

EC21&EC25 USB Interface Descriptor

LTE Module Series

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About the document

History

Revision	Date	Author	Description
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1 Introduction

This document mainly introduces EC21&EC25 USB Interface Descriptor.

2 Product Overview

Quectel EC21&EC25 is a 4G wireless LTE module. You can use it to implement some functions such as Voice Call and browsing the Internet and so on.

In general, the EC21&EC25 module will create five interfaces when you connect it with embedded equipments. These five interfaces have different functionalities. The details are shown as below:

Table 1: Interface Description

DM interface	Diagnose port
NMEA interface	For GPS NMEA sentence output
AT interface	For AT commands
Modem interface	For PPP connections and AT commands
NDIS interface	Network driver interface

3 USB Interface Descriptor

E21&EC25 module is a composite communication device. After USB driver is installed in Windows, Windows will automatically read the device descriptor and the configuration descriptor of the EC2 module, meanwhile the interface devices will be created according to the interface descriptors of the configuration descriptor.

3.1. Composite Communication Device Enumeration

3.1.1. Device Descriptor

Table 2: Device Descriptor

Name	Value	Dec	Hex
bLength	18	18	0x12
bDescriptorType	DEVICE	1	0x01
bcdUSB	2.0	512	0x0200
bDeviceClass	Class defined at interface level	0	0x00
bDeviceSubClass	Subclass defined at interface level	0	0x00
bDeviceProtocol	None	0	0x00
bMaxPacketSize0	0x40 (64 bytes)	64	0x40
idVendor	0x2C7C	11388	0x2C7C
idProduct	0x0125	293	0x0125
bcdDevice	0x318	792	0x318
iManufacturer	1	1	0x01
iProduct	2	2	0x02

iSerialNumber	0	0	0x00
bNumConfigurations	1	1	0x01

3.1.2. Configuration

Table 3: Configuration Descriptor\Configuration

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	CONFIGURATION	2	0x02
wTotalLength	209 bytes	209	0x00D1
bNumInterfaxe	5	5	0x05
bConfigurationValue	1	1	0x01
iConfiguration	0	0	0x00
bmAttributes	0xA0	160	0xA0
bmAttributes.Reserved7	One	1	0x01
bmAttributes.SelfPowered	No	0	0x00
bmAttributes.RemoteWakeup	Supported	1	0x01
bmAttributes.Reserved4..0	Zero	0	0x00
bMaxPower	500 mA	250	0xFA

3.1.3. Interface 0 (DM Port)

Table 4: Configuration Descriptor\Interface 0

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	INTERFACE	4	0x04

bInterfaceNumber	0	0	0x00
bAlternateSetting	0	0	0x00
bNumEndpoints	2 Endpoints	2	0x02
bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Endpoint Descriptor 1

Table 5: Configuration Descriptor\Interface 0\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	1 IN	129	0x81
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	0	0x00

Endpoint Descriptor 2

Table 6: Configuration Descriptor\Interface 0\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	1 OUT	1	0x01
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200

bInterval	never NAKs	0	0x00
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3.1.4. Interface 1 (NMEA Port)

Table 7: Configuration Descriptor\Interface 1

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	INTERFACE	4	0x04
bInterfaceNumber	1	1	0x01
bAlternateSetting	0	0	0x00
bNumEndpoints	3	3	0x03
bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	0	0	0x00
bInterfaceProtocol	0	0	0x00
iInterface	0	0	0x00

Endpoint Descriptor 1

Table 8: Configuration Descriptor\Interface 1\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	3 IN	131	0x83
bmAttributes	Transfer-Types: INTERRUPT	3	0x03
wMaxPacketSize	10 bytes	10	0x0A
bInterval	At most one NAK each 9 micro-frames	9	0x09

Endpoint Descriptor 2

Table 9: Configuration Descriptor\Interface 1\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	2 IN	130	0x82
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	0	0x00

Endpoint Descriptor 3

Table 10: Configuration Descriptor\Interface 1\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	2 OUT	2	0x02
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	0	0x00

