产 品 承 认 书

SPECIFICATION FOR APPROVAL

客户名称 Customer:

产品型号 Product model：DP-6000

产品名称 Product name：RS232 转 RS485 无源转换器

制定： 审核：

客户承认： 日期：

请签字确认并回传本司

签字后，证明您同意本承认书内容，所有产品将按照此要求生产；
如您在回签此承认书前下货品订单，表示您同意该本承认书中所有内容。

深圳市帝普物联科技有限公司

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一产品介绍

1 、概述

DP-6000 转换器兼容 RS-232C、RS-485 标准，能够将单端的 RS-232 信号转换为平衡差分的 RS-485，转换器将 RS-232 通信距离延长至 1.2 公里，无需外接电源采用独特的"RS-232 电荷泵"驱动，不需要靠初始化 RS-232 串口可得到电源， 内部带有零延时自动收发转换，独有的 I/O 电路自动控制数据流方向，而不需任何握手信号(如 RTS、DTR 等)，，从而保证了在 RS-232 全双工、半双工方式下编写的程序无需更改便可.确保适合现有的操作软件和接口硬件，转换器传输速率 300-512Kbps. 都可以应用于主控机之间、主控机与单片机或外设之间构成点到点、点到多点远程多机通信网络，实现多机应答通信。广泛地应用于工业自动化控制系统、一卡通、门禁系统、停车场系统、自助银行系统、公共汽车收费系统、饭堂售饭系统、公司员工出勤管理系统、公路收费站系统、自动销售机系统、电梯系统等等

2 、性能参数

表 1-1

产品型号	DT-6000
接口特性	接口兼容 EIA/TIA 的 RS-232C、RS485 标准
电气接口	RS-232 端 DB9 孔型连接器，RS-485 端 4 位接线柱
工作方式	异步半双工差分传输
传输介质	双绞线（线径大于或等于 0.5MM）或屏蔽线
传输速率	300-512KBPS
使用环境	-40 度到 85 度，相对湿度为：5%-95%

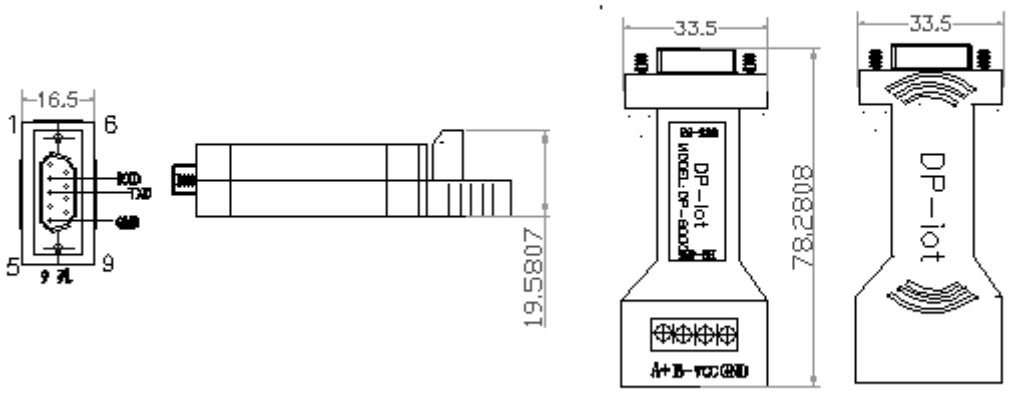
传输距离	小于 1200 米（RS485 端）小于 15 米（RS232 端）
保护级别	RS485 接口每线 600W 雷击浪涌保护
两种通讯方式	点到点/两线半双工和点到多点/两线半双工

3、产品规格参数

表 1-2

材料	防火 PC 料
颜色	纯黑色
产品尺寸	（78.3×33.5×19.58）mm
重量	产品净重(24g)　产品含包装(77g)
包装	珍珠棉
外盒尺寸	（160×105×35.5）mm
箱量	150pcs

