

de Sicherheitshinweise	
GEFAHR	
	Zur sicheren Installation und zum sicheren Betrieb des Gerätes ist Folgendes zu beachten: ► Das Gerät darf nur von qualifiziertem Fachpersonal montiert werden. ► Vor dem Abschluss des festen Einbaus darf am Gerät keine gefährliche Spannung angelegt werden. ► Das Gerät darf nur in einer Umgebung betrieben werden, die nicht mehr als Verschmutzungsgrad 2 gemäß IEC 60664-1 aufweist. ► Bei Anwendungen, in denen gefährliche Spannungen an den Ein-/Ausgängen des Gerätes angeschlossen sind, ist auf genügend Abstand bzw. Isolation von Leitungen, Anschlussklemmen und Gehäusen zur Umgebung (inkl. Nebengeräten) zu achten, um den Schutz vor elektrischem Schlag zu gewährleisten. ► Das Gerät muss von einer SELV-Quelle versorgt werden, gemäß der Niederspannungsrichtlinie 2014/35/EU und 2014/30/EU.
VORSICHT	
	► Das Gerät erwärmt sich während des Betriebs. Lassen Sie das Gerät abkühlen oder tragen Sie Schutzhandschuhe, wenn Sie Arbeiten ausführen.

it Indicazioni di sicurezza	
PERICOLO	
	Per un'installazione e un esercizio sicuri dell'apparecchio occorre attenersi a quanto segue: ► Il dispositivo può essere montato solo da personale tecnico qualificato. ► Non dare tensione elettrica pericolosa all'apparecchio prima della conclusione dell'installazione fissa. ► Il dispositivo può essere utilizzato solo in un ambiente che non supera una gravità di inquinamento 2 secondo la norma IEC/EN 60664-1. ► Per le applicazioni in cui vengono collegate tensioni pericolose agli ingressi/alle uscite dell'apparecchio, occorre mantenere una distanza di assicurare un isolamento sufficienti in relazione ai cavi, ai morsetti di collegamento e alle custodie rispetto all'ambiente circostante (compresi gli apparecchi accessori), al fine di garantire la protezione dalle scosse elettriche. ► Il dispositivo deve essere alimentato da una sorgente SELV come definito nella direttiva sulla bassa tensione 2014/35/EU e 2014/30/EU.
ATTENZIONE	
	► Il dispositivo si surriscalda durante il funzionamento. Lasciare raffreddare il dispositivo oppure indossare guanti protettivi durante l'esecuzione dei lavori.

en Safety notices	
DANGER	
	For safe installation and safe operation the following must be observed: ► The equipment may be installed only by qualified experts. ► Until the device is installed, do not connect hazardous voltages to the device. ► The device may only be operated in an environment with pollution degree 2 or lower acc. to IEC 60664-1. ► In applications where hazardous voltage is connected to in-/outputs of the device, sufficient spacing or isolation from wires, terminals and enclosure to surroundings (incl. neighbouring devices), must be ensured to maintain protection against electric shock. ► The device must be supplied by a SELV source as defined in the Low Voltage Directive 2014/35/EU and 2014/30/EU.
CAUTION	
	► The device heats up during operation. Allow the unit to cool down or use protection gloves when carrying out any work.

es Indicaciones de seguridad	
PELIGRO	
	Para una instalación y funcionamiento seguros del equipo debe tener presente lo siguiente: ► El dispositivo debe ser instalado exclusivamente por personal cualificado. ► Antes de finalizar el montaje fijo, el aparato no debe exponerse a tensiones peligrosas. ► El dispositivo debe utilizarse únicamente en un ambiente que no supere el grado de polución 2 según la norma IEC/EN 60664-1. ► En aplicaciones en las que hay tensiones peligrosas conectadas a las entradas/salidas del aparato, debe procurar una distancia o aislamiento suficiente entre cables, bornes de conexión y carcassas y el entorno (incluidos aparatos secundarios) para asegurar la protección frente a posibles electrocuciones. ► El dispositivo debe ser alimentado por una fuente SELV tal y como se define en la Directiva de Baja Tensión 2014/35/EU y 2014/30/EU.
ATENCIÓN	
	► El dispositivo se calienta durante su funcionamiento. Deje que el dispositivo se enfríe o utilice guantes protectores cuando realice trabajos.

