

EBYTE E30-170T20D

EBYTE E30-170T20D Wireless Module Instruction Manual

Model: E30-170T20D

[Introduction](#)

[Setup](#)

[Operating](#)

[Maintenance](#)

[Troubleshooting](#)

[Specifications](#)

[Support](#)

1. INTRODUCTION

The EBYTE E30-170T20D is a high-performance wireless module based on the SI4463 chip from Silicon Labs. It operates in the 148~173.5MHz frequency band and offers transparent data transmission with TTL level output. This module is designed for applications requiring long-distance communication, robust performance, and low power consumption, featuring an air wake-up function (WOR) and Forward Error Correction (FEC) algorithm. Its 170MHz frequency provides excellent penetration and diffraction capabilities, making it suitable for industrial and indoor environments. The module supports both SMD and DIP interfaces for flexible integration.

Key Features:

- IC: SI4463
- Frequency: 148~173.5MHz
- Power: 10~20dBm (100mW max)
- Distance: Up to 2.0 km (tested up to 2.5 km)
- Interface: UART (TTL level)
- Air Wake-up Function (WOR)
- Forward Error Correction (FEC) algorithm for improved reliability
- Half-duplex operation
- Supports 2.3V~5.2V power supply
- Industrial grade design (-40 ~ 85 °C)
- SMA interface for external antenna

Typical Applications:

- Meter reading systems
- Smart home devices
- Industrial wireless control

- Smart locks
- Smart agriculture solutions
- Temperature/humidity sensors
- Home security alarm and remote keyless entry
- Wireless alarm security systems
- Building automation solutions
- Health care products
- Advanced Meter Reading Architecture (AMI)
- Automotive industry applications

2. SETUP

2.1 Module Overview

The E30-170T20D module features a compact design with a metal shield covering the main IC. It includes a standard SMA connector for antenna attachment and a row of pins for power and data communication.



Figure 2.1: Top view of the EBYTE E30-170T20D wireless module, showing the EBYTE logo, model number, RoHS and CE marks, and the SMA antenna connector.

2.2 Pinout and Connections

The module provides a set of pins for power supply and UART communication. Ensure correct voltage and data line connections to avoid damage.

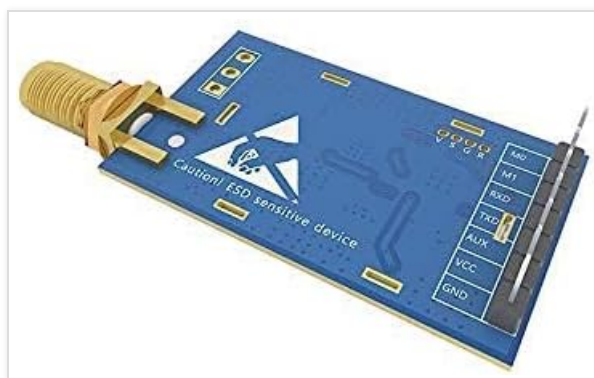


Figure 2.2: Bottom view of the EBYTE E30-170T20D module, displaying the pin labels (M0, M1, RXD, TXD, AUX, VCC, GND) and an ESD sensitive device warning.

The pins typically include:

- **VCC:** Power supply input (2.3V to 5.2V)
- **GND:** Ground
- **TXD:** Transmit Data (UART output)
- **RXD:** Receive Data (UART input)

- **M0, M1:** Mode selection pins
- **AUX:** Auxiliary pin (e.g., for indicating data readiness)

2.3 Antenna Connection

The module features an SMA interface for connecting an external antenna. Ensure the antenna is securely attached to maximize transmission distance and signal integrity.



Figure 2.3: The EBYTE E30-170T20D module with an antenna connected to its SMA port, illustrating the compact form factor.

2.4 Installation Considerations

For secure mounting, the module may include nuts and washers for the SMA connector. These components help in firmly attaching the module to an enclosure or panel.

