

DSW series EtherCAT branch











EtherCAT (Ethernet Control Automation Technology) is an open architecture and an Ethernet-based fieldbus system. The DSW series of EtherCAT rail slave controllers can provide 4 or 6 RJ45 Ethernet ports for devices to connect to the network, one in and multiple outs, and flexibly relay the input Ethernet to multiple destination device ports. The transmission speed of 10/100Mbit/s and its industrial structure design can be widely used in automation and office networks. The EtherCAT rail slave controllers of the DSW series are flexible and can be networked in almost any topology, such as linear, tree or star. The IN port of the device is the input port of the network, and more EtherCAT slave modules can be connected to the OUTx port

The DSW series EtherCAT rail slave controllers feature 12/24/48 VDC and 24VAC single power inputs, rail mounting, and have passed EMI/EMC high level testing. It is widely used in automated assembly, robots, machine tools, packaging machinery, printing machines, stamping machines, semiconductor manufacturing, tunnel control and building control and other industries.

Performance characteristics:

- 10M/100M rate adaptive, avoid lag and delay, good adaptability;
- 4 or 6 EtherCAT ports, RJ45 interface, cascading function;
- Imported industrial-grade chips, antistatic 2KV;
- Iron shell, good heat dissipation performance, anti-electromagnetic interference;
- Support hot-swappable network cable, self-healing time 200ms;
- 18~28VDC wide voltage power supply, anti-reverse connection, anti-2500V surge voltage;
- Operating temperature range: -10° C~55° C;
- Working humidity: 5%~90% (no condensation);
- Volume: 30*102*96mm;
- Support DN45 rail installation or screw fixed installation.

Technical Indicators

Basic Information			
Product model	DSW-ECT-A4K0004	DSW-ECT-A6K0006	
port	4 RJ45 ports	6 RJ45 ports	
Network	Eth cuCAT		
protocols	EtherCAI		
RJ45 port	10/100BaseT(X) auto-detection		
LED indicator	Power Indicator: PWR; Interface Indicator: Network Port (Link/ACT)		
Power parameters			
Connect:	1 detachable 2-PIN terminal		
Input Voltage:	24 VAC		
Access	It supports built-in overcurrent 4.0A protection, supports reverse polarity		
Terminal:	protection, and supports anti-2500V surge voltage		



Physical properties			
Installation:	Rail-mounted mounting		
Enclosure:	Metallic, electrostatic blackened		
Weight:	0.15Kg (max)		
Environmental ch	aracteristics		
Humidity:	5% ~ 90% (No condensation)		
Operating			
Temperature:	- 10 C - +55 C		
Storage			
Temperature:			
Ingress	1840		
Protection:	1740		
Electromagnetic properties			
Electromagnetic	FCC Part 15 Subpart B Class A		
radiation:	EN 55022 Class A EMS		
Floctromagnotic	IEC(EN)61000-4-2(ESD)		
Compatibility:	IEC(EN)61000-4-3(RS)		
compationity.	IEC(EN)61000-4-4(EFT)		

Basic Information			
Product model	DSW-ECT-A4K0202-S-STA	DSW-ECT-A4K0202-S-STB	
port	2 RJ45 ports (1 EtherCAT input, 1EtherCAT output).2 ST interfaces (2 EtherCAT outputs).	2 ST optical interfaces (1 EtherCAT input, 1 EtherCAT output)2 RJ45 interfaces (2 EtherCAT outputs)	
Network protocols	EtherCAT		
RJ45 port	10/100BaseT(X) auto-detection		
LED indicator	Power Indicator: PWR; Interface Indicator: Network Port (Link/ACT)		
Power parameters			
Connect:	1 detachable 2-PIN terminal		
Input Voltage:	24 VAC		
Access Terminal:	It supports built-in overcurrent 4.0A protection, supports reverse polarity protection, and supports anti-2500V surge voltage		
Physical properties			
Installation:	Rail-mounted mounting		
Enclosure:	Metallic, electrostatic blackened		
Weight:	0.15Kg (max)		
Environmental characteristics			
Humidity:	5% ~ 90% (No condensation)		
Operating	- 10℃~ +55℃		



