

## 产品特点：

- ✓ 小体积 124\*86\*128
- ✓ 高可靠性
- ✓ 使用 TS-35/7.5 或 TS-35/15 安装，便于生产维护
- ✓ 效率 94%以上，低损耗
- ✓ 9+1 并联冗余功能（可选）
- ✓ 150%的峰值带载能力
- ✓ 内置主动式 PFC 功能，PF>0.96
- ✓ 内置 DC OK 和远程隔离信号输出
- ✓ 符合环保要求 RoHs6.

## Features:

- ✓ Small size 124 \* 86 \* 128
- ✓ High reliability
- ✓ Use TS-35/7.5 or TS-35/15 for easy production and maintenance
- ✓ 94% efficiency, low loss
- ✓ 9 + 1 parallel redundancy (optional)
- ✓ 150% peak load capacity
- ✓ Built-in active PFC , PF> 0.96
- ✓ Built-in DC OK and remote isolated signal output
- ✓ Comply with RoHs6

## 应用领域：

- ✓ 工业控制
- ✓ 清洁能源
- ✓ 轨道交通
- ✓ 生产制造
- ✓ 对尺寸大小、环境要求十分严酷的场所
- ✓ 对寿命、可靠性要求很高的供配电系统

## Application:

- ✓ Industrial control
- ✓ Clean energy
- ✓ Track and traffic
- ✓ Production and Manufacturing
- ✓ It is very harsh on the size and use environment
- ✓ System with high requirements for life and reliability

# EDP-480-24

## 产品规格书

# PRODUCT SPECIFICATION

制造安全产品 驱动绿色世界 Power a Safe and Green world

Excellent 卓越 Creative 创造 United 协作



## 合肥华耀电子工业有限公司

ECU ELECTRONICS INDUSTRIAL CO.,LTD.



微信扫码关注

电话 TEL 4006659997/0551-62731110

传真 FAX+86-551-65324417 转 0

安徽省合肥市蜀山区涘河路 88 号  
No.88 Pihe road P.O BOX 9023-  
20,Hefei China

<http://www.ecu.com.cn>

<http://www.ecupowersupply.com>

[sales@ecu.com.cn](mailto:sales@ecu.com.cn)

基本参数 Basic Parameter	1
输入特性 Input Characteristics	1
输出特性 Output Characteristics	2
环境特性 Environment Characteristics	2
保护功能 Protection Function	3
特殊功能 Signals Function	3
电气安全 Electrical Safety	3
电磁兼容 Electromagnetic Compatibility	4
可靠性数据 Reliability	5
结构与安装 Mechanical Installation	5
附件（安装示意图、降额曲线、并联冗余、串并连接线图、导轨安装方法）	6
Appendix(Product assembly/Derating curve/parallel redundancy/ Series-Parallel Operation Connection Diagram/Din track mounting)	6

## 基本参数 Basic Parameter

项目 Item	单位 UNIT	规格 Specification	备注 Notes
输出电压 Output Voltage	Vdc	24	
输出电压可调范围 Adjustable range	V	24~28	
额定输出电流 Rated current	A	0~20	
峰值电流 Peak Current	A	30	正常工作3秒 Normally works more than 3 seconds
额定功率 Rated power	W	480	
纹波&噪声 Ripple&noise	mVp-p	100	

输出纹波噪声测试条件/DC output ripple & noise test conditions

- 示波器须设置在 20M 赫兹带宽/Oscilloscope should be limited at 20MHZ bandwidth;
- 将 0.1UF 的陶瓷电容和 47UF 的电解电容并联在线材末端/ Connect 0.1UF ceramic capacitors and 47UF electrolytic capacitors in parallel at the end of the wire;
- 使用 300mm 的双绞线连接电源和负载/ Connect the load and power supply with a 300mm twisted pair;
- 在负载端进行测试/ Testing is done on the load port;

## 输入特性 Input Characteristics

项目 Item	单位 UNIT	最小值 MIN	额定值 Rated	最大值 Max	备注 Notes
输入电压 Input Voltage	Vac	90	230	264	参考输出降额曲线 Refer to output derating curve.
	Vdc	127	310	370	
输入频率 Input Frequency	Hz		47~63		
输入电流 Input Current	A	/	/	2.4	220Vac Full load
				5.5	110Vac, Full Load.
输入冲击电流 Inrush Current	A	/	/	30	110Vac, Full Load. cold start.
				50	220Vac, Full Load. cold start.
功率因数 Power Factor	/	0.99	/	/	110Vac, Full Load.
		0.96			220Vac, Full Load.
空载损耗 No-load loss	W			5	230Vac, No Load
输入保险 Input Fuse			T6.3A/250Vac		

