

Modem M.2 to USB Converter

GTM-205M

User Manual

Version 1.0.0 Mar 2024



Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

Warning

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Contact us

If you have any problem, please feel free to contact us. You can count on us for quick response.

Email : <u>service@icpdas.com</u>

Symbol description



Manufacture of this product strictly abide by the rules of lead-free and does not contain any harmful substances.



WEEE

RoHS

This symbol means this product must be collected at the time of discarding in the EU.



HOT SURFACE DO NOT TOUCH

This symbol means this product's enclosure may be with high temperature, do not touch before cooling or else will be burned.



USB Super Speed Plus

This product support USB 3.1 Super Speed Plus.

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1. Introduction

GTM-205M is an industrial-grade data modem M.2 converter with a USB Super Speed Plus interface. Customers can choose to match different communication modules according to the requirements of the field, supporting services in different frequency bands.

The GTM-205M supports standard AT commands and also provides an integrated library, eliminating the need for customers to handle command issues with different communication modules, allowing them to focus and accelerate application development. It can be paired with various PLCs and PCs, and through the library, SMS sending and 4G/5G connections can be quickly implemented.



2. Hardware Specifications

2.1 Hardware Specifications

Item	GTM-205M				
Comm. Interface					
COM Port	RS232 x 1 (RxD, TxD, GND, Only for Reset Modem)				
COM Port Baud Rate	115200 bps				
USB	USB 3.1 (Super Speed Plus)				
USB Driver Support	Windows 10_x64 Vindows 11				
LED Indicators					
Power	Red				
Signal	Green				
Power					
Protection	Power reverse polarity protection				
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot				
Required Supply Voltage	$+10 V_{DC} \sim +30 V_{DC}$				
Rated Current	30 ~ 15 mA / 10 ~ 30 V _{DC}				
Reset Input					
Input Type	Isolated, 3750 V _{rms}				
On Voltage Level	$+3.5 V_{DC} \sim +30 V_{DC}$				
Off Voltage Level	+1 V _{DC} max.				
Input Impedance	3 kΩ, 0.25W				
Mechanical					
Casing	Metal				
Dimensions (W x L x H)	28 mm x 78.5 mm x 100 mm				
Installation	DIN-Rail				
Environment					
Operation Temperature	-25°C to 70°C				
Storage Temperature	-40°C to 80°C				
Humidity	5~90% RH, non-condensing				

2.2 Accessory Specification

Module (Optional)	RM500Q-AE	RM500Q-GL	FN990A28	MV31-W				
Frequency Bands								
5G	NSA/SA: n1/n2/n3/n5/n7/ n8/n12/n20/n25/ n28/n38/n40/ n41/n48*/n66/ n71/n77/n78/n79	NSA: n38/n41/n77/n78/n79 SA: n1/n2/n3/n5/n7/n8/ n12/n20/n25/n28/ n38/n40/n41/n48*/ n66/n71/n77/n78/n79	NSA/SA: n1/n2/n3/n5/n7/ n8/n20/n25/n28/ n30/n38/n40/n41/ n48/n66/n71/n75/ n77/n78/n79 Default off - n12/n13/n14/n18/ n26/n29/n76	FDD: n1/n2/n3/n5/n7/n8/ n12/n20/n28/ n66/n71 TDD: n38/n41/n77/n78/n79 mmWave: n257/n258/n260/n261				
4G	FDD-LTE: B1/B2/B3/B4/B5/B7 4/B18/B19/B20/B25 B32/B66/B71 TDD-LTE: B34/B38/B39/B40/E LAA: B46	3/B8/B12(B17)/B13/B1 5/B26/B28/B29/B30/ 341/B42/B43/B48	B1/B2/B3/B4/B5/ B7/B8/B12/B13/ B14/B17/B20/ B25/B26/B28/ B29/B30/B32/ B38/B40/B41/ B42/B43/B48/ B66/B71 LAA: B46	FDD-LTE: BB1/B2/B3/B4/B5/B7/ B8/B12/B13/B14/B17/ B18/B19/B20/B25/B26 /B28/B29/B30/B32/ B66/B71 TDD LTE: B34/B38/B39/B40/ B41/B42/B43/B48 LAA: B46				
3G	B1/B2/B3/B4/ B5/B6/B8/B19	B1/B2/B3/B4/B5/ B8/B19	B1/B2/B3/B4/B5/B6/B8/B19					
GNSS	GPS/GLONASS/BeiDou/Galileo							
Scope of Use								
Region	Global (Except for China)	Global (Except for US)	EMEA/ APAC/ North America	Global				
Certification	GCF/RCM/ JATE*/IC*/ PTCRB*/CE/ FCC/NCC		FCC/IC/RED/ NCC/JATE/ TELEC/KCC/ RCM/PTCRB/GCF	RED/REACH/CE/IC/ FCC/ISED/GCF/ PTCRB/RCM/JATE/TE LECC				
Environment								
Temperature Range	-30°C	c ~+70°C	-40°C ~+85°C					
Dimensions (W x L x H)	30.0mm x 52	2.0mm x 2.3mm	30.0mm x 52.0mm x 2.25mm	30.0mm x 42.0mm x 2.5mm				