Temperature:		
Storage		
Temperature:	- 40 C +85 C	
Ingress	1040	
Protection:	1240	
Electromagnetic properties		
Electromagnetic	FCC Part 15 Subpart B Class A	
radiation:	EN 55022 Class A EMS	
Floctromognotic	IEC(EN)61000-4-2(ESD)	
Compatibility	IEC(EN)61000-4-3(RS)	
Compatibility:	IEC(EN)61000-4-4(EFT)	

Schematic diagram of the interface

DSW-ECT-A4K0004& DSW-ECT-A6K0006 Among them, the X1 network port is fixed to connect to the EtherCAT master station, and the rest of the network ports are connected to the EtherCAT slave station;





The X1 network port of DSW-ECT-A4K0202-S-STA is fixed for connecting to EtherCAT master station, and the other network ports are connected to EtherCAT slave station. The DSW-ECT-A4K0202-S-STA connects to the optical port X1 of the DSW-ECT-A4K0202-S-STB through optical port X3 or X4.





Example 1 of the newsletter

Note: This example uses the DSW-ECT-A4K0004 module as an example to describe the use of DSW-ECT-A4K0004 switches, and the DF58 series I/O module can be used by referring to this example.

1.1 Hardware Conditions

1 EtherCAT branch

- 2、DF20-C-EC Coupler
- 3. Omron controller (NX1P2-9024DT is used in this example).
- 4. PC (equipped with network card driver) and network cable

1.2 Software Requirements

Sysmac Studio (in this case using Sysmac Studio V1.30)

1.3 Procedure

1.3.1. Install XML files

Open Sysmac Studio, create a new project, and add an XML file.



IN 新建工程 - new_Controller_0 - Sysmac Studio (32bit)				
文件(F) 编辑(E) 视图(V) 插入(I) 工程(P) 控制器	₭(C) 模拟(S) 工具(T) 窗[コ(W) 帮助(H)		
※ ● @ 前 ち ご 図 占 人 &	a 🗔 🛱 🔐 🛱 🔍	R 🔥 👗 63	# ∿ • • • •	
多视图浏览器	EtherCAT 🗙 🛹 I/O 映射 🛛	🔤 全局变量 🛛 🥃 程序0	6 任务设置	
new_Controller_0 🔻	点地址I网络设置 主沿祭			
Image: Contract of the second se	主设备		風伽伯揵	
■ EtherCAT 1、选中,双击打开				
▶ Sa CPU/扩展机架		~(-) 粘贴(P)		
		删除(D)		
▶ ◎ 注动控制设置		 撤销(U)		
 ✓ Cam数据设置 		重做(R)		
▶ 事件设置				
		全部折叠		
₩ 数据取标设置		计算主机的传送	延迟时间(N)	
V I POUs		导入从设备设置	和插入新从设备(O)	
▼ 圓 程序		导出从设备设置	(X)	
V 💀 Program0		写入从设备节点	地址(W)	
L 書 Section0		与物理网络配置	比较和合并	
して 注意 して しんしょう しょう しょう しょう しょう しょう しょう しょう しょう しょう		取得从设备串口	킄(N)	
∟國 功能块		取消所有设置(L)		
▼ Ⅲ 数据			<u> </u>	
		显示产品信息(A 息元句收测(//)		
L 至同受軍 ▶ ■ 任务		显示ESI库 3		
		导出配置信息(F)		
		輸出ENS文件		
		导出所有耦合器	I/O分配	
		分配驱动器到轴	•	
		安全相关的PDC	批量设置	
A15			-L-d-	
治邴	修改日期	类型	大小	
DSW-ECT-A4K0004-Hub-A-V1.0.xml	2024/6/14 10:31	XML文档	5	
DSW-ECT-A4K0004-Hub-V1.0.xml	2024/6/14 10:32	XML 文档	5	



1.3.2、Add to DSW-ECT-A4K0004 (Automatic scanning method)