Ebyte UART DIP module

With factory Nuts and Washers

Good for installation

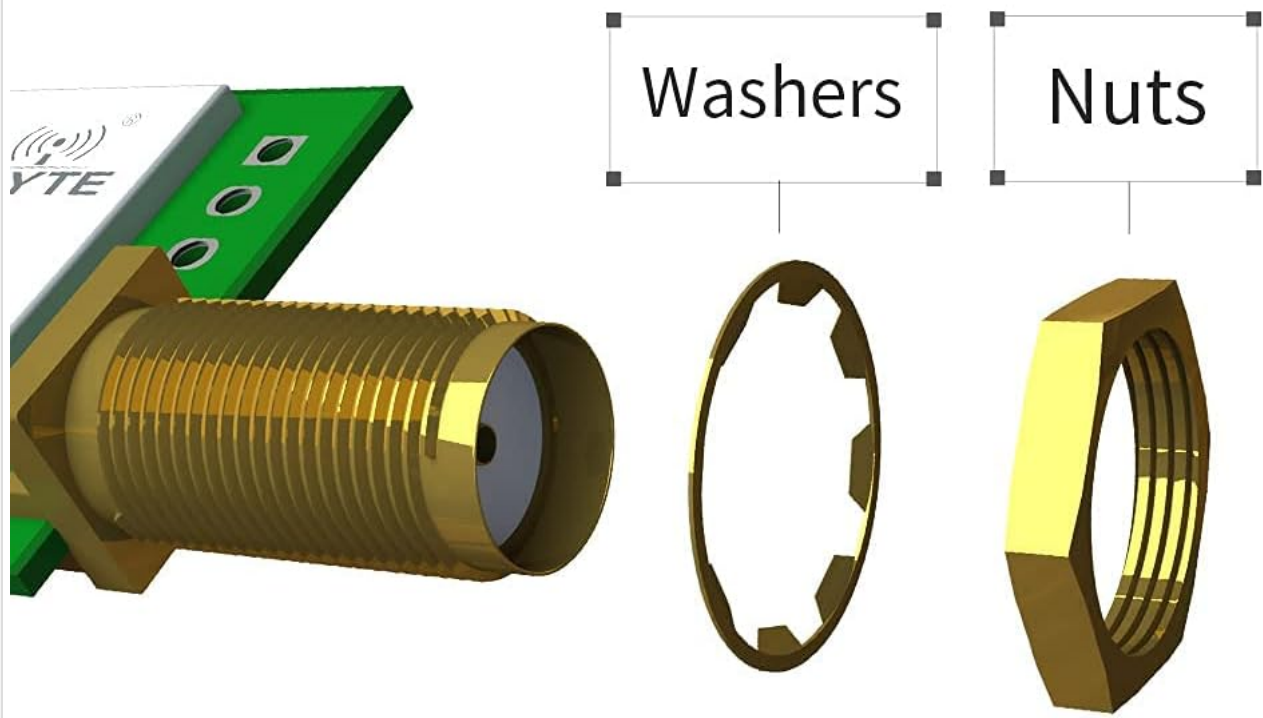


Figure 2.4: Illustration of the nuts and washers provided for the EBYTE UART DIP module, designed for secure installation.

3. OPERATING INSTRUCTIONS

3.1 Transparent Transmission

The E30-170T20D module supports transparent transmission, meaning data sent to its UART input (RXD) will be wirelessly transmitted, and data received wirelessly will be output through its UART output (TXD). This simplifies integration as no complex protocol handling is required at the host microcontroller level for basic data transfer.

3.2 Air Wake-up Function (WOR)

The module features a WOR function, enabling ultra-low power consumption. In WOR mode, the module can periodically wake up to check for incoming data, and if no data is detected, it returns to a low-power sleep state. This is ideal for battery-powered applications where energy efficiency is critical.

3.3 Forward Error Correction (FEC)

The integrated FEC algorithm enhances the reliability and transmission range of the module. FEC proactively corrects interfered data packets, reducing data loss in environments with sudden interference. Without FEC, such packets would typically be dropped, leading to reduced data integrity and effective range.

3.4 Data Rate and Half-Duplex Operation

The module supports air data rates ranging from 1kbps to 25kbps. It operates in half-duplex mode, meaning it can either transmit or receive data at any given time, but not simultaneously. Proper communication protocols should account for this half-duplex nature to manage data flow effectively.

4. MAINTENANCE

4.1 General Care

- **Keep the module clean and free from dust and debris.**
- **Avoid exposing the module to extreme temperatures or humidity outside its specified operating range.**
- **Ensure proper ventilation if the module is enclosed to prevent overheating.**

4.2 Electrostatic Discharge (ESD) Precautions

The E30-170T20D is an ESD sensitive device. Always handle the module with appropriate ESD precautions, such as using an anti-static wrist strap and working on an ESD-safe mat, to prevent damage to internal components.

4.3 Operating Environment

The module is designed for industrial-grade applications and can operate reliably in temperatures ranging from -40 °C to 85 °C. While robust, prolonged exposure to the extreme ends of this range or rapid temperature changes should be minimized to ensure longevity.