## 输出特性 Output Characteristics

项目 Item	单位 Unit	最小值 Min	典型值 Typ	最大值 Max	备注 Notes
峰值功率 Peak Power	W			720	正常工作3秒 Normally works more than 3 seconds
效率 Efficiency	%	93.5	94	/	230Vac/50Hz, Full Load.
负载调整率 Load Regulation	%	/	+/-1	/	230Vac Full~min load
输入电压调整率 Line Regulation	%	/	+/-0.5	/	100Vac~264Vac Full load
开机延迟时间 Setup Time	s	/	/	2	110Vac&230Vac Full Load
上升时间 Rise Time	ms	/	/	60	输出从10%上升到90%的时间 The output voltages shall rise from 10% to 90% of their output voltage.
保持时间 Hold time	ms	20	/	/	110Vac, Full Load
过冲响应 Overshoot & undershoot Response	%			+/-5	开关机时 Power on/off
负载动态 Load dynamic response	%	/	/	+/-5	设定周期20ms,升降电流0.1A/us,在50%~100%负载 Settling time 20ms R/s 0.1A/us load 50%~100%full load
容性负载 Capacitive Loads	uF			8000	

## 环境特性 Environment Characteristics

项目 ITEM	单位 UNIT	最小值 MIN	典型值 Rated	最大值MAX	备注 Notes
温度 Temperature	℃	-25	25	70	工作温度Operation Temperature ; 60℃以上需降额使用, 参考降额曲线。 60~70℃ Refer to derating curve.
		-40	25	85	贮藏温度Storage Temperature
相对湿度 Humidity	%	5%	RH	90%	工作湿度Operation Humidity
		5%	RH	95%	贮藏湿度Storage Humidity
振动 Vibration	/	IEC 60068-2-6, 正弦10-500Hz, 2G, 位移0.35mm, X、Y、Z轴各60分钟; Sine Wave:10-500Hz, 2G, displacement of 0.35mm; 60 min per axis for all X, Y, Z directions			
冲击 Impact	/	IEC60068-2-27,半正弦波: 30G, 持续18ms, 每个方向3次, 共6次 Half Sine Wave: 30G for a duration of 18ms, 3 times per direction, 6 times in total			
海拔高度 Altitude	m	≤2000, 2000m以上降额使用, 15%load/Km 2000m derated above, 15%load/Km			
冷却方式 Cooling Mode		空气自然冷却 Air Cooling			
防护等级 IP level		IP20			

## 保护功能 Protection Function

项目 Item	技术要求 Requirement	注释 Notes
短路保护 Short Circuit Protection	电源无损坏, 关闭输出电压 No damage shut down O/P voltage	故障移出后, 电源自动恢复。 Recovers automatically after fault condition is removed
过流保护 Over current Protection	150%~180% @ I <sub>o</sub>	故障移出后, 电源自动恢复。 Recovers automatically after fault condition is removed
过压保护 Over voltage Protection	120~150% @ V <sub>o</sub>	关闭输出电压, 故障解除后自动恢复 Shut down O/P voltage. recovers automatically after fault condition is removed
过温保护 Over Temperature Protection	95°C±5°C, 关闭输出电压 Shut down O/P voltage.	温度下降后自动恢复 recovers automatically after temperature goes down

短路保护时间大于等于60秒/Short Circuit Protection time is above of 60s

## 特殊功能 Signals Function

项目 Item	技术要求 Requirement
面板显示 Panel display	当输出指标正常时, 绿色LED常亮/Output voltage≥20V, Green LED is always on;
远程信号 Remote signal	与输出隔离, 常开触点; 当输出指标正常时, DC OK为低阻抗≤50mΩ, 最大耐受直流30 V / 1 A/ Normally open contact, isolated output, ; Output voltage≥20V, DC OK is a low impedance ≤50mΩ, Max DC 30 V / 1 A
冗余母线 Redundant bus	Ls+, Ls-; 多台并联后, 每台产品的输出电流将被平均分配/ Ls+, Ls-; After connecting Ls+&Ls- of each product, the output current will be evenly distributed;