1、 Connect network port X1 of DSW-ECT-A4K0004 to network port EtherCAT of Omron controller, network port X2 to network port (IN) of DF58-C-EC, network port X3 to network port (IN) of DF58-C-EC, and network port X4 to network port (IN) of DF58-C-EC. Connect the PC to the Omron controller EtherNET/IP network port and connect the controller online:



Image: Studio (32bit) 新建工程 - new_Controller_0 - Sysmac Studio (32bit)

After the controller status becomes online, add the DSW-ECT-A4K0004 module by scanning:



段置		
主设备		
王政备		
DSW-ECT-A4K000		
x 2		
DF20-0		
Port(
Polic	MEDOX(IX)	
	全部展开	
	全部折叠	
- A3	计算主机的传送延迟时间(N)	
L 🜉 X4 OUT		
	导出从设备设置(X)	
	写入从设备节点地址(W)	
	与物理网络配置比较和合并	
	取得从设备串口号(N)	
	取消所有设置(1)	
	显示诊断/统计信息(G)	
	显示ESI库	



	- 川日名称	11
₩ 从设备节点地址写入中	- 🗆	× 备
当前值1设置值1物理网络配置		备
主 主设备)微
1 1 DSW-ECT-A4K0004-Hub Rev:0x00000000		微
■ - T X2		設
255 3 DF20-C-EC Rev:0x00000355) :
		弱化
		「古く
节点地址被写入到从设备。		<u>a</u> `
为了使操作任果主文、加爾曼再次手动建通州委备电源、 停納人该操作号安全的。 「写入」取消		
使用最为从设备设置节点地址。	新实际网络配置	更新 ユ
当除0外的社意值被设置到能够从硬件设置节点地址的从设备时,该设置有优先级。对于其它情况,设置的地址被应用。	写入	取消

The device is powered back on

目 程序0 局任务设置
3
剪切(T)
复制(C)
粘贴(P)
删除(D)
撤销(U)
重做(R)
全部展开
全部折叠
计算主机的传送延迟时间(N)
导出从设备设置(X)
写入从设备节点地址(W)
与物理网络配置比较和合并 4
取得从设备串口号(N)
取消所有设置(L)
显示诊断/统计信息(G)
显示产品信息(A)
显示包监测(K)



📓 同物理网络配置的比较和合并			1000	- 0	×
节点地址 Sysmac Studio上的网络设置	节点地址 物理网络配置	Sysmac Studio <u>+</u>	比较结果	物理网络配置	较低配置
主设备	主设备	主设备	匹配	主设备	
	1 DSW-ECT-A4K0004-Hub Rev:0x00000000		添加	1 : DSW-ECT-A4	
	🔳 🗕 🖳 X2		添加	3 : DF20-C-EC R	
i .	3 DF20-C-EC Rev:0x00000355		添加	2 : DSW-ECT-A4	
	PortC				
	2 🔤 🗖 🛁 DSW-ECT-A4K0004-A Rev:0x000				
	— 💭 X3				
	X4 OUT				
	約理网络配置(Δ)				
某些从设备像电源单元不包括在物理网络配置中。					
	关闭				

图 同物理网络配置的比较和合并 - □ ×					
节点地址 Sysmac Studio上的网络设置	节点地址1物理网络配置	Sysmac Studio上的网 日	比较结果 物理网络	各配置 较低配置	
	■ 主没备	主设备	匹配 主设备		
1 E001 DSW-ECT-A4K0004-Hub Rev:0x	1 ISW-ECT-A4K0004-Hub Rev:0x00	1 : DSW-ECT-A4K00	匹配 1:DSW-ECT	-А4К00	
		2 : DSW-ECT-A4K00	匹配 2:DSW-ECT	-A4K00	
▲ このの近の時には200 実お人授金舎は愛知元不何后介物博開始配置中.					



