

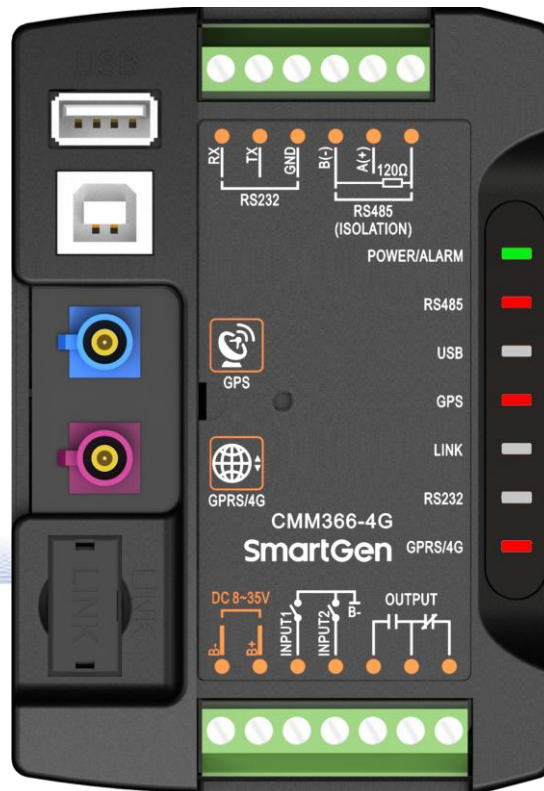
SmartGen

MAKING CONTROL SMARTER

CMM366-4G

CLOUD MONITORING COMMUNICATION MODULE

USER MANUAL



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Table 1 Software Version

Date	Version	Note
2017-09-01	1.0	Original release.
2022-04-20	1.1	Update the manual format, information and logo of SmartGen.
2023-08-09	1.2	Update description of RS485 access to 120Ω resistor.

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1 OVERVIEW

CMM366-4G Cloud Monitoring Communication Module is 4G (fits all kinds of networks) wireless network communication protocol switch module, which can achieve gen-set (with SCI) connect to Internet. The module gains gen-set data via RS485 port, USB port, LINK port or RS232 port of gen-set controller modules of international first-class brands including SmartGen, DeepSea, ComAp, etc. Then it transmits the data to corresponding cloud server via 4G wireless network for achieving user's real-time monitoring to running status and searching of running records via APP (IOS or Android) and PC terminal devices.

CMM366-4G module has already integrated protocols of mainstream gen-set control module. It not only can achieve gen-set monitoring but also can insert some digital alarm input/output signals to achieve monitoring of generator room entrance guard, guard against theft and fire facilities.

This module, which has GPS locate function, can upload gained longitude, latitude and elevation to corresponding cloud server.

2 PERFORMANCE AND CHARACTERISTICS

- Connect to cloud server via 4G wireless network, one to one monitoring;
- Multiple ports for communication with gen-set control module: RS485, RS232, LINK and USB (Host); can monitor great majority gen-set control modules of international first-class brands;
- Widely power supply: DC (8~35)V, can direct use gen-set build-in battery;
- With ARM-based 32-bit SCM, high integration of hardware and strong programming ability;
- Include with GPS locate function to achieve gain location information and locate gen-set;
- Take JSON network data communication protocol, upload real-time data variation and take compression algorithm to vastly reduce network flow at the same time;
- Users can set up history data upload rest to upload monitoring data to server (history data can be analyzed);
- When alarm occurs it can upload data to server immediately;
- 2 configurable digital input ports which can receive external alarm signal;
- 1 configurable relay output port which can output various of alarm signal;
- Power and multiple communication status indicators on front panel that working status is clear at a glance;
- Lamp test function;
- Parameter adjust function: users can adjust parameters via USB port;
- Take standard π -type 35mm guide-rail installation or screw-fixed installation that the module can be installed in the gen-set control box;
- Modular design, self extinguishing ABS plastic shell, light weight, compact structure with easy installation.

3 SPECIFICATION

Table 2 Technical Parameters

Items	Contents
Operating Voltage	DC 8.0V~35.0V, continuous power supply.
Power Consumption	Standby: ≤2W Working: ≤5W
Auxiliary Input	Digital Input, connect (B-) is active.
Auxiliary Output	1A DC30V Volts free output
USB Host	A-type USB female port
RS485	Isolated type
RS232	General type
LINK	SmartGen exclusive port
USB Device	B-type USB female port
GPRS Port	Standard SMA port (female), SMA port (male) for antenna.
GPS Port	Standard SMA port (female), SMA port (male) for antenna, active antenna.
Wireless Network	LTE-TDD/LTE-FDD/HSPA+/TD-SCDMA/EVDO GSM/GPRS/EDGE
Case Dimensions	73mmx105mmx33mm
Working Temperature	(-25~+70)°C
Storage Temperature	(-25~+70)°C
Working Humidity	(20~93)%RH
Weight	0.15kg