4、外型结构图



5、重要元件参数

5.1、485 芯片

intersil

ISL8487E, ISL81487L, ISL81487E

Data Sheet | **September 15, 2005** | **FN6051.6**

±15kV ESD Protected, 1/8 Unit Load, 5V, Low Power, High Speed or Slew Rate Limited, RS-485/RS-422 Transceivers

These Intersil RS-485/RS-422 devices are ESD protected, fractional unit load (UL), BiCMOS, 5V powered, single transceivers that meet both the RS-485 and RS-422 standards for balanced communication. Each driver output/receiver input is protected against ±15kV ESD strikes, without latch-up. Unlike competitive devices, this Intersil family is specified for 10% tolerance supplies (4.5V to 5.5V).

All devices present a 1/8 "unit load" to the RS-485 bus, which allows up to 256 transceivers on the network for large node count systems (e.g., process automation, remote meter reading systems). In a remote utility meter reading system, individual (apartments for example) utility meter readings are routed to a concentrator via an RS-485 network, so the high allowed node count minimizes the number of repeaters required to network all the meters. Data for all meters is then read out from the concentrator via a single access port, or a wireless link.

Slew rate limited drivers on the ISL8487E and ISL81487L reduce EMI, and minimize reflections from improperly terminated transmission lines, or unterminated stubs in multidrop and multipoint applications. Data rates up to 250kbps are achievable with these devices.

Data rates up to 5Mbps are achievable by using the ISL81487E, which features higher slew rates.

Receiver (Rx) inputs feature a "fail-safe if open" design, which ensures a logic high Rx output if Rx inputs are floating.

Driver (Tx) outputs are short circuit protected, even for voltages exceeding the power supply voltage. Additionally, on-chip thermal shutdown circuitry disables the Tx outputs to prevent damage if power dissipation becomes excessive.

These half duplex devices multiplex the Rx inputs and Tx outputs to allow transceivers with Rx and Tx disable functions in 8 lead packages.

Features

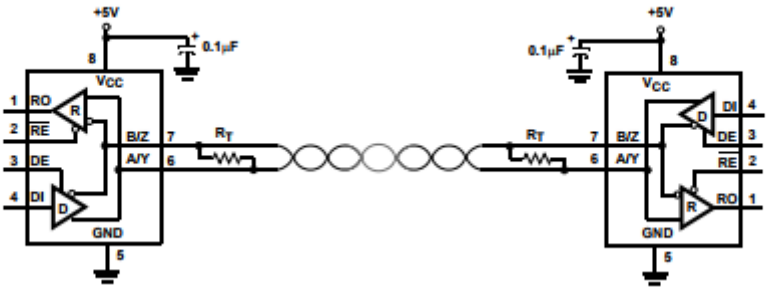
- RS-485 I/O Pin ESD Protection . . . . . ±15kV HBM
  - Class 3 ESD Level on all Other Pins . . . . . >7kV HBM
- Fractional Unit Load Allows up to 256 Devices on the Bus
- Specified for 10% Tolerance Supplies
- High Data Rate Version (ISL81487E) . . . . . up to 5Mbps
- Slew Rate Limited Versions for Error Free Data Transmission (ISL8487E, ISL81487L) . . . . .up to 250kbps
- Low Current Shutdown Mode (Except ISL81487E). . . 0.5µA
- Low Quiescent Supply Current:
  - ISL8487E, ISL81487L . . . . . 145µA (Max.)
  - ISL81487E . . . . . 420µA (Max.)
- -7V to +12V Common Mode Input Voltage Range
- Three State Rx and Tx Outputs
- 30ns Propagation Delays, 5ns Skew (ISL81487E)
- Half Duplex Pinouts
- Operate from a Single +5V Supply (10% Tolerance)
- Current Limiting and Thermal Shutdown for Driver Overload Protection
- Pin Compatible Replacements for: MAX487E, (ISL8487E); LTC1487, ADM1487 (ISL81487L); MAX1487E, ST485ER (ISL81487E)
- Pb-Free Plus Anneal Available (RoHS Compliant)

