The Industrial Ethernet module
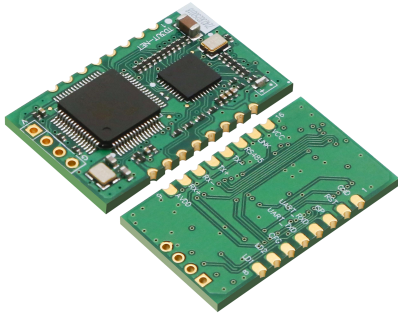
TD3UT-NET

MORNSUN®

Serial port to Ethernet delivery module

FEATURES

- Compliance with the IEEE802.3 standard
- The Porter rate is up to 921,600 bps
- 10 / 100M Adaptive Ethernet interface
- Support for TCP, UDP, and Real COM mode
- Support for serial port, configuration software
- The 32-bit ARM Cortex-M4 microcontroller processor
- Flexible serial port data frame division setting
- *Support firmware upgrades*
- Support for the AT command configuration
- MSL 1

RoHS

3 years Warranty

TD3UT-NET is a modular product that transmits serial port signals to the Ethernet side. It supports TCP Client, TCP Server, UDP Server, UDP Client, and Real COM operating modes. The module uses the core of the ARM Cortex M4 RISC instruction set, with strong information processing capabilities, and data caching up to 2kB. It can efficiently forward serial and Ethernet data, and the module can replace the customer system to develop Ethernet functions, giving the customer system more advantages.

Selection Table

Selection Guide	Product No	Power Input (VDC)	Number of Serial Port Channels	Number of Ethernet Port Channels	Operating Current (max.) (mA)	Working Temperature (℃)
-	TD3UT-NET	3.0-3.6	1	1	3.3V: 150	-40 to 85

Limiting Characteristics

Item	Working Conditions	Min.	Typ.	Max.	unit
Reflux welding temperature	--	The peak temperature Tc 245℃, the time above 217℃ is maximum 60s, Refer to the IPC / JEDEC J-STD-020D.1 standard for practical application.			

Input Characteristics

Item	Working condition	Min.	Typ.	Max.	unit
Power supply input voltage	TYPE A	3.0	3.3	3.6	VDC
Input current (3.3V)	Iin (3.3V)	--	115	150	mA
Serial interface	3.3V standard TTL signal interface				
Network interface	IEEE802.3 Standard network interface				

String Port Characteristics

Item		Working condition	Min.	Typ.	Max.	unit
TXD logic level	high level	V_{IH}	2	3.3	3.6	VDC
	low level	V_{IL}	--	0	0.8	
RXD logic level	high level	V_{OH}	VCC-0.4	3.1	--	
	low level	V_{OL}	--	0	0.4	
TXD drive current		I_T	2	--	--	mA
RXD output		I_R	--	--	10	
Serial port port rate		Baud	1200	--	921600	bps
Maximum subcontract interval		SER_T	--	--	5	ms
Maximum subcontract length		SER_{LEN}	--	--	500	Byte

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Network Characteristic

Item	Working condition	Min.	Typ.	Max.	unit
Network rate	Adaptive network interface	10	--	100	Mbps
TCP maximum number of connections		1	1	16	individual
Work mode support	Support for TCP Client, TCP Server, UDP Server, UDP Client, and Real COM mode				

Other   Characteristics

Item	Working condition	Min.	Typ.	Max.	unit
485 Control interface	With 485 control interface, 485 EN is high, and the rest is low.				

General Characteristics

Item	Working Conditions	Value
Working temperature		-40℃ to +85℃
Transport and storage temperature		-40℃ to +85℃
Working humidity	No condensation	10%-90%
Moisture sensitivity level (MSL)	IPC/JEDEC J-STD-020D.1	Grade 1

Note: Customer need to pay attention during use, it may cause damage to the product if there is dust, strong vibration, impact, and gas corrosive to product components in the surrounding environment.