fr Consignes de sécurité	
DANGER	
	Afin que l'installation et le fonctionnement de l'appareil soient sécurisés, tenir compte de ce qui suit : ► L'appareil doit être monté exclusivement par un personnel qualifié. ► Avant de terminer le montage fixe, n'appliquer aucune tension dangereuse sur l'appareil. ► L'appareil ne doit fonctionner que dans un environnement présentant un degré de pollution de niveau 2 au maximum selon IEC/EN 60664-1. ► Dans les applications pour lesquelles des tensions dangereuses sont appliquées aux entrées/sorties de l'appareil, il faut veiller à garder une distance ou une isolation suffisante entre les câbles, bornes de connexion et boîtier par rapport à l'environnement (appareils voisins compris) afin de garantir la protection contre les chocs électriques. ► L'appareil doit être alimenté par une source SELV telle que définie dans la directive basse tension 2014/35/EU et 2014/30/EU.
ATTENTION	
	► L'appareil chauffe pendant le fonctionnement. Laissez l'appareil refroidir ou portez des gants de protection lorsque vous réalisez des travaux.

zh 安全规程	
危险	
	为保证安装和操作安全, 请务必遵守下列规程: ► 只允许有资质的专业人员安装设备。 ► 在装置安装受当前, 切勿将危险电压接通至装置。 ► 只允许在依据 IEC/EN 60664-1 有不超过 2 级污染等级的环境中运行设备。 ► 在应用中, 装置的输入/输出如果要接入危险电压, 必须保证导线、端子和外壳与四周 (包括相邻的装置) 之间有充分的空间间隔或隔离, 以确保防触电保护有效。 ► 设备必须由低电压指令 2014/35/EU 和 2014/30/EU 中定义的 SELV 电源供电。
注意	
	► 设备在运行期间会升温。使设备冷却, 或者在执行作业时佩戴防护手套。

de

Bedienungsanleitung
SPE 10Base-TiL Unmanaged Switch

en

Operating instructions
SPE 10Base-TiL unmanaged switch

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IE-SW-SPE05-4T1LMP0DL-1TX 3012120000



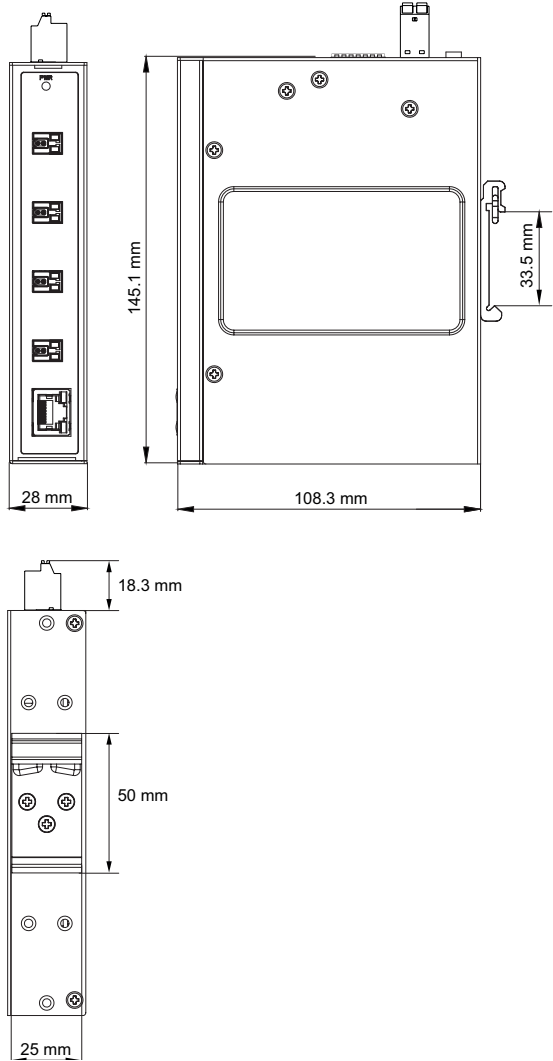
Zulassungen / Approvals / Agréments / Omologazioni / Homologaciones / 认证	
c UL us	Normen / Standards / Normes / Norme / Normas / 适用标准 UL 61010-1

