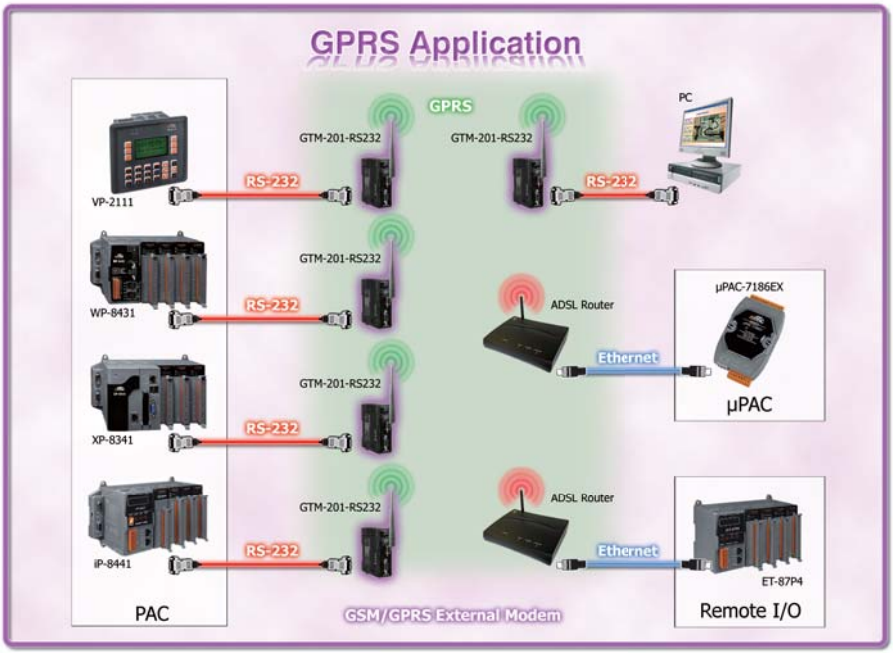
5.2. GPRS/GSM Wireless Products

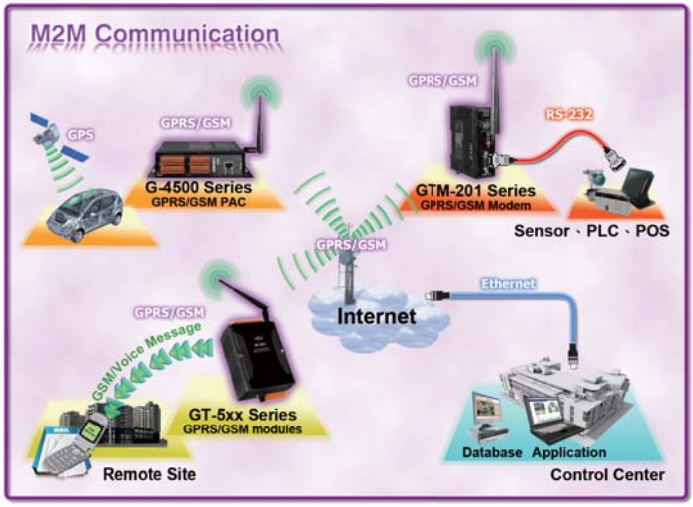
ICP DAS GPRS/GSM wireless solutions are uniquely designed to meet the challenges of implementing and Managing a small, medium and large number of unmanned remote devices as well as mobile terminals using the GPRS/GSM network. The ICP DAS GPRS/GSM wireless system is comprised of intelligent GPRS/GSM modems with versatile interfaces, a GPRS/GSM Data Server (DS) and GRPS/GSM PACs with embedded dynamic IP resolution technology to help system integrators and application service providers quickly integrate GPRS/GSM technology into their own solutions, and save development time with reduced costs and assured performance.

Advantages & Benefits

- There is no need to build an expensive fixed line network, saving substantially costs
- Plug & Play - Enable any device to be connected to the Internet via serial port over a GSM/GPRS network
- Communications - The most efficient method of handling data over a GPRS/GSM wireless network and the Internet
- Complete - A full turnkey solution that is designed for both fixed and mobile machine-to-machine applications



The Supreme has the same versatile Plug & Play form factor as previous M1306 products, and is packed with a host of new features that will carry your applications well into the future. For µPAC users, we provide GPRS, GSM and SMS lib files that allow you to quickly create custom application. For PAC users, the necessary software tools for GPRS, GSM and SMS are built to the OS.



