



SmartGen
ideas for power

HGM9510
GENSET CONTROLLER
COMMUNICATION PROTOCOL

SmartGen

SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.



Chinese trademark

SmartGen English trademark

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Table 1 Version History

Date	Version	Content
2013-04-27	1.0	Original release.
2021-10-21	1.1	1. Exchange the serial number of "After Stop" and "Stop Failure" in genset status table. 2. Add 06 function code. 3. Add some parameters.

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1 DESCRIPTION

This protocol describes read and write command format of RS485 half-duplex serial port communication and definition of internal information data in detail for the third-party to develop and use.

HGM9510 genset controller has 2 RS485 ports, applying same communication protocol.

Controller is used as slave, adopting Modbus-RTU protocol, not support other protocols like Modbus-ASCII.

Communication address: 1~254 (default: 1)

Baud rate: 2400/4800/9600/19200bps (default: 9600bps)

Start bit: 1-bit

Data bit: 8-bit

Parity bit: None, Odd Parity, Even Parity (default: None)

Stop bit: 1-bit or 2-bit (default: 2-bit)

Supported function code: 03H, 05H, 06H. Function code 03H is used for reading controller alarm, status information and various electricity data; function code 05H is used for sending remote command; function code 06H is used for saving single-point data to memory inside the controller.

Data calibration method: CRC16.

Internal registers of controller are in the unit of "word (double bytes)".

Timeout period: over 200ms.

Communication distance: 9600 baud rate, the longest distance can reach 1,000m when using 120Ω shielding twisted pair.

Once maximum 120 data of word register can be read.

Up to 32 controllers can be connected together for network communication.

When RS485 is connected, 120Ω twisted pair with shielding layer shall be used, and the shielding layer shall be grounded at one end.

2 WIRING DIAGRAM

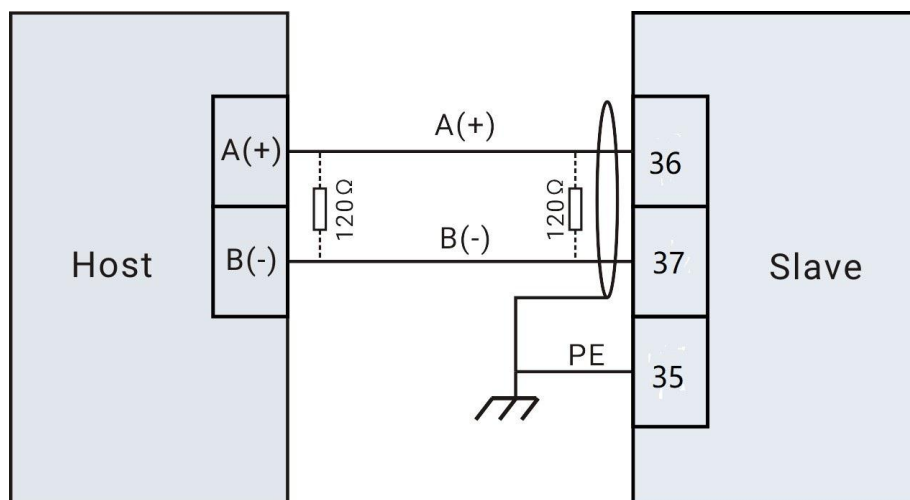


Fig.1 Single Unit Communication Wiring Diagram

NOTE1: 2 120Ω impedance resistors can be connected automatically according to site situation, details refer to the following description.

NOTE2: This figure is RS485-1 wiring diagram, RS485-2 wiring diagram is as above.

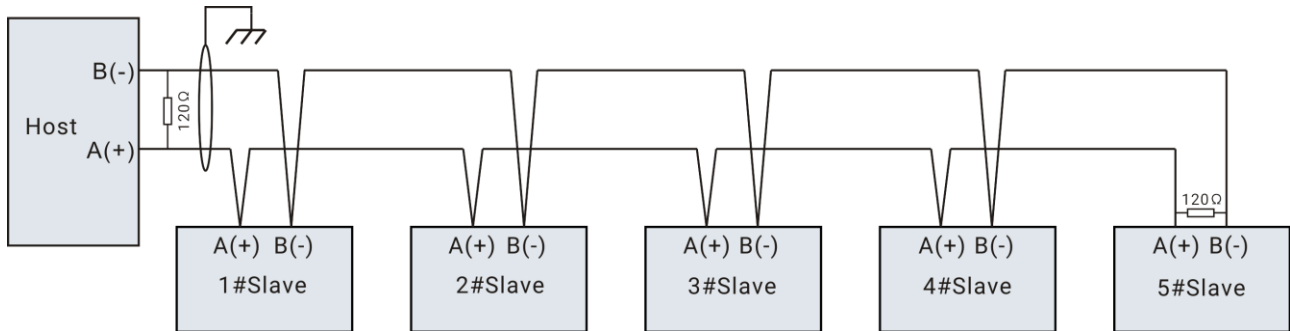


Fig.2 Multi-unit Communication Wiring Diagram

NOTE1: Please set each controller's communication module address before networking. Same module address is inhibited in the same network.

NOTE2: The shielding layer of communication line is single-end grounded on the host side.

3 CONTROLLER INTERNAL REGISTER ADDRESS AND DATA

3.1 ILLUSTRATION

In the following table, S1 refers to 1# power, S2 refers to 2# power, "/" means this item is reserved.

3.2 ALARM, STATUS COIL DATA FIELD CORRESPONDING TO FUNCTION CODE 03H

Table 2 Alarm, Status Coil Data Field

Modbus Address	PLC Address	Item	Description	Bits
0000.0	40001.0	Common Alarm	0 means no common alarm occurs; 1 means there is common alarm. (000.0 is the boolean value of bit 0 of address 000) The following contents in turn.	1bit (LSB 0)
0000.1	40001.1	Common Shutdown Alarm		1bit
0000.2	40001.2	Common Warning Alarm		1bit
0000.3	40001.3	Common Trip and Stop Alarm		1bit
0000.4	40001.4	Common Trip Alarm		1bit
0000.5	40001.5	Common Safety Trip and Stop Alarm		1bit
0000.6	40001.6	Common Safety Trip Alarm		1bit
0000.7	40001.7	Common Block Alarm		1bit
0000.8	40001.8	/		1bit
0000.9	40001.9	In Auto Mode		1bit
0000.10	40001.10	In Manual Mode		1bit
0000.11	40001.11	In Stop Mode		1bit
0000.12	40001.12	/		1bit
0000.13	40001.13	/		1bit
0000.14	40001.14	/		1bit
0000.15	40001.15	/		1bit (MSB 15)
0001.0	40002.0	Emergency Stop Alarm		1bit (LSB 0)
0001.1	40002.1	Overspeed Alarm Shut		1bit
0001.2	40002.2	Underspeed Alarm Shut		1bit
0001.3	40002.3	Loss of Speed Signal Alarm		1bit
0001.4	40002.4	Gen Overfrequency Alarm Shut		1bit
0001.5	40002.5	Gen Undrfrequency Shut		1bit
0001.6	40002.6	Gen Overvoltage Shut		1bit
0001.7	40002.7	Gen Undervoltage Shut		1bit