Technische Daten / Technical Specifications

de	en	fr	it	es	zh	IE-SW-SPE05-4T1LMP0DL-1TX 3012120000
Elektrische Daten	Electrical data	Caractéristiques électriques	Dati elettrici	Datos eléctricos	电气数据	
Eingangsspannung	Input voltage	Tension d'entrée	Tensione di ingresso	Tensión de entrada	输入电压	24 V DC (20 ~ 30 V DC)
Max. Leistungsaufnahme bei 24 V DC	Max. power consumption at 24 V DC	Consommation de puissance max. à 24 V DC	Potenza assorbita massima a 24 V CC	Consumo de potencia máx. a 24 V CC	24 伏直流电压下的最大功耗	0.09 A = 2.16 W without PoDL and connection 3.47 A = 83.28 W with PoDL and connection
PoDL-Leistungsbudget	PoDL power budget	Budget de puissance PoDL	Budget di potenza PoDL	Presupuesto de potencia PoDL	PoDL 功率预算	80 W
Überlastschutz vorhanden	Overload current protection present	Protection contre les surcharges disponible	Protezione contro il sovraccarico presente	Protección contra sobrecarga disponible	有过载保护	✓
Verpolungsschutz vorhanden	Reverse polarity protection present	Protection contre les inversions de polarité disponible	Protezione contro l'inversione di polarità presente	Protección contra polarización inversa disponible	有反极性保护	✓
Umgebungsbedingungen	Environmental conditions	Conditions ambiantes	Condizioni ambientali	Condiciones del entorno	环境条件	
Betriebstemperatur	Operating temperature	Température de fonctionnement	Temperatura d'esercizio	Temperatura de servicio	工作温度	-40 °C ... 70 °C
Lagertemperatur	Storage temperature	Température de stockage	Temperatura di magazzino	Temperatura de almacenamiento	存储温度	-40 °C ... 85 °C
Feuchtigkeit	Humidity	Humidité	Umidità	Humedad	湿度	5% ... 98%, no condensation
Max. Einsatzhöhe ohne Derating¹	Max. altitude without derating¹	Hauteur d'utilisation max. sans déclassement¹	Altezza di impiego massima senza derating¹	Altura máx. de funcionamiento sin derating¹	无降额的最大使用高度¹	2000 m
Allgemeine Daten	General data	Données générales	Dati generali	Datos generales	常规数据	
Höhe x Breite x Tiefe	Height x Width x Depth	Hauteur x largeur x profondeur	Altezza x Larghezza x Profondità	Altura x anchura x profundidad	高度 x 宽度 x 深度	145.1 x 28 x 108.3 mm
Gewicht	Weight	Poids	Peso	Peso	重量	600 g
Verschmutzungsgrad	Pollution degree	Degré de pollution	Livello di inquinamento	Grado de polución	污染等级	2
Schutzart	Protection class	Degré de protection	Classe di protezione	Tipo de protección	防护等级	IP30
Anschlussdaten	Connection data	Données de connexion	Dati di collegamento	Datos de conexión	联接数据	
Anzahl Anschlussstecker	Number of terminal blocks	Nombre de prises de raccordement	Numero di spine di collegamento	Número de clavijas de conexión	连接插头数量	1
Leiterquerschnitt	Wire cross-section	Diamètre du câble	Sezione del conduttore	Sección del conductor	导体横截面	0.2 ... 2.5 mm² (AWG 12 ... AWG 24)
Abisolierlänge	Insulation stripping length	Longueur de dénudage	Lunghezza di spellatura	Longitud de desaislado	剥皮长度	10 mm
Schnittstellen	Interfaces	Interfaces	Interfacce	Interfaces	接口	4 x SPE ports acc. to IEC 63171-2 (10Base-T1L, PoDL), 1 x RJ45 port (10/100Base-TX, Auto MDI/MDIX)
Technologie	Technology	Technologie	Tecnologia	Tecnologia	技术	
Ethernet Standard	Ethernet standards	Ethernet standard	Standard Ethernet	Estándar Ethernet	标准以太网	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3X for Flow control IEEE 802.3cg for 10Base-T1L + PoDL 1 K
MAC-Tabelle	MAC table	Tableau MAC	Tabella MAC	Tabla MAC	MAC 表	
Verarbeitung	Processing	Traitement	Lavorazione	Procesamiento	处理	Store-and-Forward
PoDL-Klasse, siehe Abb. F	PoDL class, see fig. F	Classe de puissance PoDL, voir fig. F	Classe di potenza PoDL, vedere fig. F	Clase de potencia PoDL, véase la Fig. F	PoDL功率等级, 见图 F	24 V: Class 10 – 12, up to 12.63 W from PSE 50 V: Class 13 – 14, up to 30 W from PSE
Force-Mode²	Force mode²	Mode Force²	Modalità di forza²	Modo forzado²	Force mode 强制模式²	Up to 50 W / 1 A
Normen	Standards	Normes	Norme	Normas	标准	
EMV	EMC	CEM	EMC	EMC	电磁兼容性	EN 61000-6-2 EN 61000-6-4
Vibrationsfestigkeit	Vibration resistance	Tenue aux vibrations	Resistenza alle vibrazioni	Resistencia a las vibraciones	抗震动性	IEC 60068-2-6
Schockfestigkeit	Shock resistance	Résistance aux chocs	Resistenza agli urti	Resistencia a choques	抗冲击性	IEC 60068-2-27
Freier Fall	Free fall	Chute libre	Caduta libera	Caída libre	自由落体	IEC 60068-2-32
MTBF	MTBF	MTBF	MTBF	MTBF	MTBF (平均故障间隔时间)	
Zeit	Time	Durée	Tempo	Tiempo	时间	692776 hrs 2319572 hrs for PoDL circuit
Datenbank	Database	Base de données	Banca dati	Base de datos	数据库	Telcordia SR332