4 PANEL AND TERMINAL DESCRIPTION

4.1 PANEL INDICATOR AND BUTTONS

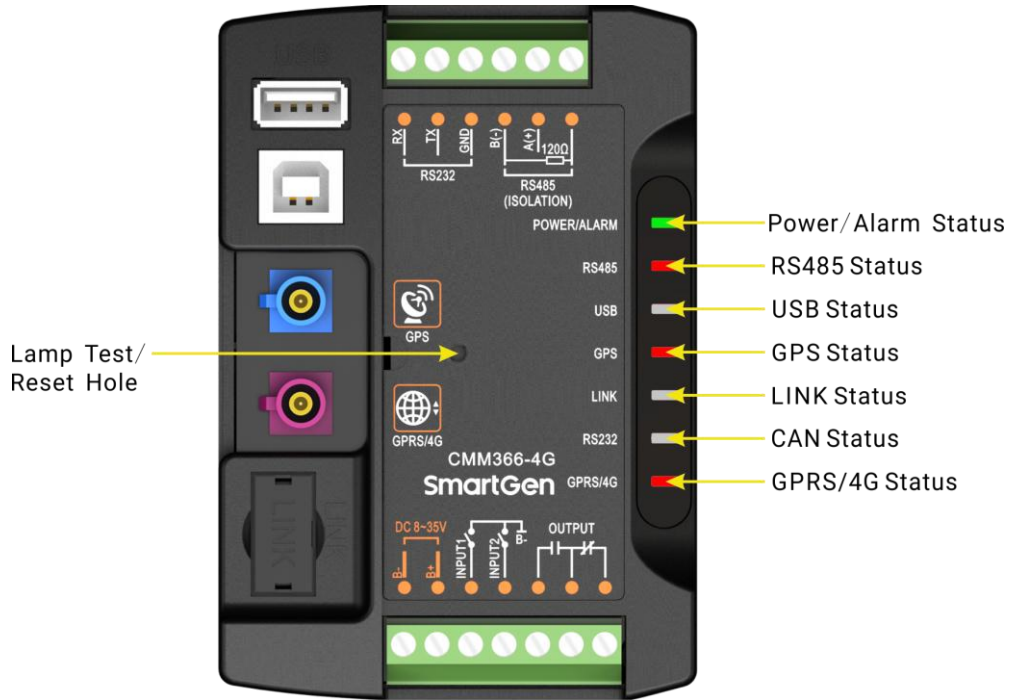


Fig.1 CMM366-4G Panel Drawing

Table 3 Indicator Description

Icon	Note
POWER/ALARM	Green LED Light: Power supply normal indicator Red LED Light: Common alarm indicator
RS485(Red)	Normally Extinguish: RS485 disabled Normally Light: Communication fail Blink: Communication normal
USB(Red)	Normally Extinguish: USB(Host) disabled Normally Light: Communication fail Blink: Communication normal
GPS(Red)	Normally Extinguish: GPS disabled Normally Light: GPS not gained satellite signal Blink: GPS gained satellite signal
LINK(Red)	Normally Extinguish: Disabled Normally Light: Communication fail Blink: Communication normal
RS232(Red)	Normally Extinguish: RS232 disabled Normally Light: Communication fail Blink: Communication normal
GPRS/4G(Red)	Extinguish: CMM366-4G login with server unsuccessfully Light: Login with server successfully Blink: Real-time communication normal

Lamp test/Rest:

Press this button for 1s, all the LEDs are illuminated; hold and press for 10s, reset the module to default and all the LEDs blink for 3 times.

NOTE: After reset the module, set up the parameters via PC software is recommended. Please operate cautiously.

4.2 GPRS

Connect GPRS antenna to GPRS/4G port.

Antenna: 50Ω/SMA female.

4.3 GPS

GPS enabled, connect GPS antenna to CMM366-4G.

NOTE: GPS antenna needs to be placed to open outdoors, otherwise location information may not accurate or cannot be gained.

Antenna: 50Ω/SMA female, active antenna.

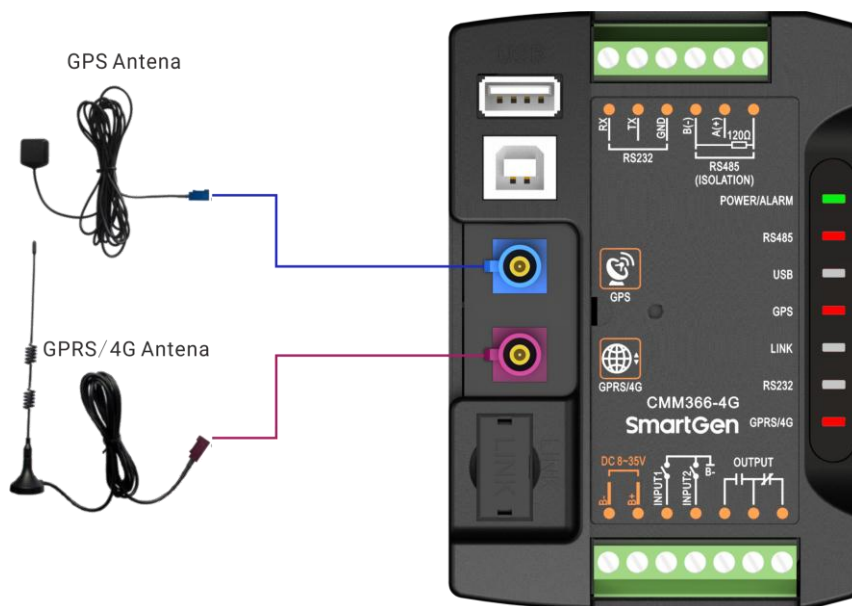


Fig.2 CMM366-4G Antenna Connection

NOTE: GPRS antenna and GPS antenna cannot be connected reversely.