Applications

- High Node Count Networks
- Automated Utility Meter Reading Systems
- Factory Automation
- Security Networks
- Building Environmental Control Systems
- Industrial/Process Control Networks

TABLE 1. SUMMARY OF FEATURES

PART NUMBER	HALF/FULL DUPLEX	NO. OF DEVICES ALLOWED ON BUS	DATA RATE (Mbps)	SLEW-RATE LIMITED?	RECEIVER/ DRIVER ENABLE?	QUIESCENT I_{CC} (µA)	LOW POWER SHUTDOWN?	PIN COUNT
ISL8487E	Half	256	0.25	Yes	Yes	120	Yes	8
ISL81487L	Half	256	0.25	Yes	Yes	120	Yes	8
ISL81487E	Half	256	5	No	Yes	350	No	8



5.2、钽电容

Tantalum Surface Mount Capacitors – Standard Tantalum

T491 Series Industrial Grade MnO_2

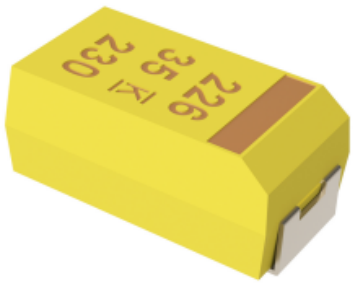
Electronic Components
KEMET
CHARGED.

Overview

The KEMET T491 Series, designed specifically for today's highly automated surface mount processes and equipment, is the leading choice for surface mount designs. The T491 combines KEMET's proven solid tantalum technology, acclaimed and respected throughout the world, with the latest in materials, processes and automation, resulting in unsurpassed total performance and value. This product meets or exceeds the requirements of EIA standard 535BAAC. This series is classified as MSL (Moisture Sensitivity Level) 1 under J STD 020: unlimited floor life time at ≤ 30°C/85% RH. The T491 standard terminations are available in 100% matte tin and provide excellent wetting characteristics and compatibility with today's surface mount solder systems. Tin/lead (Sn/Pb) terminations are available upon request for any part number. Gold-plated terminations are also available for use with conductive epoxy attachment processes. Standard packaging of these devices is tape and reel in accordance with EIA 481. This system provides perfect compatibility with all tape-fed placement units.

Benefits

- Meets or exceeds EIA Standard 535BAAC
- Taped and reeled per EIA 481
- Symmetrical, compliant terminations
- Optional gold-plated terminations
- Laser-marked case
- 100% surge current test on C, D, E, U, V, X sizes
- Halogen free epoxy
- Capacitance 0.1 µF to 1,000 µF
- Tolerance ±10%, ±20%
- Voltage 2.5 – 50 VDC
- Extended range values
- Low profile case sizes
- RoHS Compliant and lead-free terminations (See www.kemet.com for transition information)
- Operating temperature: −55°C to +125°C



Click image above for interactive 3D content
Open PDF in Adobe Reader for full functionality

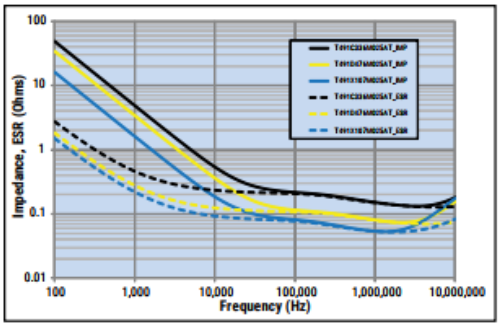
Applications

Typical applications include decoupling and filtering in industrial and automotive end applications such as DC/DC converters, portable electronics, telecommunications, and control units.