5. TROUBLESHOOTING

5.1 No Communication

- **Check Power Supply:** Verify that the VCC pin receives a stable voltage within the 2.3V to 5.2V range.
- **UART Connections:** Ensure TXD and RXD pins are correctly connected to your host device (TX to RX, RX to TX).
- **Baud Rate:** Confirm that the UART baud rate and other serial parameters (data bits, parity, stop bits) match between the module and your host device.
- **Module Mode:** Check the M0 and M1 pin states to ensure the module is in the correct operating mode for communication.

5.2 Poor Range or Signal Quality

- **Antenna:** Ensure the antenna is securely connected to the SMA port and is appropriate for the 170MHz frequency band.
- **Obstructions:** Minimize physical obstructions (walls, metal objects) between the transmitting and receiving modules.
- **Interference:** Identify and mitigate potential sources of RF interference in the operating environment.
- **Power Output:** Verify the module's power output settings. Higher power generally provides better range, but ensure compliance with local regulations.

5.3 Module Not Responding

- **Reset:** Try power cycling the module.
- **Damage:** Inspect the module for any visible physical damage.
- **ESD:** Consider if the module might have been exposed to electrostatic discharge without proper precautions.

6. SPECIFICATIONS

Parameter	Value
IC	SI4463
Frequency Range	148~173.5MHz
Transmit Power	10~20dBm (100mW max)
Communication Distance	Up to 2.0 km (line of sight)
Interface	UART (TTL level)
Power Supply	2.3V~5.2V DC
Operating Temperature	-40 °C to 85 °C
Data Rate	1kbps~25kbps
Antenna Connector	SMA
Dimensions	Refer to datasheet for exact dimensions (DIP/SMD)
Compliance	FCC, CE, CCC

7. WARRANTY AND SUPPORT

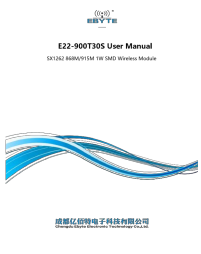
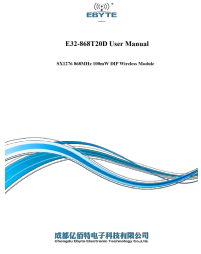
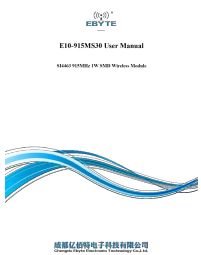
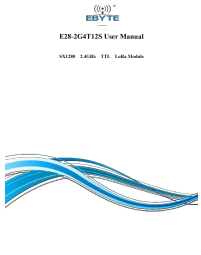
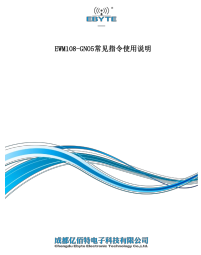
7.1 Manufacturer Information

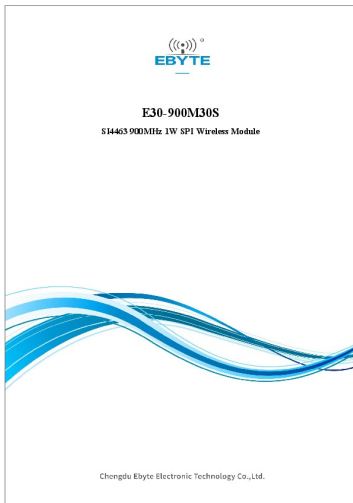
The E30-170T20D module is manufactured by EBYTE. For detailed technical support, datasheets, and further product information, please visit the official EBYTE website:

<http://www.cdebyte.com/>

7.2 Compliance

The E30-170T20D strictly adheres to design standards of FCC, CE, and CCC, meeting various RF certification requirements for export. Users are advised to ensure their application of the module complies with local regulations regarding radio frequency devices.

