

操作指南•05/2015

通过 CPU 路由功能访问 G120 变 频器 (PN-DP)

SINAMICS G120 PN/DP 路由

https://support.industry.siemens.com/cs/cn/zh/view/109477907

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概述

路由功能涉及的是在 SIMATIC 站中从一个子网到另一个或者几个子网的转换, 它包括子网的接口。

路由功能允许使用 PG/PC 越过子网的限制和界线在线读取 S7 站。例如,下载 用户程序或者硬件组态,或者测试和运行诊断功能。

在网络中任何位置都可以把 PG 连接到所有站,它是通过网络转换实现,并建立 在线连接。在本 FAQ 中讨论的内容是如何通过 S7 300 主站建立 PG 和 SINMAICS G120 之间的 PROFIBUS 在线连接。它的含义是建立从工业以太网 接口到 PROFIBUS 接口的转换(路由功能)。

2 相关配置

2.1 硬件要求

为了实现无差错路由,所有使用的模板/控制板都必须支持路由功能。本例中使用的硬件如下:

- PLC 型号, CPU319-3PN/DP, V2.8
- SINAMIC G120 CU 型号, CU240E-2DP,FW V4.5

2.2 软件要求

要实现路由功能,本例配置的软件如下:

- STEP 7 版本, V5.5 SP2
- STARTER 版本, V4.4.0.3

请注意软件的安装顺序,应先安装 STEP7,再安装 STARTER。

3 操作步骤

3.1 设置接口

用一根网线将 PG/PC 连接到 CPU, 打开 STEP7 软件,新建一个 S7 项目和 SIMATIC 300 站,设置 PG/PC 接口。根据实际情况,选择合适的 PG/PC 接口。

🍕 SIMATIC Manager - [routing_PN_DF	D:\Program Files\SIEMENS\Step	7\s7proj\routin	g_]		
File Edit Insert PLC View Op	tions Window Help				
🗅 🥔 🔐 🥽 🐰 🖻 💼 💼 💿	Customize	Ctrl+Alt+E	2 🛞 🖣		
E prouting_PN_DP	Access Protection	•		Size Author	Last modified
IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Change Log	+	gurati		05/14/2015 04:23:16 PM 05/14/2015 01:48:38 PM
	Text Libraries	•			05/14/2015 03:00:20 PM
	Language for Display Devices				
	Manage Multilingual Texts	•			
	Rewire				
	Run-Time Properties				
	Compare Blocks				
	Reference Data	+			
	Define Global Data				
	Configure Network				
	Simulate Modules				
	Configure Process Diagnostics				
	PCS 7 License Information				
	Charts	+			
	Shared Declarations	٠			
	Plant Types	•			
	CAx Data	•			
	Set PG/PC Interface				

图 3-1 设置 PG/PC 接口

ccess Pat	ILLDP / DCP PNIC	O Adapter Info		
Access P	pint of the Application:			
S70NLIN	E (STEP 7)> Intel	(R) Ethernet Connec	tion I217-LM.TCPIP.1	-
(Standard	for STEP 7)			
Interface F	arameter Assignmen	t Used:		
Intel(R) E	thernet Connection I21	7-LM.TCPIP.1	Properties	
el(R) Centrino(R) Advanced-N 6235.TCPIP. el(R) Ethernet Connection I217-LM.ISO.1 el(R) Ethernet Connection I217-LM.TCPIP.1 [el(R) Ethernet Connection I217-LM.TCPIP.A			Diagnostics Copy	
•	Ш	•		
(Paramete withTCP/If	er assignment of your l Protocol (RFC-1006) Is emove:	NDIS-CP)	Select	
Add/R				

图 3-2 选择所用电脑对应的网卡

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3.2 查看 CPU 的 IP 地址和名称

在 SIMATIC Manager 菜单里, 点击按键"PLC→Edit Ethernet Node…",见图 3-3。



Ethornot nodo		
Linemethode		Nodes accessible online
MAC address:		Browse
Set IP configuration		
Use IP parameters		
ID address:	[:	_ Gateway
ii address.		On not use router
Subnet mask:		C Use router
		Address:
Client ID Client ID:	C MAC address	C Device name
Client ID Client ID Client ID:	C MAC address	C Device name
Client ID Client ID Client ID: Assign IP Configure	C MAC address	C Device name
Client ID Client ID Client ID Assign IP Configure Assign device name Device name:	C MAC address	C Device name
Client ID Client ID Client ID: Assign IP Configure Assign device name Device name: Reset to factory settings	C MAC address	C Device name Assign Name
Client ID Client ID Client ID Assign IP Configure Assign device name Device name: Reset to factory settings	C MAC address	C Device name Assign Name Reset

图 3-3 浏览在线结点

Edit Ethernet Node		×
MAC address:	Nodes	s accessible online Browse
Browse Network - 1 Nodes		×
Stop	address MAC address 2.168.0.1 00-0E-8C-8A-7	AF-0E S7-300 pn-io
Fast search		
•	Ш	•
Flash MAC add	Iress: 00-0E-8C-8A-AF-0E	
ОК		Cancel Help
Reset to factory settings		
		Reset
Close		Holp

