02 00 01 54 EB AD
90...	IP Address	RO	192.168.1.33
90...	Network Mask	RO	255.255.255.0
90...	Gateway Address	RO	0.0.0.0
90...	DHCP Max Retries	RO	0
90...	TCP/IP TTL	RO	128
90...	TCP/IP UDP Checksum	RO	TRUE
90...	TCP/IP TCP Timeout	RO	30 Seconds
90...	MultiCast TTL	RO	1
90...	MultiCast UDP Checksum	RO	FALSE
90...	Forward Class3 to AmsP...	RO	DISABLED
90...	Advanced Slave Options	RO	0x0000 (0)

9)、制作EDS文件

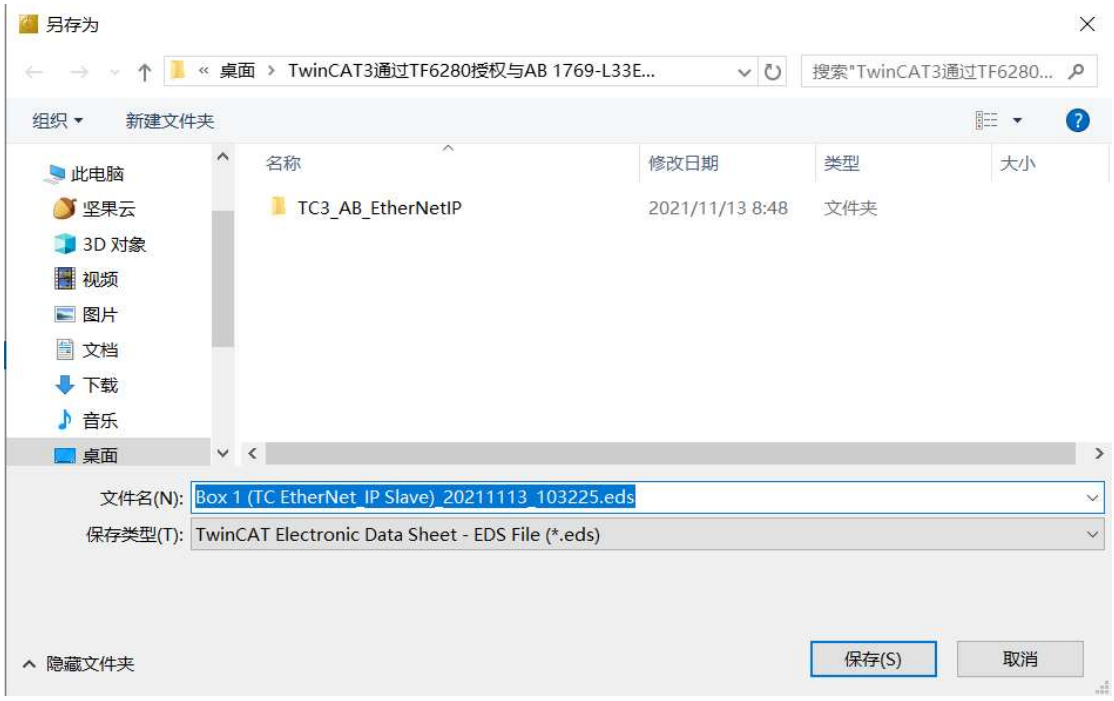
右击BOX1(EtherNet/IP Slave)，点击Export EDS File。