Product	Functions	Applications
GTM-201 series 	Industrial GSM/GPRS modems • Quad-band 850/900/1800/1900 MHz • Different communication interfaces are provided, including RS-232 and USB, etc. • Uses AT commands • Designed for GPRS, data, fax, SMS and voice applications • Industrial design with surge protection • Supports TCP Server, TCP client, UDP client connection from GPRS	• Equipment automation • Remote monitoring systems • Remote Data acquisition systems • For the PC based/PLC/PAC-based applications
GT-5xx series 	Intelligent GPRS/GSM modules • Quad-band 850/900/1800/1900 MHz • Can act as a GPRS or SMS gateway module • SMS reception and transmission • Connect any serial device to GPRS and the Internet • Easily monitor remote processes • Plug and play. No special programming Knowledge required • Support for Voice alarm via GSM network • GUI-based Utility • Industrial design with surge protection	• Remote data monitoring and control • Water, gas and oil flow metering • Power station monitoring and control • Traffic signal monitoring and control • Remote I/O monitoring systems • Home automation • Vendor machine management systems • Voice alert system
G-4500 series 	Multi-function GPRS/GSM PACs • Supports a variety of TCP/IP features, including TCP, UDP, IP, ICMP and ARP, etc. • 10/100 BASE-T NE2000 compatible Ethernet Controller • Built-in Self-Tuner ASIC controller on the RS-485 port • Support the Modbus Protocol • GPS function • Free easy-to-use software development toolkits • Industrial design with surge protection	• Fleet management • Commercial vehicle monitoring and driver performance monitoring • Rental car monitoring and theft recovery • Emergency (ambulance and fire engine) • Hydrology monitoring systems

GTM-201-RS232
GTM-201-USB

Industrial Quad-band GPRS/GSM Modems

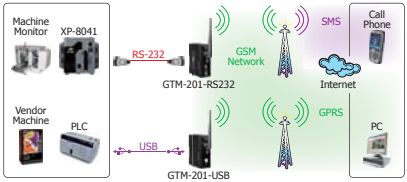
Features

- Quad-band GSM/GPRS Modem Operating of 850/900/1800/1900 MHz
- Designed for GPRS, Data, Fax, SMS and Voice Applications
- Supports TCP Server, TCP Client, UDP Client Connection from GPRS
- Supports Standard AT Commands
- Includes a Digital Input Channel to reset the System
- Provide 3.5 mm stereo jack for Audio Interface
- LED Indicators for GSM and Power Indication
- High reliability in harsh environments
- The RS-232 Port supports 9600 to 115200 bps (GTM-201-RS232)
- USB Driver for Windows, WinPAC (WinCE5.0), LinPAC (Linux 2.6) (GTM-201-USB)
- DIN-Rail mountable

Introduction

The GTM-201 is a series of industrial Quad-band GSM/GPRS modems with RS-232 and USB interfaces that work at frequencies of GSM 850 MHz, EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. The modems utilize the GSM/GPRS network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data acquisition. The GTM-201 series has an integrated TCP/IP stack so that even simple controllers with serial communications ports can be connected to the modem without the need for special installation of drivers. The features of the GTM-201 series allows a variety of PLC and PC applications to take advantage of SMS and GPRS connectivity. The voice interface allows these modems to be also applied to alarm systems with sounds.