	E22-900T30S User Manual - EBYTE SX1262 Wireless Module User manual for the EBYTE E22-900T30S wireless module, featuring SX1262 LoRa technology for 868M/915MHz bands. Covers specifications, features, applications, operation modes, hardware design, and troubleshooting.
	E32-868T20D User Manual: SX1276 868MHz 100mW DIP Wireless Module Comprehensive user manual for the EBYTE E32-868T20D wireless serial port module. Details include its SX1276 LoRa technology, 868MHz frequency, 100mW transmission power, DIP package, specifications, operating modes, command formats, hardware design considerations, and frequently asked questions. Suitable for IoT and industrial applications.
	E10-915MS30 1W 915MHz SMD Wireless Module User Manual User manual for the EBYTE E10-915MS30, a 1W 915MHz SMD wireless module based on the SI4463 chip. Covers specifications, operation, hardware design, software, applications, and troubleshooting.
	E28-2G4T12S LoRa Module User Manual - EBYTE This user manual provides detailed information on the EBYTE E28-2G4T12S 2.4GHz TTL LoRa module, covering its features, technical specifications, operation modes, command formats, hardware design considerations, and production guidance.
	EWT104-BT41SP: Low-Cost Dual-Mode Bluetooth Slave Module Test Kit - EBYTE Technical specifications and user guide for the EWT104-BT41SP, a low-cost dual-mode Bluetooth slave module test kit from EBYTE. Covers features, hardware, BLE/SPP data transmission, and AT command configuration.
	EWM108-GN05 Command Manual for GNSS Module This manual provides comprehensive instructions for using commands with the EWM108-GN05 GNSS module from Chengdu Ebyte Electronic Technology. It details command formats, serial port configuration, NMEA data output, satellite system selection, parameter saving, and special pin functions for firmware updates.

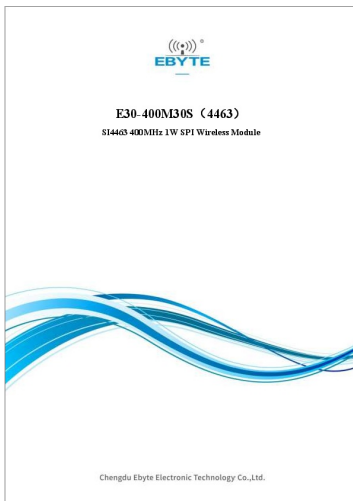


[\[pdf\]](#) User Manual Specifications

E01 2G4M27D v1 0 Wu Avalon E30 900M30S Ebyte Chengdu Electronic Technology Co Ltd User Manual Copyright ©2012 2021 42 Contents UserManual EN 2 cdebyte down.aspx?id=2142 |||

E30-900M30S SI4463 900MHz 1W SPI Wireless Module Chengdu Ebyte Electronic Technology Co.,Ltd E30- ... ded according to the specification, the module may be permanently damaged. 8 E30 series Model No. **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D E30-490T20S E30-490T20D E30-780T20S E30...

lang:i-klngon **score:33** filesize: 539.82 K page_count: 11 document date: 2023-02-20

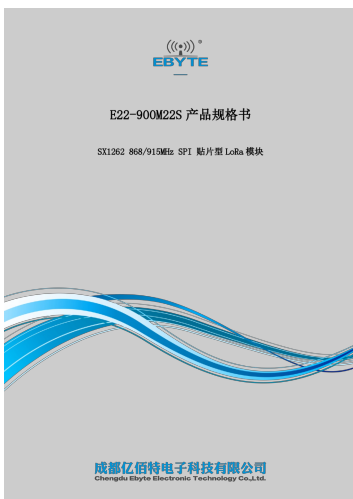


[\[pdf\]](#) User Manual Specifications

E01 2G4M27D v1 0 Wu Avalon ChengduEbyteElectronicTechnologyCo Ltd E30 400M30S 4463 User Manual Copyright©2012 2021 9 P l easv oid un g m rth w UserManual EN ebyte en down.aspx?id=1713 |||

E30-400M30S4463 SI4463 400MHz 1W SPI Wireless Module Chengdu Ebyte Electronic Technology Co.,Ltd M ... ded according to the specification, the module may be permanently damaged. 8 E30 series Model No. **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D1B E30-490T20S E30-490T20D E30-780T20S E...

lang:i-klngon **score:32** filesize: 658.65 K page_count: 11 document date: 2021-11-15



[\[pdf\]](#) Datasheet

E22 900M22S DatasheetGlobal suppliers of Ebyte Sub GHz Modulesebyte e22900m22s xonjuly20 20 nocatlinkxonstorage z8 web core windows net ebyte nocatlink |||

E22-900M22S SX1262 868/915MHz SPI LoRa 1.1 E22-900M22S Semtech LoRa™ SX1262 868/915MHz ... BT10G TX4G-XPL-300 E22-900T22S TX433-NP-4310 E01-ML01S E75-2G4M10S E104-BT10N E07-M1101S E01ML01SP2 **E30-170T20D** E22-900M22S E104-BT5032A E22-400M30S XC-SMA-SMA-20 TX490-JZ-5 TX2400-JK-11 E104-BT05 E73...

lang:en **score:28** filesize: 1.09 M page_count: 11 document date: 2021-03-13



E42-400M20S
User Manual
HW3000 400MHz 100mW SPI Wireless Module



Chengdu Ebyte Electronic Technology Co.,Ltd.