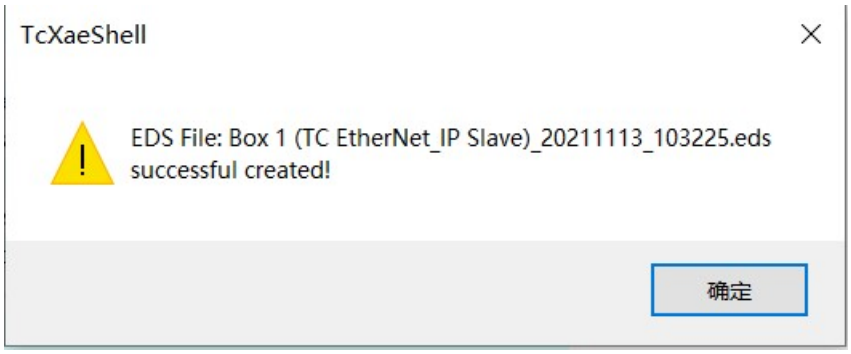
点击Export EDS File后的状态。



点击“否”后，选择EDS的保存路径。



点击保存后的状态。



10)、激活系统配置

点击Activate Configuration按钮，激活系统配置。

点击Activate Configuration后的状态。

点击确定后的状态。

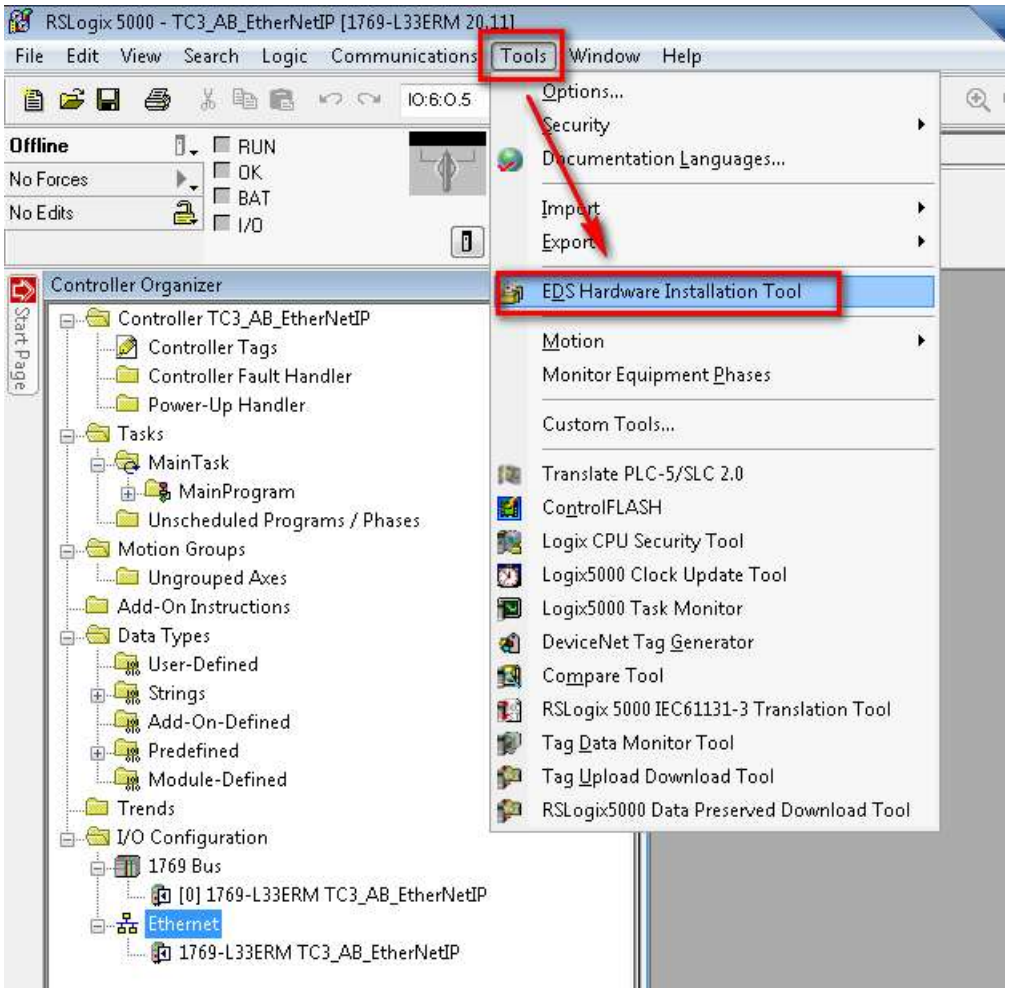
Restart TwinCAT System指示被点亮。

倍福CP2291侧的设定就全部完成了。

2.AB 1769-L33ERM 主站侧配置

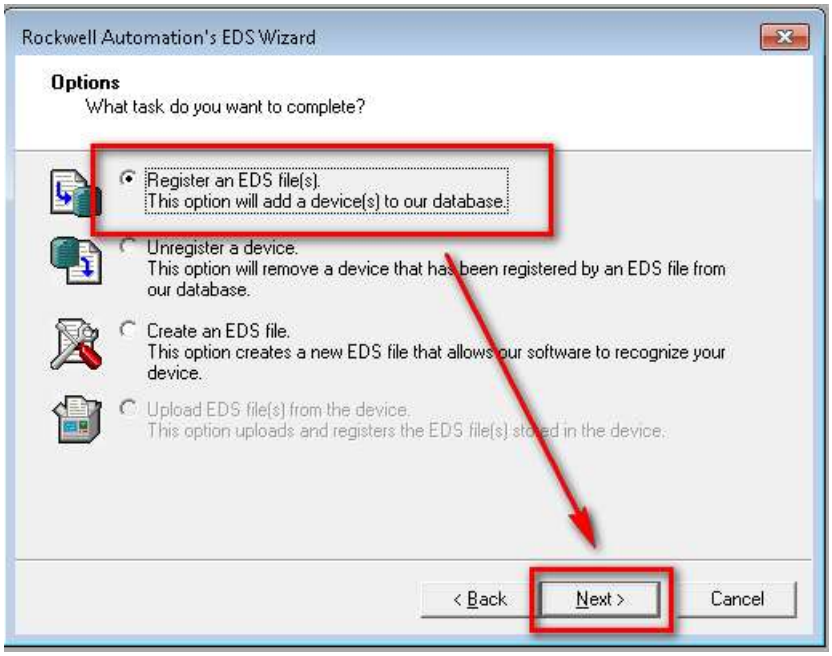
1)、安装倍福配置完成后生成的EDS文件。

选择Tools，点击EDS Hardware Installation Tool。

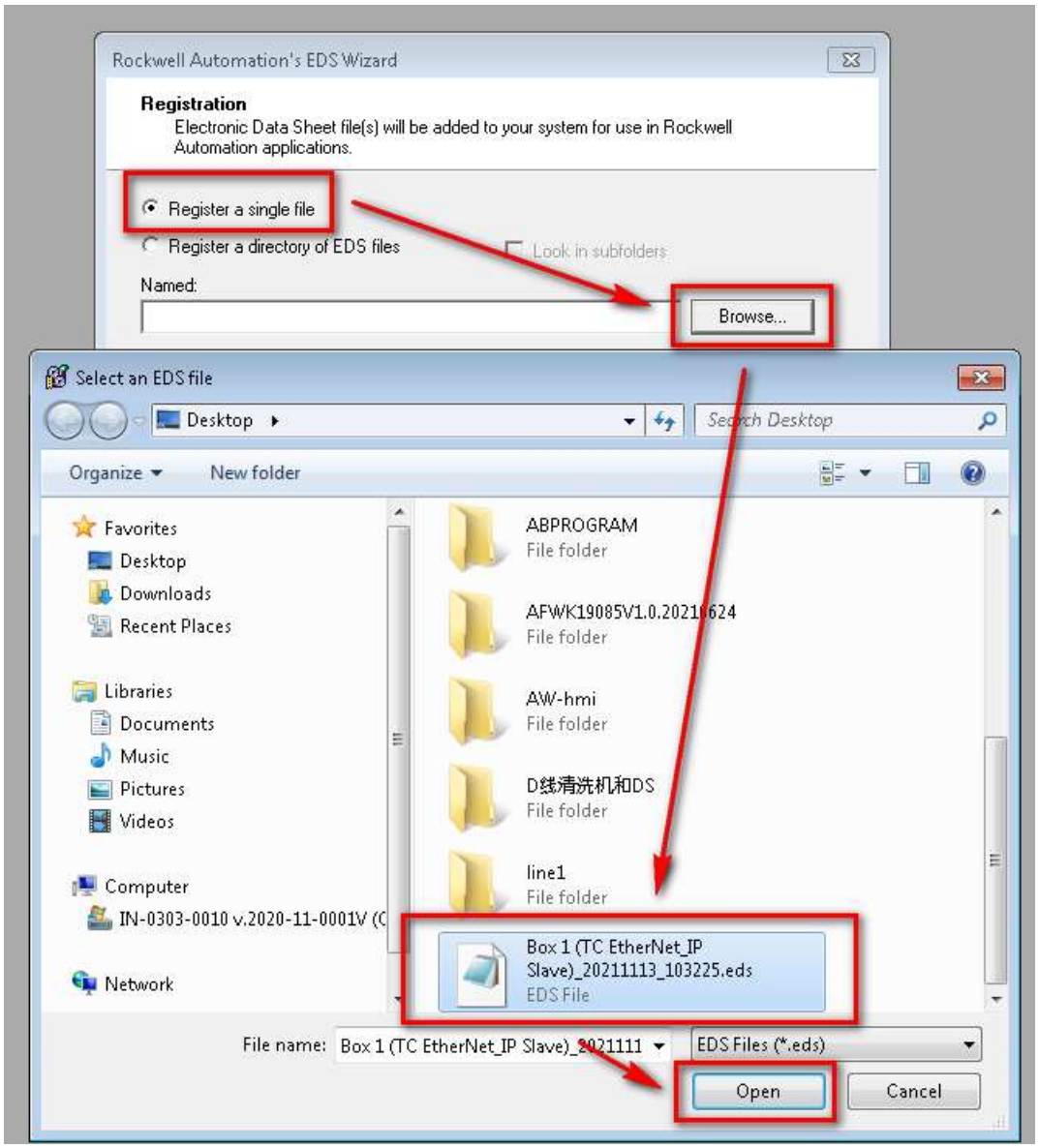


点击 EDS Hardware Installation Tool 后的状态。

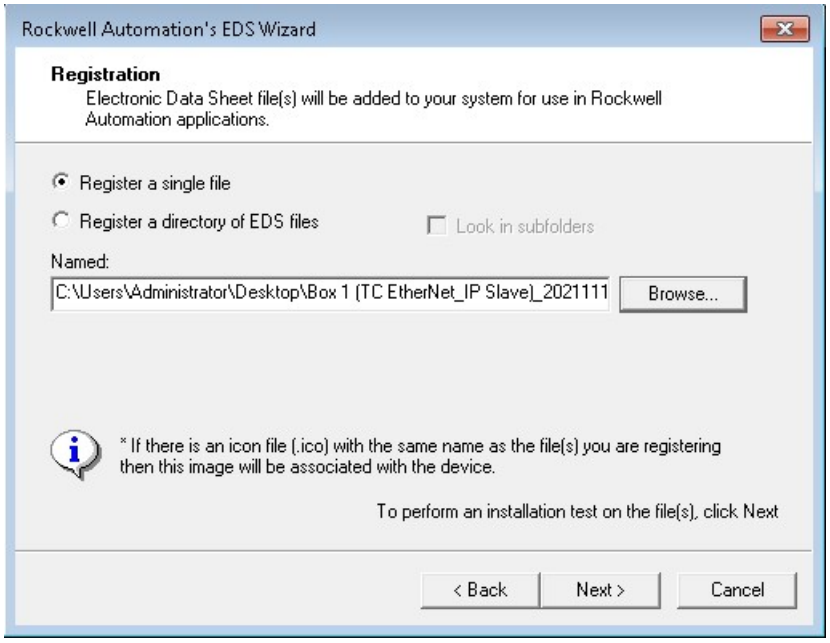
点击 Next



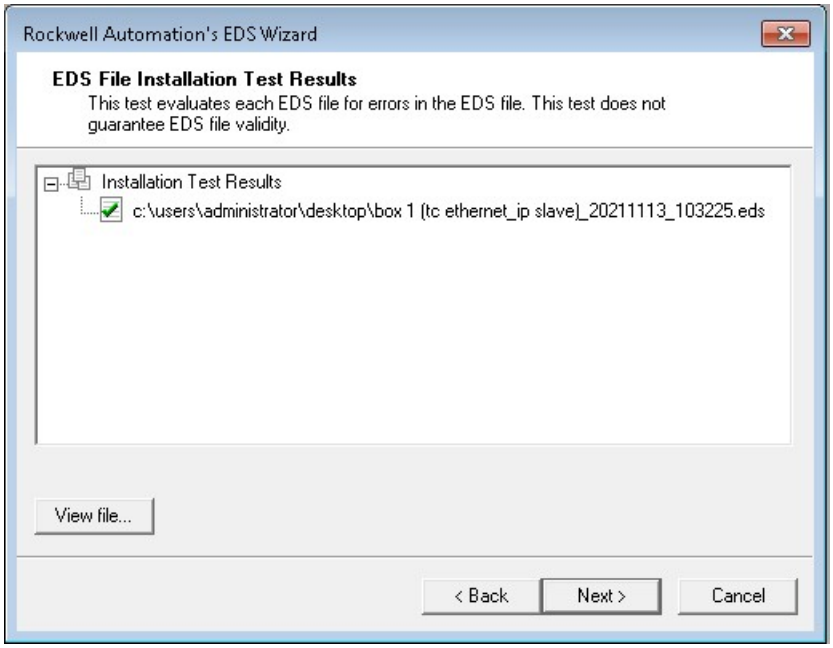
选择第一项，点击 Next


Rockwell Automation's EDS Wizard
Registration
Electronic Data Sheet file(s) will be added to your system for use in Rockwell Automation applications.
Register a single file
Register a directory of EDS files
Look in subfolders
Named:
Browse...
Select an EDS file
Desktop
Search Desktop
Organize
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
IN-0303-0010 v.2020-11-0001V (C
Network
ABPROGRAM
File folder
AFWK19085V1.0.20210624
File folder
AW-hmi
File folder
D线清洗机和DS
File folder
line1
File folder
Box 1 (TC EtherNet_IP Slave)_20211113_103225.eds
EDS File
File name:
Box 1 (TC EtherNet_IP Slave)_20211111
EDS Files (*.eds)
Open
Cancel