Modbus Address	PLC Address	Item	Description	Bits
0001.8	40002.8	Start Failure Alarm		1bit
0001.9	40002.9	Gen Overcurrent Shut		1bit
0001.10	40002.10	Maintenance Due Alarm Shut.		1bit
0001.11	40002.11	ECU Alarm Shut		1bit
0001.12	40002.12	Reverse Power Alarm Shut		1bit
0001.13	40002.13	Over Power Alarm Shut		1bit
0001.14	40002.14	High Temp Alarm Shut		1bit
0001.15	40002.15	Low Oil Pressure Alarm Shut		1bit (MSB 15)
0002.0	40003.0	ECU Comm. Failure Alarm Shut		1bit (LSB 0)
0002.1	40003.1	MSC ID Error Alarm Shut		1bit
0002.2	40003.2	Voltage Bus Error Alarm Shut		1bit
0002.3	40003.3	Gen Phase Error Alarm Shut		1bit
0002.4	40003.4	Bus (Mains) Phase Error Alarm Shut		1bit
0002.5	40003.5	Unbalanced Current Alarm Shut		1bit
0002.6	40003.6	Earth Fault Alarm Shut		1bit
0002.7	40003.7	Loss of Excitation Fault Alarm Shut		1bit
0002.8	40003.8	Temp Sensor Open		1bit
0002.9	40003.9	High Temp Alarm Shut		1bit
0002.10	40003.10	/		1bit
0002.11	40003.11	/		1bit
0002.12	40003.12	Oil Pressure Sensor Open		1bit
0002.13	40003.13	/		1bit
0002.14	40003.14	Low Oil Pressure Alarm Shut		1bit
0002.15	40003.15	/		1bit (MSB 15)
0003.0	40004.0	Level Sensor Open		1bit (LSB 0)
0003.1	40004.1	/		1bit
0003.2	40004.2	/		1bit
0003.3	40004.3	/		1bit
0003.4	40004.4	Aux. Sensor 1 Open		1bit
0003.5	40004.5	Aux. 1 High Alarm Shut		1bit
0003.6	40004.6	Aux. 1 Low Alarm Shut		1bit
0003.7	40004.7	Reserved		1bit
0003.8	40004.8	Aux. Sensor 2 Open		1bit
0003.9	40004.9	Aux. 2 High Alarm Shut		1bit
0003.10	40004.10	Aux. 2 Low Alarm Shut		1bit
0003.11	40004.11	/		1bit
0003.12	40004.12	/		1bit
0003.13	40004.13	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0003.14	40004.14	/		1bit
0003.15	40004.15	Input Module 2 Cylinder Temp High		1bit (MSB 15)
0004.0	40005.0	Input Module 1 Comm. Failure		1bit (LSB 0)
0004.1	40005.1	Input Module 1 Exhaust Temp High		1bit
0004.2	40005.2	Input Module 1 Sensor 15 Open		1bit
0004.3	40005.3	Input Module 1 Sensor 15 High		1bit
0004.4	40005.4	Input Module 1 Sensor 15 Low		1bit
0004.5	40005.5	Input Module 1 Sensor 16 Open		1bit
0004.6	40005.6	Input Module 1 Sensor 16 High		1bit
0004.7	40005.7	Input Module 1 Sensor 16 Low		1bit
0004.8	40005.8	Input Module 1 Sensor 17 Open		1bit
0004.9	40005.9	Input Module 1 Sensor 17 High		1bit
0004.10	40005.10	Input Module 1 Sensor 17 Low		1bit
0004.11	40005.11	Input Module 1 Sensor 18 Open		1bit
0004.12	40005.12	Input Module 1 Sensor 18 High		1bit
0004.13	40005.13	Input Module 1 Sensor 18 Low		1bit
0004.14	40005.14	Input Module 1 Sensor 19 Open		1bit
0004.15	40005.15	Input Module 1 Sensor 19 High		1bit (MSB 15)
0005.0	40006.0	Input Module 1 Sensor 19 Low		1bit (LSB 0)
0005.1	40006.1	Input Module 1 Sensor 20 Open		1bit
0005.2	40006.2	Input Module 1 Sensor 20 High		1bit
0005.3	40006.3	Input Module 1 Sensor 20 Low		1bit
0005.4	40006.4	Input Module 1 Sensor 21 Open		1bit
0005.5	40006.5	Input Module 1 Sensor 21 High		1bit
0005.6	40006.6	Input Module 1 Sensor 21 Low		1bit
0005.7	40006.7	Input Module 1 Sensor 22 Open		1bit

Modbus Address	PLC Address	Item	Description	Bits
0005.8	40006.8	Input Module 1 Sensor 22 High		1bit
0005.9	40006.9	Input Module 1 Sensor 22 Low		1bit
0005.10	40006.10	Input Module 1 Sensor 23 Open		1bit
0005.11	40006.11	Input Module 1 Sensor 23 High		1bit
0005.12	40006.12	Input Module 1 Sensor 23 Low		1bit
0005.13	40006.13	Input Module 1 Sensor 24 Open		1bit
0005.14	40006.14	Input Module 1 Sensor 24 High		1bit
0005.15	40006.15	Input Module 1 Sensor 24 Low		1bit (MSB 15)
0006.0	40007.0	Input Module 2 Comm. Failure		1bit (LSB 0)
0006.1	40007.1	Input Module 2 Exhaust Temp High		1bit
0006.2	40007.2	Input Module 2 Sensor 15 Open		1bit
0006.3	40007.3	Input Module 2 Sensor 15 High		1bit
0006.4	40007.4	Input Module 2 Sensor 15 Low		1bit
0006.5	40007.5	Input Module 2 Sensor 16 Open		1bit
0006.6	40007.6	Input Module 2 Sensor 16 High		1bit
0006.7	40007.7	Input Module 2 Sensor 16 Low		1bit
0006.8	40007.8	Input Module 2 Sensor 17 Open		1bit
0006.9	40007.9	Input Module 2 Sensor 17 High		1bit
0006.10	40007.10	Input Module 2 Sensor 17 Low		1bit
0006.11	40007.11	Input Module 2 Sensor 18 Open		1bit
0006.12	40007.12	Input Module 2 Sensor 18 High		1bit
0006.13	40007.13	Input Module 2 Sensor 18 Low		1bit
0006.14	40007.14	Input Module 2 Sensor 19 Open		1bit
0006.15	40007.15	Input Module 2 Sensor 19 High		1bit (MSB 15)
0007.0	40008.0	Input Module 2 Sensor 19 Low		1bit (LSB 0)
0007.1	40008.1	Input Module 2 Sensor 20 Open		1bit

Modbus Address	PLC Address	Item	Description	Bits
0007.2	40008.2	Input Module 2 Sensor 20 High		1bit
0007.3	40008.3	Input Module 2 Sensor 20 Low		1bit
0007.4	40008.4	Input Module 2 Sensor 21 Open		1bit
0007.5	40008.5	Input Module 2 Sensor 21 High		1bit
0007.6	40008.6	Input Module 2 Sensor 21 Low		1bit
0007.7	40008.7	Input Module 2 Sensor 22 Open		1bit
0007.8	40008.8	Input Module 2 Sensor 22 High		1bit
0007.9	40008.9	Input Module 2 Sensor 22 Low		1bit
0007.10	40008.10	Input Module 2 Sensor 23 Open		1bit
0007.11	40008.11	Input Module 2 Sensor 23 High		1bit
0007.12	40008.12	Input Module 2 Sensor 23 Low		1bit
0007.13	40008.13	Input Module 2 Sensor 24 Open		1bit
0007.14	40008.14	Input Module 2 Sensor 24 High		1bit
0007.15	40008.15	Input Module 2 Sensor 24 Low		1bit (MSB 15)
0008.0	40009.0	Input Port 1 Shutdown		1bit (LSB 0)
0008.1	40009.1	Input Port 2 Shutdown		1bit
0008.2	40009.2	Input Port 3 Shutdown		1bit
0008.3	40009.3	Input Port 4 Shutdown		1bit
0008.4	40009.4	Input Port 5 Shutdown		1bit
0008.5	40009.5	Input Port 6 Shutdown		1bit
0008.6	40009.6	Input Port 7 Shutdown		1bit
0008.7	40009.7	Input Port 8 Shutdown		1bit
0008.8	40009.8	/		1bit
0008.9	40009.9	/		1bit
0008.10	40009.10	/		1bit
0008.11	40009.11	/		1bit
0008.12	40009.12	/		1bit
0008.13	40009.13	/		1bit
0008.14	40009.14	/		1bit
0008.15	40009.15	/		1bit (MSB 15)
0009.0	40010.0	/		1bit (LSB 0)
0009.1	40010.1	/		1bit
0009.2	40010.2	/		1bit
0009.3	40010.3	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0009.4	40010.4	/		1bit
0009.5	40010.5	/		1bit
0009.6	40010.6	/		1bit
0009.7	40010.7	/		1bit
0009.8	40010.8	/		1bit
0009.9	40010.9	/		1bit
0009.10	40010.10	/		1bit
0009.11	40010.11	/		1bit
0009.12	40010.12	/		1bit
0009.13	40010.13	/		1bit
0009.14	40010.14	/		1bit
0009.15	40010.15	/		1bit (MSB 15)
0010.0	40011.0	/		1bit (LSB 0)
0010.1	40011.1	/		1bit
0010.2	40011.2	/		1bit
0010.3	40011.3	/		1bit
0010.4	40011.4	/		1bit
0010.5	40011.5	/		1bit
0010.6	40011.6	/		1bit
0010.7	40011.7	/		1bit
0010.8	40011.8	/		1bit
0010.9	40011.9	/		1bit
0010.10	40011.10	/		1bit
0010.11	40011.11	/		1bit
0010.12	40011.12	/		1bit
0010.13	40011.13	/		1bit
0010.14	40011.14	/		1bit
0010.15	40011.15	/		1bit (MSB 15)
0011.0	40012.0	/		1bit (LSB 0)
0011.1	40012.1	/		1bit
0011.2	40012.2	/		1bit
0011.3	40012.3	/		1bit
0011.4	40012.4	/		1bit
0011.5	40012.5	/		1bit
0011.6	40012.6	/		1bit
0011.7	40012.7	/		1bit
0011.8	40012.8	/		1bit
0011.9	40012.9	/		1bit
0011.10	40012.10	/		1bit
0011.11	40012.11	/		1bit
0011.12	40012.12	/		1bit
0011.13	40012.13	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0011.14	40012.14	/		1bit
0011.15	40012.15	/		1bit (MSB 15)
0012.0	40013.0	Overcurrent Trip and Stop		1bit (LSB 0)
0012.1	40013.1	Maintenance Due Trip and Stop		1bit
0012.2	40013.2	Reverse Power Trip and Stop		1bit
0012.3	40013.3	Over Power Trip and Stop		1bit
0012.4	40013.4	Input Port 1 Trip and Stop		1bit
0012.5	40013.5	Input Port 2 Trip and Stop		1bit
0012.6	40013.6	Input Port 3 Trip and Stop		1bit
0012.7	40013.7	Input Port 4 Trip and Stop		1bit
0012.8	40013.8	Input Port 5 Trip and Stop		1bit
0012.9	40013.9	Input Port 6 Trip and Stop		1bit
0012.10	40013.10	Input Port 7 Trip and Stop		1bit
0012.11	40013.11	Input Port 8 Trip and Stop		1bit
0012.12	40013.12	/		1bit
0012.13	40013.13	/		1bit
0012.14	40013.14	/		1bit
0012.15	40013.15	/		1bit (MSB 15)
0013.0	40014.0	/		1bit (LSB 0)
0013.1	40014.1	/		1bit
0013.2	40014.2	/		1bit
0013.3	40014.3	/		1bit
0013.4	40014.4	/		1bit
0013.5	40014.5	/		1bit
0013.6	40014.6	/		1bit
0013.7	40014.7	/		1bit
0013.8	40014.8	/		1bit
0013.9	40014.9	/		1bit
0013.10	40014.10	/		1bit
0013.11	40014.11	/		1bit
0013.12	40014.12	/		1bit
0013.13	40014.13	/		1bit
0013.14	40014.14	/		1bit
0013.15	40014.15	/		1bit (MSB 15)
0014.0	40015.0	/		1bit (LSB 0)
0014.1	40015.1	/		1bit
0014.2	40015.2	/		1bit
0014.3	40015.3	/		1bit
0014.4	40015.4	/		1bit
0014.5	40015.5	/		1bit
0014.6	40015.6	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0014.7	40015.7	/		1bit
0014.8	40015.8	/		1bit
0014.9	40015.9	/		1bit
0014.10	40015.10	/		1bit
0014.11	40015.11	/		1bit
0014.12	40015.12	/		1bit
0014.13	40015.13	/		1bit
0014.14	40015.14	/		1bit
0014.15	40015.15	/		1bit (MSB 15)
0015.0	40016.0	/		1bit (LSB 0)
0015.1	40016.1	/		1bit
0015.2	40016.2	/		1bit
0015.3	40016.3	/		1bit
0015.4	40016.4	/		1bit
0015.5	40016.5	/		1bit
0015.6	40016.6	/		1bit
0015.7	40016.7	/		1bit
0015.8	40016.8	/		1bit
0015.9	40016.9	/		1bit
0015.10	40016.10	/		1bit
0015.11	40016.11	/		1bit
0015.12	40016.12	/		1bit
0015.13	40016.13	/		1bit
0015.14	40016.14	/		1bit
0015.15	40016.15	/		1bit (MSB 15)
0016.0	40017.0	Overcurrent Trip		1bit (LSB 0)
0016.1	40017.1	Maintenance Due Trip		1bit
0016.2	40017.2	Reverse Power Trip		1bit
0016.3	40017.3	Over Power Trip		1bit
0016.4	40017.4	Input Port 1 Trip		1bit
0016.5	40017.5	Input Port 2 Trip		1bit
0016.6	40017.6	Input Port 3 Trip		1bit
0016.7	40017.7	Input Port 4 Trip		1bit
0016.8	40017.8	Input Port 5 Trip		1bit
0016.9	40017.9	Input Port 6 Trip		1bit
0016.10	40017.10	Input Port 7 Trip		1bit
0016.11	40017.11	Input Port 8 Trip		1bit
0016.12	40017.12	/		1bit
0016.13	40017.13	/		1bit
0016.14	40017.14	/		1bit
0016.15	40017.15	/		1bit (MSB 15)
0017.0	40018.0	/		1bit (LSB 0)