Applications

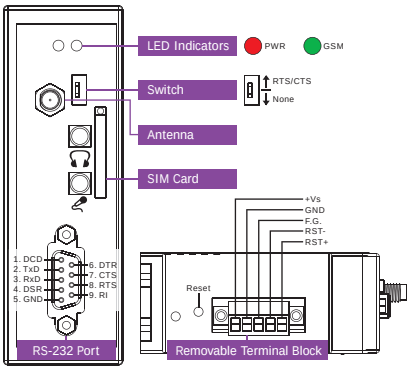


Specifications

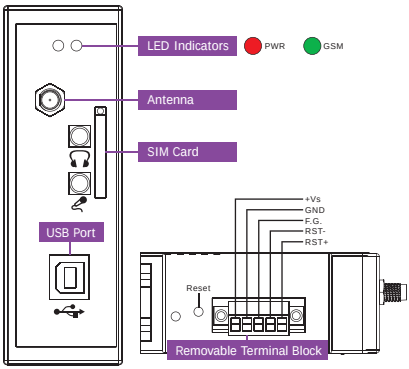
Models	GTM-201-RS232	GTM-201-USB
GSM/GPRS System		
GPRS/GSM Quad-band	850/900/1800/1900 MHz	
GPRS Multi-slot	Class 10/8	
GPRS Mobile Station	Class B	
GPRS Class 10	Max. download speed 85.6 kbps	
CSD	Up to 14.4 kbps	
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)	
Coding Schemes	CS 1, CS 2, CS 3, CS 4	
SMS	Text and PDU Mode	
Serial Ports		
Serial Standards	RS-232 (DB-9 Female)	USB (B-TYPE) to RS232(VCP)
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	TxD, RxD, DTR, DSR, DCD, RI, GND
Baud Rate	9600 bps ~ 115200 bps	
Include Cable	RS-232 9-Pin Female to Male cable (CA-0915)	USB Type A to Type B cable (CA-USB18)
Compatibility	-	USB 1.1 and 2.0 standard
USB Driver Support	-	Windows 98 and 2000 Windows XP and XP 64-bit Windows Vista and Vista 64-bit WinPAC (WinCE 5.0) LinPAC (Linux kernel 2.6)
Reset Input		
Input Type	Isolated, 3750 V_{rms}	
On Voltage Level	+3.5 V_{DC} ~ +30 V_{DC}	
Off Voltage Level	+1V max.	
Input Impedance	3 kΩ, 0.25 W	
LED Indicators		
Power	Red	
GSM/GPRS	Green	
Power		
Protection	Power reverse polarity protection	
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot	
Required Supply Voltage	+10 V_{DC} ~ +30 V_{DC}	
Power Consumption	Idle: 25 mA @ 24 V_{DC}; Data Link: 100 ~ 400 mA (peak) @ 24 V_{DC}	
Connection	5-Pin 3.81 mm Removable Terminal Block	
Mechanical		
Casing	Plastic	
Flammability	UL 94V-0 materials	
Dimensions (W x L x H)	33 mm x 87 mm x 107 mm	
Installation	DIN-Rail	
Environment		
Operating Temperature	-25 °C ~ +55 °C	
Storage Temperature	-40 °C ~ +80 °C	
Humidity	5 ~ 90% RH, non-condensing	

Appearance

GTM-201-RS232

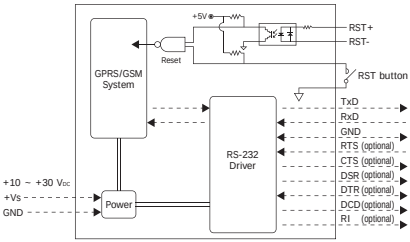


GTM-201-USB

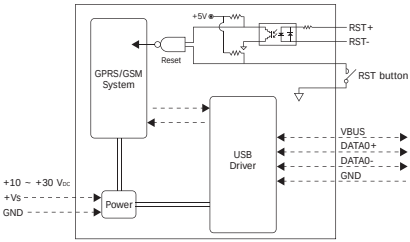


Internal I/O Structure

GTM-201-RS232

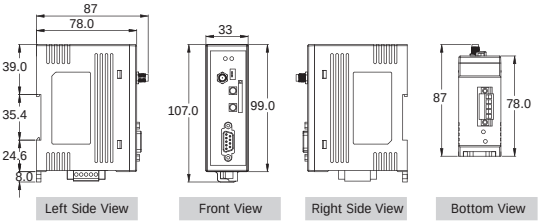


GTM-201-USB

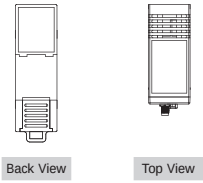


Dimensions (Unit: mm)

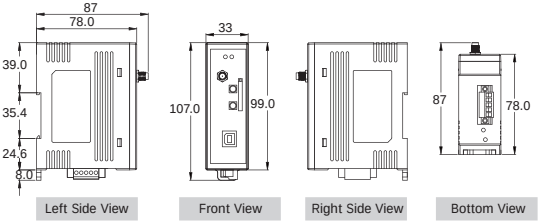
GTM-201-RS232



GTM-201-RS232/GTM-201-USB



GTM-201-USB



Ordering Information

GTM-201-RS232 CR	Industrial Quad-band GPRS/GSM Modem with RS-232 Interface (RoHS)
GTM-201-USB CR	Industrial Quad-band GPRS/GSM Modem with USB Interface (RoHS)