Sync to the controller to get started

1.3.3、Add to DSW-ECT-A4K0004 (Manual addition mode)

Once the XML file is installed, locate the following device in the Toolbox of the Sysmac Studio 11 / 18 $\,$



software



First add "DSW-ECT-A4K0004-hub Rev", then add "DSW-ECT-A4K0004-A Rev":

节点地址	网络设置 / / / / / / / / / / / / / / / / / / /
	■ 主设备 主设备
1	E001 DSW-ECT-A4K0004-Hub Rev:0x0000000
	- 👿 X2
	PortC
2	E002 DSW-ECT-A4K0004-A Rev:0x00000001
	— 💭 X3
	X4 OUT



🔜 EtherCAT 🗙 🛹 I/O 映射 🛛 🔤 全局变量 🛛 📄 程序0 🛛 🗟 任务设	
节点地址网络设置	I
■ 主设备 主设备	
1 = E001 149-hub Rev:0x00000000	
- 💻 X2	
PortC	
2 ■ □ 149-A Rev:0x00000001	

配置 DSW-ECT-A4K0004 的"节点地址":

节点地址 网络设置	
■ 主设备 主设备	
1 E L E001 DSW-	-ECT-A4K0004-Hub Rev:0x0000000
🗖 🗕 🖉 X2	
з Ц	E003 DF20-C-EC Rev:0x00000355
PortC	
2 ∎∟	E002 DSW-ECT-A4K0004-A Rev:0x00000001
-	- 🕎 X3
L	- 🜉 X4 OUT

Add the module to the corresponding network interface, configure the "Node Address", and then download it to the controller:

节点地址 网络设置	
■ 主设备 主设备	
1 🖬 🗖 👪 E001 DSV	V-ECT-A4K0004-Hub Rev:0x00000000
X2	
3 L	E003 DF20-C-EC Rev:0x00000355
PortC	
2	E002 DSW-ECT-A4K0004-A Rev:0x00000001
	— 🜉 X3
l	— 🜉 X4 OUT



Example 2 of the newsletter

Note: This example uses the DSW-ECT-A4K0004 module as an example to introduce the use of DSW EtherCAT switch. You can refer to this example to use the DSW-ECT-A6K0006 module $_{\circ}$

2.1 Hardware Conditions

- 1 DSW EtherCAT branch
- 2、DF20-C-EC Coupler
- 3. PC (equipped with network card driver) and network cable

2.2 Software Requirements

1. TwinCAT software (in this case, TwinCAT3.1 is used)

2.3 Procedure

2.3.1. Install XML files

Put the two XML files of DSW-ECT-A4K0004 into the XML folder of TwinCAT:

📙 > 此电	1)脑 > 本地磁盘 (C:) > TwinCAT > 3.1 > Co	nfig > Io > EtherCAT	~ Ū	在 EtherCAT 中搜索
^説 明及握 ^		修改日期	类型	大小
	Beckhoff EPP9xxx.xml	2022/2/18 17:16	XML文档	199 KB
20231	Beckhoff EPx9xx.xml	2022/2/18 17:16	XML文档	921 KB
	Beckhoff EQ1xxx.xml	2022/6/20 8:53	XML文档	22 KB
	Beckhoff EQ2xxx.xml	2022/6/20 8:53	XML文档	73 KB
	Beckhoff EQ3xxx.xml	2022/6/20 8:53	XML文档	1,386 KB
	Beckhoff ER1xxx.XML	2022/6/20 8:53	XML文档	244 KB
+	Beckhoff ER2xxx.XML	2022/6/20 8:53	XML文档	261 KB
	Beckhoff ER3xxx.XML	2022/6/20 8:53	XML文档	1,177 KB
T#	Beckhoff ER4xxx.xml	2022/6/20 8:53	XML文档	318 KB
(1 1)	Beckhoff ER5xxx.xml	2022/6/20 8:53	XML文档	273 KB
	Beckhoff ER6xxx.xml	2022/6/20 8:53	XML文档	1,434 KB
	Beckhoff ER7xxx.xml	2022/6/20 8:53	XML文档	2,717 KB
	Beckhoff ER8xxx.xml	2022/6/20 8:53	XML文档	207 KB
	Beckhoff EtherCAT EvaBoard.xml	2022/2/18 17:16	XML文档	72 KB
	Beckhoff EtherCAT Terminals.xml	2022/2/18 17:16	XML文档	54 KB
	Beckhoff FB1XXX.xml	2022/2/18 17:16	XML文档	49 KB
	Beckhoff FCxxxx.xml	2022/2/18 17:16	XML文档	21 KB
	Beckhoff FM3xxx.xml	2022/2/18 17:16	XML文档	367 KB
	Beckhoff ILxxxx-B110.xml	2022/2/18 17:16	XML文档	8 KB
	DF20-C-EC V3.5.5i3 20230725.xml	2023/10/15 16:55	XML文档	520 KB
(C:)	DSW-ECT-A4K0004-Hub-A-V1.0.xml	2024/6/14 10:31	XML文档	5 KB
(D:) 🗸	DSW-ECT-A4K0004-Hub-V1.0.xml	2024/6/14 10:32	XML文档	5 KB



