KEPServerEX V6 Allen-Bradley ControlLogix Ethernet Driver

通讯实例

本文是 KEPServerEX V6 的 Allen-Bradley ControlLogix Ethernet 驱动连接 Rockwell AB ControlLogix

5500 系列 PLC 的案例。

◆ 设置 KEPServerEX V6

建立 KEPServerEX 的工程主要分为以下几项:新建通道: New Channel;新建设备: New Device;新建标签组: New Tag Group (可选);新建标签: New Tag。



➤ 新建通道: New Channel

打开 "KEPServerEX V6" 软件,点击 "File" -> "New",或者工具栏上的 "New Project",建立一个新的工程。





2. 单击 "Click to add a channel" 或者工具栏上的 "new channel", 建立一个新通道。

<u>File Edit View Tools Runtime</u>	Help		
🗅 🐸 🗟 🛃 😫 🗳 🗐 🖇	🗅 🕰 🗙 🖭		
Project	Channel Name / Driver	Connection	Sharing
Aliases			

3. 选择需要分配给本通道的设备驱动 "Device driver",在下拉选项中选择 "Allen-Bradley ControlLogix Ethernet",单击 "下一步"。

Add Channel Wizard	
Select the type of channel to be created:	
Allen-Bradley ControlLogix Ethemet	•
ABB Totalflow Advanced Simulator Allen-Bradley Bulletin 1609 Allen-Bradley Bulletin 900 Allen-Bradley ControlLogix Ethemet	E
Allen-Bradley DF1 Allen-Bradley DF1 Allen-Bradley DH+ Allen-Bradley Micro800 Ethemet Allen-Bradley Micro800 Serial	
Allen-braciey Slave Ethemet Alstom Redundant Ethemet Analog Devices Aromat Ethemet Aromat Serial AutomationDirect DirectNet	
Automation Direct Direct Net	

注意:如果用户在下拉列表里没有找到所要连接的设备驱动,可能是没有进行完全安装,用户应该对 KEPServerEX 进行修改安装(Modify),用户在安装时可根据需要安装所要用的设备驱动或者全部安装。

 修改通道名称"Channel name",修改为想要的名称,这里我们改为 Allen-Bradley ControlLogix Ethernet, 单击"下一步"。

Specify the identity of this object.	
Name:	
Allen-Bradley ControlLogix Ethernet	0

选择所用的网络适配器 "Network Adapter"。这里选择实际需要使用的网络适配器,点击"…"弹出选择窗口,选择所用网络适配器,点击"OK",之后单击"下一步"。

Specify the name of a	network adapter t	o bind or allow t	he OS to select
the default. Network Adapter			
Default			

Binding	Adapter Name
	Default

6. 对通道进行优化设置"Optimization Method",这里保持默认,单击"下一步"。

Choose how writ when more than	e data is passed to the und one write exists in the wri	erlying communications driver te queue.
Optimization Me	thod:	
way ofter.		
10		
10		

7. 设置浮点型标准 "Floating-Point Values",保持默认值不变,单击"下一步"。

	Choose how to send invalid floating-point numbers to the client.	
	Replace with Zero 🗸 🔞	
2		

8. 设置总结,单击"完成",在这里可以对以上所做的设置重新进行修改。

-	Identification			
	Name	Allen-Bradley ControlLogix Ethernet		
	Description			
	Driver	Allen-Bradley ControlLogix Ethemet		
Ξ	Diagnostics			
	Diagnostics Capture	Disable		
-	Ethernet Settings			
	Network Adapter	Default		
	Write Optimizations			
	Optimization Method	Write Only Latest Value for All Tags		
	Duty Cycle	10		
Ξ	Non-Normalized Float Handlin	ng		

9. 通过右键点击通道名选择 "Properties",或者双击通道名称修改通道参数。

Property Groups	Identification			
General	Name	Allen-Bradley ControlLogix Ethernet		
themet Communications	Description			
Vrite Optimizations	Driver	Allen-Bradley ControlLogix Ethemet		
dvanced	Diagnostics			
avences	Diagnostics Capture	Disable		
	Name			
	Specify the identity of this object.			