Accessories

ANT-421-01	3m external GPRS/GSM antenna

GT-530

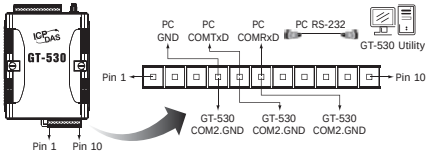
Intelligent SMS Alarm Controller

Features

- Support 900/1800/1900 MHz Tri-band frequency
- Identify ASCII or Unicode SMS Automatically
- Supports max. 140 ASCII Characters
- Supports max. 70 Unicode Characters
- Built-in ASCII Commands and Transparent Communication Modes
- Max. 10 Default Phone Numbers
- Industrial Design with Surge Protection
- Support SMS setting and control
- 10 DI (6 Counter), 2 DO, 2 RS-232 port
- Digital input support NC/NO/Counter modes
- Send alarm SMS by DI trigger or exceed Counter preset limits
- Support simple command to send SMS via RS-232
- Supports DC +10 V_{DC} ~ +30 V_{DC} Power Input
- Supports 3.7 V Li-ion Battery Backup

Introduction

GT-530 is an intelligent SMS controller for industry applications with the simple commands and SMS tunnel function, and power can be input by external power or Li-ion Battery. It supports UNICODE or 7 bit format for users to send SMS messages with in various languages. Applying GT-530, the SMS report can be sent by defined time or DI/counter event trigger. This can be a remote control and alarm system allowing you to use your mobile phone to monitor and control your business from any location. Its alarm facilities provide a flexible way to distribute critical alarm information to any number of mobile phone users. GT-530 can monitor up to 10 digital inputs (6 counters). The user can also interrogate the status of I/O through SMS messages. The GT-530 also has 2 Digital output which can be activated via DI trigger or SMS to control the lamps, pumps, heaters etc.



Tool Menu

Status Line

I/O Specifications

Digital Input	
Input Channel	10 (6 DI can set as counter + 4 DI work with Li-ion battery)
On Voltage Level	+3.5 V_{DC} ~ +30 V_{DC}
Off Voltage Level	+1V max.
Digital Output	
Output Channel	2
Output Type	Open Collector Output
Load Voltage	+24 V_{DC} max.
Load Current	500 mA max.

LED Indicators

Digital Input				
EXT (red)	On	The external Power is active		
	Off	The external Power is not active		
STA (orange)	EXT on	Normal	GSM Fail	PIN code is wrong
		Blinking (1 sec)	Always on or off	Blinking per 50 ms
	EXT off	Off (sleep mode) blinking (1 sec) (wake up)	Always on	Blinking per 50 ms
GSM (green)	Blinking 3 sec	Modem normal		
	On	Modem fail (or Blinking(not 3 sec))		

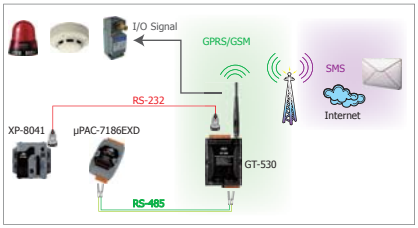
System Specifications

GSM/GPRS System	
GPRS/GSM Tri-band	900/1800/1900 MHz
GPRS Multi-slot	Class 10/8
GPRS Mobile Station	Class B
GPRS Class 10	Max. download speed 85.6 kbps
CSD	Up to 14.4 kbps
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 900 MHz) Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	Text and PDU Mode
Serial Ports	
COM2	RS-232: TxD, RxD, GND
COM3	RS-232: TxD, RxD, GND
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 V_{DC} ~ +30 V_{DC} with 600 mAh Li-ion battery backup (Option: 1200 mAh)
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x H x D)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +55 °C
Storage Temperature	-40 °C ~ +80 °C
Humidity	5 ~ 95% RH, non-condensing

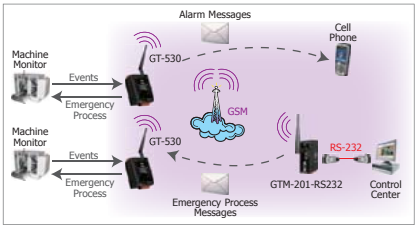
Applications

Machine, Standby Power Generator, Electrical Panels, Pumps, Vending Machines, Fire alarm Panels, Gas monitoring System, HVAC system, Door security, etc.