[\[pdf\]](#) User Manual

FtpDown E42 400M20S UserManual EN v1 0 es ebyte down.aspx?id=2721 |||

E42-400M20S User Manual HW3000 400MHz 100mW SPI Wireless Module 1

Chengdu Ebyte Electronic Technol ... ding to the rules arbitrarily welding module may module permanent damage. 8. Related Models Model **E30-170T20D** E30-170T27D E30-433T20S 3 E30-433T20S E30-433T20D 1B E30-490T20S E30-490T20D E30-780T20S...

lang:i-klngon **score:28** filesize: 934.75 K page_count: 12 document date: 2024-01-25



E42-400M20S
User Manual
HW3000 400MHz 100mW SPI Wireless Module



Chengdu Ebyte Electronic Technology Co.,Ltd.

[\[pdf\]](#) User Manual

FtpDown E42 400M20S UserManual EN v1 0 ru ebyte down.aspx?id=2761 |||

E42-400M20S User Manual HW3000 400MHz 100mW SPI Wireless Module 1

Chengdu Ebyte Electronic Technol ... ding to the rules arbitrarily welding module may module permanent damage. 8. Related Models Model **E30-170T20D** E30-170T27D E30-433T20S 3 E30-433T20S E30-433T20D 1B E30-490T20S E30-490T20D E30-780T20S...

lang:i-klngon **score:28** filesize: 934.75 K page_count: 12 document date: 2024-01-25



E104-BT5010A-TB 用户手册 1.0



成都亿佰特电子科技有限公司
Chengdu Ebyte Electronic Technology Co.,Ltd.

[\[pdf\]](#)

E104 BT5010A TB 1 0 E104 BT5032A TB E104 ebyte e104bt5010atb

xonjuly20 20 nocatlink xonstorage blob core windows net |||

E104-BT5010A-TB v1.0 E104-BT5010A-TB 1.0 1 3 E104-BT5010A-TB v1.0 1 1. E104

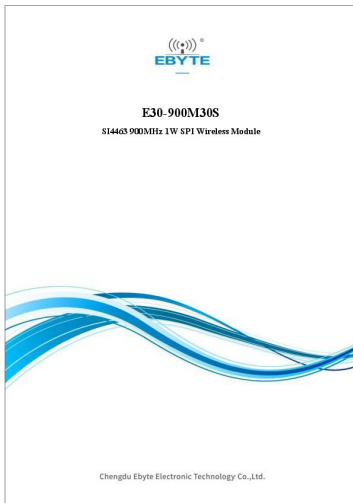
E104-BT5 ... BT10G TX4G-XPL-300 E22-900T22S TX433-NP-4310 E01-ML01S

E75-2G4M10S E104-BT10N E07-M1101S E01ML01SP2 **E30-170T20D** E22-

900M22S E104-BT5032A E22-400M30S XC-SMA-SMA-20 TX490-JZ-5 TX2400-JK-

11 E104-BT05 E73...

lang:en **score:27** filesize: 880.14 K page_count: 5 document date: 2021-03-13

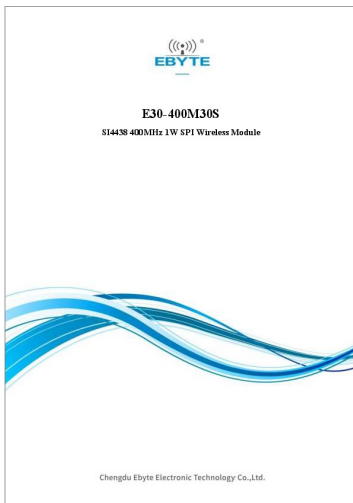


[\[pdf\]](#) User Manual Specifications

E01 2G4M27D v1 0 Wu Avalon Title Author Keywords Created Date 9 24 2021 5 02 21 PM E30 900M30S UserManual EN ebyte en down aspx id 1579 |||

E30-900M30S SI4463 900MHz 1W SPI Wireless Module Chengdu Ebyte Electronic Technology Co.,Ltd E30- ... ded according to the specification, the module may be permanently damaged. 8 E30 series Model No. **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D E30-490T20S E30-490T20D E30-780T20S E30...