1) 5000 m with derating in terms of isolation voltage (EN61010-1) and operating temperature (IEEE 1613).
2) 24 V or 50 V are directly added to the data lines without PoDL detection.

Abmessungen / Dimensions



A Montage und Demontage / Mounting and demounting

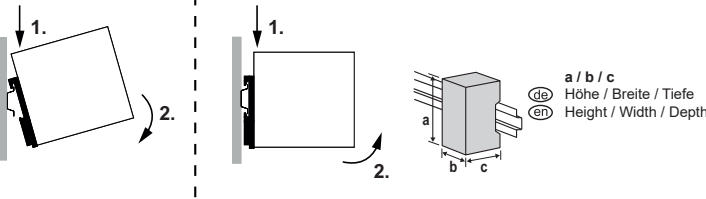
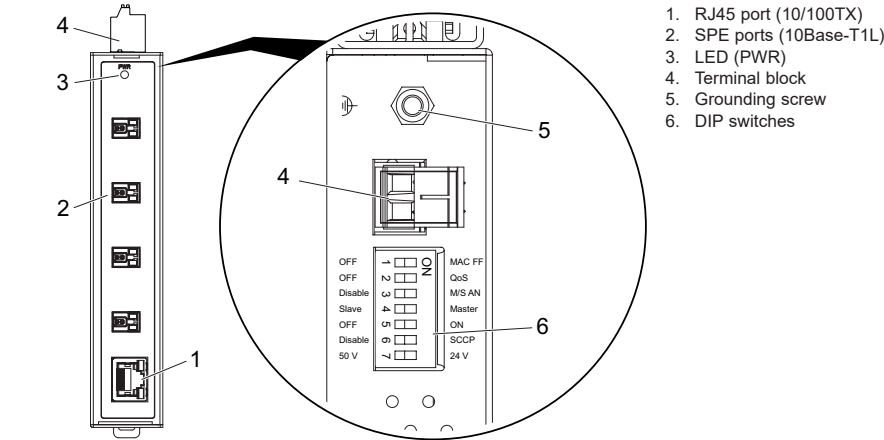