▶ 新建设备: New Device

1. 单击软件界面中的"Click to add a device"或者工具栏上的"New Device",进行设备设置。

 KEPServerEX 6 Configuration [Configuration [Configura	hected to Runtime] Help	× 🖭	-
Project Project Connectivity Click to add a device. Aliases Advanced Tags Adams & Events Adams & Events Adams & Adams & Events Adams & Adams	Device Name	/ Model	ID

2. 修改设备名称 "Name", 修改为需要的名称, 这里我们改为 "ControlLogix 5500", 单击 "下一步"。

Add Davies Wiened	
Add Device Wizard	
Specify the identity of this object.	
Name:	
ControlLogix 5500	0

3. 选择设备模型 "Model", 这里我们选择 "ControlLogix 5500", 单击 "下一步"。

Add	Device Wizard				
Select t depend o	he specific typ n the type of c	e of device a communications	ssociated with in use.	h this ID. Option	s
Model:					
Control	Logix 5500		-		
	- 751				

4. 设置 Device-ID, 按照规定要求格式来填写。

格式要求: <IP or Host name>,1,[<Optional Routing Path>],<CPU Slot>

<所要采集的 AB PLC 的 IP 地址 >, 1, [<可选路由路径>可以不填], <CPU 槽位号>

这里我们填写的如下: <192.168.0.147>,1,0

ïc station or node.
0

5. 选择扫描方式 "Scan Mode", 保持默认, 单击"下一步"。

Î	Add Device Wizard
1000	Specify the method for determining how often tags in the device are scanned.
No.	Scan Mode:
	Provide the first updates for new tag references from stored (cached) data rather than polling devices immediately. Initial Updates from Cache: Disable
	下一步(N) 取消

6. 设置通信的时间参数"Timing",保持默认值不变,单击"下一步"。

Define the connection	maximum amount of time, in seconds, allowed to establish a to a remote device. Connection time is often longer than on request time for a device
Connect Tim	eout (s):
3	
Specify an waits for a Request Tim	interval, in milliseconds, to determine how long the driver response from the target device to indicate completion. eout (ms):
Specify an waits for a Request Tim 1000	interval, in milliseconds, to determine how long the driver response from the target device to indicate completion. eout (ms):

7. 设置失败降级"Demote on Failure",保持默认设置不变,单击"下一步"。

6	Add Devic	e Wizard				_
	Automatically failures. Demote on Fail	remove the devia	ce from the so	can due to	communication	
	Disable	• 0				
					下一步(N)	取消

8. 自动生成标签设置,这里我们不设置自动生成 Tag,保持默认设置,单击"下一步"。

Select the automatic	c tag generation action to be taken on device startup.
On Device Startup:	
Do Not Generate on 3	Startup 👻 🙆
On Duplicate Tag:	red method of avoiding creation of dup⊥icate tags.
On Duplicate Tag: Delete on Create	red method of avoiding creation of duplicate tags.
On Duplicate Tag: Delete on Create Indicate a tag group tags are added at th	red method of avoiding creation of duplicate tags.

用户也可选择"Always generate on Startup",表示"每次启动服务器时,都自动生成 tag"。

9. 通信参数设置,我们保持默认值不变,单击"下一步"。

Specify th	I PERMIT AND A REPORT AND A
opectify en	e EtherNet/IP port on the target device.
TCP/IP Por	t:
44818	0
Specify th data reque above 500 Connection	e maximum number of bytes available on the CIP connection for sts and responses. Not all devices support connection sizes bytes. .Size (bytes):
500	
Specify th (without r	e amount of time, in seconds, a connection can remain idle ead/write transactions) before being closed by the controller.



10. 设置 Logix Options,这里我们保持默认值不变,单击"下一步"。

Sele Gener	t the method for reading and addressing data from the controller. ally only changed by advanced users looking to optimize performance.
Prot	ocol Mode:
Logi	cal Non-Blocking 🗸 🕢
Syncl Yes	ronize After Unline Edits:
Indi offl:	ate if the server should synchronize with the controller after an ne edit or a download from RSLogix/Studio5000 is detected.
Syncl	ronize After Offline Edits:
3 <u></u>	

11. 设置 Logix Database Settings——数据库设置,保持默认设置不变,点击"下一步"。

Choose the source	2 of tags for creating the tag database. Notbod
Create from Devi	ce 🔹
· · · · · · · · · · · · · · · · · · ·	
Specify the exact	t location of the L5K/L5X file from which to import tags.
Tag Import File:	
*.15k	0
Specify if tag de non-array tags.	escriptions should be imported for non-structure and
Tag Descriptions	