选择生成的EDS文件。



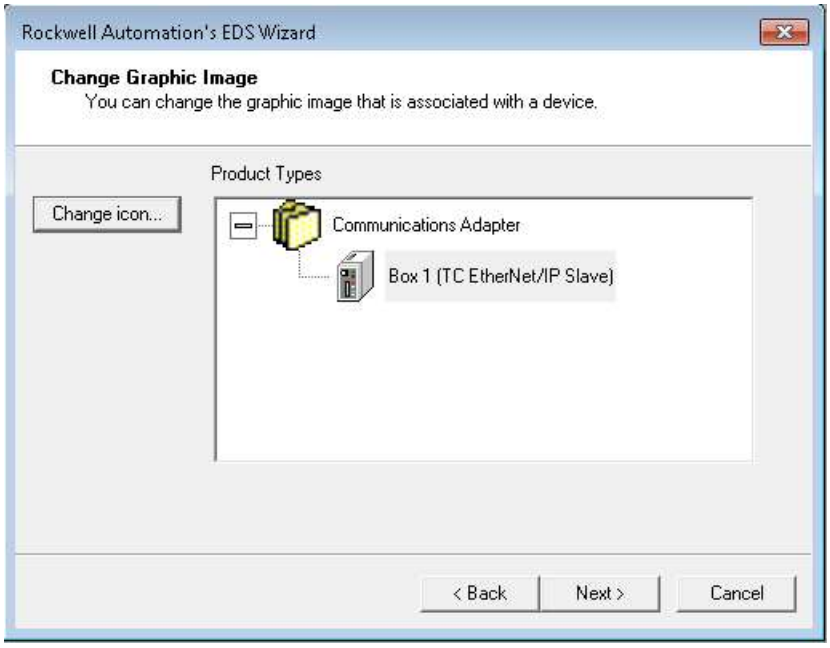
点击Next



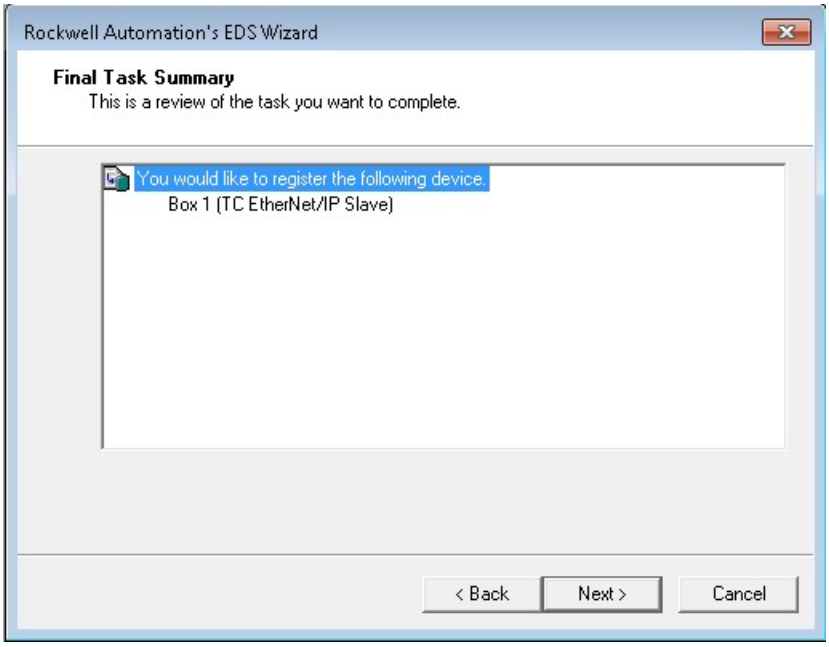
点击Next，到达选择图标界面


Rockwell Automation's EDS Wizard
Change Graphic Image
You can change the graphic image that is associated with a device.
Product Types
Change icon...
Communications Adapter
Box 1 (TC EtherNet/IP Slave)
Change Icon
Rockwell Automation Icon Library
OK
Cancel
Browse...

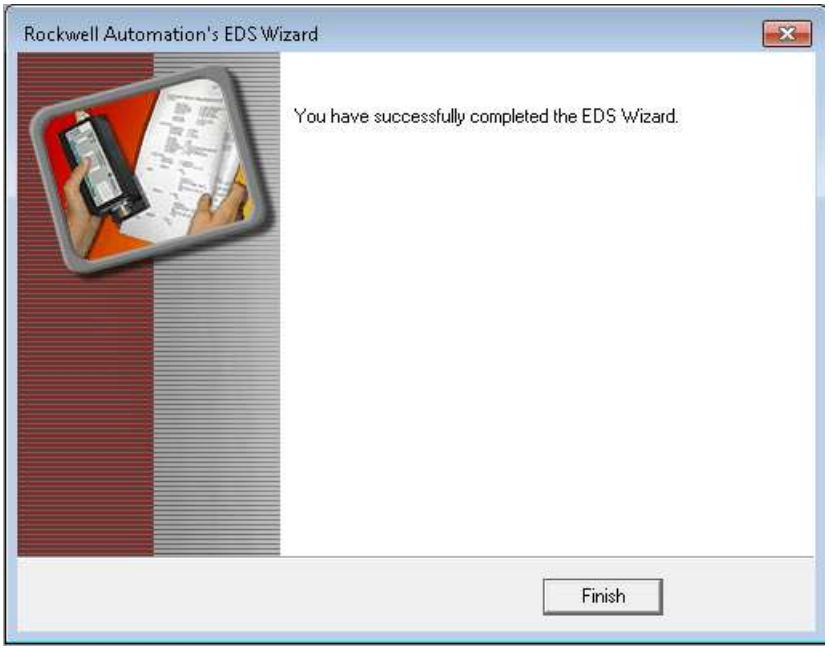
点击OK


Rockwell Automation's EDS Wizard
Change Graphic Image
You can change the graphic image that is associated with a device.
Product Types
Change icon...
Communications Adapter
Box 1 (TC EtherNet/IP Slave)
< Back
Next >
Cancel