Modbus Address	PLC Address	Item	Description	Bits
0017.1	40018.1	/		1bit
0017.2	40018.2	/		1bit
0017.3	40018.3	/		1bit
0017.4	40018.4	/		1bit
0017.5	40018.5	/		1bit
0017.6	40018.6	/		1bit
0017.7	40018.7	/		1bit
0017.8	40018.8	/		1bit
0017.9	40018.9	/		1bit
0017.10	40018.10	/		1bit
0017.11	40018.11	/		1bit
0017.12	40018.12	/		1bit
0017.13	40018.13	/		1bit
0017.14	40018.14	/		1bit
0017.15	40018.15	/		1bit (MSB 15)
0018.0	40019.0	/		1bit (LSB 0)
0018.1	40019.1	/		1bit
0018.2	40019.2	/		1bit
0018.3	40019.3	/		1bit
0018.4	40019.4	/		1bit
0018.5	40019.5	/		1bit
0018.6	40019.6	/		1bit
0018.7	40019.7	/		1bit
0018.8	40019.8	/		1bit
0018.9	40019.9	/		1bit
0018.10	40019.10	/		1bit
0018.11	40019.11	/		1bit
0018.12	40019.12	/		1bit
0018.13	40019.13	/		1bit
0018.14	40019.14	/		1bit
0018.15	40019.15	/		1bit (MSB 15)
0019.0	40020.0	/		1bit (LSB 0)
0019.1	40020.1	/		1bit
0019.2	40020.2	/		1bit
0019.3	40020.3	/		1bit
0019.4	40020.4	/		1bit
0019.5	40020.5	/		1bit
0019.6	40020.6	/		1bit
0019.7	40020.7	/		1bit
0019.8	40020.8	/		1bit
0019.9	40020.9	/		1bit
0019.10	40020.10	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0019.11	40020.11	/		1bit
0019.12	40020.12	/		1bit
0019.13	40020.13	/		1bit
0019.14	40020.14	/		1bit
0019.15	40020.15	/		1bit (MSB 15)
0020.0	40021.0	Overspeed Warning		1bit (LSB 0)
0020.1	40021.1	Underspeed Warning		1bit
0020.2	40021.2	Loss of Speed Signal Warning		1bit
0020.3	40021.3	Gen Overfrequency Warning		1bit
0020.4	40021.4	Gen Underfrequency Warning		1bit
0020.5	40021.5	Gen Overvoltage Warning		1bit
0020.6	40021.6	Gen Undervoltage Warning		1bit
0020.7	40021.7	Gen Overcurrent Warning		1bit
0020.8	40021.8	Stop Failure Warning		1bit
0020.9	40021.9	Charging Failure Warning		1bit
0020.10	40021.10	Battery Overvoltage Warning		1bit
0020.11	40021.11	Battery Undervoltage Warning		1bit
0020.12	40021.12	Maintenance Due Warning		1bit
0020.13	40021.13	Reverse Power Warning		1bit
0020.14	40021.14	Over Power Warning		1bit
0020.15	40021.15	ECU Warning		1bit (MSB 15)
0021.0	40022.0	Gen Loss of Phase Warning		1bit (LSB 0)
0021.1	40022.1	Gen Reverse Phase Sequence Warning		1bit
0021.2	40022.2	/		1bit
0021.3	40022.3	Unbalanced Current Warning		1bit
0021.4	40022.4	Earth Fault Warning		1bit
0021.5	40022.5	Loss of Excitation Fault Warn		1bit
0021.6	40022.6	/		1bit
0021.7	40022.7	Switch Transfer Failure Warn		1bit
0021.8	40022.8	Temp Sensor Open		1bit
0021.9	40022.9	High Temp Warning		1bit
0021.10	40022.10	Low Temp Warning		1bit
0021.11	40022.11	/		1bit
0021.12	40022.12	Oil Pressure Sensor Open		1bit
0021.13	40022.13	/		1bit
0021.14	40022.14	Low Oil Pressure Warning		1bit
0021.15	40022.15	/		1bit (MSB 15)
0022.0	40023.0	Level Sensor Open		1bit (LSB 0)
0022.1	40023.1	/		1bit
0022.2	40023.2	Low Level Warning		1bit
0022.3	40023.3	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0022.4	40023.4	Aux. Sensor 1 Open Warning		1bit
0022.5	40023.5	Aux. Sensor 1 High Warning		1bit
0022.6	40023.6	Aux. Sensor 1 Low Warning		1bit
0022.7	40023.7	/		1bit
0022.8	40023.8	Aux. Sensor 2 Open Warning		1bit
0022.9	40023.9	Aux. Sensor 2 High Warning		1bit
0022.10	40023.10	Aux. Sensor 2 Low Warning		1bit
0022.11	40023.11	/		1bit
0022.12	40023.12	/		1bit
0022.13	40023.13	/		1bit
0022.14	40023.14	/		1bit
0022.15	40023.15	/		1bit (MSB 15)
0023.0	40024.0	/		1bit (LSB 0)
0023.1	40024.1	/		1bit
0023.2	40024.2	/		1bit
0023.3	40024.3	/		1bit
0023.4	40024.4	/		1bit
0023.5	40024.5	/		1bit
0023.6	40024.6	/		1bit
0023.7	40024.7	/		1bit
0023.8	40024.8	/		1bit
0023.9	40024.9	/		1bit
0023.10	40024.10	/		1bit
0023.11	40024.11	/		1bit
0023.12	40024.12	/		1bit
0023.13	40024.13	/		1bit
0023.14	40024.14	/		1bit
0023.15	40024.15	/		1bit (MSB 15)
0024.0	40025.0	/		1bit (LSB 0)
0024.1	40025.1	/		1bit
0024.2	40025.2	/		1bit
0024.3	40025.3	/		1bit
0024.4	40025.4	/		1bit
0024.5	40025.5	/		1bit
0024.6	40025.6	/		1bit
0024.7	40025.7	/		1bit
0024.8	40025.8	/		1bit
0024.9	40025.9	/		1bit
0024.10	40025.10	/		1bit
0024.11	40025.11	/		1bit
0024.12	40025.12	/		1bit
0024.13	40025.13	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0024.14	40025.14	/		1bit
0024.15	40025.15	/		1bit (MSB 15)
0025.0	40026.0	/		1bit (LSB 0)
0025.1	40026.1	/		1bit
0025.2	40026.2	/		1bit
0025.3	40026.3	/		1bit
0025.4	40026.4	/		1bit
0025.5	40026.5	/		1bit
0025.6	40026.6	/		1bit
0025.7	40026.7	/		1bit
0025.8	40026.8	/		1bit
0025.9	40026.9	/		1bit
0025.10	40026.10	/		1bit
0025.11	40026.11	/		1bit
0025.12	40026.12	/		1bit
0025.13	40026.13	/		1bit
0025.14	40026.14	/		1bit
0025.15	40026.15	/		1bit (MSB 15)
0026.0	40027.0	/		1bit (LSB 0)
0026.1	40027.1	/		1bit
0026.2	40027.2	/		1bit
0026.3	40027.3	/		1bit
0026.4	40027.4	/		1bit
0026.5	40027.5	/		1bit
0026.6	40027.6	/		1bit
0026.7	40027.7	/		1bit
0026.8	40027.8	/		1bit
0026.9	40027.9	/		1bit
0026.10	40027.10	/		1bit
0026.11	40027.11	/		1bit
0026.12	40027.12	/		1bit
0026.13	40027.13	/		1bit
0026.14	40027.14	/		1bit
0026.15	40027.15	/		1bit (MSB 15)
0027.0	40028.0	GSM Comm. Failure Warning		1bit (LSB 0)
0027.1	40028.1	/		1bit
0027.2	40028.2	/		1bit
0027.3	40028.3	/		1bit
0027.4	40028.4	/		1bit
0027.5	40028.5	/		1bit
0027.6	40028.6	/		1bit
0027.7	40028.7	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0027.8	40028.8	/		1bit
0027.9	40028.9	/		1bit
0027.10	40028.10	/		1bit
0027.11	40028.11	/		1bit
0027.12	40028.12	/		1bit
0027.13	40028.13	/		1bit
0027.14	40028.14	/		1bit
0027.15	40028.15	/		1bit (MSB 15)
0028.0	40029.0	/		1bit (LSB 0)
0028.1	40029.1	/		1bit
0028.2	40029.2	/		1bit
0028.3	40029.3	/		1bit
0028.4	40029.4	/		1bit
0028.5	40029.5	/		1bit
0028.6	40029.6	/		1bit
0028.7	40029.7	/		1bit
0028.8	40029.8	/		1bit
0028.9	40029.9	/		1bit
0028.10	40029.10	/		1bit
0028.11	40029.11	/		1bit
0028.12	40029.12	/		1bit
0028.13	40029.13	/		1bit
0028.14	40029.14	/		1bit
0028.15	40029.15	/		1bit (MSB 15)
0029.0	40030.0	Input Port 1 Warning		1bit (LSB 0)
0029.1	40030.1	Input Port 2 Warning		1bit
0029.2	40030.2	Input Port 3 Warning		1bit
0029.3	40030.3	Input Port 4 Warning		1bit
0029.4	40030.4	Input Port 5 Warning		1bit
0029.5	40030.5	Input Port 6 Warning		1bit
0029.6	40030.6	Input Port 7 Warning		1bit
0029.7	40030.7	Input Port 8 Warning		1bit
0029.8	40030.8	/		1bit
0029.9	40030.9	/		1bit
0029.10	40030.10	/		1bit
0029.11	40030.11	/		1bit
0029.12	40030.12	/		1bit
0029.13	40030.13	/		1bit
0029.14	40030.14	/		1bit
0029.15	40030.15	/		1bit (MSB 15)
0030.0	40031.0	/		1bit (LSB 0)
0030.1	40031.1	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0030.2	40031.2	/		1bit
0030.3	40031.3	/		1bit
0030.4	40031.4	/		1bit
0030.5	40031.5	/		1bit
0030.6	40031.6	/		1bit
0030.7	40031.7	/		1bit
0030.8	40031.8	/		1bit
0030.9	40031.9	/		1bit
0030.10	40031.10	/		1bit
0030.11	40031.11	/		1bit
0030.12	40031.12	/		1bit
0030.13	40031.13	/		1bit
0030.14	40031.14	/		1bit
0030.15	40031.15	/		1bit (MSB 15)
0031.0	40032.0	Inhibit Alarm Shut Indication		1bit (LSB 0)
0031.1	40032.1	Maintenance Due Indication		1bit
0031.2	40032.2	In Scheduled Not Run Indication		1bit
0031.3	40032.3	GSM Comm. Failure Indication		1bit
0031.4	40032.4	/		1bit
0031.5	40032.5	/		1bit
0031.6	40032.6	/		1bit
0031.7	40032.7	/		1bit
0031.8	40032.8	/		1bit
0031.9	40032.9	/		1bit
0031.10	40032.10	/		1bit
0031.11	40032.11	/		1bit
0031.12	40032.12	/		1bit
0031.13	40032.13	/		1bit
0031.14	40032.14	/		1bit
0031.15	40032.15	/		1bit (MSB 15)
0032.0	40033.0	/		1bit (LSB 0)
0032.1	40033.1	/		1bit
0032.2	40033.2	/		1bit
0032.3	40033.3	/		1bit
0032.4	40033.4	/		1bit
0032.5	40033.5	/		1bit
0032.6	40033.6	Auto Mode Input		1bit
0032.7	40033.7	Auto Mode Inactive		1bit
0032.8	40033.8	GSM Inhibit Start		1bit
0032.9	40033.9	Reserved		1bit
0032.10	40033.10	Alt. Config. 1 Indication		1bit