12. 设置 Limit Name Length——名称长度限制,保持默认设置不变,点击"下一步"。

Add Device Wize	ard	
Set tag and group n characters maximum.	names created through aut	comatic tag generation to 31
Limit Name Length:		
Disable 🔹 🔵	2	
Specify whether the address (condensed)	e group and tag hierarchy) or on RSLogix 5000 (exp	r should be based on tag panded). The 'Allow
Specify whether the address (condensed) automatically gener Tag Hierarchy:	e group and tag hierarchy) or on RSLogix 5000 (exp ated subgroups' option m	/ should be based on tag panded). The 'Allow pust be enabled.
Specify whether the address (condensed) automatically gener Tag Hierarchy: Expanded	e group and tag hierarchy) or on RSLogix 5000 (exp rated subgroups' option m	y should be based on tag banded). The 'Allow bust be enabled.
Specify whether the address (condensed) automatically gener Tag Hierarchy: Expanded	e group and tag hierarchy) or on RSLogix 5000 (exp rated subgroups' option m	y should be based on tag panded). The 'Allow pust be enabled.
Specify whether the address (condensed) automatically gener Tag Hierarchy: Expanded	e group and tag hierarchy) or on RSLogix 5000 (exp rated subgroups' option m	/ should be based on tag panded). The 'Allow pust be enabled.
Specify whether the address (condensed) automatically gener Tag Hierarchy: Expanded	e group and tag hierarchy) or on RSLogix 5000 (exp rated subgroups' option m	y should be based on tag panded). The 'Allow nust be enabled.
Specify whether the address (condensed) automatically gener Tag Hierarchy: Expanded	e group and tag hierarchy) or on RSLogix 5000 (exp rated subgroups' option m	y should be based on tag panded). The 'Allow nust be enabled.

13. 设置 Impose Array Limit,这里我们保持默认设置不变,单击"下一步"。

Add Devi	ce Wizard	
Choose if th user-defined	e number of elements generated i count.	for an array is limited to
Impose Array	Limit:	
Disable	<u> </u>	
Specify the arrays.	naximum number of array element:	s allowed when generating
Array Count	Upper Limit:	
2000		
		下一步(N) 取消



14. 设置总结,单击"完成"。在这里可以对之前的设置进行修改。

Name	ControlLogix 5500	
Description		
Channel Assignment	Allen-Bradley ControlLogix Ethemet	
Driver	Allen-Bradley ControlLogix Ethernet	
Model	ControlLogix 5500	
ID	<192.168.0.147>,1,0	
Operating Mode		
Data Collection	Enable	
Simulated	No	
Scan Mode		
Scan Mode	Respect Client-Specified Scan Rate	
	Name Description Channel Assignment Driver Model ID Operating Mode Data Collection Simulated Scan Mode Scan Mode	Name ControlLogix 5500 Description Allen-Bradley ControlLogix Ethemet Driver Allen-Bradley ControlLogix Ethemet Model ControlLogix 5500 ID <192.168.0.147>,1,0 Operating Mode Enable Data Collection Enable Simulated No Scan Mode Respect Client-Specified Scan Rate

15. 用户可以右键单击设备名称选择"Properties"或者双击设备名称来修改设备参数。

Property Groups	Identification	
General	Name	ControlLogix 5500
Scan Mode	Description	
Dimina	Channel Assignment	Allen-Bradley ControlLogix Ethemet
Auto-Demotion	Driver	Allen-Bradley ControlLogix Ethemet
Tag Generation	Model	ControlLogix 5500
ag Generation ogix Comm. Parameters ogix Options	ID	<192.168.0.147>,1,0
	Operating Mode	
	Data Collection	Enable
NI DE1/DU /CN Churr Comm	Simulated	No
	Name	
	Specify the identity of this object.	



新建标签: New Tag \triangleright

1. 单击软件界面中的"Click to add a static tag",或者工具栏中的"New Tag"新增标签。

le <u>E</u> dit <u>V</u> iew <u>T</u> ools <u>Rur</u>	itime Help		
Project 一間)Connectivity 日本 Allen-Bradley Control	ogik	Address	Data Type wsable by OPC clients.
→ Aliases Advanced Tags Alarms & Events			

如果有需要建立标签组,也可以在新建标签之前先建立 New Tag Group,单击工具栏"New Tag Group"。



2. 设置 Tag 属性: 这里我们设置 Name=Data_0, Description=温度变量, Address= LOCAL:1:I.DATA[0], Data Type=Long, 其他的保持默认不变, 点击"OK"。

Property Groups	dentification					
General	Name	Data_0				
Scaling	Description	温度变量				
Jeaning	Data Properties					
	Address	LOCAL:1:I.DATA[0]				
	Data Type	Long				
	Client Access	Read/Write				
	Scan Rate (ms)	100				
	Description Provide a brief summary of this ob	ject or its use.				