2.3.2 Add to DSW-ECT-A4K0004

Open TwinCAT3, create a new project, and use TwinCAT3 software to scan out DSW-ECT-A4K0004:





	General Adapter EtherCAT Office COE - Office
解决方案资源管理器(Ctrl+;)	
Routes Type System TcCOM Objects MOTION PLC Dutitled1 Project PUtitled1 Instance Untitled1 Instance SAFETY SAFETY C++ MANALYTICS	No A Name State CRC 1 1 Box 1 (DSW-ECT-A4K0004-Hub) OP 0, 0, 0 2 1 Box 2 (DF20-C-EC) OP 0 3 1 Term 3 (DSW-ECT-A4K0004-A) OP 0
 ✓ Z VO ✓ Devices ✓ Device 2 (EtherCAT) Image Image Image-Info ✓ SyncUnits 	Actual State: OP Counter Cyclic Que Init Pre-Op Safe-Op Op Frames / sec 498 + 19 Clear CBC Clear Frames 0 + 0
P ⊂ inputs P ⊂ Outputs P ⊂ InfoData InfoData E Box 1 (DSW-ECT-A4K0004-Hub) P ⊂ InfoData	Number Box Name Address Type In Size Out Size E-Bus (m 1 Box 1 (DSW-ECT-A4K0 1001 DSW-ECT-A4K00 0 0 • • • • • • • •
	- I Soke -

Example 3 of the newsletter

Note: This example uses the DSW-ECT-A4K0202-S-STA& DSW-ECT-A4K0202-S-STB module as an example to describe the use of DSW EtherCAT switches.

3.1 Hardware Conditions

- 1 DSW EtherCAT branch
- 2、DF58-C-EC Coupler
- 3. PC (equipped with network card driver) and network cable

3.2 Software Requirements

1、CODESYS V3.5 Software

3.3 Steps

3.3.1. Install XML files

First, find the device description file DSW-ECT-A4K0202-S-STA-for-CoDeSys-V1.0 provided by the manufacturer, double-click the CoDeSys icon, Start the software. Tap Tools, select Device Reposity, and tap install to install the device.



5称	修改日期	类型	大小
DSW-ECT-A4K0202-S-STA-for-CoDeSys-V1.0.xml	2024/6/14 11:19	XML 文档	б
			,
:	~	自动检测(*.xml;*.eds;*.	.dcf;*.gs ∨
		HTT (O)	En Yold

3.3.2 Add to DSW-ECT-A4K0202-S-STA

Open CODESYS, create a new project, right-click "Device" in the device tree, select "Add Device", and select EtherCAT Master in the pop-up device





设备名称	设备类型	别名地址	
- DSW_ECT_A4K0202_S_STA	DSW-ECT-A4K0202-S-STA	0	
DSW_ECT_A4K0202_S_STA_A	DSW-ECT-A4K0202-S-STA-A	0	
DSW_ECT_A4K0202_S_STB	DSW-ECT-A4K0202-S-STB	0	
DSW_ECT_A4KD202_S_STB_A	DSW-ECT-A4K0202-S-STB-A	0	
- DF58_C_EC	DF58-C-EC	255	
DECO M ADTD DT			
ntoo_w_ath_t1	DF58-M-4KTD-PT, 4KTD		
nloo ^w avin ⁻ 11	DF58-M-4KTD-PT, 4KTD		

After logging out, log in again, download the scanned device to the controller, and complete the configuration.