Modbus Address	PLC Address	Item	Description	Bits
0032.11	40033.11	Alt. Config. 2 Indication		1bit
0032.12	40033.12	Alt. Config. 3 Indication		1bit
0032.13	40033.13	Overcurrent Indication		1bit
0032.14	40033.14	Reverse Power Indication		1bit
0032.15	40033.15	Over Power Indication		1bit (MSB 15)
0033.0	40034.0	Input Port 1 Indication		1bit (LSB 0)
0033.1	40034.1	Input Port 2 Indication		1bit
0033.2	40034.2	Input Port 3 Indication		1bit
0033.3	40034.3	Input Port 4 Indication		1bit
0033.4	40034.4	Input Port 5 Indication		1bit
0033.5	40034.5	Input Port 6 Indication		1bit
0033.6	40034.6	Input Port 7 Indication		1bit
0033.7	40034.7	Input Port 8 Indication		1bit
0033.8	40034.8	Input Port 9 Indication		1bit
0033.9	40034.9	Input Port 10 Indication		1bit
0033.10	40034.10	/		1bit
0033.11	40034.11	/		1bit
0033.12	40034.12	/		1bit
0033.13	40034.13	/		1bit
0033.14	40034.14	/		1bit
0033.15	40034.15	/		1bit (MSB 15)
0034.0	40035.0	/		1bit (LSB 0)
0034.1	40035.1	/		1bit
0034.2	40035.2	/		1bit
0034.3	40035.3	/		1bit
0034.4	40035.4	/		1bit
0034.5	40035.5	/		1bit
0034.6	40035.6	/		1bit
0034.7	40035.7	/		1bit
0034.8	40035.8	/		1bit
0034.9	40035.9	/		1bit
0034.10	40035.10	/		1bit
0034.11	40035.11	/		1bit
0034.12	40035.12	/		1bit
0034.13	40035.13	/		1bit
0034.14	40035.14	/		1bit
0034.15	40035.15	/		1bit (LSB 0)
0035.0	40036.0	Emergency Stop Input Port Status		
0035.1	40036.1	Input Port 1 Status		
0035.2	40036.2	Input Port 2 Status		
0035.3	40036.3	Input Port 3 Status		

Modbus Address	PLC Address	Item	Description	Bits
0035.4	40036.4	Input Port 4 Status		
0035.5	40036.5	Input Port 5 Status		
0035.6	40036.6	Input Port 6 Status		
0035.7	40036.7	Input Port 7 Status		
0035.8	40036.8	Input Port 8 Status		
0035.9	40036.9	/		
0035.10	40036.10	/		
0035.11	40036.11	/		
0035.12	40036.12	/		
0035.13	40036.13	/		
0035.14	40036.14	/		
0035.15	40036.15	/		
0036.0	40037.0	Input Port 1 Active		
0036.1	40037.1	Input Port 2 Active		
0036.2	40037.2	Input Port 3 Active		
0036.3	40037.3	Input Port 4 Active		
0036.4	40037.4	Input Port 5 Active		
0036.5	40037.5	Input Port 6 Active		
0036.6	40037.6	Input Port 7 Active		
0036.7	40037.7	Input Port 8 Active		
0036.8	40037.8	Input Port 9 Active		
0036.9	40037.9	Input Port 10 Active		
0036.10	40037.10	Input Port 11 Active		
0036.11	40037.11	Input Port 12 Active		
0036.12	40037.12	/		
0036.13	40037.13	/		
0036.14	40037.14	/		
0036.15	40037.15	/		
0037.0	40038.0	Fuel Relay Output Status		
0037.1	40038.1	Crank Relay Output Status		
0037.2	40038.2	Aux. Output Port 1 Status		
0037.3	40038.3	Aux. Output Port 2 Status		
0037.4	40038.4	Aux. Output Port 3 Status		
0037.5	40038.5	Aux. Output Port 4 Status		
0037.6	40038.6	Aux. Output Port 5 Status		
0037.7	40038.7	Aux. Output Port 6 Status		
0037.8	40038.8	Aux. Output Port 7 Status		
0037.9	40038.9	Aux. Output Port 8 Status		
0037.10	40038.10	Aux. Output Port 9 Status		
0037.11	40038.11	Aux. Output Port 10 Status		
0037.12	40038.12	/		
0037.13	40038.13	/		