* : Under development/in progress

3. Hardware Appearance

3.1 View of the GTM-205M Panel





3.2 Pin Assignments



ltem	Name
Power Input	+Vs
+10 ~ +30 VDC	GND
Frame Ground	F. G
Poset	RST+
Resel	RST-
	TxD
RS-232	RxD
	GND

3.3 LED Indicators



GTM-205M has 2 LED indicator lights to help users determine the current status of the sys tem. Their descriptions are as follows:

A. PWR(Red) : The PWR LED can indicate the status of Power module.

Power normal	Power fail
Always ON	Always OFF

B. Signal (Green) : The modem LED can indicate the status of 5G module.

5G module normal	5G module fail
Always ON	Always OFF

4. Hardware Wire Connection

4.1 Reset Wire Connection

ļ



Reset Input						
ON Voltage Level	$+3.5 V_{DC} \sim +30 V_{DC}$					
OFF Voltage Level	+1 V _{DC} max.					



You can also restart the modem by inputting the command "@ICPDASRESET" through RS-232.

4.2 Installation

> Module Installation Method

Please refer to the following installation method:

• For purchasing communication modules, please refer to the ordering information below the ordering page of GTM-205M.

Step 1: Remove the screw(s) securing the mounting mechanism.



Step 2: Insert the purchased communication module into the slot, and secure it by tightening the silver screw(s).



Step 3: Attach the IPEX cable to the IPEX connectors on the communication module and to the AN0~3 positions on the board.

• The position of the IPEX connectors may vary depending on the module, but there is no difference in installation.



Assembly Safety Precautions

1. Assemble only when the power is completely off.



- 2. Be particularly careful of other electronic components on the panel dur ing assembly to avoid damage.
- 3. Handle with care during assembly to prevent accidental contact with o ther components and potential injury.

Step 4: After installation, reassemble the removed casing.

> SIM Card and Antenna Installation

Step 1: Insert the Micro SIM card into the card slot.



Step 2: Install the purchased antenna accessory.



Power Supply Wiring

Power can be supplied via USB or through the power input terminals. If USB power is found to be unstable, it is recommended to use the power input terminal for supplying power.



Safety Precautions

1. The product casing may be hot. Do not touch it until it has cooled down to avoid burns.



 The power input terminals (DC.+VS/DC.) comply with EN60950-1 requireme nts for Limited Power Sources (SELV). Ensure correct wiring.

5. USB Driver Installation

Please download the driver from the official website and proceed with the installation.

https://www.icpdas.com/tw/download/show.php?num=8695&model=GTM-205M-5GE

Step 1: Install the corresponding USB driver "GTM-20xM USB driver.exe".



Step 2: Double-click on "GTM-20xM USB driver.exe" to install the driver, then click

"Next".

etup - GTM_Series_Driver_V1.2	2000	
ect Destination Location		5
Where should GTM_Series_Driver be installed?		6
Setup will install GTM_Series_Driver into the following folder.		
To continue, dick Next. If you would like to select a different folder, dick Browse.		
		owse

At least 58.1 MB of free d	lisk space is required.
----------------------------	-------------------------

Next	Cancel

Step 3: Click on "Install". Please wait for the installation to complete. Do not close the

program during installation.