3.1.5. Interface 2 (AT Port)

Table 11: Configuration Descriptor\Interface 2

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	INTERFACE	4	0x04

bInterfaceNumber	2	2	0x02
bAlternateSetting	0	0	0x00
bNumEndpoints	3	3	0x03
bInterfaceClass	0	0	0xFF
bInterfaceSubClass	0	0	0x00
bInterfaceProtocol	0	0	0x00
iInterface	0	0	0x00

Endpoint Descriptor 1

Table 9: Configuration Descriptor\Interface 2\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	5 IN	133	0x85
bmAttributes	Transfer-Types: INTERRUPT	3	0x03
wMaxPacketSize	10 bytes	10	0x0A
bInterval	At most one NAK each 9 micro-frames	9	0x09

Endpoint Descriptor 2

Table 10: Configuration Descriptor\Interface 2\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	4 IN	3	0x84
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200

bInterval	never NAKs	0	0x00
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Endpoint Descriptor 3

Table 11: Configuration Descriptor\Interface 2\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	3 OUT	3	0x03
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	0	0x00

3.1.6. Interface 3 (Modem Port)

Table 12: Configuration Descriptor\Interface 3

Name	Value	Dec	Hex
bLength	Valid	9	0x09
bDescriptorType	INTERFACE	4	0x04
bInterfaceNumber	3	3	0x03
bAlternateSetting	0	0	0x00
bNumEndpoints	3	3	0x03
bInterfaceClass	0	255	0xFF
bInterfaceSubClass	0	255	0x00
bInterfaceProtocol	0	255	0x00
iInterface	0	0	0x00

Endpoint Descriptor 1

Table 13: Configuration Descriptor\Interface 3\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	7 IN	135	0x87
bmAttributes	Transfer-Types: INTERRUPT	3	0x03
wMaxPacketSize	10 bytes	10	0x0A
bInterval	At most one NAK each 9 micro-frames	9	0x09

Endpoint Descriptor 2

Table 14: Configuration Descriptor\Interface 3\Endpoint Descriptor

Name	Value	Dec	Hex
BLength	Valid	7	0x07
BDescriptorType	ENDPOINT	5	0x05
BEndpointAddress	6 IN	133	0x86
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	32	0x00

Endpoint Descriptor 3

Table 15: Configuration Descriptor\Interface 3\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	4 OUT	4	0x04
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200

bInterval	never NAKs	0	0x00
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3.1.7. Interface 4 (NDIS Port)

Table 16: Configuration Descriptor\Interface 4

Name	Value	Dec	Hex
BLength	Valid	9	0x09
bDescriptorType	INTERFACE	4	0x04
bInterfaceNumber	4	4	0x04
bAlternateSetting	0	0	0x00
bNumEndpoints	3	3	0x03
bInterfaceClass	Vendor-specific	255	0xFF
bInterfaceSubClass	Vendor-specific	255	0xFF
bInterfaceProtocol	Vendor-specific	255	0xFF
iInterface	0	0	0x00

Endpoint Descriptor 1

Table 20: Configuration Descriptor\Interface 4\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	9 IN	137	0x89
bmAttributes	Transfer-Types: INTERRUPT	3	0x03
wMaxPacketSize	8 bytes	8	0x08
bInterval	At most one NAK each 9 micro-frames	9	0x09

Endpoint Descriptor 2

Table 21: Configuration Descriptor\Interface 4\Endpoint Descriptor

Name	Value	Dec	Hex
BLength	Valid	7	0x07
BDescriptorType	ENDPOINT	5	0x05
BEndpointAddress	8 IN	135	0x88
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	0	0x00

Endpoint Descriptor 3

Table 17: Configuration Descriptor\Interface 4\Endpoint Descriptor

Name	Value	Dec	Hex
bLength	Valid	7	0x07
bDescriptorType	ENDPOINT	5	0x05
bEndpointAddress	5 OUT	5	0x05
bmAttributes	Transfer-Types: BULK	2	0x02
wMaxPacketSize	512 bytes	512	0x0200
bInterval	never NAKs	0	0x00