Modbus Address	PLC Address	Item	Description	Bits
0037.14	40038.14	/		
0037.15	40038.15	/		
0038.0	40039.0	/		1bit (LSB 0)
0038.1	40039.1	/		1bit
0038.2	40039.2	/		1bit
0038.3	40039.3	/		1bit
0038.4	40039.4	/		1bit
0038.5	40039.5	/		1bit
0038.6	40039.6	/		1bit
0038.7	40039.7	/		1bit
0038.8	40039.8	/		1bit
0038.9	40039.9	/		1bit
0038.10	40039.10	/		1bit
0038.11	40039.11	/		1bit
0038.12	40039.12	/		1bit
0038.13	40039.13	/		1bit
0038.14	40039.14	/		1bit
0038.15	40039.15	/		1bit (MSB 15)
0039.0	40040.0	/		
0039.1	40040.1	/		
0039.2	40040.2	/		
0039.3	40040.3	/		
0039.4	40040.4	/		
0039.5	40040.5	/		
0039.6	40040.6	/		
0039.7	40040.7	/		
0039.8	40040.8	/		
0039.9	40040.9	/		
0039.10	40040.10	/		
0039.11	40040.11	/		
0039.12	40040.12	/		
0039.13	40040.13	/		
0039.14	40040.14	/		
0039.15	40040.15	/		
0040.0	40041.0	/		
0040.1	40041.1	/		
0040.2	40041.2	/		
0040.3	40041.3	/		
0040.4	40041.4	/		
0040.5	40041.5	/		
0040.6	40041.6	/		
0040.7	40041.7	/		

Modbus Address	PLC Address	Item	Description	Bits
0040.8	40041.8	/		
0040.9	40041.9	/		
0040.10	40041.10	/		
0040.11	40041.11	/		
0040.12	40041.12	/		
0040.13	40041.13	/		
0040.14	40041.14	/		
0040.15	40041.15	/		
0041.0	40042.0	/		
0041.1	40042.1	/		
0041.2	40042.2	/		
0041.3	40042.3	/		
0041.4	40042.4	/		
0041.5	40042.5	/		
0041.6	40042.6	/		
0041.7	40042.7	/		
0041.8	40042.8	/		
0041.9	40042.9	/		
0041.10	40042.10	/		
0041.11	40042.11	/		
0041.12	40042.12	/		
0041.13	40042.13	/		
0041.14	40042.14	/		
0041.15	40042.15	/		
0042.0	40043.0	/		1bit (LSB 0)
0042.1	40043.1	/		1bit
0042.2	40043.2	/		1bit
0042.3	40043.3	/		1bit
0042.4	40043.4	/		1bit
0042.5	40043.5	/		1bit
0042.6	40043.6	/		1bit
0042.7	40043.7	/		1bit
0042.8	40043.8	/		1bit
0042.9	40043.9	/		1bit
0042.10	40043.10	/		1bit
0042.11	40043.11	/		1bit
0042.12	40043.12	/		1bit
0042.13	40043.13	/		1bit
0042.14	40043.14	/		1bit
0042.15	40043.15	/		1bit (MSB 15)
0043.0	40044.0	Mains Normal		1bit (LSB 0)
0043.1	40044.1	Mains Close		1bit

Modbus Address	PLC Address	Item	Description	Bits
0043.2	40044.2	Gen Normal		1bit
0043.3	40044.3	Gen Close		1bit
0043.4	40044.4	Alarm Indicator Status		1bit
0043.5	40044.5	Running Indicator Status		1bit
0043.6	40044.6	/		1bit
0043.7	40044.7	/		1bit
0043.8	40044.8	/		1bit
0043.9	40044.9	/		1bit
0043.10	40044.10	/		1bit
0043.11	40044.11	/		1bit
0043.12	40044.12	/		1bit
0043.13	40044.13	/		1bit
0043.14	40044.14	/		1bit
0043.15	40044.15	/		1bit (MSB 15)
0044.0	40045.0	Mains Abnormal		1bit (LSB 0)
0044.1	40045.1	Mains Overvoltage		1bit
0044.2	40045.2	Mains Undervoltage		1bit
0044.3	40045.3	Mains Overfrequency		1bit
0044.4	40045.4	Mains Underfrequency		1bit
0044.5	40045.5	Mains Loss of Phase		1bit
0044.6	40045.6	Mains Reverse Phase Seq		1bit
0044.7	40045.7	Mains Blackout		1bit
0044.8	40045.8	/		1bit
0044.9	40045.9	/		1bit
0044.10	40045.10	/		1bit
0044.11	40045.11	/		1bit
0044.12	40045.12	/		1bit
0044.13	40045.13	/		1bit
0044.14	40045.14	/		1bit
0044.15	40045.15	/		1bit (MSB 15)
0045.0	40046.0	Input Port 1 Active		1bit (LSB 0)
0045.1	40046.1	Input Port 2 Active		1bit
0045.2	40046.2	Input Port 3 Active		1bit
0045.3	40046.3	Input Port 4 Active		1bit
0045.4	40046.4	Input Port 5 Active		1bit
0045.5	40046.5	Input Port 6 Active		1bit
0045.6	40046.6	Input Port 7 Active		1bit
0045.7	40046.7	Input Port 8 Active		1bit
0045.8	40046.8	/		1bit
0045.9	40046.9	/		1bit
0045.10	40046.10	/		1bit
0045.11	40046.11	/		1bit

Modbus Address	PLC Address	Item	Description	Bits
0045.12	40046.12	/		1bit
0045.13	40046.13	/		1bit
0045.14	40046.14	/		1bit
0045.15	40046.15	/		1bit (MSB 15)
0046.0	40047.0	/		1bit (LSB 0)
0046.1	40047.1	/		1bit
0046.2	40047.2	/		1bit
0046.3	40047.3	/		1bit
0046.4	40047.4	/		1bit
0046.5	40047.5	/		1bit
0046.6	40047.6	/		1bit
0046.7	40047.7	/		1bit
0046.8	40047.8	/		1bit
0046.9	40047.9	/		1bit
0046.10	40047.10	/		1bit
0046.11	40047.11	/		1bit
0046.12	40047.12	/		1bit
0046.13	40047.13	/		1bit
0046.14	40047.14	/		1bit
0046.15	40047.15	/		1bit (MSB 15)
0047	40048	/		
0048	40049	/		
0049	40050	/		
0050	40051	/		
0051	40052	/		
0052	40053	/		
0053	40054	/		
0054	40055	/		

Example:

If need to read “Level Sensor Open” and “Input Module 1 Sensor 17 Open” status, firstly get their corresponding address is 0003.0 and 0004.8, by checking the table, it is known that you need to read 2 addresses’ data.

Assume the slave (controller) address is 01, the master (can be computer) request command is as following:

Table 3 Master (Computer) Request Command

Slave Address	Function Code	Starting Address (0003)		Data Qty. (2)		CRC 16 Calibration	
		MSB	LSB	MSB	LSB	LSB	MSB
01	03	00	03	00	02	34	0B

Slave response command is as following:

Table 4 Slave (Controller) Response Command

Slave Address	Function Code	Data Qty. (Bytes)	Data				CRC 16 Calibration	
			Data MSB of Address 0003	Data LSB of Address 0003	Data MSB of Address 0004	Data LSB of Address 0004	LSB	MSB
01	03	04	00	01	01	00	AA	3F

Table 5 Data Analysis

Address	Received Data (Hex)	Convert to Binary	Data Signification
0003	0001H	0000 0000 0000 0001 (correspond to 0003.15, 0003.14.....0003.1, 0003.0)	Data of bit 0 is 1 indicates that level sensor open is active.
0004	0100H	0000 0001 0000 0000 (correspond to 0004.15, 0004.14.....0004.1, 0004.0)	Data of bit 0004.8 is 1 indicates that input module 1 sensor 17 open is active.

3.3 VALUE DATA FIELD CORRESPONDING TO FUNCTION CODE 03H, 06H

Function code 06H only can be written by address 0199-0210 and 0225-0231, not available for other addresses.