Physical Characteristics

Size	33.00 x 20.30 x 3.50mm
Weight	3.1g (Typ.)
Cooling-down method	Natural air cold

EMC Characteristic

EMS	ESD	IEC / EN 61000-4-2 Contact ± 2kV (Figure 3 network port)	Perf. Criteria B
	EFT	IEC / EN 61000-4-4 ± 1kV (Figure 3 network port)	Perf. Criteria B

Precautions For Use

1. Before use, please read the technical manual carefully. If you have any questions, please contact our technical support;
2. Please do not install the products in dangerous areas for use;
3. Product power supply adopts DC power supply, it is strictly prohibited to use AC power supply;
4. It is strictly prohibited to modify the products without permission to prevent equipment failure or failure.
5. Hot-plug-plugging function is not supported.

AFTER-SALE SERVICE

1. The products have been strictly inspected and quality controlled before leaving the factory. In case of abnormal work or suspected internal module failure, please contact the nearest agent or the company's technical support in time.

2. Product warranty for 3 years, from the date of delivery. During the warranty period, the product quality problems arising during the normal use of the products shall be repaired or replaced by the Company free of charge.

APPLICATION MANUAL

Refer to the Serial Port to Ethernet Module TD3UT-NET Application Guide.

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Design Reference

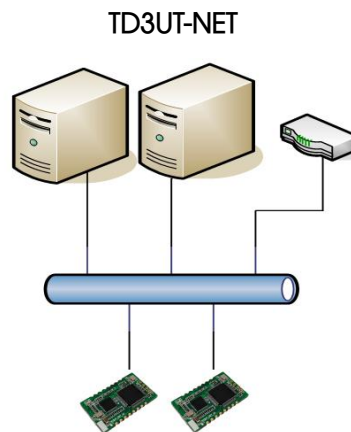### 1. Typical application circuit

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Figure 1

In general, after the module is paired with a peripheral circuit, connect the power supply and the network port to another network device or switch/router. The recommended maximum communication distance does not exceed 100m
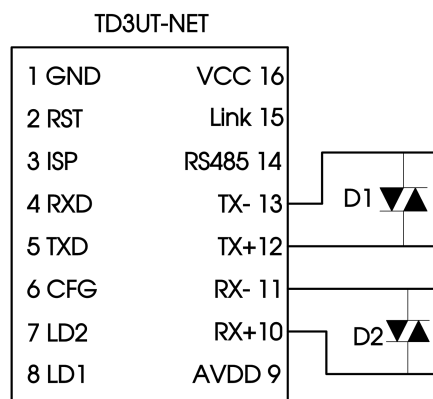
2. Port protection recommended circuit

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1 GND	VCC 16
2 RST	Link 15
3 ISP	RS485 14
4 RXD	TX- 13
5 TXD	TX+ 12
6 CFG	RX- 11
7 LD2	RX+ 10
8 LD1	AVDD 9

Figure 3

In the environment of harsh EMC environment, ETX, ERX differential line can add TVS tube for protection.

parameter declaration:

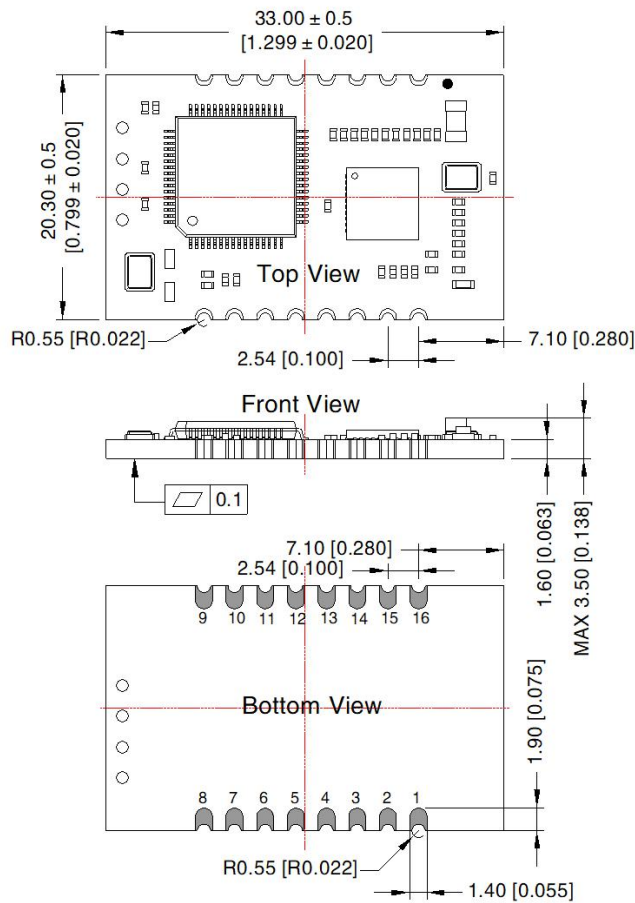| Component	Recommended parameter	Recommended brand
D1, D2	ESDBKU3V0D3	Chang Jing