## 电气安全 Electrical Safety

项目 Item	测试方法 Test Method	测试条件 Test Conditions
绝缘电压 Withstand voltage	输入-输出 I/P-O/P	3000Vac. 60S, ≤7.5mA
	输入-大地 I/P-FG	1500Vac. 60S, ≤7.5mA
	输出-大地 O/P-FG	500Vac. 60S, ≤15mA
绝缘阻抗 Withstand Resistance	输入-输出 I/P-O/P	500VDC. ≥5MΩ
	输入-大地 I/P-FG	500VDC. ≥5MΩ
	输出-大地 O/P-FG	500VDC. ≥5MΩ
泄露电流 Leakage Current	L、N-外壳/L、N-Case	3.5mA Max
	L、N-PE/L、N-PE	3.5mA Max
接地阻抗 PE Resistance	PE-外壳/PE-Case	< 0.1Ohm
设计标准 Design standards	UL508 工业控制类	/
	EN60950-1 资讯类	/
	UL1310 Class2 类电源	/
	EN60335-1 家电类	/
	EN61347-1 灯具类	/
	IEC60601-1 医疗类	/

1) 标准A: 规格界限内正常性能 Criteria A: Normal performance within the specification limits

2) 标准B: 可自行恢复的临时性退化或功能丧失 Criteria B: Temporary degradation or loss of function which is self-recoverable

3) 不对称: 共模 (线对地) Asymmetrical: Common mode (Line to earth)

4) 对称: 差模 (线对线) Symmetrical: Differential mode (Line to line)

5) ”/”: 不符合项 Non-conformance

# 电磁兼容 Electromagnetic Compatibility

项目 Item	测试方法 Test Method	测试条件 Test Conditions	
静电ESD Electrostatic Discharge	IEC 61000-4-2 GB17626-2	Criteria B ; Air Discharge: ±8kV ; Contact Discharge: ±4kV	
射频辐射RS Radiated Field	IEC 61000-4-3 GB17626-3	Criteria A ; 80-1000MHz, 3V/M, 80% modulation (1kHz) ;	
脉冲杂讯EFT Electrical Fast Transient / Burst	IEC 61000-4-4 GB17626-4	Criteria B ; ±1kV	
雷击 Surge	IEC 61000-4-5 GB17626-5	Criteria B ; Common Mode3): 2kV ; Differential Mode4): 1kV	
射频传导 Conducted	IEC 61000-4-6 GB17626-6	Criteria A ; 0.15-80MHz, 3Vrms , 80% modulation (1kHz)	
电源磁场 Power Frequency Magnetic Fields	IEC 61000-4-8 GB17626-8	/	
脉冲磁场抗扰度试验 Impulse magnetic field immunity test	IEC 61000-4-9 GB17626-9	/	
阻尼振荡磁场抗扰度试验 Damped oscillatory magnetic field immunity test	IEC 61000-4-10 GB17626-10	/	
电压瞬断 Voltage Dips and Interruptions	IEC 61000-4-11 GB17626-11	Voltage Dips >95% reduction,0.5 period	Criteria B
		Voltage Dips >30% reduction,25 period	Criteria C
		Voltage interruptions >95% reduction,250 period	Criteria C
低能量脉冲 Low Energy Pulse Test (Ring Wave)	IEC 61000-4-12 GB17626-12	/	
谐波 Harmonic Current Emission	IEC/EN 61000-3-2 GB17625-1	Class A	
电磁耐受标准 Immunity Generic Standards		EN 55024,GB17618资讯类	
	/5)	EN55014-2家电类	
	/5)	EN60601-1-2医疗类	
	/5)	EN61547灯具类	
	/5)	EN61000-6-1,EN50082-1,GB/T17799-1轻工业环境 EN 61000-6-2,EN55082-2,GB/T17799-2工业环境	
传导和辐射通用标准 CE&RE	/5)	GB9254, CISPR 32, EN 55032 : Class B 资讯类	
	/5)	GB4824, CISPR 11, EN 55011 : Class B 医疗类	
	/5)	GB17743 , EN55015 , CISPR15 : Class B 灯具类	
		GB4343-1, CISPR14 , EN55014-1 : Class B 家电类	
电压波动和闪烁 Voltage Fluctuation and Flicker		EN 61000-6-3 , FCC Title 47, EN55011 : Class B 工控类	
通用电源测试标准 Component Power Supply for General		IEC/EN 61000-3-3 , GB17625.2	
		EN 61204-3	