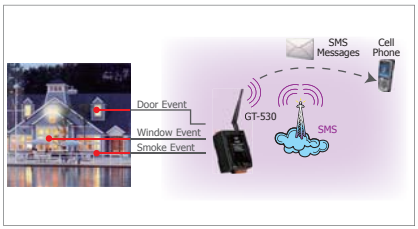
Signal Alarm and SMS Communication System



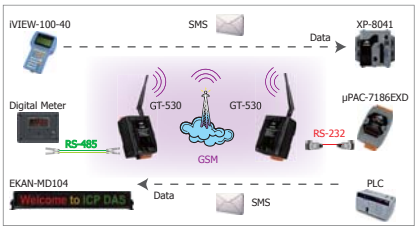
Remote Maintenance System



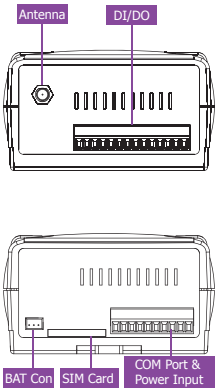
Home Security System

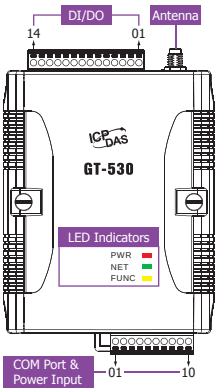


SMS Tunnel Communication System



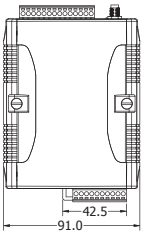
Appearance



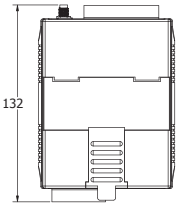


DI/DO			COM Port & Power Input		
Terminal No.		Pin Assignment	Terminal No.		Pin Assignment
DI	01	DI0	COM3 RS-232	01	GND
	02	DI1		02	RxD1
	03	DI2		03	TxD1
	04	DI3	COM2 RS-232	04	GND
	05	DI4		05	RxD2
	06	DI5		06	TxD2
	07	DI6	N/A	07	N/A
	08	DI7	Power Input: +10 Vdc ~ +30 Vdc	08	DC.+Vs
	09	DI8		09	DC.GND
	10	DI9	Frame Ground	10	F.G.
DO	11	DO0			
	12	DO1			
	13	DO.PWR			
DI/DO	14	Ext.GND			

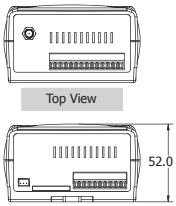
Dimensions (Unit: mm)



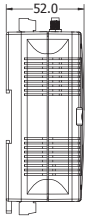
Front View



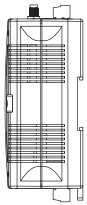
Back View



Bottom View



Left Side View



Right Side View

Ordering Information

GT-530 CR	Intelligent SMS Alarm Controller (RoHS)

Accessories

3S003	External GPRS/GSM Antenna

GT-540

Intelligent GPRS Remote Terminal Unit

Features

- Built-in 32 bit, 72 MHz CPU
- COM port: COM1 (5-wire RS-232), COM2 (RS-485),
- I/O: 6 channels DI, 2 channels DO, 1 channel AI
- Supports microSD Storage Card
- Quad-band 850/900/1800/1900 MHz
- Automatic/continuous GPRS Link Management
- Support Modbus RTU protocol to connect to Max 3 Modbus RTU devices via RS-485 port
- Support I/O data logger file transferring by E-mail
- Support M2M.OPC server and M2M.API tools
- Local I/O linkage function to make the simple local control
- Support 3.7V 600 mAH Li-battery

Introduction

The GT-540 is an intelligent Active GPRS Remote Terminal Unit. It can be used in M2M application fields to transfer the local I/O or Modbus device's data via GPRS by the defined period or DI/AI triggers. The local I/O data can also be stored in the SD card to become a remote data logger. In addition, the GT-540 also offers the e-mail mode to transfer the data by e-mail via GPRS for users to choose. With The simple I/O linkage function, the GT-540 can reach the real time control in local field.

I/O Specifications

Digital Input	
Input Channel	6
Input Type	Sink or Source, Isolated channel with common power or ground
Wet Contact	On Voltage Level: +3.5 V_{DC} ~ +30 V_{DC} Off Voltage Level: +1 V_{DC} max.
Digital Output	
Output Channel	2
Output Type	Open Collector (NPN)
Load Voltage	+30 V_{DC} max.
Max. Load Current	100 mA/channel
Analog Input	
Input Channel	1
Resolution	12-bit
Input Range/Type	0 ~ 20 mA
Sample Rate	1 kHz max. (Read one channel)