注意:填写 Address (地址)时,必须确保填写的内容是 PLC 硬件设备内部允许访问的地址。

Scaling 设置:这里我们保持默认值。

Property Groups	Scaling			
General Scaling	Туре	None		
	Type Specify the correct format for t	he data.		

3. 用户可以通过选中标签右键单击选择 "Properties",或者双击 Tag 名称查看修改标签参数。至此

KEPServerEX server	服务器端设置完成。

Property Groups						
Connerl	Name	Data_0				
Castian	Description	温度变量				
Scaling	Data Properties					
	Address LOCAL:1:I.DATA[0]					
	Data Type	Long				
	Client Access	Read/Write				
	Scan Rate (ms)	100				
	Name					

◆ 连接测试

 首先打开 Rockwell AB ControlLogix 5500 PLC,用 RSLogix 5000 对 PLC 进行编程,在 AB PLC 中添加 Move 指令,Source 为输出,Dest 为输入,将本地输出缓冲区的数据写到输入缓冲区,将程序下载到 PLC 中,必须确保程序中有 LOCAL:1:I.DATA[0]这一变量,这个变量就是 PLC 的内部寄存器,它和上 图中的 Address 所赋的值必须一样,否则 OPC client 访问不到。



2. 在 PLC 本地输出缓冲区 LOCAL:1:O.DATA[0]修改数值为 111111111。

E-Local:1:0	{}	{}		AB:1756_DN
E-Local:1:0.CommandRegister	{}	{}		AB:1756_DN
⊡-Local:1:0.Data	{}	{}	Decimal	DINT[123]
+ Local:1:0.Data[0]	111111111	j	Decimal	DINT
E-Local:1:0.Data[1]	0		Decimal	DINT

3. 在 PLC 本地输入缓冲区 LOCAL:1:I.DATA[0]可以看到相同数据 111111111。

E-Local:1:I	{}	{}		AB:1756_DN	
Eucal:1:I.StatusRegister	{}	{}		AB:1756_DN	
E-Local:1:I.Data	{}	{}	Decimal	DINT[124]	
± Local:1:I.Data[0]	111111111		Decimal	DINT	
	0		Decimal	DINT	

 点击已设置完成的 KEPServerEX 工具栏中的 "QC",或者点击界面中的 "Tools→Launch OPC Quick Client"进行测试。



5. 点击"QC"后出现以下界面:

OPC Quick Clie	ent - 无标题 *		-				
<u>File Edit View</u>	<u>I</u> ools <u>H</u> elp						
🗅 🖼 🔒 📩 🛛	" 💣 😭 👗 🖻	e x)			
E :: Kepware.KEF	ServerEX.V6	Item ID / Data Type	Value	Timestamp	Quality	Update Count	
DataLog	Iger	Allen Bradley Centre Word	500	10:39:50.009	Good	1	
Allen-Brad	lev Controll only Etherne	Allen-Bradley Contr. Word	500	10:39:50 009	Good	1	
Allen-Brad	lley ControlLogix Etheme	t. Allen-Bradley Contr Long	111111111	10:40:28 530	Good	5	2
Br	adley ControlLogix B			10.40.20.00	0000		-2
Allen-Brad	lley ControlLogix Etherne	t.					
Allen-Brad	lley ControlLogix Etheme	t.					
<	•						
Date	Time	Event					*
0 2016/12/20	16:05:09	Added group "Allen-B					
1 2016/12/20	16:05:09	Added 7 items to gro					
1 2016/12/20	16:05:09	Added group 'Allen-B					
1 2016/12/20	16:05:09	Added 21 items to gr					
1 2016/12/20	16:05:09	Added group 'Allen-B					=
1 2016/12/20	16:05:09	Added 12 items to gr					
1 2016/12/20	16:05:09	Added 6 items to gro					*
Ready							Item Count: 77

当图中的"Quality"变为"Good"时说明 OPC Server 已与 Rockwell AB ControlLogix 5500 PLC 正确

连接,读取到的数据在"Value"中显示。