Step 4: Click "Finish".



Step 5: Connect GTM-205M to your PC via the USB cable.

Step 6: Check Device Manager to see the listed devices: USB NMEA Port, USB AT Port, USB Modem, USB DM Port, and Wireless Ethernet Adapter.

The displayed names may vary depending on the module. The main communication n ports are typically "AT Port" and "Modem Port".



6 Software Test

6.1 Test Com Port communication

X This example uses Access Port version 1.37 for testing.

Step 1: Open the Access Port software and select the Terminal option.



Step 2: Click on the parameter configuration at the top left corner, then set the Com

Port and parameters.

AccessPort - COM5(115200,N,8,1) Closed	_	\times
File Edit View Monitor Tools Operation Help		
🤷 🕑 🛃 🗐 🗲 🥥		
Terminal Monitor		
🖬 🔠 Hex ab 🖾 🔀		

Send->	Hex	🔵 Char	Plain Text		Real Time Send	Clear	Send	DTR R1	S I	Max Size < 641
00000	0000000:								\sim	
										~
就緒						Tx	0	R×0 (OM:	5(115200,N 🔡
							-			

Step 3: Select the number corresponding to the GTM-205M AT Port or Modem Port.

In this example, COM4 is used, with Baud Rate set to 115200, Parity to NONE, Data Bit to 8, and Stop Bit to 1.

🍓 Options	×
General Event Control Flow Control Timeout Control Monitor Control	General Custom Baud Rate Enable 115200
	Serial Port Settings Port: COM4 Baud Rate: COM5 COM6 Parity Bit: COM7 COM8 Data Bit: COM9 COM10 COM10 Stop Bit: COM11 COM11 COM12 Parity Bit: COM12 COM10 CO
	Char Format Char Format Hex Format Hex Format Hex Format Lenable auto send Cycle 1000 ms Mathematical Sector Secto
OK	Advanced Auto open port when application start Prompt for saving when application exit Remind me when update is available

Step 4: In the transmission window, select "String" and enter the AT Command.

■ In this example, if communication is successful, the module will respond with: OK

۾ 📭	Access	ort - C	OM4(1152	200,N,8	,1) Opened	d						—		\times
File	Edit	View	Monitor	Tools	Operatio	on Hel	р							
9			2 📃	\$	\bigcirc									
Te	erminal		Monitor											
	∭u Hex	ab 🗷	2											
AT														
ок														
Send->	OF	Iex	• Cha	r	Plain Text	~	Real 7	'ime Send	Clear	Send	DTR	RTS	Max	Size < 64F
AT														< >
Comm	Status		CTS .	DSR	RING	RLSD ((CD)	CTS Hold	DSR Hold	RLSI) Hold	XOFF H	lold	
Ready	/								T:	< 5 7	Rx 230	CO	vi4(115)	200.N