4.4 SIM INSTALLATION

Insert 4G, 3G or 2G SIM card. CMM366-4G will connect to servers via wireless mobile network.

NOTE: All 4G wireless networks are supported. Use standard SIM card (25mmX15mm); if GPS indicator and GPRS indicator blink in the same time, which means SIM card hasn't been inserted or bad contacts.

After removing the head cover, the installation steps are as below:



Fig.3 SIM Card Installation

4.5 RS485

Receive gen-set data information by RS485 port connecting with gen-set controller RS485 port.

If communication is abnormal, 120Ω terminal resistance is recommended. If 120Ω resistor is required, please short connect A(+) of RS485 port on CMM366-4G to 120Ω.

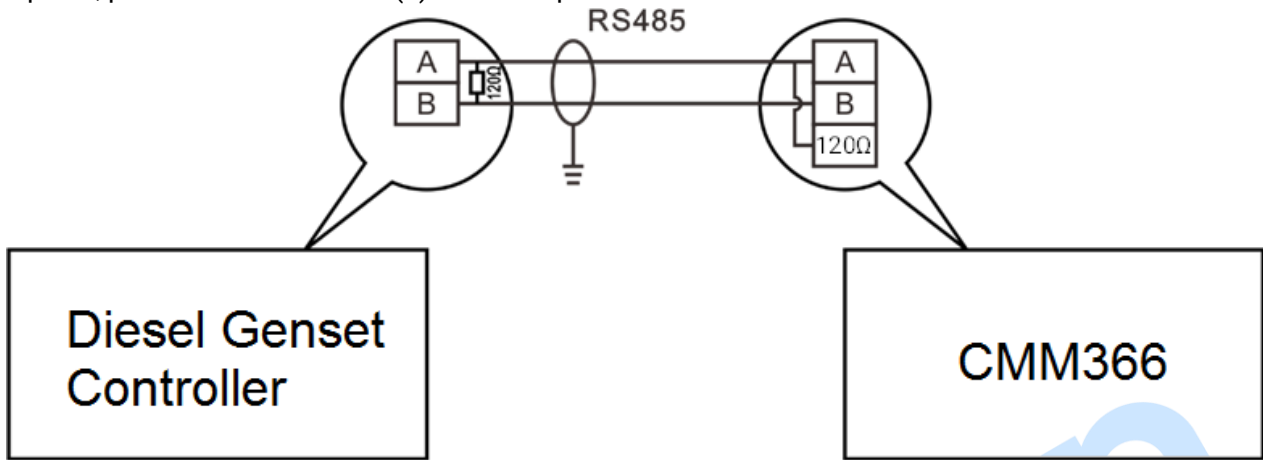


Fig.4 RS485 Connection



Fig.5 RS485 Access to 120Ω Resistor

4.6 RS232

Receive genset data information by RS232 port connecting with gen-set controller RS232 port.

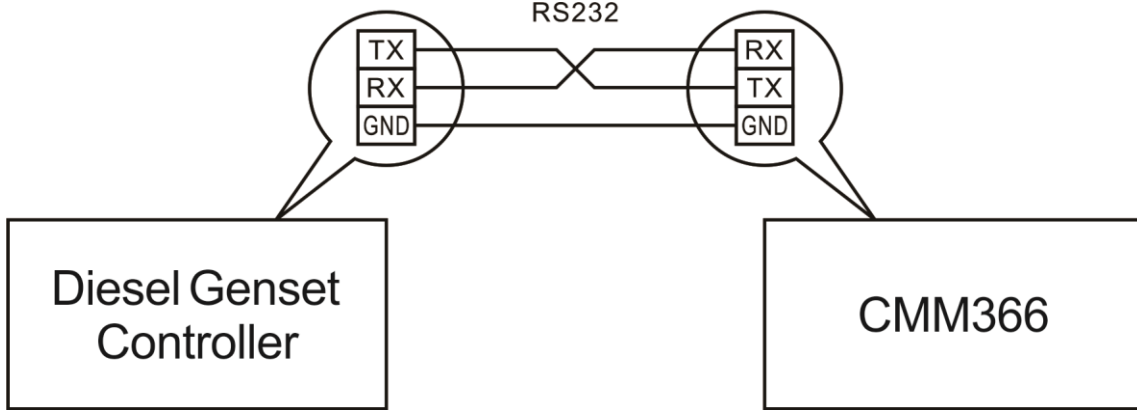


Fig.6 RS232 Connection

4.7 LINK

Receive genset data information by LINK port connecting with gen-set controller LINK port.