点击Next



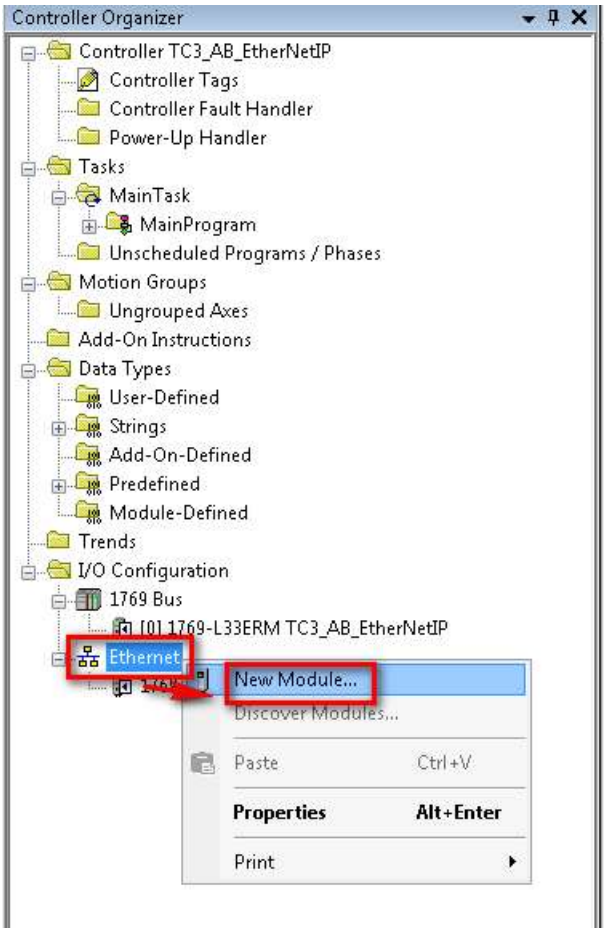
点击Next



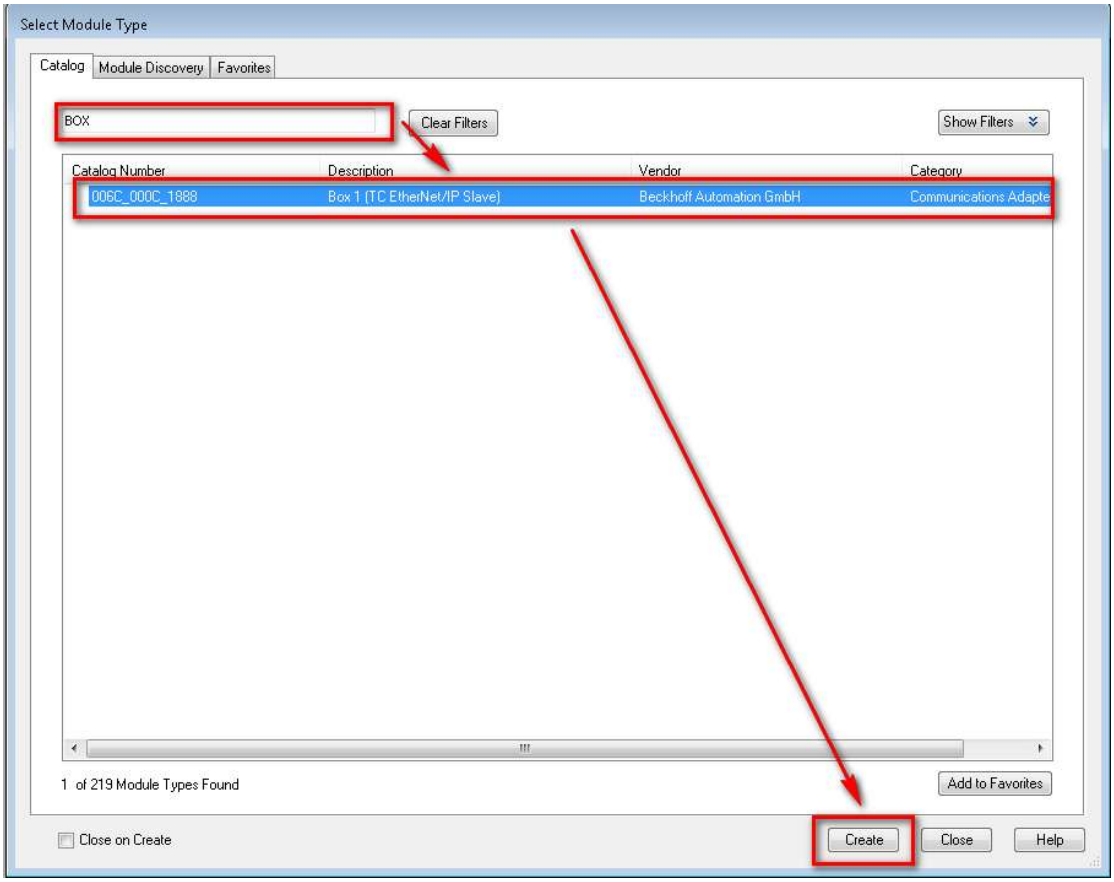
点击Finish完成。

2)、添加EtherNetIP网络中添加从站模块。

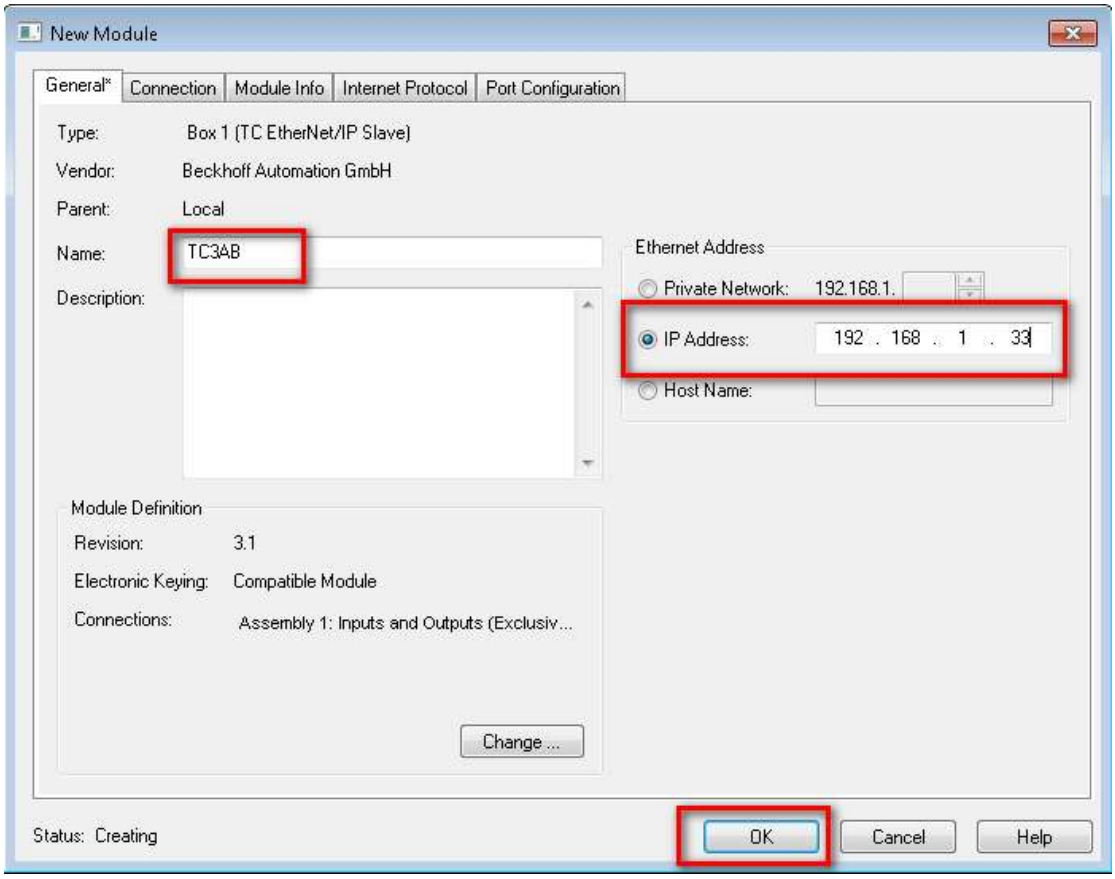
右击Ethernet后，点击New Module



找到EDS文件，点击Create


Select Module Type
Catalog
Module Discovery
Favorites
BOX
Clear Filters
Show Filters
Catalog Number
Description
Vendor
Category
006C_000C_1888
Box 1 (TC EtherNet/IP Slave)
Beckhoff Automation GmbH
Communications Adapte
1 of 219 Module Types Found
Add to Favorites
Close on Create
Create
Close
Help

点击Create