LED Indicators

Digital Input				
EXT (red)	On	The external Power is active		
	Off	The external Power is not active		
STA (orange)	EXT on	Normal	GSM Fail	PIN code is wrong
		Blinking (1 sec)	Always on or off	Blinking per 50 ms
GSM (green)	Blinking 3 sec	Modem normal		
	Off	Modem fail (or Blinking(not 3 sec))		

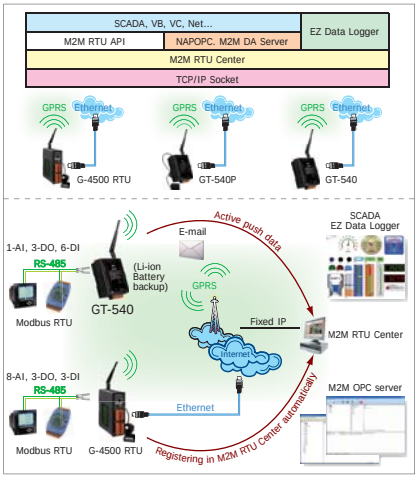
System Specifications

GSM/GPRS System	
GPRS/GSM Quad-band	850/900/1800/1900 MHz
GPRS Multi-slot	Class 10/8
GPRS Mobile Station	Class B
GPRS Class 10	Max. download speed 85.6 kbps
CSD	Up to 14.4 kbps
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz) Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	Text and PDU Mode
Serial Ports	
COM1	RS-232: TxD, RxD, GND
COM2	RS-232, RS-485 (Transparency)
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 V_{DC} ~ +30 V_{DC}
Power Consumption	Idle: 35 mA @ 24 V_{DC} Data Link: 150 ~ 400 mA (peak) @ 24 V_{DC}
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x H x D)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +55 °C
Storage Temperature	-40 °C ~ +80 °C
Humidity	5 ~ 95% RH, non-condensing

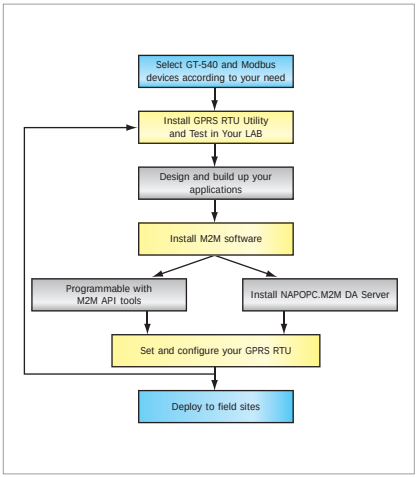
Applications

Machine, Standby Power Generator, Electrical Panels, Pumps, Vending Machines, Fire alarm Panels, Gas monitoring System, HVAC system, Door security, etc.

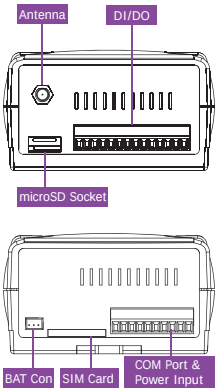
Software Solutions

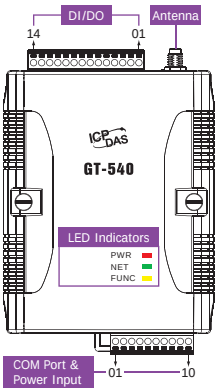


Application Flow Chard



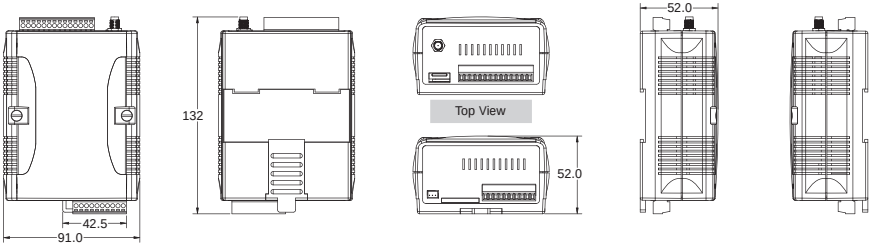
Appearance





DI/DO			COM Port & Power Input		
Terminal No.		Pin Assignment	Terminal No.		Pin Assignment
DI	01	DI0	COM1 RS-232	01	RxD1
	02	DI1		02	TxD1
	03	DI2	COM2 RS-232	03	RxD2
	04	DI3		04	TxD2
	05	DI4	Ground for COM	05	GND
	06	DI5	COM2 RS-485	06	D+
	07	DI6		07	D-
	08	DI7	Power Input: +10 Vdc ~ +30 Vdc	08	DC.+Vs
DO	09	DO0		09	DC.GND
	10	DO1	Frame Ground	10	F.G.
	11	DO2			
	12	DO3			
	13	DO.PWR			
DI/DO	14	Ext.GND			