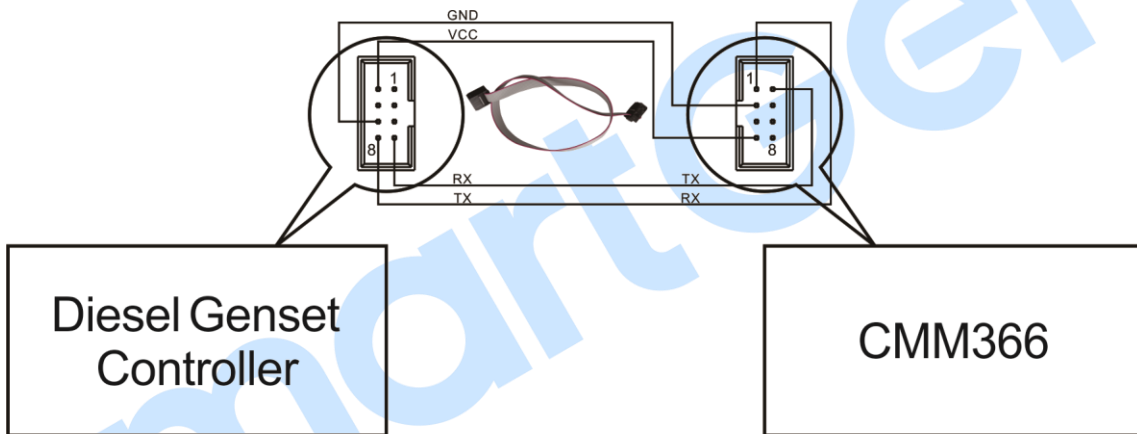


Fig.7 LINK Connection

4.8 USB HOST

Receive genset data information by A-type USB mother port connecting with gen-set controller USB port.

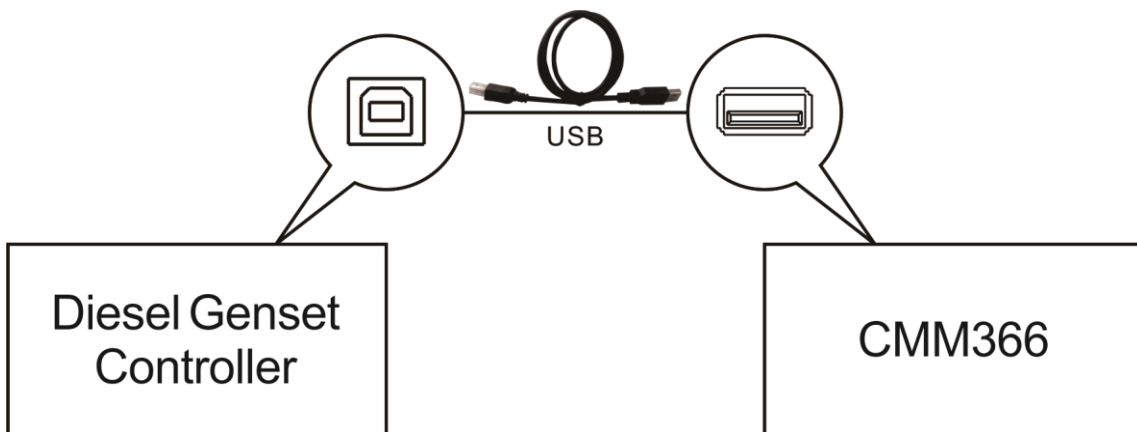


Fig.8 USB Host Connection

4.9 USB DEVICE

Set up all the parameters and view CMM366-4G ID&Login password by CMM366 USB port connecting with PC USB disk port.



Fig.9 USB and PC Configuration Connection

4.10 TERMINAL

Table 4 Terminal Description

No.	Function	Cable Size	Note
1	B-	1.0mm ²	Connected with negative of starter battery.
2	B+	1.0mm ²	Connected with positive of starter battery. 3A fuse is recommended.
3	Aux. Input 1	1.0mm ²	Active when connect to B-.
4	Aux. Input 2	1.0mm ²	Active when connect to B-.
5	Aux. Output	Normally Open	Normally open outputs, rated 1A DC30V.
6		Common	
7		Normally Close	
8	RS485 B(-)	0.5mm ²	If 120Ω is used, please short connect A (+) with 120Ω.
9	RS485 A(+)	0.5mm ²	
10	120Ω	0.5mm ²	
11	RS232 RX	0.5mm ²	RS232 port.
12	RS232 TX	0.5mm ²	
13	RS232 GND	0.5mm ²	