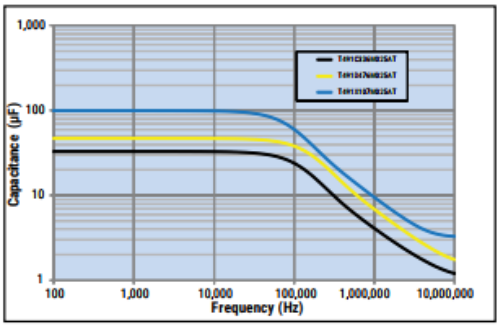
Environmental Compliance

RoHS Compliant (6/6) according to Directive 2002/95/EC when ordered with 100% Sn solder, Gold plated or Non-magnetic 100% Sn solder.

ESR vs. Frequency



Capacitance vs. Frequency



5.3、TVS 二极管

SM6T

Transil™

Features

- Peak pulse power:
  - 600 W (10/1000 µs)
  - 4 kW (8/20 µs)
- Breakdown voltage range: from 6.8 V to 220 V
- Unidirectional and bidirectional types
- Low leakage current:
  - 0.2 µA at 25 °C
  - 1 µA at 85 °C
- Operating $T_{j\ max}$: 150 °C
- High power capability at T_{jmax}:
  - 515 W (10/1000 µs)
- JEDEC registered package outline

Complies with the following standards

- IEC 61000-4-2 level 4:
  - 15 kV (air discharge)
  - 8 kV (contact discharge)
- IEC 61000-4-5
- MIL STD 883G, method 3015-7: class 3B:
  - 25 kV HBM (human body model)
- UL 497B, file number: QVGQ2.E136224
- Resin meets UL 94, V0
- MIL-STD-750, method 2026 solderability
- EIA STD RS-481 and IEC 60286-3 packing
- IPC 7531 footprint

Unidirectional Bidirectional

SMB
(JEDEC DO-214AA)

Description

The SM6T Transil series has been designed to protect sensitive equipment against electrostatic discharges according to IEC 61000-4-2 and MIL STD 883, method 3015, and electrical overstress according to IEC 61000-4-4 and 5. These devices are more generally used against surges below 600 W (10/1000 µs).

Planar technology makes these devices suitable for high-end equipment and SMPS where low leakage current and high junction temperature are required to provide reliability and stability over time.

SM6T are packaged in SMB (SMB footprint in accordance with IPC 7531 standard).

TM: Transil is a trademark of STMicroelectronics

Table 1. Absolute maximum ratings

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation(1)	T_j initial = T_{amb}	600	W
T_{stg}	Storage temperature range		-65 to 150	°C
T_j	Operating junction temperature range		-55 to 150	
T_L	Maximum lead temperature for soldering during 10 s.		260	

1. For a surge greater than the maximum values, the diode will fail in short-circuit.

Table 2. Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to leads	20	°C/W
$R_{th(j-a)}$	Junction to ambient on printed circuit on recommended pad layout	100	°C/W