1) 标准A：规格界限内正常性能Criteria A: Normal performance within the specification limits

2) 标准B：可自行恢复的临时性退化或功能丧失Criteria B: Temporary degradation or loss of function which is self-recoverable

3) 不对称：共模（线对地）Asymmetrical: Common mode (Line to earth)

4) 对称：差模（线对线）Symmetrical: Differential mode (Line to line)

5) ”/”：不符合项Non-conformance

6) 电源应视为系统内元件的一部分，需结合终端设备进行EMC确认Power should be considered part of the element within the system, to be combined with the terminal device EMC acknowledgment;

## 可靠性数据 Reliability

项目 Item	数据 Data	测试条件 Test Conditions
产品老化 Burn-in	100%	230Vac, 满载, 40°C±5°C, 4小时
平均无故障时间 MTBF	206010H Min	230Vac, 满载, 25°C, MIL HDBK 217F
	/	230Vac, 满载, 40°C, MIL HDBK 217F
质保 Warranty period	3年	40°C, 230Vac, 80% Load, 24小时工作
设计使用寿命 Design Service life	/	此项依据实际使用条件推算 This calculated based on the actual conditions of use

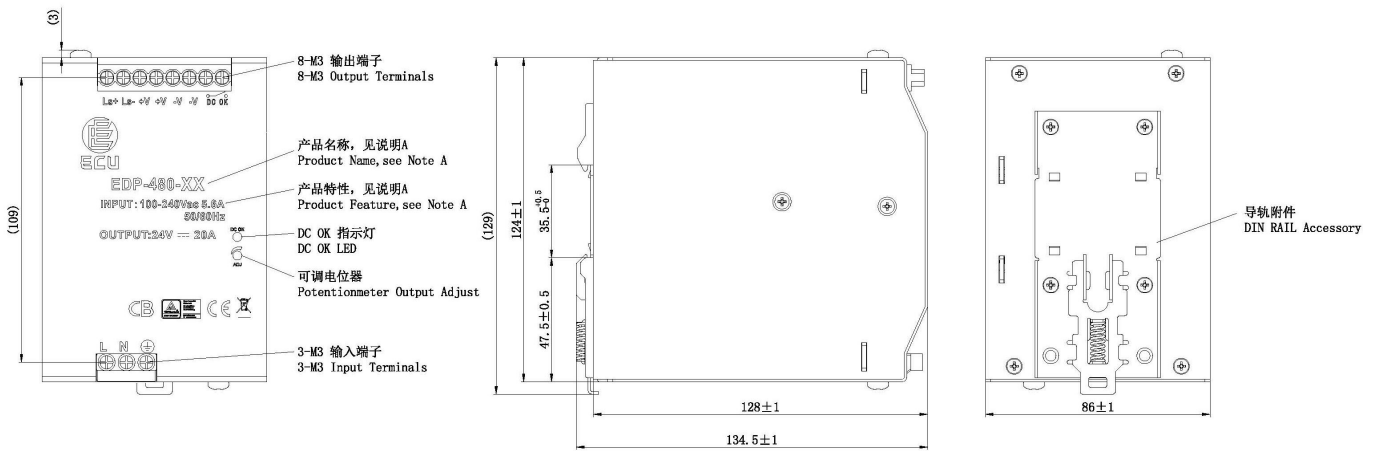
## 结构与安装 Mechanical Installation

项目 Item	数据 Data	备注 Note
尺寸mm (长宽高) Size	124 * 128* 86	
重量Kg Weight	1.32	
安装方式 Installation	导轨式安装 mounted on 35mm DIN rails	TS-35/7.5或TS-35/15 EN 60715
输入端子 Input Terminal	脚距7.62mm, 3位 Pitch=7.62mm, 3pin	最大扭矩0.4N.M, 直插式连接, 硬导线横截面0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
	1 PIN---L	柔性导线横截面0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
	2 PIN---N	横截面 AWG 24 ... 12
	3 PIN---FG	剥线长度10 mm
输出端子 Output Terminal	脚距6.35mm, 8位/Pitch=6.35mm, 8pin	
	1 PIN---Ls+	
	2 PIN---Ls-	最大扭矩0.4N.M, 直插式连接, 硬导线横截面0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
	3 PIN---V+	柔性导线横截面0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
	4 PIN---V+	
	5 PIN---V-	横截面 AWG 24 ... 12
	6 PIN---V-	剥线长度10 mm
	7 PIN---DC OK	
8 PIN---DC OK		