Step 5: If a SIM card is inserted, you can enter "AT+CEREG?" or "AT+COPS?" to

🚰 AccessPort - COM4(1152)	00,N,8,1) Opened				_	o ×
File Edit View Monitor	Tools Operation H	delp				
🍫 🕑 🔁 📃	\$ 0					
Terminal Monitor						
📕 📴 Hex 🛛 🖾 🧟						
AT+CREG?						
+CREG: 0,1	module reply +CRI	EG: 0,1, it means it l	has been reg	gistered with	the carri	er
ок – – –						
Send-> OHex OChar	Plain Text 🗸 🗸	Real Time Send	Clear	Send DTR	RTS	Max Size < 6
AT+CREG?						-
Comm Status CTS D	SR RING RLS	D (CD) CTS Hold	DSR Hold	RLSD Hold	XOFF Ho	old
Ready			T~ 71	R~ 250	LCON	147115200 N
🛋 AccessPort - COM4(11520)0,N,8,1) Opened				_	o x
🚰 AccessPort - COM4(11520) File Edit View Monitor)0,N,8,1) Opened Tools Operation H	lelp			_	o ×
AccessPort - COM4(11520) File Edit View Monitor	00,N,8,1) Opened Tools Operation H	lelp			_	
AccessPort - COM4(11520 File Edit View Monitor	00,N,8,1) Opened Tools Operation H	lelp			-	
AccessPort - COM4(11520) File Edit View Monitor File Edit View Monitor File Edit View Monitor Monitor Ferminal Monitor	00,N,8,1) Opened Tools Operation H		"Chunghwa	Telecom" 13	-	
AccessPort - COM4(11520) File Edit View Monitor Terminal Monitor OK Hex ab C 22	00,N,8,1) Opened Tools Operation H	lelp e reply +COPS: 0,0, Chunghwa Telecom i	,"Chunghwa s registered	Telecom",13 on the 5G ne	- etwork o	□ ×
AccessPort - COM4(11520) File Edit View Monitor Terminal Monitor Hex ab V Reference OK Hex ab V Reference OK Hex ab V Reference AT+COPS?	00,N,8,1) Opened Tools Operation H Tools Operation H	lelp e reply +COPS: 0,0, Chunghwa Telecom i	, "Chunghwa s registered	Telecom",13 on the 5G ne	– etwork o	C X
AccessPort - COM4(11520 File Edit View Monitor Terminal Monitor Hex ab © @ OK tr AT+COPS? a +COPS: 0,0, "Chunghwa Telecom	00,N,8,1) Opened Tools Operation H S Operation H S Operation H Tools Operation H S Operation H Tools O	lelp e reply +COPS: 0,0, Chunghwa Telecom i	, "Chunghwa s registered	Telecom",13 on the 5G ne	–	C X
AccessPort - COM4(11520 File Edit View Monitor Terminal Monitor Monitor Hex ab C 22 OK tr AT+COPS: 0,0, "Chunghwa Telecorr OK	00,N,8,1) Opened Tools Operation H S 0 nis example module which means that C Telecom. 0,13	ielp e reply +COPS: 0,0, Chunghwa Telecom i	,"Chunghwa s registered	Telecom",13 on the 5G ne	_ etwork o	C X
AccessPort - COM4(11520) File Edit View Monitor Terminal Monitor Terminal Monitor Hex ab C Char CK AT+COPS: 0,0, "Chunghwa Telecom OK Send-> Hex OCA	00,N,8,1) Opened Tools Operation H S Operation H S Operation H Tools Operation H Too	e reply +COPS: 0,0, Chunghwa Telecom i	,"Chunghwa s registered	Telecom", 13 on the 5G ne	etwork o	f Chunghw
AccessPort - COM4(11520 File Edit View Monitor Terminal Monitor Terminal Monitor	00,N,8,1) Opened Tools Operation H S Operation H S Operation H Tools Operation H S Operation H Tools O	e reply +COPS: 0,0, Chunghwa Telecom i Real Time Send	"Chunghwa s registered	Telecom", 13 on the 5G ne	etwork o	C X f Chunghw I Max Size < 0
AccessPort - COM4(11520 File Edit View Monitor Terminal Monitor Terminal Monitor Image: AccessPort - COM4(11520) Image: AccessPort - CO	00,N,8,1) Opened Tools Operation H Second States of the second	e reply +COPS: 0,0, Chunghwa Telecom i Real Time Send	,"Chunghwa s registered	Telecom", 13 on the 5G ne Send DTR	etwork o	C X f Chunghw I Max Size < 6

inquire about registration status.

5.2 Testing SMS Sending and Receiving

Our company also provides a simple testing software. You can download the example prog

ram from our official website.

• The image below shows **GSMNetDemo.exe**, which can be used for testing SMS

sending and receiving.

🔛 GSM.Net Demo			– 🗆 X
Language Open Log Version			
Modem Port 初始化 Modem Status: Modem 待初始化	訊號強度 0 尚未註冊	AT port: v V R M M M M M M M M M M M M M M M M M M	行動數據 ,11】
送簡訊			
電話: 09xxxxxxxx 模式: 7-Bit 、	/ 傳送狀態		
簡訊內容: 簡訊測試 : Hello SMS	傳送簡訊		
收簡訊			
電話: 模式: UCS2			
簡訊長度: xx 時間: xxxx/xx/	/xx		
簡訊內容:			
			v

• For Windows systems, mobile data is built-in and can be enabled or disabled through the system's built-in functionality.