New Module
General*
Connection
Module Info
Internet Protocol
Port Configuration
Type:
Box 1 (TC EtherNet/IP Slave)
Vendor:
Beckhoff Automation GmbH
Parent:
Local
Name:
TC3AB
Description:
Ethernet Address
Private Network:
192.168.1.
IP Address:
192 . 168 . 1 . 33
Host Name:
Module Definition
Revision:
3.1
Electronic Keying:
Compatible Module
Connections:
Assembly 1: Inputs and Outputs (Exclusiv...
Change ...
Status: Creating
OK
Cancel
Help

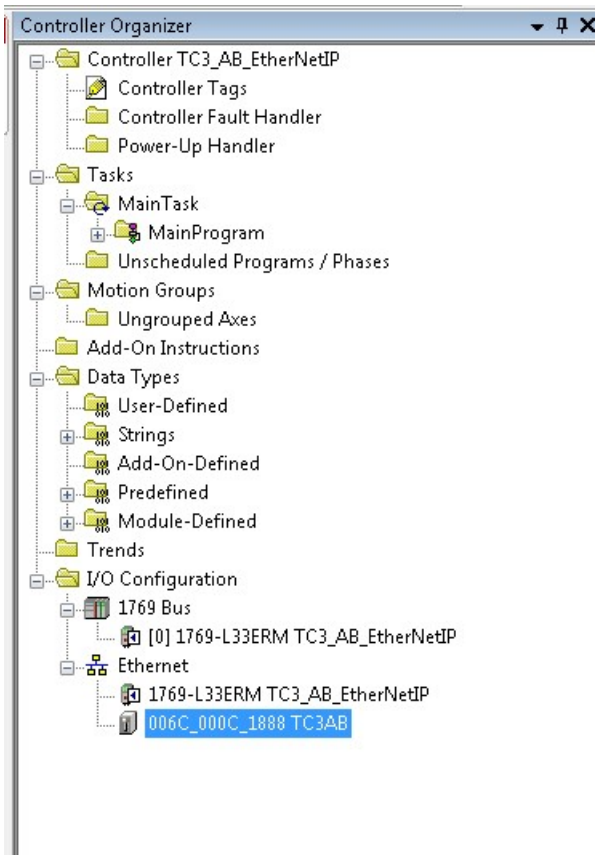
取个名字，名字可以任意设定。设定IP地址，该IP地址为在倍福CP2291 Slave设定中的IP地址。