Abb. / Fig. A1

Abb. / Fig. A2

B Anschlüsse / Connections



C DIP-Schalter / DIP switches

				Setting				
OFF 1 ☐ ON OFF 2 ☐ Disable 3 ☐ Slave 4 ☐ OFF 5 ☐ Disable 6 ☐ 50 V 7 ☐	No.	Function	Default					
	1	MAC frame filtering (MAC FF)	on	on: Enables MAC FF to drop range of 01-80-C2-00-00-02 to 01-80-C2-00-00-0F off: Disables MAC FF				
	2	Quality of service (QoS)	on	on: Enables QoS				
				COS (1P)	0, 1, 2, 3, 4	5	6	7
				Priority	lowest	third highest	second highest	highest
				Queues	0	1	2	3
	off: Disables QoS							
	SPE 10Base-T1L							
	3	M/S AN	on	on: Enables master/slave auto-negotiation off: Disables master/slave auto-negotiation				
	4	Master/Slave	on	No effect, if DIP switch 3 is on. on: Master off: Slave				
SPE 10Base-T1L PoDL								
5	PoDL ON/OFF	on	on: Enables PoDL (Power over data line) off: Disables PoDL					
6	SCCP	on	No effect, if DIP switch 5 is off. Active SCCP (Serial Communication Classification Protocol) ensures full operating voltage is applied by the Power Sourcing Equipment (PSE) when a valid powered device (PD) is connected. Only valid for devices that support SCCP. on: Enables SCCP off: Disables SCCP, enables force mode PoDL Hot plugging is not supported before disabling PoDL. SCCP Mode is only working with the same voltage simultaneously.					
7	24/50 V	on	No effect, if DIP switch 5 is off. on: Enables 24 V output (Classes 10 – 12) off: Enables 50 V output (Classes 13 – 14)					

D LED Anzeige / LED indicator

PWR	green	PWR 1 supply voltage OK
10/100TX Port	Upper LED	
	green	10/100 Mbps link active
	off	10/100 Mbps link inactive
	Lower LED	
	green	100 Mbps link active
	yellow	10 Mbps link active
10Base-T1L SPE Port	off	10/100 Mbps link inactive
	Upper LED	
	green	10 Mbps link active
	off	10 Mbps link inactive
	Lower LED	
	yellow	PoDL PD device is enabled
	off	PoDL PD device is disabled

E Pinbelegung / Pinouts

10/100Base TX RJ45 pinouts					
MDI Port Pinouts		MDI-X Port Pinouts		8-pin RJ45	
Pin	Signal	Pin	Signal		
1	Tx+	1	Rx+		
2	Tx-	2	Rx-		
3	Rx+	3	Tx+		
6	Rx-	6	Tx-		

10Base-T1L SPE port pinouts		
Pin	Mode A	
1	PI+	
2	PI-	

F PoDL-Klassen / PoDL classes

Class	10	11	12	13	14
V _{PSE} max.	30 V	30 V	30 V	58 V	58 V
V _{PSE} min.	20 V	20 V	20 V	50V	50 V
Max. wired resistance to PD	< 65 Ω	< 25 Ω	< 9.5 Ω	< 65 Ω	< 25 Ω
P _{PSE} min.	1.85 W	4.8 W	12.63 W	11.54 W	30 W
V _{PD} min.	14 V	14 V	14 V	35 V	35 V
P _{PD} max.	1.23 W	3.2 W	8.4 W	7.7 W	20 W

en

Intended use

The devices are intended for setting up communication networks within an industrial environment, they are intended to be used in a restricted access location. The devices may only be used within the scope of the specified technical data. Observing the documentation is part of the intended use.

The device is equipped with SPE ports (10Base-T1L) and an RJ45 Fast Ethernet port (10/100TX). The DIP switches can be used to configure the following features: MAC frame filtering (MACFF), Quality of service (QoS), 10Base-T1L and Power over data line (PoDL) settings and force mode.