Table 6 Value Data Field

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0000	40001	Common Alarm					
0001 -0011	40002 -40012	Stop Alarm Field					
0012 -0015	40013 -40016	Trip and Stop Alarm Field					
0016 -0019	40017 -40020	Trip Field					
0020 -0030	40021 -40031	Warning Field					
0031 -0034	40032 -40035	Indication Field					
0035	40036	Inputs Status Field					
0036	40037	Expand Inputs Status Field					
0037	40038	Outputs Status Field					
0038	40039	Expand Output Module Outputs Status					

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
		Field					
0039	40040	/					
0040	40041	/					
0041	40042	/					
0042	40043						
0043	40044	Lamp Status Field					
0044	40045	Mains Status Field					
0045	40046	Inputs Field					
0046	40047	Expand Inputs Field					
0047	40048	/					
0048	40049	/					
0049	40050	/					
0050	40051	/					
0051	40052	/					
0052	40053	/					
0053	40054	/					
0054	40055	/					
0055	40056	Mains UAB	-32768~32767	1	V	16-bit Signed	
0056	40057	Mains UBC	-32768~32767	1	V	16-bit Signed	
0057	40058	Mains UCA	-32768~32767	1	V	16-bit Signed	
0058	40059	Mains UA	-32768~32767	1	V	16-bit Signed	
0059	40060	Mains UB	-32768~32767	1	V	16-bit Signed	
0060	40061	Mains UC	-32768~32767	1	V	16-bit Signed	
0061	40062	Mains Phase UA	0~360.0	0.1	°	16-bit Signed	
0062	40063	Mains Phase UB	0~360.0	0.1	°	16-bit Signed	
0063	40064	Mains Phase UC	0~360.0	0.1	°	16-bit Signed	
0064	40065	Mains Freq	0~100.00	0.01	Hz	16-bit Signed	
0065	40066	Freq Change				16-bit Signed	
0066	40067	Vector Value				16-bit Signed	
0067	40068	/				16-bit Unsigned	
0068	40069	/				16-bit Unsigned	
0069	40070	/				16-bit Unsigned	
0070	40071	/				16-bit Unsigned	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0071	40072	/				16-bit Unsigned	
0072	40073	/				16-bit Unsigned	
0073	40074	/				16-bit Unsigned	
0074	40075	/				16-bit Unsigned	
0075	40076	Gen UAB	-32768~32767	1	V	16-bit Signed	
0076	40077	Gen UBC	-32768~32767	1	V	16-bit Signed	
0077	40078	Gen UCA	-32768~32767	1	V	16-bit Signed	
0078	40079	Gen UA	-32768~32767	1	V	16-bit Signed	
0079	40080	Gen UB	-32768~32767	1	V	16-bit Signed	
0080	40081	Gen UC	-32768~32767	1	V	16-bit Signed	
0081	40082	Gen UA Phase	0~360	0.1	°	16-bit Signed	
0082	40083	Gen UB Phase	0~360	0.1	°	16-bit Signed	
0083	40084	Gen UC Phase	0~360	0.1	°	16-bit Signed	
0084	40085	Gen Freq			Hz	16-bit Signed	
0085	40086	Volt Difference				16-bit Signed	
0086	40087	Freq Difference				16-bit Signed	
0087	40088	Phase Difference				16-bit Signed	
0088	40089	Current Gen Active PCT				16-bit Signed	
0089	40090	Target Gen Active PCT				16-bit Signed	
0090	40091	Current Gen Reactive PCT				16-bit Signed	
0091	40092	Target Gen Reactive PCT				16-bit Signed	
0092	40093	Gov PCT				16-bit Signed	
0093	40094	Average Power PCT				16-bit Signed	
0094	40095	/				16-bit Unsigned	
0095	40096	A Phase Current	0~65535	1	A	16-bit Unsigned	
0096	40097	B Phase Current	0~65535	1	A	16-bit Unsigned	
0097	40098	C Phase Current	0~65535	1	A	16-bit Unsigned	
0098	40099	N Line Current	0~65535	1	A	16-bit Unsigned	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0099	40100	A Phase Current Phase	0~360.0	0.1	°	16-bit Unsigned	
0100	40101	B Phase Current Phase	0~360.0	0.1	°	16-bit Signed	
0101	40102	C Phase Current Phase	0~360.0	0.1	°	16-bit Signed	
0102	40103	N Line Current Phase	0~360.0	0.1	°	16-bit Signed	
0103	40104	A Phase Active Power	-2,147,483,648		kW	32-bit Signed	
0104	40105		~2,147,483,647				
0105	40106	B Phase Active Power	-2,147,483,648		kW	32-bit Signed	
0106	40107		~2,147,483,647				
0107	40108	C Phase Active Power	-2,147,483,648		kW	32-bit Signed	NOTE3
0108	40109		~2,147,483,647				
0109	40110	Total Active Power	-2,147,483,648		kW	32-bit Signed	
0110	40111		~2,147,483,647				
0111	40112	A Phase Reactive	-2,147,483,648		kvar	32-bit Signed	
0112	40113		~2,147,483,647				
0113	40114	B Phase Reactive Power	-2,147,483,648		kvar	32-bit Signed	
0114	40115		~2,147,483,647				
0115	40116	C Phase Reactive Power	-2,147,483,648		kvar	32-bit Signed	
0116	40117		~2,147,483,647				
0117	40118	Total Reactive Power	-2,147,483,648		kvar	32-bit Signed	
0118	40119		~2,147,483,647				
0119	40120	A Phase Apparent Power	-2,147,483,648		kVA	32-bit Signed	
0120	40121		~2,147,483,647				
0121	40122	B Phase Apparent Power	-2,147,483,648		kVA	32-bit Signed	
0122	40123		~2,147,483,647				
0123	40124	C Phase Apparent Power	-2,147,483,648		kVA	32-bit Signed	
0124	40125		~2,147,483,647				
0125	40126	Total Apparent Power	-2,147,483,648		kVA	32-bit Signed	
0126	40127		~2,147,483,647				
0127	40128	A Phase Power Factor			CosΦ	16-bit Signed	
0128	40129	B Phase Power Factor			CosΦ	16-bit Signed	
0129	40130	C Phase Power Factor			CosΦ	16-bit Signed	
0130	40131	Average Power Factor			CosΦ	16-bit Signed	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0131	40132	/				16-bit Unsigned	
0132	40133	/				16-bit Unsigned	
0133	40134	Unbalanced Current	-32768~32767		A	16-bit Unsigned	
0134	40135	Mains Current	-32768~32767		A	16-bit Unsigned	
0135	40136	/					
0136	40137	/					
0137	40138	/					
0138	40139	/					
0139	40140	/					
0140	40141	/					
0141	40142	Speed				16-bit Signed	
0142	40143	Battery Volt			V	16-bit Signed	
0143	40144	Charger Volt			V	16-bit Signed	
0144	40145	GSM Power				16-bit Signed	
0145	40146	/					
0146	40147	/					
0147	40148	/					
0148	40149	Sensor 1 Resist. Value	-32768~32767			16-bit Unsigned	
0149	40150	Sensor 1 Value	-32768~32767			16-bit Signed	
0150	40151	Sensor 2 Resist. Value, Current Value, Voltage Value	0~65535			16-bit Unsigned	
0151	40152	Sensor 2 Value	-32768~32767			16-bit Signed	
0152	40153	Sensor 3 Resist. Value	0~65535			16-bit Unsigned	
0153	40154	Sensor 3 Value	-32768~32767			16-bit Signed	
0154	40155	Sensor 4 Resist. Value, Current Value, Voltage Value	0~65535			16-bit Unsigned	
0155	40156	Sensor 4 Value	-32768~32767			16-bit Signed	
0156	40157	Sensor 5 Resist. Value	0~65535			16-bit Unsigned	
0157	40158	Sensor 5 Value	-32768~32767			16-bit Signed	
0158	40159	Sensor 6 Resist. Value	0~65535			16-bit Unsigned	
0159	40160	Sensor 6 Value	-32768~32767			16-bit Signed	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0160	40161	/					
0161	40162	/				16-bit Signed	Signed, it is reserved when engine is not ECU.
0162	40163	Coolant Level				16-bit Signed	
0163	40164	Oil Temp				16-bit Signed	
0164	40165	Coolant Press.				16-bit Signed	
0165	40166	Fuel Pressure				16-bit Signed	
0166	40167	Fuel Temp				16-bit Signed	
0167	40168	Inlet Temp				16-bit Signed	
0168	40169	Exhaust Temp				16-bit Signed	
0169	40170	Turbo Pressure				16-bit Signed	
0170	40171	Fuel Consumption				16-bit Signed	
0171	40172	Accum. Fuel Consumption				16-bit Signed	
0172	40173					16-bit Signed	
0173	40174	Throttle Position 1				16-bit Signed	
0174	40175	Gas Pressure after Value				16-bit Signed	
0175	40176	Gas Pressure before Value				16-bit Signed	
0176	40177	/				16-bit Signed	
0177	40178	/				16-bit Unsigned	
0178	40179	/				16-bit Unsigned	
0179	40180	/				16-bit Unsigned	
0180	40181	Current Mains Active PCT				16-bit Signed	
0181	40182	Current Mains Reactive PCT				16-bit Signed	
0182	40183	Active Power	-2,147,483,648 ~2,147,483,647	10	kW	32-bit Signed	NOTE4
0183	40184						
0184	40185	Reactive Power	-2,147,483,648 ~2,147,483,647	10	kvar	32-bit Signed	
0185	40186						
0186	40187	Apparent Power	-2,147,483,648 ~2,147,483,647	10	kVA	32-bit Signed	
0187	40188						
0188	40189	Power Factor			CosΦ	16-bit Signed	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0189	40190	Gen Working Status		No.		Generator Status Table	
0190	40191	Gen Working Delay Value		1	s	16-bit Unsigned	
0191	40192	Remote Start Status		No.		Remote Start Status Table	
0192	40193	Remote Start Delay Value		1	s	16-bit Unsigned	
0193	40194	Engine Switch Status		No.		Switch Status Table	
0194	40195	Engine Switch Transfer Delay Value		1	s	16-bit Unsigned	
0195	40196	Mains Status		No.		Mains Status Table	
0196	40197	Mains Delay Value		1	s	16-bit Unsigned	
0197	40198	Mains Switch Status		No.		Switch Status Table	
0198	40199	Mains Switch Delay Value		1		16-bit Unsigned	
0199	40200	Accum. Running Hours	0~23	1	h	16-bit Unsigned	
0200	40201	Accum. Running Minutes	0~59	1	min	16-bit Unsigned	
0201	40202	Accum. Running Seconds	0~59	1	s	16-bit Unsigned	
0202	40203	Accum. Start Times			times	16-bit Unsigned	
0203	40204	Accum. Energy kWh			kWh	32-bit Signed	
0204	40205						
0205	40206	Accum. Energy kvarh			kvarh	32-bit Signed	
0206	40207						
0207	40208	Accum. Energy KVAh			KVAh	32-bit Signed	
0208	40209						
0209	40210	Accum. Energy N kWh			N kWh	32-bit Signed	
0210	40211						
0211	40212	Maint. Left Time (h)	0~23	1	h	16-bit Unsigned	
0212	40213	Maint. Left	0~59	1	min	16-bit	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
		Time (min)				Unsigned	
0213	40214	Maint. Left Time (s)	0~59	1	s	16-bit Unsigned	
0214	40215	Multi-set Total	-2,147,483,648		Kvarh	32-bit Signed	
0215	40216	Reactive Power	~2,147,483,647				
0216	40217	/				16-bit Signed	
0217	40218	Controller Model				16-bit Unsigned	
0218	40219	Software Version				16-bit Unsigned	
0219	40220	Hardware Version				16-bit Unsigned	
0220	40221	Issue Year	0~99	1	Year	16-bit Unsigned	
0221	40222	Issue Month	1~12	1	Month	16-bit Unsigned	
0222	40223	Issue Day	1~31	1	Day	16-bit Unsigned	
0223	40224	Reserved				16-bit Unsigned	
0224	40225	Reserved				16-bit Unsigned	
0225	40226	Controller Time: Year	0~99	1	Year	16-bit Unsigned	
0226	40227	Controller Time: Month	1~12	1	Month	16-bit Unsigned	
0227	40228	Controller Time: Day	1~31	1	Day	16-bit Unsigned	
0228	40229	Controller Time: Week	0~6	1	Week	16-bit Unsigned	0: Sun 1~6: Mon-Sat
0229	40230	Controller Time: Hour	0~23	1	h	16-bit Unsigned	
0230	40231	Controller Time: Minute	0~59	1	min	16-bit Unsigned	
0231	40232	Controller Time: Second	0~59	1	s	16-bit Unsigned	
0232	40233	Module MSC ID	0~65535			16-bit Unsigned	
0233	40234	Module Priority				16-bit Unsigned	
0234	40235	Total Modules				16-bit Unsigned	



Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0235	40236	Multi-set Power kW			kW	32-bit Signed	
0236	40237						
0237	40238	Reserved				16-bit Unsigned	
0238	40239	Exp. AIN24-1, Sensor 15				16-bit Signed	
0239	40240	Exp. AIN24-1, Sensor 16				16-bit Signed	
0240	40241	Exp. AIN24-1, Sensor 17				16-bit Signed	
0241	40242	Exp. AIN24-1, Sensor 18				16-bit Signed	
0242	40243	Exp. AIN24-1, Sensor 19				16-bit Signed	
0243	40244	Exp. AIN24-1, Sensor 20				16-bit Signed	
0244	40245	Exp. AIN24-1, Sensor 21				16-bit Signed	
0245	40246	Exp. AIN24-1, Sensor 22				16-bit Signed	
0246	40247	Exp. AIN24-1, Sensor 23				16-bit Signed	
0247	40248	Exp. AIN24-1, Sensor 24				16-bit Signed	
0248	40249	Exp. AIN24-2, Sensor 15				16-bit Signed	
0249	40250	Exp. AIN24-2, Sensor 16				16-bit Signed	
0250	40251	Exp. AIN24-2, Sensor 17				16-bit Signed	
0251	40252	Exp. AIN24-2, Sensor 18				16-bit Signed	
0252	40253	Exp. AIN24-2, Sensor 19				16-bit Signed	
0253	40254	Exp. AIN24-2, Sensor 20				16-bit Signed	
0254	40255	Exp. AIN24-2, Sensor 21				16-bit Signed	
0255	40256	Exp. AIN24-2, Sensor 22				16-bit Signed	
0256	40257	Exp. AIN24-2, Sensor 23				16-bit Signed	
0257	40258	Exp. AIN24-2, Sensor 24				16-bit Signed	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
		Sensor 24					
0258	40259	Exhaust Gas Oxygen				16-bit Signed	
0259	40260	Temp before Turbo				16-bit Unsigned	
0260	40261	Gas Valve Position				16-bit Signed	
0261	40262	Exp. 3 Sensor 4 Data				16-bit Unsigned	
0262	40263	Exp. 4 Sensor 1 Resist. Value				16-bit Signed	
0263	40264	Exp. 4 Sensor 1 Data				16-bit Unsigned	
0264	40265	Exp. 4 Sensor 2 Resist. Value				16-bit Signed	
0265	40266	Exp. 4 Sensor 2 Data				16-bit Unsigned	
0266	40267	Exp. 4 Sensor 3 Resist. Value				16-bit Signed	
0267	40268	Exp. 4 Sensor 3 Data				16-bit Unsigned	
0268	40269	Exp. 4 Sensor 4 Resist. Value				16-bit Signed	
0269	40270	Exp. 4 Sensor 4 Data				16-bit Unsigned	
0270	40271	A Running Hours	0~23	1	h	16-bit Unsigned	
0271	40272	A Running Minutes	0~59	1	min	16-bit Unsigned	
0272	40273	A Running Seconds	0~59	1	s	16-bit Unsigned	
0273	40274	A Start Times	0~65535	1	times	16-bit Unsigned	
0274	40275	A Gen Power kWh	-2,147,483,648 ~2,147,483,647	1	kWh	32-bit Signed	
0275	40276						
0276	40277	B Running Hours	0~23	1	h	16-bit Unsigned	
0277	40278	B Running Minutes	0~59	1	min	16-bit Unsigned	
0278	40279	B Running Seconds	0~59	1	s	16-bit Unsigned	
0279	40280	B Start Times	0~65535	1	times	16-bit Unsigned	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0280	40281	B Gen Power kWh	-2,147,483,648 ~2,147,483,647	1	kWh	32-bit Signed	
0281	40282						
0282	40283	9560 Total Modules				16-bit Unsigned	
0283	40284	Current Module 9560 ID				16-bit Unsigned	
0284	40285	Current Module 9560 PRI				16-bit Unsigned	
0285	40286	Exp. AIN24-1, Sensor 1				16-bit Unsigned	
0286	40287	Exp. AIN24-1, Sensor 2				16-bit Unsigned	
0287	40288	Exp. AIN24-1, Sensor 3				16-bit Unsigned	
0288	40289	Exp. AIN24-1, Sensor 4				16-bit Unsigned	
0289	40290	Exp. AIN24-1, Sensor 5				16-bit Unsigned	
0290	40291	Exp. AIN24-1, Sensor 6				16-bit Unsigned	
0291	40292	Exp. AIN24-1, Sensor 7				16-bit Unsigned	
0292	40293	Exp. AIN24-1, Sensor 8				16-bit Unsigned	
0293	40294	Exp. AIN24-1, Sensor 9				16-bit Unsigned	
0294	40295	Exp. AIN24-1, Sensor 10				16-bit Unsigned	
0295	40296	Exp. AIN24-1, Sensor 11				16-bit Unsigned	
0296	40297	Exp. AIN24-1, Sensor 12				16-bit Unsigned	
0297	40298	Exp. AIN24-1, Sensor 13				16-bit Unsigned	
0298	40299	Exp. AIN24-1, Sensor 14				16-bit Unsigned	
0299	40300	Exp. AIN24-2, Sensor 1				16-bit Unsigned	
0300	40301	Exp. AIN24-2, Sensor 2				16-bit Unsigned	
0301	40302	Exp. AIN24-2, Sensor 3				16-bit Unsigned	
0302	40303	Exp. AIN24-2,				16-bit	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
		Sensor 4				Unsigned	
0303	40304	Exp. AIN24-2, Sensor 5				16-bit Unsigned	
0304	40305	Exp. AIN24-2, Sensor 6				16-bit Unsigned	
0305	40306	Exp. AIN24-2, Sensor 7				16-bit Unsigned	
0306	40307	Exp. AIN24-2, Sensor 8				16-bit Unsigned	
0307	40308	Exp. AIN24-2, Sensor 9				16-bit Unsigned	
0308	40309	Exp. AIN24-2, Sensor 10				16-bit Unsigned	
0309	40310	Exp. AIN24-2, Sensor 11				16-bit Unsigned	
0310	40311	Exp. AIN24-2, Sensor 12				16-bit Unsigned	
0311	40312	Exp. AIN24-2, Sensor 13				16-bit Unsigned	
0312	40313	Exp. AIN24-2, Sensor 14				16-bit Unsigned	
0313	40314	AIN24 1 Sensor 15 Resist. Value Address 1				16-bit Unsigned	
0314	40315	AIN24 1 Sensor 15 Resist. Value Address 2				16-bit Unsigned	
0315	40316	AIN24 1 Sensor 15 Resist. Value Address 3				16-bit Unsigned	
0316	40317	AIN24 1 Sensor 15 Resist. Value Address 4				16-bit Unsigned	
0317	40318	AIN24 1 Sensor 15 Resist. Value Address 5				16-bit Unsigned	
0318	40319	AIN24 1 Sensor 15 Resist.				16-bit Unsigned	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
		Value Address 6					
0319	40320	AIN24 1 Sensor 15 Resist. Value Address 7				16-bit Unsigned	
0320	40321	AIN24 1 Sensor 15 Resist. Value Address 8				16-bit Unsigned	
0321	40322	AIN24 1 Sensor 15 Resist. Value Address 9				16-bit Unsigned	
0322	40323	AIN24 1 Sensor 15 Resist. Value Address 10				16-bit Unsigned	
0323	40324	AIN24 2 Sensor 15 Resist. Value Address 1				16-bit Unsigned	
0324	40325	AIN24 2 Sensor 15 Resist. Value Address 2				16-bit Unsigned	
0325	40326	AIN24 2 Sensor 15 Resist. Value Address 3				16-bit Unsigned	
0326	40327	AIN24 2 Sensor 15 Resist. Value Address 4				16-bit Unsigned	
0327	40328	AIN24 2 Sensor 15 Resist. Value Address 5				16-bit Unsigned	
0328	40329	AIN24 2 Sensor 15 Resist. Value Address 6				16-bit Unsigned	
0329	40330	AIN24 2 Sensor				16-bit	