5 PROGRAMMABLE PARAMETERS

5.1 CONTENTS AND SCOPES OF PARAMETERS

Table 5 Parameter Configuration

No.	Items	Parameters	Defaults	Description
Gateway				
1	Site Name			20 Chinese characters, letters or numbers
2	Server URL		cm.smartgen.com.cn	40 characters
3	Server Port	(0-65535)	81	
4	Security Code		123456	16 characters
GPS				
1	GPS Enabled	(0-1)	1	0: Manual Input 1: GPS Location
2	Longitude	(-180-180)°	0.000000	GPS location, altitude
3	Latitude	(-90-90)°	0.000000	
4	Altitude	(-9999.9-9999.9)	100.0m	
GSM				
1	GSM Enabled	(0-1)	1	0:Disabled; 1:Enabled
2	GPRS Password	Reserved		
3	SMS Center Number	Reserved		
4	PIN Enabled	(0-1)	0	0:Disabled; 1:Enabled
5	APN		40 characters	
6	SMS Enabled	(0-1)	0	0: Chinese; 1:English
7	SMS Alarm Language	(0-1)	0	
8	Telephone Number	Max. 20 numbers		Phone number need to be added area code, such as China 86136666666666.
Cloud Server				
1	Auto Gain Communication Port	(0-1)	1	0:Disabled; 1:Enabled
2	Module ID	(1-254)	1	Module ID
3	Communication Port	(0-4)	2	0: Disabled 1: LINK 2: RS485 3: RS232 4: USB
4	Baud Rate	(0-2)	0	0: 9600bit/s 1: 19200bit/s 2: 115200 bit/s
5	Location Information	(0-1)	1	0: Manual input location info 1: Use GPS to gain location
6	Longitude	(-180-180)°	0.000000	Manually set module location and elevation.
7	Latitude	(-90-90)°	0.000000	

No.	Items	Parameters	Defaults	Description
8	Altitude	(-9999.9-9999.9)	100.0	
9	Gen-set Model		HGM6110	See: Form4
10	Module Name		Module Names(20 Chinese characters, letters or numbers)	
11	Debugger Name	20 Chinese characters, letters or numbers		
12	Phone Number	20 Chinese characters, letters or numbers		
13	Installation Date	20 Chinese characters, letters or numbers		
14	Historical Upload Interval	(0-3600)s	0	History data upload rest. Note: No upload when it is 0s
15	Time Zone	(-12-12)	8	Time Zone
16	Live Data Uploaded Interval	(1-20)s	5	Interval time of uploading data.
Module Configuration Information				
1	Module Type	(0-5)	1	0:AMF module 1:Single-unit self-starting module 2: Single-single parallel module 3:Mains-genset parallel module 4:Mains-bus parallel module 5:Bus-bus parallel module Note: The parameter will auto change according to gen-set type.
2	Rated Speed	(0-6000)r/min	1500	Rated Speed
3	AC Supply	(0-3)	0	0: 3P4W; 1: 3P3W; 2: 2P3W; 3: 1P2W
4	Rated Voltage	(30-30000)V	230	Rated Volt
5	Rated Frequency	(10-600)Hz	50	Rated Freq
6	Rated Current	(5-6000)A	500	Rated Current
7	Rated Power	(0-6000)kW	276	Rated Power
8	Description 1		Custom Description (20 Chinese characters, letters or numbers)	
9	Description 2		Custom Description (20 Chinese characters, letters or numbers)	
10	Description 3		Custom Description (20 Chinese characters, letters or numbers)	
11	Description 4		Custom Description (20 Chinese characters, letters or numbers)	
12	Description 5		Custom Description (20 Chinese characters, letters or numbers)	
Digital Input				
Digital Input 1				
1	Options	(0-9)	0	Default: Not used
2	Activate Type	(0-1)	0	0: Close to activate 1: Open to activate See: Table6
3	Delay	(0-20.0)	0.0	Action delay
Digital Input 2				

No.	Items	Parameters	Defaults	Description
3	Options	(0-9)	1	Default: Lamp test
4	Activate Type	(0-1)	0	0: Close to activate 1: Open to activate See: Table6
5	Delay	(0-20.0)	0.0	Action delay
Digital Output				
1	Options	(0-14)	0	Default: Not used See: Table7

Table 6 Definition Content of Inputs

No.	Item	Description
0	Not Used	Not used.
1	Lamp Test	All the indicators are illuminated when input is active.
2	Remote Control Inhibited	Cloud start/stop control is prohibited when input is active.
3	Access Alarm Input	Access alarm is uploaded to server when input is active.
4	Fire Alarm Input	Fire alarm is uploaded to server when input is active.
5	Alarm Input	External alarm is uploaded to server when input is active.
6	Reserved	
7	Reserved	
8	Reserved	
9	Factory Test Mode	It is only used for factory hardware port test when active.

Table 7 Definition Content of Outputs

No.	Item	Description
0	Not used	Output port won't output when this item is selected.
1	Digital Input 1 Active	Output when auxiliary input 1 is active.
2	Digital Input 2 Active	Output when auxiliary input 2 is active.
3	RS485 Communication Failure	RS485 communication fails.
4	Network Communication Failure	Network communication fails.
5	LINK Communication Failure	LINK communication fails.
6	RS232 Communication Failure	RS232 communication fails.
7	Common Alarm	Output when there is an alarm.
8	Remote Control Output	Send remote control commands via cloud platform with fixed output delay 20s.
9	Reserved	
10	Reserved	
11	Reserved	
12	Reserved	
13	Reserved	
14	Reserved	