Dimensions (Unit: mm)



Front View | Back View | Bottom View | Left Side View | Right Side View

Ordering Information

GT-540 CR	Intelligent GPRS Remote Terminal Unit (RoHS)

Accessories

ANT-421-01	3m external GPRS/GSM antenna

G-4500(D)-SIM340/ G-4500P(D)-SIM340

M2M Mini-Programmable Automation Controller Series

Features

- Embedded MiniOS7, anti-virus
- Supports a variety of TCP/IP features, including TCP, UDP, IP, ICMP, AR
- 10/100 Base-TX NE2000 Compatible Ethernet Controller
- COM1 (5-wire RS-232), COM2 (RS-485), COM3 (3-wire RS-232)
- Built-in Self-Tuner ASIC Controller on the RS-485 Port
- I/O: 3-ch DI, 3-ch DO, 8-ch AI
- Supports SD Storage Card
- GPRS/GSM: Tri-band 900/1800/1900 MHz, Quad-band 850/900/1800/1900 MHz (optional)
- GPS: 16-ch with All-In-View Tracking (optional)
- Support TCP Server, TCP Client, UDP Client Connection from GPRS
- 128 x 64-dots LCM Display (only for G-4500D(PD)-SIM340)
- Supports Virtual COM Technology
- Supports the Modbus Protocol
- Built-in RTC, NVRAM, EEPROM
- High reliability in harsh environments
- Free Easy-to-use Software Development Toolkits

Introduction

The G-4500 provided by ICP DAS is a series of M2M (Machine to Machine) mini programmable controllers with a cellular transceiver that can be used to monitor industrial equipment information that sends live data to the monitoring system, providing real-time status. With the optional GPS model, the G-4500 can also function as a GPS tracking system that can be used in vehicle management systems or maritime systems.
With a high performance CPU, the G-4500 series modules can handle a large amount of data and are suitable for the harsh industrial environments. The G-4500 series features a GPRS/GSM module, Ethernet interface, an optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 2 RS-232 and 1 RS-485 ports.

Applications

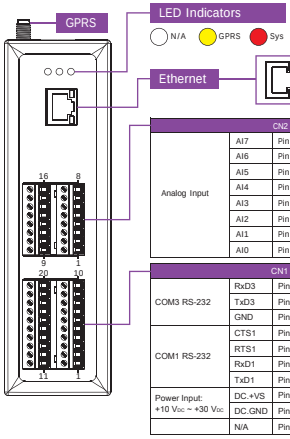
- Remote Control/Monitoring Systems
- Car Monitor Systems
- GIS Systems
- Redundant Communication Systems

Specifications

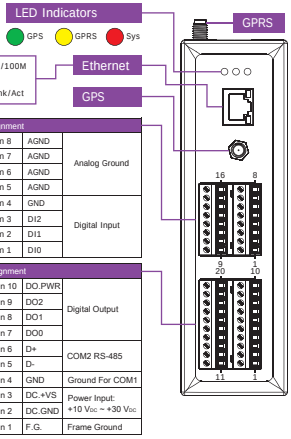
Models		G-4500-SIM340	G-4500D-SIM340	G-4500P-SIM340	G-4500PD-SIM340
CPU					
CPU		80 MHz internal microprocessor			
SRAM/Flash		512K/512K, real time clock, watchdog timer			
NVRAM		31 bytes, battery backup, data valid up to 10 years			
EEPROM		16 KB, data retention> 40 years. 1,000,000 erase/write cycles			
Communication Interface					
COM1		5-wire RS-232			
COM2		RS-485			
COM3		3-wire RS-232			
Ethernet		10/100 Base-TX Ethernet controller			
GPRS Interface					
Frequency Band	Quad-Band	850/900/1800/1900 MHz			
	GPRS Multi-slot	Class 10/8			
GPRS Connectivity		GPRS class 10; GPRS station class B			
DATA GPRS	Downlink Transfer	Max. 85.6 kbps			
	Uplink Transfer	Max. 42.8 kbps			
SMS		MT, MO, CB, Text and PDU mode			
GPS Interface					
General		-		32 channels with All-In-View tracking Built-in high gain amplifier and bandpass filter Extra high sensitivity: -159 dBm	
Acquisition Time		-		Cold/Warm Time: 42/35 sec. in air and stationary	
Reacquisition Time		-		0.1 second	
LCD Interface					
General	Effective Display Area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)
	Module Dimension	-	93 mm x 70 mm x 1.6 mm (W x H xT)	-	93 mm x 70 mm x 1.6 mm (W x H xT)
Life Time		-	Expected life is more than 100,000 hours under normal operations	-	Expected life is more than 100,000 hours under normal operations
LED Indicators					
System		Red			
GPRS		Yellow			
GPS		Green		Yes	
Power					
Protection		Power reverse polarity protection			
Frame Ground Protection		ESD, Surge, EFT, Hi-Pot			
Power Requirement		15 W; Unregulated +10 Vdc ~ +30 Vdc			
Power Consumption		Idle: 75 mA @ 24 Vdc; Data Link: 150 ~ 400 mA (peak) @ 24 Vdc			
Mechanical					
Casing		Metal			
Dimensions (W x L x H)		42 mm x 118 mm x 154 mm			
Installation		DIN-Rail			
Environment					
Operating Temperature		-25 °C ~ +50 °C			
Storage Temperature		-40 °C ~ +80 °C			
Humidity		5 ~ 90% RH, non-condensing			