3. Pin function description

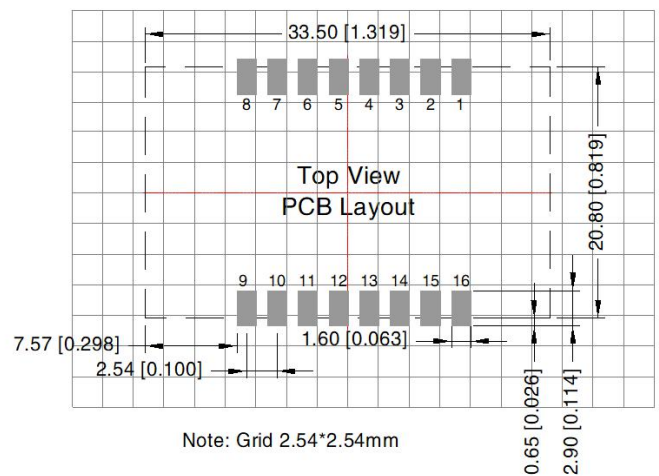| Serial number	Pin	Function	Explanation
1	GND	Signal ground	landing
2	RST	Reset	The RST pin is a module reset pin. Please receive the IO port of the user to reset the module when the exception occurs. The pin will reset the module after receiving 200ms low level. Reset the module after the power start to make the module run normally.
3	ISP	NC	Restore the factory setup function pin. After 3s of low level, restore the factory settings.
4	RXD	Module data receiving	At the data receiving end of the module, TTL level for 3.3V MCU (reference: for 5V)
5	TXD	Module data sent	Data transmitter of the module, TTL level for 3.3V MCU (for 5V, conversion circuit reference: voltage matching circuit diagram)
6	CFG	Use as a serial port configuration pin	For normal operation, please suspend this pin or connect it to the high level. At the low level, the serial port can be used to configure the module parameters.
7	LD2	Network data indication	Network data indicator, VCC via LED without limiting resistance (already in the module)
8	LD1	Network connection status indication	Network connection status indicator, VCC via LED without limiting resistance (already in the module)
9	AVDD	PHY output voltage	The PHY chip controls the voltage output and connects to the central tap of the network transformer.
10	RX+	Receipt signal +	Receive Data + (receive signal +), please keep the wiring as short as possible
11	RX-	Receipt signal -	Receive Data - (receive signal -), please keep the wiring as short as possible
12	TX+	Sending signal +	Transceiver Data + (signal +), please keep the wiring as short as possible
13	TX-	Sending signal -	Transceiver Data - (signal -), please keep the wiring as short as possible
14	RS_485	Standby pins	Can be used as an enabling pin for the RS485
15	Link	The alternate pins can be used as a TCP	The indicator pin for the connection state
16	VCC	Power supply module power supply: 3.3V	@150mA