General | Settings

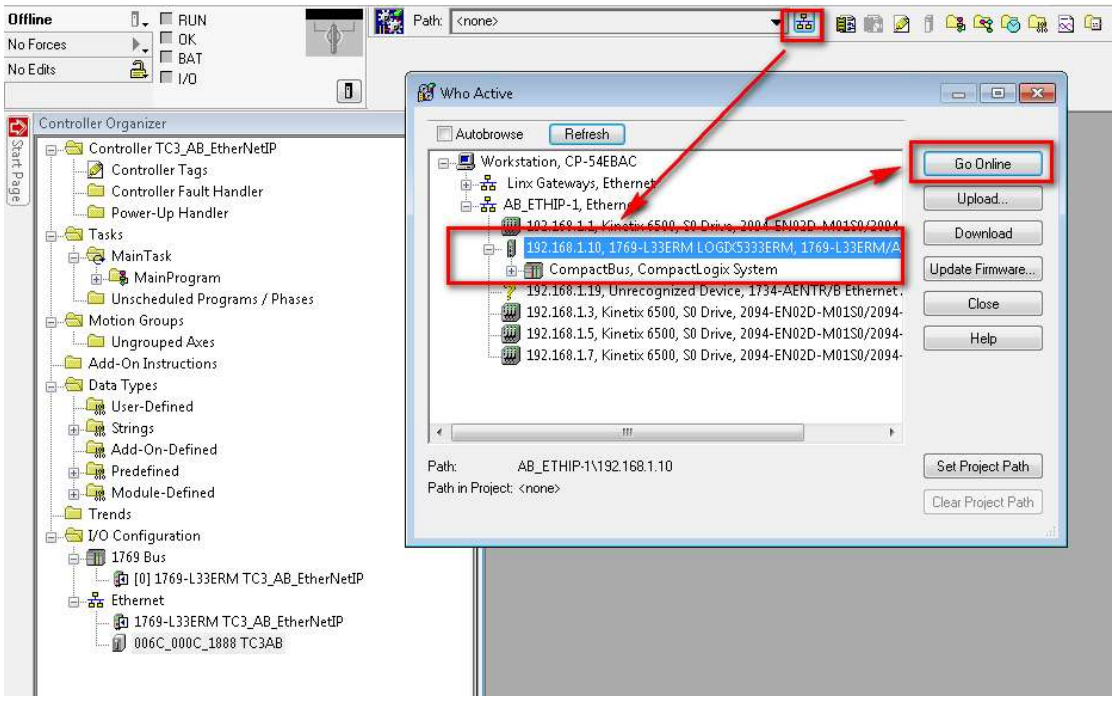
Slave Settings

Index	Name	Flags	Value
8000:0	Slave Settings (Box 1)	M RO	> 43 <
8000:01	Slave Number	M RO	0x0001 (1)
8000:03	Product Name	M RW	Box 1 (TC EtherNet/IP...
8000:04	Device Type	M RO	0x000C (12)
8000:05	Vendor ID	M RO	0x006C (108)
8000:06	Product Code	M RO	0x1888 (6280)
8000:07	Revision	M RO	3.1
8000:08	Serial Number	M RO	0x00000000 (0)
8000:20	MAC Address	M RO	02 00 01 54 EB AD
8000:21	IP Address	M RW	192.168.1.33
8000:22	Network Mask	M RW	0.0.0.0
8000:23	Gateway Address	M RW	0.0.0.0
8000:24	DHCP Max Retries	M RW	0
8000:25	TCP/IP TTL	M RW	128
8000:26	TCP/IP UDP Checksum	M RW	TRUE
8000:27	TCP/IP TCP Timeout	M RW	30 Seconds
8000:28	MultiCast TTL	M RW	1
8000:29	MultiCast UDP Checksum	M RW	FALSE
8000:2A	Forward Class3 to AmsP...	M RW	DISABLED
8000:2B	Advanced Slave Options	M RW	0x0000 (0)
9000:0	Slave Info (Box 1)	RO	> 43 <