Appearance

G-4500(D)-SIM340



G-4500P(D)-SIM340



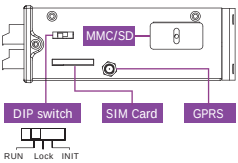
CN2 Pin Assignment

Analog Input	AI7	Pin 16	Pin 8	AGND	Analog Ground
	AI6	Pin 15	Pin 7	AGND	
	AI5	Pin 14	Pin 6	AGND	
	AI4	Pin 13	Pin 5	AGND	
	AI3	Pin 12	Pin 4	GND	Digital Input
	AI2	Pin 11	Pin 3	DI2	
	AI1	Pin 10	Pin 2	DI1	
	AI0	Pin 9	Pin 1	DI0	

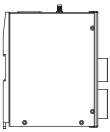
CN1 Pin Assignment

COM3 RS-232	RxD3	Pin 20	Pin 10	DO.PWR	Digital Output
	TxD3	Pin 19	Pin 9	DO2	
	GND	Pin 18	Pin 8	DO1	
COM1 RS-232	CTS1	Pin 17	Pin 7	DO0	
	RTS1	Pin 16	Pin 6	D+	COM2 RS-485
	RxD1	Pin 15	Pin 5	D-	
	TxD1	Pin 14	Pin 4	GND	Ground For COM1
Power Input: +10 Vdc ~ +30 Vdc	DC.+VS	Pin 13	Pin 3	DC.+VS	Power Input: +10 Vdc ~ +30 Vdc
	DC.GND	Pin 12	Pin 2	DC.GND	
	N/A	Pin 11	Pin 1	F.G.	Frame Ground

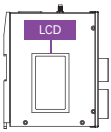
G-4500(D)/4500P(D)-SIM340



G-4500/ 4500P-SIM340

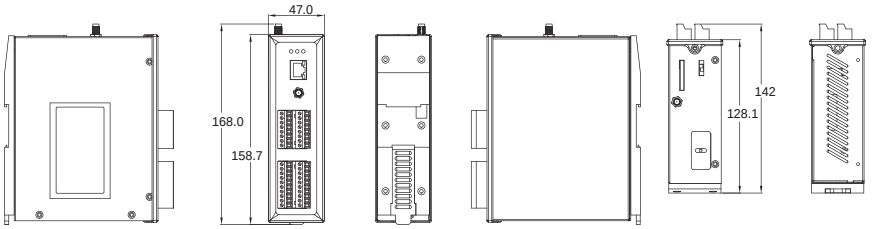


G-4500D/ 4500PD-SIM340



Dimensions (Unit: mm)

G-4500PD-SIM340



Right Side View | Front View | Back View | Left Side View | Top View | Bottom View

Ordering Information

G-4500-SIM340 CR	M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-SIM340 CR	M2M Mini-Programmable Automation Controller with LCD Display (RoHS)
G-4500P-SIM340 CR	M2M Mini-Programmable Automation Controller with GPS Function (RoHS)
G-4500PD-SIM340 CR	M2M Mini-Programmable Automation Controller with LCD Display and GPS Function (RoHS)

Accessories

ANT-421-01	3m external GPRS/GSM antenna