6、接口特性

连接器和信号

RS-232C 引脚分配

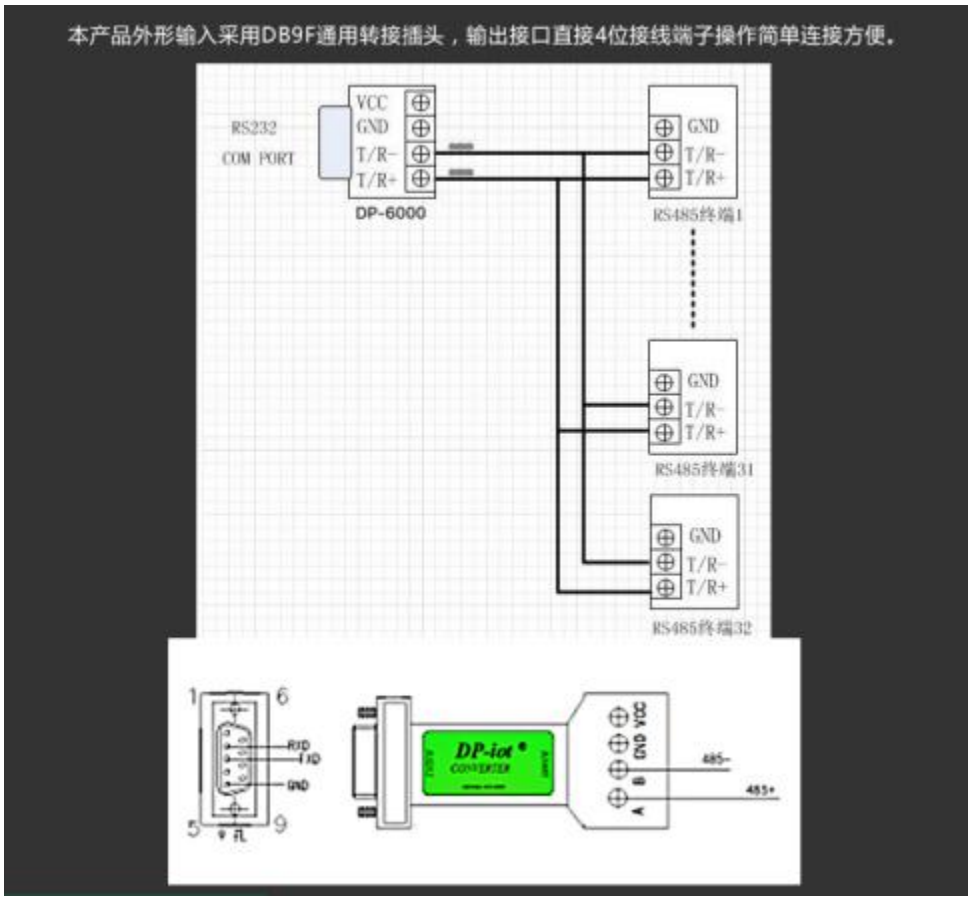
DB 母头/孔型	RS-232C 接口信号
1	保护地
2	发送数据 SOUT（TXD）
3	接受数据 SIN（RXD）
4	数据终端准备 DTR
5	信号地 GND
6	数据装置准备（DSR）
7	请求发送 RTS
8	清除发送 CTS
9	响铃指示 RI

RS-485 输出信号及接线端子引脚分配

4 位接线端子	输出信号	RS-485 半双工接线
1	T/R+	RS-485(A+)
2	T/R-	RS-485(B-)
3	VCC	DC(5-9)V
4	GND	GND

二、产品使用说明

1 、安装示意图



2、使用注意事项

本产品虽属于无源产品，但并非未给模块电路供电，该模块主要通过串口 9 针窃电，因此 RS232 端要在标准 9 针或 USB 转 RS232 电压在 5.5V 以上才可以正常通讯。如：有些串口没有供电脚时，应在 9 针的 5 脚 7 脚之间供（5-9V）DC，5 脚接 V+,7 脚接 V- ，注：(电源不能与 RS232 共地)。供电后仍不能正常使用请于厂家联系：40000-90518

三、产品使用范围

停车场系统、自动化控制系统、智能家居系统、银行 ATM 系统、楼宇系统、智能电网系统、船舶系统、自动售卖机系统等等。

四、包装示意图


RS-232
DP-iot™
SMART INDUSTRY COMMUNICATION
RS-232
A+ B- VCC GND


DP-iot™
DP-6000
商业级高级别防雷型接口转换器
使用说明书
一、产品配置
产品合格证
Product qualified certificate
检验员 Checker
日期 Date


DP-iot™
帝普物联
DP-6000
转换器使用说明书
商业级高级别防雷型接口转换器
一、概述
产品合格证
Product qualified certificate
检验员 Checker:_____
日期 Date:_____
二、性能参数
DP-iot™
RS-232
RS-485
A+ B- VCC GND