Table 8 Genset Module Type

Manufacturers	Type	Note
SmartGen		
	HGM6110/HGM6110CAN	Genset auto-start module
	HGM6120/HGM6120CAN	AMF module
	HGM7x10	Genset auto-start module
	HGM7x20	AMF module
	HGM410	Genset auto-start module
	HGM420	AMF module
	HGM9120	AMF module
	HGM9210	Genset auto-start module
	HGM9220	AMF module
	HGM9310	Genset auto-start module
	HGM9320	AMF module
	HGM9410	Genset auto-start module
	HGM9420	AMF module
	HGM9510	Genset parallel module
	HGM9520	Mains-genset parallel module
	HGM9530	Genset parallel module
	HGM9540	Mains-genset parallel module
	HGM9560	Mains-bus parallel module
	HGM9580	Bus-bus parallel module
	HGM9610	Genset auto-start module
	HGM9620	AMF module
	HGM4010N	Genset auto-start module
	HGM4020N	AMF module
	HGM1790N	Genset auto-start module
	TC1.0	AMF module
	TC2.0	AMF module
	TC3.0	Genset parallel module
	ALC708	Genset auto-start module
	ZX9320	AMF module
HSC940	Genset auto-start module	
DeepSea	DSE7110MKII	Genset auto-start module
	DSE7120MKII	AMF module
	DSE7210	Genset auto-start module
	DSE7220	AMF module
	DSE7310	Genset auto-start module
	DSE7320	AMF module
	DSE7410	Genset auto-start module
	DSE7420	AMF module
	DSE7450	Genset auto-start module
	DSE8610	Genset parallel module
	DSE8620	Mains-genset parallel module

Manufacturers	Type	Note
ComAp	MRS10 II	Genset auto-start module
	MRS16 II	Genset auto-start module
	AMF25 II	AMF module
	IGNT	Genset parallel module
	MINT	Genset parallel module
	SPTM	Mains-genset parallel module
	MC-NT	Mains-bus parallel module
Harsen	GU620A	Genset auto-start module
	GU621A	AMF module
	GU630A	Genset auto-start module
	GU631A	AMF module
	GU620A-00	Genset auto-start module
	GU621A-00	AMF module
	GU630A-00	Genset auto-start module
	GU631A-00	AMF module
	GU320A	Genset auto-start module
	GU320B	Genset auto-start module

5.2 PC CONFIGURATION INTERFACE

The USB port of CMM366-4G communication module connects PC port to configure the parameters.

Gateway

Site Name

Server Url

Server Port (0-65535)

Security Code

Fig.10 Gateway Configuration

Cloud Servers

Debugger Name

Phone Number

Installation Date

Ethernet Set

LINK Set

Time Zone

Historic upload interval s (0-3600s)

Live Data upload interval s (1-20s)

Module Name	Config	<input checked="" type="checkbox"/> Obtain Port automatically			Module	<input checked="" type="checkbox"/> Get Location from GPS		
		Port	Baud	ID		Longitude	Latitude	Altitude
	Config	RS485	9600	1	HGM6110	0.000000	0.000000	100.0

Fig.11 Cloud Server Configuration

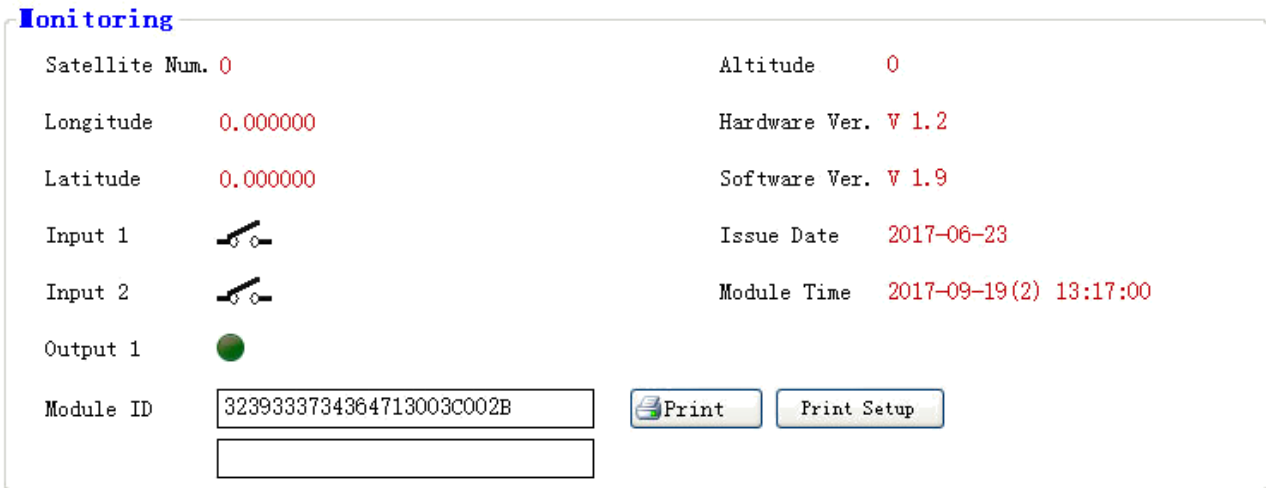


Fig.12 Module Monitoring Interface

6 SMS FUNCTION AND REMOTE CONTROL

6.1 SMS ALARM

When controller detects alarm, it will send short message to phone automatically.