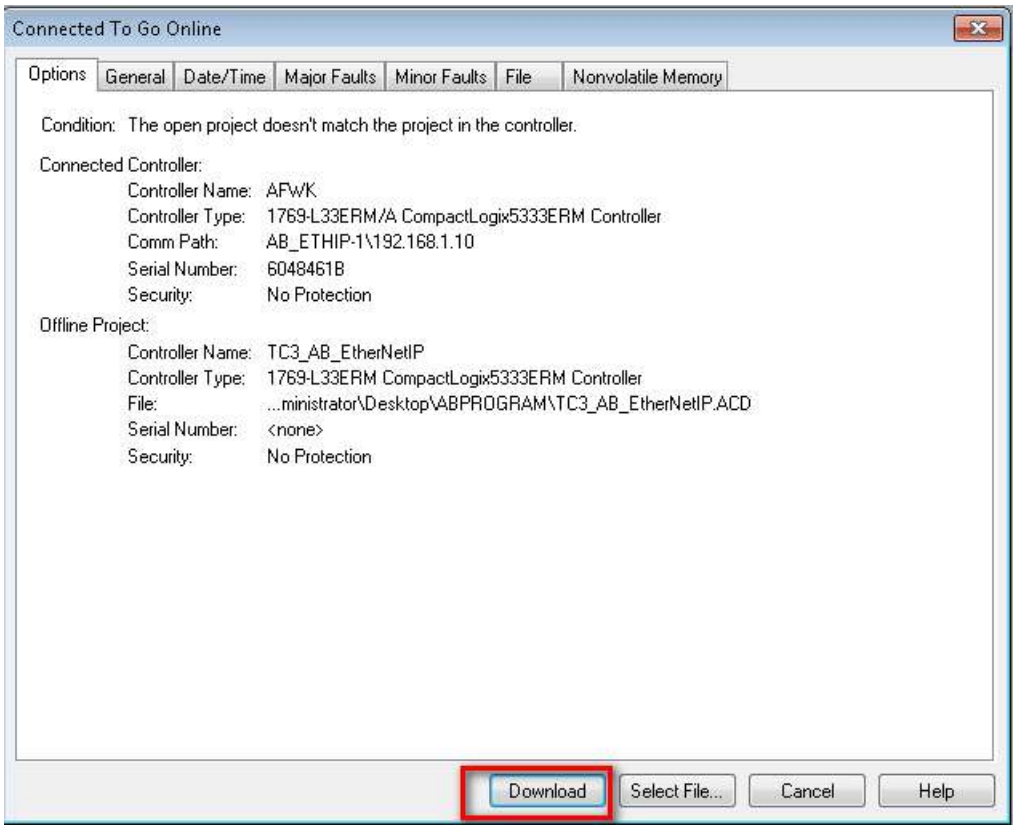
设定完成后的状态。



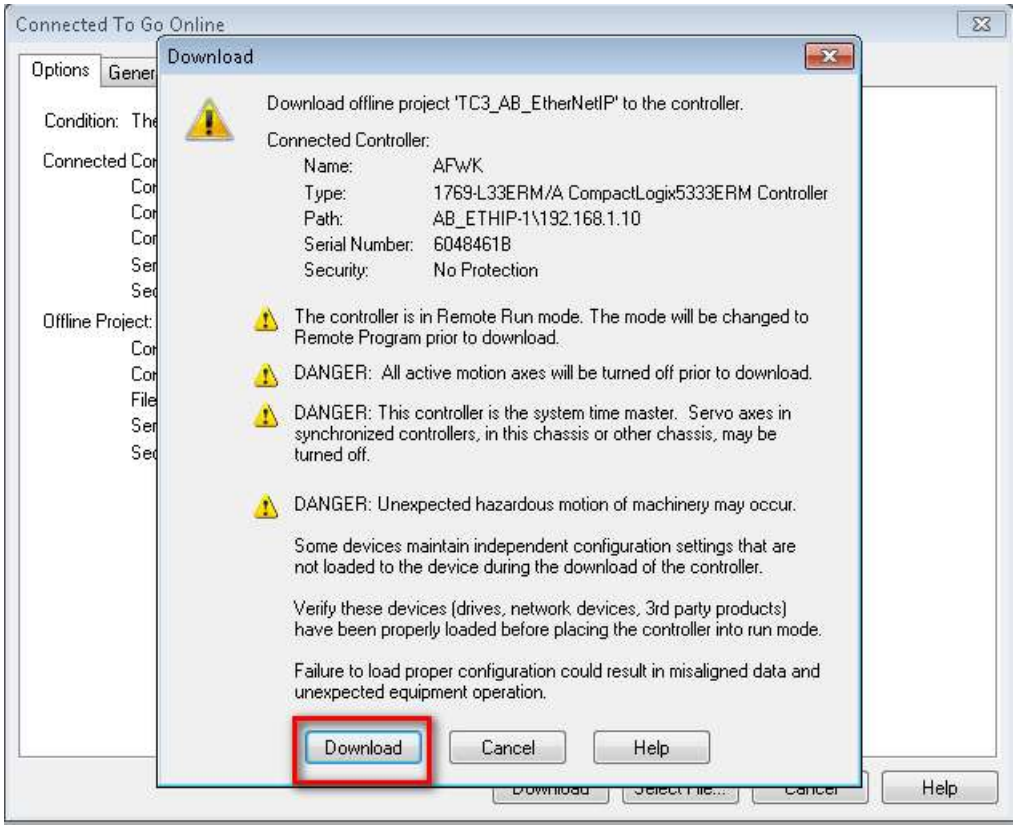
3)、将AB PLC转为在线，下载配置



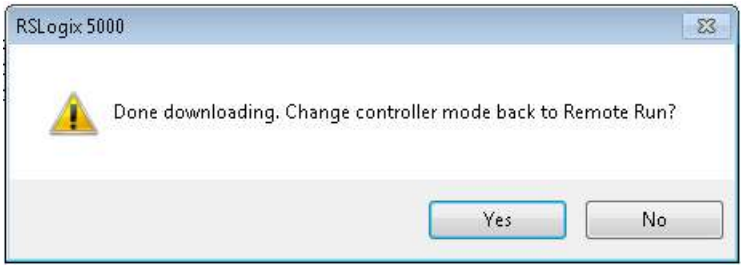
点击Go Online



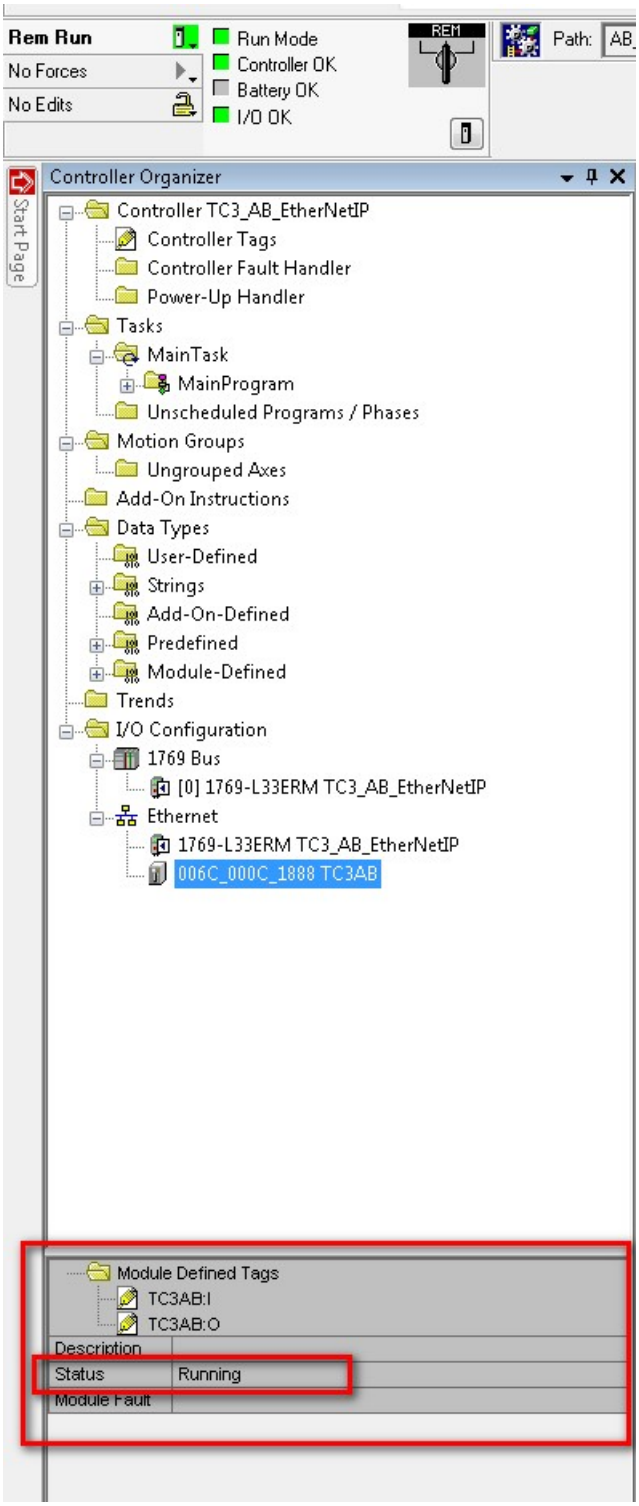
点击Download



点击Download



点击YES，将PLC状态转变为Run状态。



如果上面的Status中为Running状态，这说明倍福与AB已经通过EthernetIP通讯成功。

在控制器标签中可以看到添加的变量。


Controller 管理器
控制器 TC3_AB_EtherNetIP
控制器标签
控制器故障处理器
加电处理器
任务
MainTask
MainProgram
未规划的程序/相位
运动组
未归类轴
Add-on 自定义指令
数据类型
用户定义
字符串
Add-On-Defined
范围(P): TC3_AB_EtherN
显示(D): 所有 Tag
名称
别名
基本 Tag
Data Type
说明
TC3AB:I
_006C:000C_1888_03FEBAA8:I:0
TC3AB:I.ConnectionFaulted
BOOL
TC3AB:I.Data
SINT[20]
TC3AB:O
_006C:000C_1888_22652431:O:0
TC3AB:O.Data
SINT[20]