lang:i-klnglon **score:26** filesize: 552.55 K page_count: 11 document date: 2021-09-24

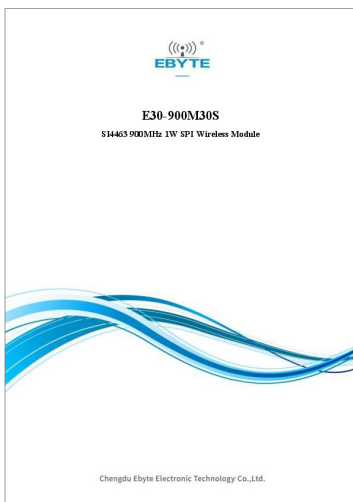


[\[pdf\]](#) User Manual Specifications

E01 2G4M27D v1 0 Wu Avalon ChengduEbyteElectronicTechnologyCo Ltd E30 400M30S UserManual Copyright©2012 2021 9 P I easv oid un g m rth w p 6 3 400M30S UserManual EN ebyte en down aspx id 1706 |||

E30-400M30S SI4438 400MHz 1W SPI Wireless Module Chengdu Ebyte Electronic Technology Co.,Ltd E30- ... ded according to the specification, the module may be permanently damaged. 8 E30 series Model No. **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D1B E30-490T20S E30-490T20D E30-780T20S E...

lang:i-klnglon **score:26** filesize: 634.28 K page_count: 11 document date: 2021-11-01

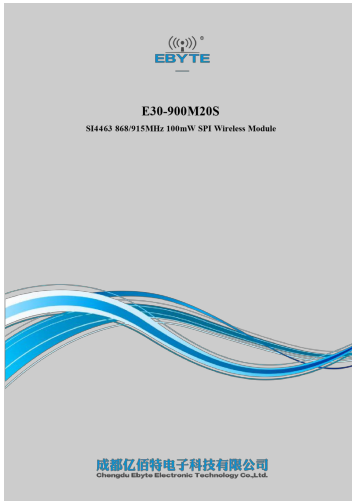


[\[pdf\]](#) User Manual Specifications

E01 2G4M27D v1 0 Wu Avalon E30 900M30S 170T27D SI4463 170M 27 5 1k 25k DIP 24 * 43 SMA K 433T20D 433M 20 2 21 36 433T20S3 UserManual ES V1 3 es ebyte down aspx id 5231 |||

E30-900M30S SI4463 900MHz 1W SPI Wireless Module Chengdu Ebyte Electronic Technology Co.,Ltd E30- ... ded according to the specification, the module may be permanently damaged. 8 E30 series Model No. **E30-170T20D** E30-170T27D E30-433T20D E30-433T20S3 E30-400M20S 4438 E30-400M20S 4463 E30-900M20S E30...

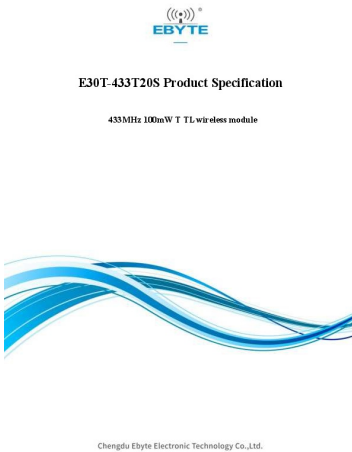
lang:i-klnglon **score:26** filesize: 543.91 K page_count: 11 document date: 2025-01-17



[\[pdf\]](#) User Manual Specifications

E01 2G4M27D v1 0 Wu Avalon E30 900M20S 13 gen 2025 — The information in this document including the URL address for reference is subject to change without notice provided as any UserManual FR 1 fr ebyte down.aspx?id=5316 |||

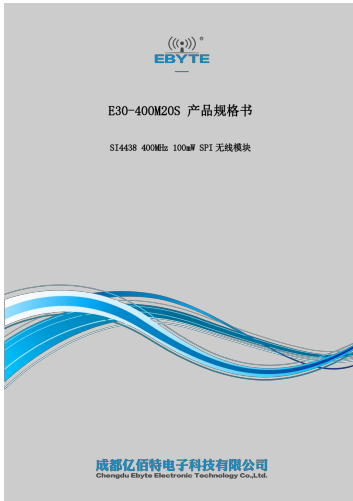
E30-900M20S SI4463 868/915MHz 100mW SPI Wireless Module Chengdu Ebyte Electronic Technology Co., ... ded according to the specification, the module may be permanently damaged. 8 E30 series Model No. **E30-170T20D** E30-170T27D E30-433T20S3 E3 0-433 T20 S E30-433T20D E3 0-490 T20 S E30-490T20D E3 0-780 ... lang:fr **score:26** filesize: 466.11 K page_count: 11 document date: 2025-01-17