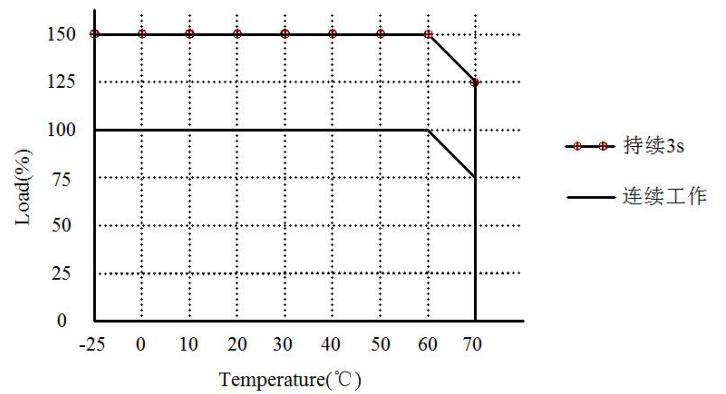
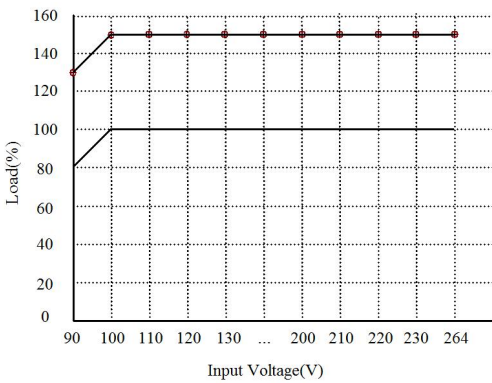
# 附件 ( 安装示意图、降额曲线、并联冗余、串并联接线图、导轨安装方法 )

## Appendix(Product assembly/Derating curve/parallel redundancy/ Series-Parallel Operation Connection Diagram/Din track mounting)