Assembly and installation may only be carried out by an electrician.

Cyber security

You can find the following information on the Weidmüller Industrial Security website:

- Industrial Product Security Guideline

Scope of delivery

- Ethernet switch
- Installation instructions
- Terminal block

Mounting the device

Dangerous contact voltage!

- Carry out mounting and wiring work only when the power supply is disconnected.
- Make sure that the place of installation (switch cabinet etc.) has been disconnected from the power supply.

► Clip the device on to a 35 mm DIN mounting rail, e.g. Weidmüller TS 35 x 7.5 (see Fig. A1).

Installing the device

Material damage!

The supply voltage may not be greater than the voltage indicated on the product label.

► Check the voltage of your power source to make sure you are using the correct voltage.

Wiring the device

- When wiring the device observe the following aspects:
- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
 - Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
 - You can use the type of signal transmitted through a wire to determine which wires should be kept separate. Wiring with similar electrical characteristics can be bundled together.
 - Keep input wiring and output wiring separated.

► Also observe the following wire cross-sections an cable lengths:

No PoDL	
Wire cross-section max.	Cable length max.
0.75 mm² / AWG 18	1000 m
0.34 mm² / AWG 22	629 m
0.14 mm² / AWG 26	395 m

With PoDL, acc. to IEC 11801			
Wire cross-section max.	Cable length max.		
	Classes 10+13	Classes 11+14	Class 12
0.75 mm² / AWG 18	1000 m	400 m	100 m
0.34 mm² / AWG 22	400 m	100 m	50 m
0.25 mm² / AWG 24	250 m	100 m	50 m
0.14 mm² / AWG 26	100 m	50 m	25 m

It is strongly advised to label the wiring for all devices in the system.

Grounding the device

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

This product must be mounted to a well-grounded mounting surface, such as a metal panel. Use at least cable type 1 mm² (AWG 18) for grounding the product.

Wiring the power input

The terminal block connector on top of the device is used for the power input, see Fig. B.

NOTICE

Material damage!

Before connecting the Ethernet Switch to the power input, make sure the power source voltage is stable.

► Use a copper conductor with the cable type 0.2 to 2.5 mm² (AWG 24 to 12) and the corresponding pin type cable terminals.

The wire must be able to withstand at least 105 °C (221 °F). There should only be one individual conductor in a clamping point.

- Insert the negative/positive AC/DC wires into the V-/V+ terminals.
- Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on top of the device.

PoDL

Based on the configuration of the DIP switch, PoDL has Power Sourcing Equipment (PSE) output voltage modes of 24 V and 50 V.

NOTICE

Material damage!

A greater output voltage mode than the voltage specifications of the connected end device may cause damage to the end device.

► Check the voltage of your connected end device to make sure you are using the correct voltage mode.

NOTICE

Material damage!

Different voltages on end devices at the same time may cause damage to the end devices.

► Only operate end devices with the same voltage at the same time.

PoDL supports powered devices (PD) classification using SCCP commands and features a force mode, which directly provides a PSE output voltage of 24/50 V. Each SPE port can supply a maximum current of 1A, independent of the classification. The total SPE ports can supply a power of 80 W. For PoDL classes, see Fig. F.

DIP switches

For the DIP switch settings, see Fig. C.

LED indicators

LEDs indicating the status of power supply, Ethernet connection and PoDL function are placed on the front of the device, see Fig. B. The LED behaviour is described in Fig. D.

Pinouts

For pinouts for MDI (NIC-type) ports, MDIX (HUB/Switch-type) ports and SPE ports with PoDL, see Fig. E.

VLAN tags

The device supports forwarding of all VLAN tags except for VLAN tag 4095. Tag 4095 is reserved for internal system use and must not be used for regular VLAN assignments.

Disassembly

- Remove all cables and lines.
- Remove the device from the DIN rail, see Fig. A2.

Disposal

Observe the notes for proper disposal of the product. You can find the notes here: www.weidmueller.com/disposal.