NOTE: SMS alarm function only suit for SmartGen HGM7000 series and HGM9000 series controllers.

NOTE: All alarms about shutdown, trip and stop and trip alarms will be sent to the pre-set phone. Warnings are sent to the phone according to the pre-set.

6.2 SMS CONTROL

Users send order message to the module, then controller will make actions according to this SMS order and pass back corresponding operations information. Controllers only execute the orders by pre-set.

Table 9 SMS Orders List

No.	SMS Orders	Pass Back Information	Description
1	SMS GENSET	GENSET ALARM	When gen-set is stopping alarm
		SYSTEM IN STOP MODE GENSET AT REST	At rest status in stop mode
		SYSTEM IN MANUAL MODE GENSET AT REST	At rest status in manual mode
		SYSTEM IN TEST MODE GENSET AT REST	At rest status in test mode
		SYSTEM IN AUTO MODE GENSET AT REST	At rest status in auto mode
		SYSTEM IN STOP MODE GENSET IS RUNNING	Running status in stop mode
		SYSTEM IN MANUAL MODE GENSET IS RUNNING	Running status in manual mode
		SYSTEM IN TEST MODE GENSET IS RUNNING	Running status in test mode
		SYSTEM IN AUTO MODE GENSET IS RUNNING	Running status in auto mode

No.	SMS Orders	Pass Back Information	Description
2	SMS START	GENSET ALARM	Generator is shutdown alarm or trip alarm
		STOP MODE NOT START	Cannot start in stop mode
		SMS START OK	Start in manual/test mode
		AUTO MODE NOT START	Cannot start in auto mode
3	SMS STOP MODE	SMS STOP OK	Set as stop mode
4	SMS MANUAL MODE	SMS MANUAL MODE OK	Set as manual mode
5	SMS TEST MODE	SMS TEST MODE OK	Set as test mode
6	SMS AUTO MODE	SMS AUTO MODE OK	Set as auto mode
7	SMS DETAIL	Pass back information can be set via controller software.	Gets details information of gen-set.

NOTE: When sending orders, users need to follow SMS orders in above form and all the letters must be capital.

NOTE: Pass back information from SMS DETAIL including: working mode, mains voltage, generator voltage, load current, mains frequency, generator frequency, active power, apparent power, power factor, battery voltage, D+ voltage, water temperature, oil pressure, oil level, engine speed, total running time, gen-set status, and alarm status.

7 SYSTEM DIAGRAM

One CMM366-4G module connects with one gen-set monitor module. It can be connected via RS485 port, LINK port, RS232 port or USB port.

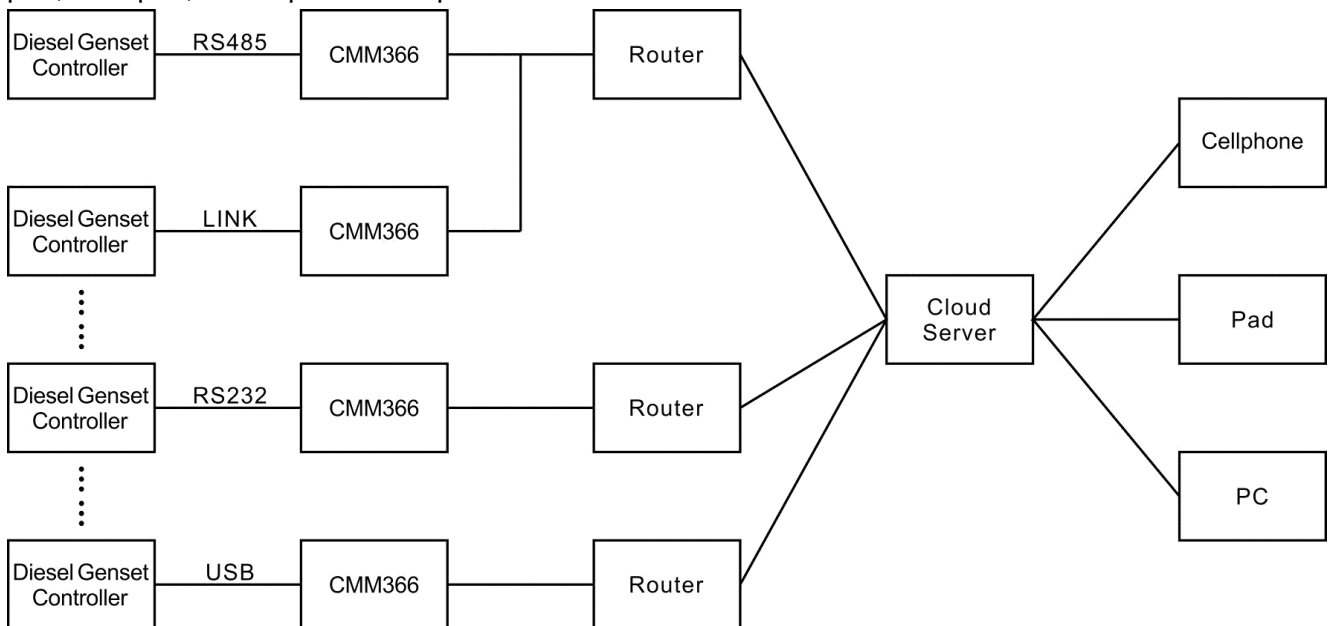


Fig.13 CMM366 System Diagram

8 CASE DIMENSION AND INSTALLATION

2 ways for installation: 35mm guide rail in box or screw (M4) installation as below:

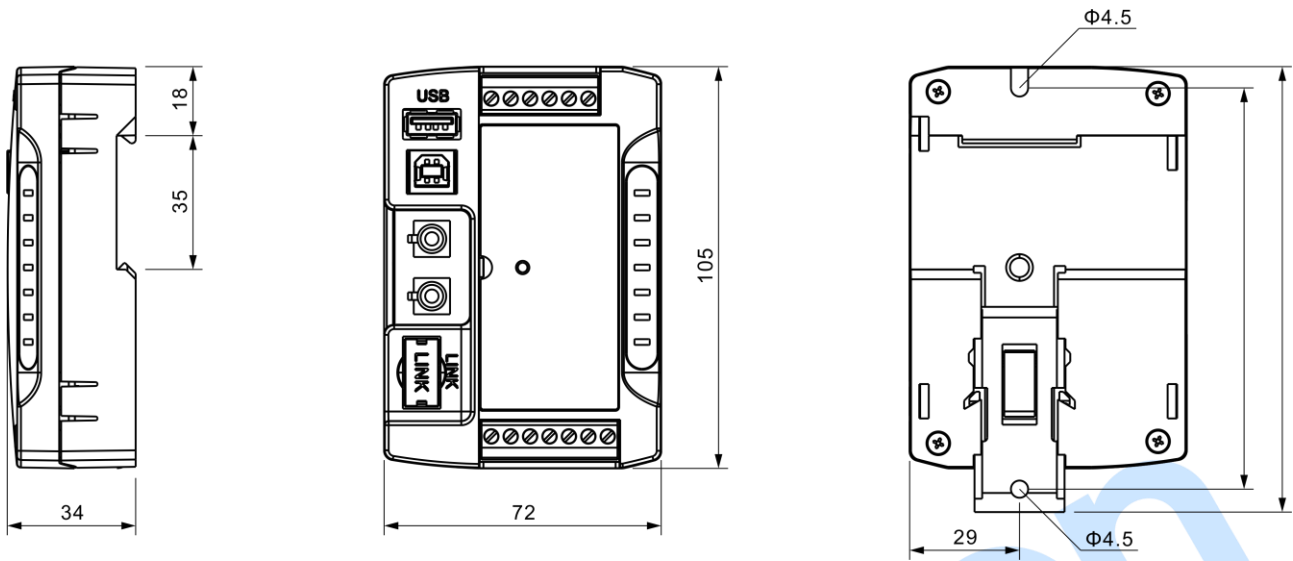


Fig.14 CMM366-4G Case Dimension

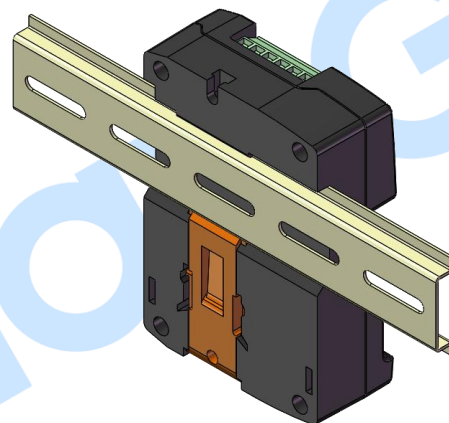


Fig.15 CMM366-4G Guide Rail Installation

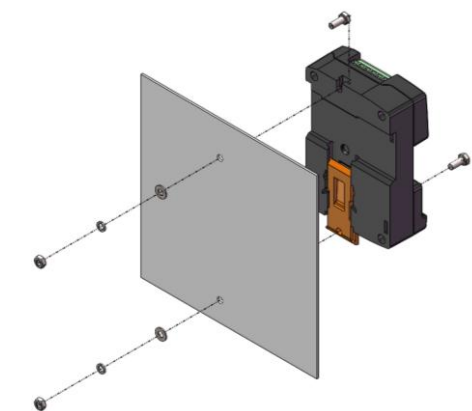


Fig.16 CMM366-4G Screw Installation

Table 10 Fault Finding

Symptoms	Possible Solutions
Controller No Response with Power	Check power voltage; Check controller connection wirings.
GPRS/4G Indicator Not Light	Check SIM card is inserted or not; Check GPRS antenna is connected or not.
GPS Not Gained Location	Check GPS parameters are enabled or not; Check GPS antenna is connected or not and placed outdoor or not.
RS485 Communication Abnormal	Check connections; Check RS485 port is enabled or not; Check settings of gen-set ID and baud rate are correct or not. Check RS485's connections of A and B is reverse connect or not.
RS232 Communication Abnormal	Check connections; Check RS232 port is enabled or not; Check settings of gen-set ID and baud rate are correct or not.
LINK Communication Abnormal	Check connections; Check LINK port is enabled or not; Check settings of gen-set ID and baud rate are correct or not.