图 3-4 查看 CPU 的 IP 地址和 MAC 地址

如图 3-4,从这里得知 CPU 的 IP 地址和网段,并以此作为下面设置的依据。

3.3 给 PG/PC 分配 IP 地址

将 PG/PC 的 IP 地址改为手动分配地址,地址分配与 CPU 的 IP 地址为同一网段。 本例中, CPU 地址为 192.168.0.1,所以将 PG/PC 设置为 192.168.0.2

Connection -		
IPv4 Connec	tivity:	No Internet access
IPv6 Connec	tivity:	No network access
Media State	:	Enabled
Duration:		03:45:16
Speed:		100.0 Mbps
Activity		C
	Sent —	Received
	2,842,236	9,215,164
Bytes:		

图 3-5 设置本地连接属性

	on Sharing		General	
Connect using:	Connection I217-LM		You can get IP settings assigned supports this capability. Otherw administrator for the appropria	d automatically if your network rise, you need to ask your network te IP settings.
		Configure	Obtain an IP address auto	matically
I his connection uses th	e following items:		Use the following IP addre	ISS:
Client for Micros	oft Networks	<u>^</u>	IP address:	192.168.0.2
 Building Packet Sc File and Printer 	nequier Sharing for Microsoft Netv	works	Subnet mask:	255.255.255.0
SIMATIC Indust	rial Ethernet (ISO)		Default gateway:	
PROFINET IO F	T-Protocol V2.0		beloak gaceway.	
Internet Protoco	Version 6 (TCP/IPv6)	-	Obtain DNS server addres	s automatically
<		• • •	- O Use the following DNS ser	ver addresses
Install	Uninstall	Properties	Preferred DNS server:	
			Alternate DNS server:	1 1 N.
Description	Protocol/Internet Protoco	ol. The default wide		
Description Transmission Contro area network protoco diverse interconnect	ol that provides communic ed networks.	cation across	Validate settings upon ex	Advanced

图 3-6 手动分配 PG/PC IP 地址

3.4 在 CPU 硬件中配置传动

如图 3-7 做相关设置,编译,保存,然后将硬件配置下载到 PLC 中。



图 3-7 将 G120 站插入到 PROFIBUS 系统中



图 3-8 激活 PN-IO 以太网接口



图 3-9 编译下载

用 DP 网线将控制单元 CU240E-2DP 连接到 CPU 的 X2 DP 接口,同时将 CU240E-2DP 的 DP 站号设置为 6(与 PLC 硬配中的站地址一致),如果一切 正常,在 CPU 中 HW 在线观察的状态如图 3-10。



图 3-10 在线观察 CPU 硬配状态

3.5 通过路由在线变频器

通过 STEP 7 启动 STARTER,建立 PN/DP 路由并在线。

SIMATIC Manager - [routing_PN_	DP D:\Program	Files\SIEMENS\Step7\s	7proj\routing_]	
🖹 File Edit Insert PLC View	Options Window	<u>H</u> elp		
D 🛩 📅 🐖 X 🛍 🛍 🚈 👳		C No Filter >	- V 🔡 🗑	
E-B routing_PN_DP	Object name	Symbolic name	Туре	Size Author
i⊡ III SIMATIC 300(1) i⊡ III CPU 319-3 PN/DP	G120_CU2405	Open Obiect	Ctrl+Alt+O	
⊡ si S7 Program(6)		Cut	Ctrl+X	
Blocks		Сору	Ctrl+C	
		Paste	Ctrl+V	
		Delete	Del	
		Rename Object Properties	F2 Alt+Return	

图 3-11 右键点击 CU240E-2DP 打开对象

Target Device Selection Devices that go online with "Connect to selected target devices": Target device Target device

图 3-12 STARTER 启动后点击在线

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Compound brake		Online
	Not activated	Activated
Dynamic brake	Not activated	Activated
Vdc min controller	Not activated	Activated
Vdc_max controller	Not activated	Activated
PM type	Not configured	PM240
djust via:	Load HW configuration to PG	
djust via:	Load HW configuration to PG The loading of the hardware configuration ca	n result in parameters being added or removed.
djust via:	Load HW configuration to PG The loading of the hardware configuration ca Changing the PM type requires a reconfigura	n result in parameters being added or removed. tion of the motor.
djust via:	Load HW configuration to PG The loading of the hardware configuration ca Changing the PM type requires a reconfigura	n result in parameters being added or removed. tion of the motor.
diust via:	Lood HW configuration to DC	

图 3-13 在线后上传硬配到 PG/PC

	Uffline	Önline	
Adjust via:	Load HW configuration to PG	n result in parameters being added or removed.	
	Changing the PM type requires a reconfigura	tion of the motor.	

图 3-14 上传完成后就可以在线对 CU 进行操作