### 1. 产品装配示意图 Product assembly



### 2. 降额曲线 Derating curve:



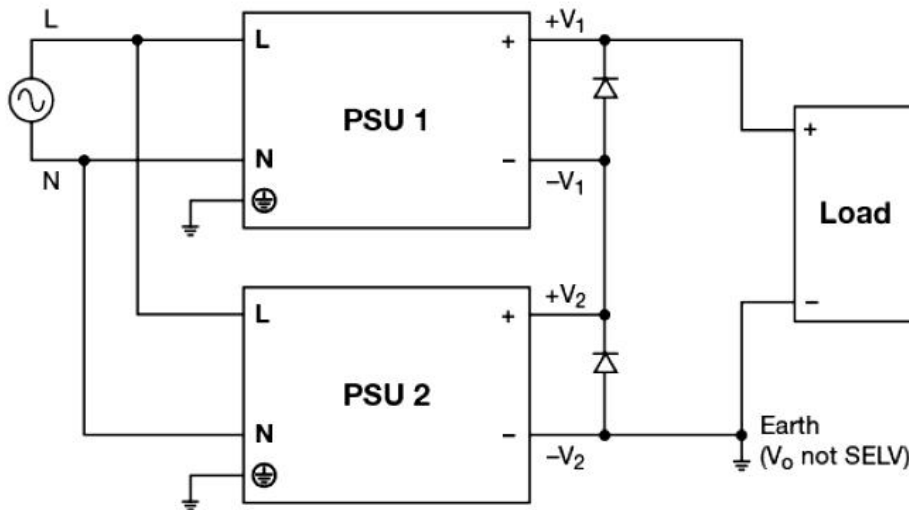


### 3. 并联冗余 Parallel redundancy:

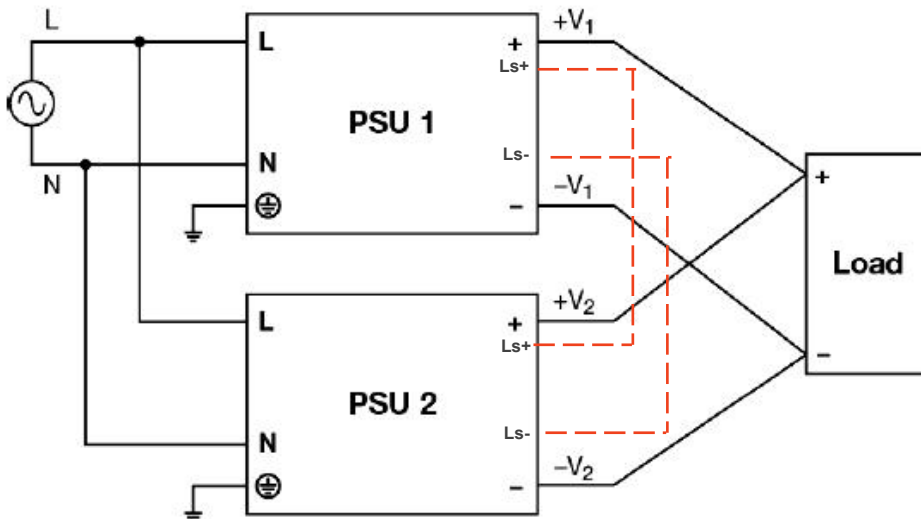
并联均流接线操作方式如下图所示 ( Ls+、Ls- 并联 ) / See diagram for Redundant wiring ways connection (Ls+, Ls- parallel):

1. 各个并联单元间输出电压差异必须小于0.3V at 30%Load ; The difference of output voltage between each parallel unit must be <0.3V(ac/dc) at 30% load.
2. 并联使用时，总输出电流和并联组数的关系：When in parallel connection, the relationship between total output current and the number of parallel units :
  - 2.1 功率冗余模式：并联总输出电流≤单组额定电流×并联组数-单组额定电流；Power redundancy mode: In parallel total output current ≤ unit rated current X number of parallel units - unit rated current.
  - 2.2 功率扩展模式：并联总输出电流≤单组额定电流×并联组数×0.9；Power Expansion mode: In parallel total output current ≤ unit rated current X number of parallel units X 0.9.
3. 并联使用时，最小负载电流和并联组数的关系: 联总输出电流≥3%单组额定电流×并联组数/When in parallel connection, the relationship between Minimum load and the number of parallel units: In parallel total output current ≥3% of unit rated current X number of parallel units.
4. 最多并联 10 组；The maximum number of parallel units are 10.

### 4. 串联接线图 Series Operation Connection Diagram:



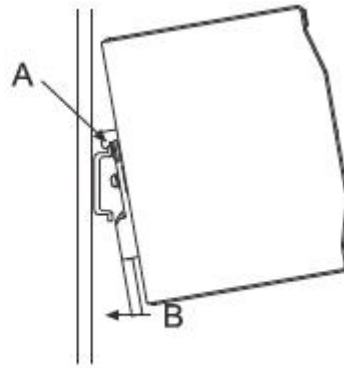
### 5. 并联接线图 Parallel Operation Connection Diagram:



## 6. 导轨安装方法 Din track mounting:

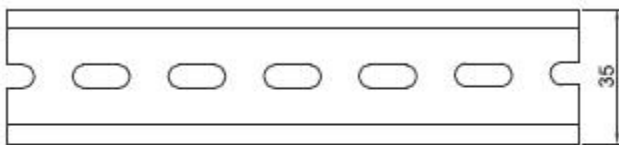
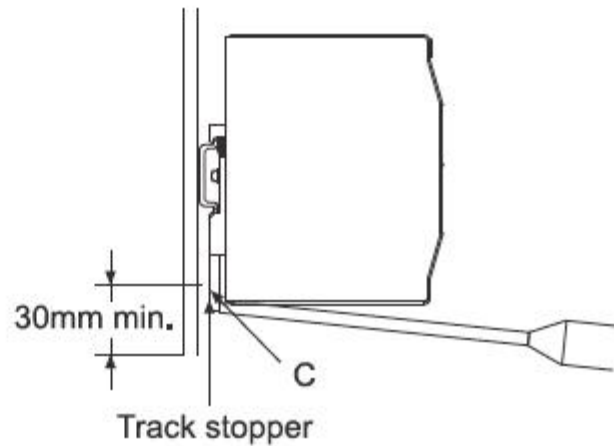
- (1) To mount the Block on a DI track, hook portion (A) of the Block onto the track and press the Block in direction (B).

安装：将(A)部分挂入导轨，朝(B)方向按压卡入导轨



- (2) To dismount the Block, pull down portion (C) with a flat-blade screw-driver and pull out the Block.

拆卸：用平口螺丝刀下拉(C)部分拆卸电源



Install rail / 安装轨道: TS35/7.5 or TS35/15