[\[pdf\]](#) User Manual Specifications

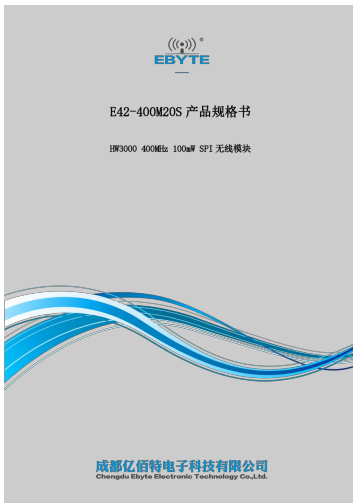
E01 2G4M27D v1 0 Wu Avalon ChengduEbyteElectronicTechnologyCo Ltd E30T 433T20SUserManual Copyright©2012 2022 18 11RelatedModels 433T20S UserManual RU 1 ru ebyte down.aspx?id=1668 |||

E30T-433T20S Product Specification 433MHz 100mW T TL wireless module 0 Chengdu Ebyte Electronic Te ... u Ebyte Electronic Technology Co., Ltd. 11 Related Models E30T-433T20S User Manual Product number **E30-170T20D** E30-170T27D E30-433T20S 3 E30T-433T20S E30-433T20D E30-490T20S E30-490T20D E30-780T20S E... lang:i-klngon **score:23** filesize: 915.35 K page_count: 21 document date: 2022-09-28



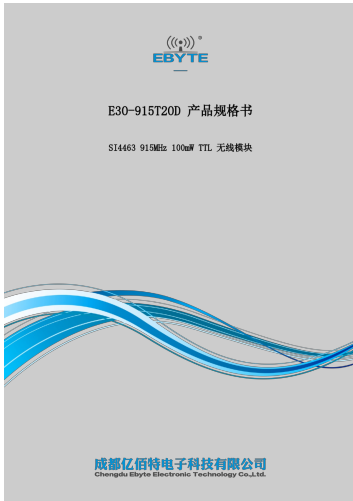
[pdf] User Manual

E01 2G4M27D v1 0 Wu Avalon E30 400M20S 4438 UserManual CN 1 ebyte down 1549 html |||
E30-400M20S SI4438 400MHz 100mW SPI E30-400M20S
... 6.1 6.2 6.3 Copyright 20122021 7 E30-400M20S **E30-170T20D** E30-170T27D E30-
433T20S3 E30-433T20S E30-433T20D1B E30-490T20S E30-490T20D E30-
780T20S E...
lang:i-klngon score:20 filesize: 923.47 K page_count: 11 document date: 2022-08-17



[pdf]

E01 2G4M27D v1 0 Wu Avalon E42 400M20S Jan 6 2024 · E30 170T27D SI4463 170M 27 5 1k 25k
24 * 43 SMA K 433T20S3 SI4438 433M 20 2 16 26 IPEX 2024111161702701 ebyte Uploadfiles
Files 1 11 |||
E42-400M20S HW3000 400MHz 100mW SPI E42-400M20S
..... 9.1 9.2 9.3 Copyright 20122024 7 E42-400M20S **E30-
170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D1B E30-
490T20S E30-490T20D E30-780T20S E...
lang:i-klngon score:19 filesize: 844.68 K page_count: 10 document date: 2024-01-11



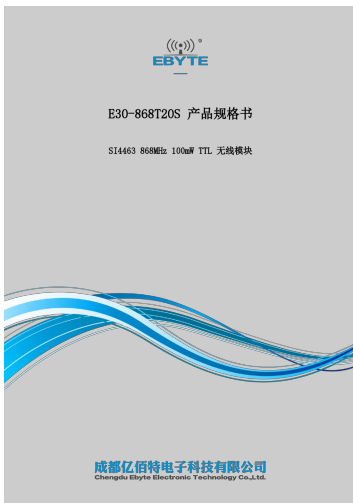
[\[pdf\]](#) User Manual

E30 915T20D UserManual CN v1 4 SI4463 TTL FEC 915MHz 20dBm 20193211649105095

ebyte Uploadfiles Files 2019 3 21 |||

E30-915T20D SI4463 915MHz 100mW TTL E30-915T20D
... 9.2 9.3 E30-915T20D Copyright 20122019 14 E30-915T20D **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D E30-490T20S E30-490T20D E30-780T20S E30...