4. For additional information please find the application notes on www.mornsun-power.com
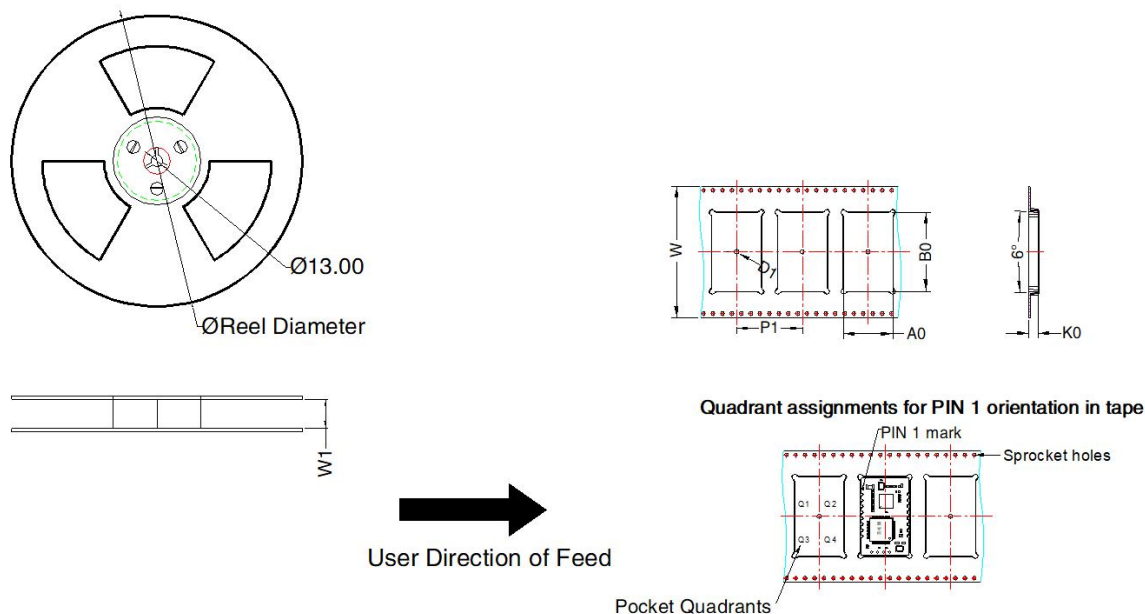
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Appearance Size, Recommended Printing Layout

THIRD ANGLE PROJECTION

33.00 ± 0.5
[1.299 ± 0.020]

20.30 ± 0.5
[0.799 ± 0.020]

Top View

R0.55 [R0.022]

2.54 [0.100]

7.10 [0.280]

Front View

0.1

7.10 [0.280]
2.54 [0.100]

1.60 [0.063]

MAX 3.50 [0.138]

9 10 11 12 13 14 15 16

Bottom View

1.90 [0.075]

8 7 6 5 4 3 2 1

R0.55 [R0.022]

1.40 [0.055]

33.50 [1.319]

8 7 6 5 4 3 2 1

Top View
PCB Layout

20.80 [0.819]

9 10 11 12 13 14 15 16

7.57 [0.298]

1.60 [0.063]

2.54 [0.100]

0.65 [0.026]

2.90 [0.114]

Note: Grid 2.54*2.54mm

Note:
Unit: mm[inch]
General tolerances: ± 0.10[± 0.004]

Pin-Out			
Pin	Mark	Pin	Mark
1	GND	9	AVDD
2	RST	10	RX+
3	ISP	11	RX−
4	UART_RXD	12	TX+
5	UART_TXD	13	TX−
6	CFG	14	RS485
7	LD2	15	LNK
8	LD1	16	VCC

Package diagram:

Ø13.00

ØReel Diameter

W1

User Direction of Feed

Quadrant assignments for PIN 1 orientation in tape

PIN 1 mark

Sprocket holes

Q1 Q2
Q3 Q4

Pocket Quadrants

Device	Package Type	Pin	MPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	PIN 1 Quadrant
TD3UT−NET	SMD	16	550	330.0	56.4	21.05	33.75	3.8	28	56	Q1

Note:
1. For packaging information, please refer to Product Shipping Packaging Information, package No.: 58240050;
2. Except for special instructions, all indicators in this manual are measured at Ta=25℃, humidity <75%RH, nominal input voltage and output rated load;
3. The test methods of all indicators in this manual are based on the enterprise standards of the company;
4. The above are the performance indicators of the product models listed in this manual. Some indicators of the non-standard model products will exceed the above requirements. For the specific situation, we can directly contact the technical personnel of our company;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified company.