Dial-up Connection	中華電信 (LTE) Connected
II CHT Turned off	
	Network & Internet settings
Network & Internet settings	Change settings, such as making a connection metered.
Change settings, such as making a connection metered.	
ф	
Airplane mode Cellular	Airplane mode Cellular

Related Reference:

https://support.microsoft.com/en-us/windows/cellular-settings-in-windows-905568ff-7f31-3013-efc7-3f396ac92cd7

7. FAQ

📇 Device Manager	_	×
File Action View Help		
V 📇 DESKTOP-AVNKGD5		 ^
> I Audio inputs and outputs		
> 🛄 Computer		
> 👝 Disk drives		
> 🔙 Display adapters		
> 🛺 Human Interface Devices		
> 📷 IDE ATA/ATAPI controllers		
> 🥅 Keyboards		
> II Mice and other pointing devices		
> 🛄 Monitors		
> 🖵 Network adapters		
✓ 😰 Other devices		
RM500Q-AE		
🙀 RM500Q-AE		
RM500Q-AE		
RM500Q-AE		
😰 RmNet		
> 👾 PAC Backplane Controller		
Ports (COM & LPT)		

Q01: Driver Installation Issue - Exclamation Mark Appears

A01: View Device Manager, if an exclamation mark appears, please follow these steps:

Step 1: Right-click on "RM500Q-AE/GL" or "Cinterion PID 0x00B3 USB" and select

Properties.



Step 2	2: Select	Update	Driver.
--------	-----------	--------	---------

RM500Q-	AE Prop	erties					Х
General	Driver	Details	Events				
2	RM500	Q-AE					
	Driver	Provider:	Unkn	own			
	Driver	Date:	Not a	vailable			
	Driver	Version:	Not a	vailable			
Digital Signer:			Not digitally signed				
Driver Details		View de	tails about	the installed drive	er files.		
Upd	late Driv	er	Update	the driver f	or this device.		
Roll I	Back Dri	ver	If the de back to	vice fails a the previo	after updating the usly installed drive	driver, roll er.	
Disable Device		Disable the device.					
Uninstall Device			Uninstal	I the devic	e from the system	n (Advanced	i).
					ОК	Cance	ł

Step 3: Choose "Browse my computer for driver software".

Cancel

 \times

Step 4: Click the "Browse" button.

←	Update Drivers - RM500Q-AE	×
	Browse for drivers on your computer	
	Search for drivers in this location:	
	E:\release64 V Browse	
	✓ Include subfolders	
	→ Let me pick from a list of available drivers on my computer This list will show available drivers compatible with the device, and all drivers in the same category as the device.	
	Next Cano	el

Step 5: Choose default Driver setup path (C:\ICPDAS\GTM_Series_Driver) , click "OK"

Browse For Folder	×
Select the folder that contains drivers for your hardware	è.
> 👌 Music	^
> E Pictures	
> 📑 Videos	
🗸 🏪 OS (C:)	
✓icpdas	
> DCON_Utility_Pro_PC	
✓ GTM-205M-5G	
	Ŧ
Folder: GTM-205M-5G	
OK Cancel	

Step 6: After confirming that the path is correct, click the "Next" button.

		\times
←	Update Drivers - RM500Q-AE	
	Browse for drivers on your computer	
	Search for drivers in this location:	
	C:\icpdas\GTM-205M-5G	
	✓ Include subfolders	
	→ Let me pick from a list of available drivers on my computer This list will show available drivers compatible with the device, and all drivers in the same category as the device.	
	Next Canc	el

Step 7: After installing the driver, please proceed to complete a total of 5 drivers, named: USB NMEA Port, USB AT Port, USB Modem, USB DM Port, and Wireless Ethernet Adapter, as shown in the image below.

X The displayed names may vary depending on the module.

> ∰ PA > ₩ Po ₩	WAIN WINIPOR (SSTP) C Backplane Controller rts (COM & LPT) Communications Port (COM1) Communications Port (COM2) GTM-205M-5G USB AT Port (COM41) GTM-205M-5G USB DM Port (COM39)	
A	GTM-205M-5G USB NMEA Port (COM38) Multi-serial Communications Port (COM3)	~

8. Revision History

Revision	Date	Author	Description
1.0.0	2024/03/29	Patty	First Release