lang:i-klngon **score:18** filesize: 1.22 M page_count: 17 document date: 2019-03-21



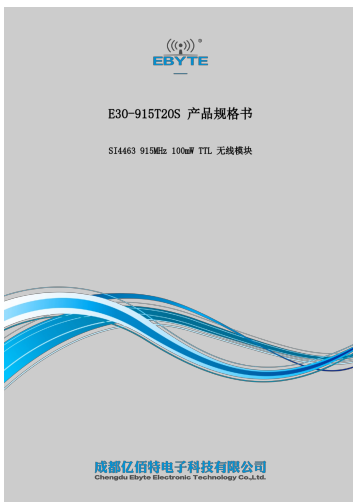
[\[pdf\]](#) User Manual

E30 868T20S UserManual CN v1 4 SI4463 TTL FEC 868MHz 20dBm 2019321164978012

ebyte Uploadfiles Files 2019 3 21 |||

E30-868T20S SI4463 868MHz 100mW TTL E30-868T20S
... 17 30-90 sec 230-250 6/second max 8 minutes max 10.2 Copyright 20122019 15 E30-868T20S **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D E30-490T20S E30-490T20D E30-780T20S E30...

lang:i-klngon **score:18** filesize: 1.32 M page_count: 18 document date: 2019-03-21



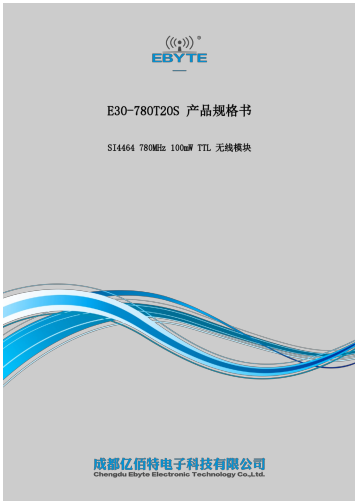
[\[pdf\]](#) User Manual

E30 915T20S UserManual CN v1 4 SI4463 915MHz 20dBm TTL FEC 2019321164969828

ebyte Uploadfiles Files 2019 3 21 |||

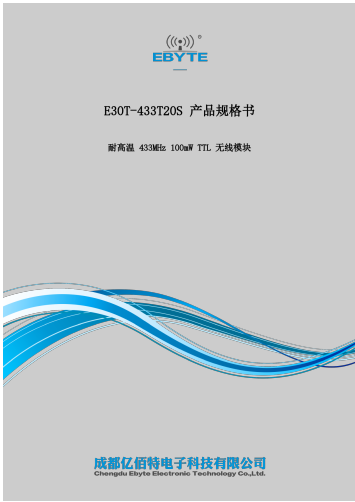
E30-915T20S SI4463 915MHz 100mW TTL E30-915T20S
... 17 30-90 sec 230-250 6/second max 8 minutes max 10.2 Copyright 20122019 15 E30-915T20S **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-433T20D E30-490T20S E30-490T20D E30-780T20S E30...

lang:i-klngon **score:18** filesize: 1.33 M page_count: 18 document date: 2019-03-21



[pdf] User Manual

E30 780T20S UserManual CN v1 4 SI4464 TTL FEC 780MHz 20dBm 2019321164977256
ebyte Uploadfiles Files 2019 3 21 |||
E30-780T20S SI4464 780MHz 100mW TTL E30-780T20S
... 17 30-90 sec 230-250 6/second max 8 minutes max 10.2 Copyright 20122019 15
E30-780T20S **E30-170T20D** E30-170T27D E30-433T20S3 E30-433T20S E30-
433T20D E30-490T20S E30-490T20D E30-780T20S E30...
lang:i-klngon score:18 filesize: 1.33 M page_count: 18 document date: 2019-03-21



[pdf] User Manual

E30T 433T20S UserManual CN v1 3 Welen Lei 10 252024 UART RF
20241024184533605 ebyte Uploadfiles Files 2024 24 |||
E30T-433T20S 433MHz 100mW TTL E30T-433T20S
7 30-90 sec 230-250 6/second max 8 minutes max 10.2 Copyright 20122024 16
E30T-433T20S **E30-170T20D** E30-170T27D E30-433T20S3 E30T-433T20S E30-
433T20D E30-490T20S E30-490T20D E30-780T20S E3...
lang:i-klngon score:17 filesize: 1.82 M page_count: 20 document date: 2024-10-24