Modbus Address	PLC Address	Name		Range (Decimal)	Ratio	Unit	Description	Remark
		15 Resist. Value	Address 7				Unsigned	
0330	40331	AIN24 2 Sensor 15 Resist. Value	Address 8				16-bit Unsigned	
0331	40332	AIN24 2 Sensor 15 Resist. Value	Address 9				16-bit Unsigned	
0332	40333	AIN24 2 Sensor 15 Resist. Value	Address 10				16-bit Unsigned	
0333	40334	Actual Air-fuel Ratio					16-bit Signed	
0334	40335	Throttle Position	2				16-bit Signed	
0335	40336	Ignition Timing					16-bit Signed	
0336	40337	DM1 Alarm Type					16-bit Unsigned	
0337	40338	DM1 Alarm Times				times	16-bit Unsigned	
0338	40339	DM1 Alarm SPN1	SPN					
0339	40340		FMI					
0340	40341		OC					
0341	40342							
0342	40343	DM1 Alarm SPN2	SPN					
0343	40344		FMI					
0344	40345		OC					
0345	40346							
0346	40347	DM1 Alarm SPN3						
0347	40348							
0348	40349							
0349	40350							
0350	40351	DM1 Alarm SPN4						
0351	40352							
0352	40353							
0353	40354							
0354	40355	DM1 Alarm SPN5						
0355	40356							
0356	40357							

Modbus Address	PLC Address	Name		Range (Decimal)	Ratio	Unit	Description	Remark
0357	40358							
0358	40359							
0359	40360	DM1 Alarm SPN6						
0360	40361							
0361	40362							
0362	40363	DM1 Alarm SPN7						
0363	40364							
0364	40365							
0365	40366	DM1 Alarm SPN8						
0366	40367							
0367	40368							
0368	40369	DM1 Alarm SPN9						
0369	40370							
0370	40371							
0371	40372	DM1 Alarm SPN10						
0372	40373							
0373	40374							
0374	40375	DM2 Alarm Type						
0375	40376						16-bit Unsigned	
0376	40377							
0377	40378	DM2 Alarm Times						
0378	40379						16-bit Unsigned	
0379	40380							
0380	40381	DM2 Alarm SPN1	SPN					
0381	40382		FMI					
0382	40383		OC					
0383	40384	DM2 Alarm SPN2						
0384	40385		SPN					
0385	40386		FMI					
0386	40387	DM2 Alarm SPN3	OC					
0387	40388							
0388	40389							
0389	40390	DM2 Alarm SPN4						
0390	40391							
0391	40392							
0392	40393	DM2 Alarm SPN4						
0393	40394							
0394	40395							
0395	40396	DM2 Alarm						
0396	40397							

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0397	40398	SPN5					
0398	40399						
0399	40400						
0400	40401	DM2 Alarm SPN6					
0401	40402						
0402	40403						
0403	40404	DM2 Alarm SPN7					
0404	40405						
0405	40406						
0406	40407	DM2 Alarm SPN8					
0407	40408						
0408	40409						
0409	40410	DM2 Alarm SPN9					
0410	40411						
0411	40412						
0412	40413	DM2 Alarm SPN10					
0413	40414						
0414	40415						
0415	40416	DM2 Alarm SPN10					
0416	40417						
0417	40418						
0418	40419	Exhaust Gas Temp 1				16-bit Signed	
0419	40420						
0420	40421						
0421	40422	Exhaust Gas Temp 2				16-bit Signed	
0422	40423	Exhaust Gas Temp 3				16-bit Signed	
0423	40424	Exhaust Gas Temp 4				16-bit Signed	
0424	40425	Exhaust Gas Temp 5				16-bit Signed	
0425	40426	Exhaust Gas Temp 6				16-bit Signed	
0426	40427	Exhaust Gas Temp 7				16-bit Signed	
0427	40428	Exhaust Gas Temp 8				16-bit Signed	
0428	40429	Exhaust Gas Temp 9				16-bit Signed	
0429	40430	Exhaust Gas Temp 10				16-bit Signed	

Modbus Address	PLC Address	Name	Range (Decimal)	Ratio	Unit	Description	Remark
0430	40431	Exhaust Gas Temp 11				16-bit Signed	
0431	40432	Exhaust Gas Temp 12				16-bit Signed	
0432	40433	Exhaust Gas Temp 13				16-bit Signed	
0433	40434	Exhaust Gas Temp 14				16-bit Signed	
0434	40435	Exhaust Gas Temp 15				16-bit Signed	
0435	40436	Exhaust Gas Temp 16				16-bit Signed	
0436	40437	Exhaust Gas Temp 17				16-bit Signed	
0437	40438	Exhaust Gas Temp 18				16-bit Signed	
0438	40439	Exhaust Gas Temp 19				16-bit Signed	
0439	40440	Exhaust Gas Temp 20				16-bit Signed	

NOTE1: Actual value=received data*ratio. Take frequency as the example, received data is 5000 (1388H), ratio is 0.01Hz, so the actual frequency value is 50.00Hz (5000*0.01Hz);

NOTE2: For 4-byte data, the actual value=received data MSB*65536 + received data LSB;

NOTE3: When the received data is 32766, it means no normal data, "###" can be displayed;

NOTE4: Definition of signed number. Take received data 8000H as the example, transfer it to binary 1000 0000 0000 0000b, the MSB is 1, which is a negative number. One's complement is obtained by subtracting 1 from it, which is inverted to obtain the absolute value of the negative number. Then transfer it to -32768 in decimal.

Example:

Read "A Phase Active Power (current is 123456), firstly get their corresponding address is 0103 and 0104 by checking the table, then it is known that you need to read 2 bytes' data.

Assume the slave address is 01, the master request command is as following:

Table 7 Master Request Command

Slave Address	Function Code	Starting Address (0103)		Data Qty. (2)		CRC 16 Calibration	
		MSB	LSB	MSB	LSB	LSB	MSB
01	03	00	67	00	02	75	D4

Slave response command is as following:

Table 8 Slave Response Command

Slave Address	Function Code	Data Qty. (Bytes)	Data				CRC 16 Calibration	
			Data MSB of Address 0103	Data LSB of Address 0103	Data MSB of Address 0104	Data LSB of Address 0104	LSB	MSB
01	03	04	E2	40	00	01	0C	5F

Fill the received data into the corresponding address, as shown in the table below:

Table 9 Data Analysis

Address	Received Data (Hex)	Combination (Hex)	Mains (Decimal)
0103	E240H	0001E240H	123456
0104	0001H		

3.4 REMOTE COIL FIELD CORRESPONDING TO FUNCTION CODE 05H

Table 10 Remote Coil Field

Modbus Address	PLC Address	Name	Description
400	401	Remote Start Key	Only send FF00H active
401	402	Remote Stop Key	Only send FF00H active
402	403	Reserved	Only send FF00H active
403	404	Remote Auto Key	Only send FF00H active
404	405	Remote Manual Key	Only send FF00H active
405	406	Remote Mains C/O Key	Only send FF00H active
406	407	Remote Gen C/O Key	Only send FF00H active
407	408	Remote Up Key	
408	409	Remote Down Key	
409	410	Remote Left Key	
410	411	Remote Right Key	
411	412	Remote Confirm Key	
412	413	Remote Mute Key	
413	414	Reserved	
414	415	Reserved	
415	416	Remote Oil Engine Fast Stop	
416	417	Reserved	
417	418	Reserved	
418	419	Reserved	
419	420	Remote Output Port 1 Output	
420	421	Remote Output Port 2 Output	Active for sending FF00H, inactive for sending 0000H.

Modbus Address	PLC Address	Name	Description
421	422	Remote Output Port 3	Active for sending FF00H, inactive for sending 0000H.
422	423	Remote Output Port 4	Active for sending FF00H, inactive for sending 0000H.
423	424	Remote Output Port 5	Active for sending FF00H, inactive for sending 0000H.
424	425	Remote Output Port 6	Active for sending FF00H, inactive for sending 0000H.
425	426	Reserved	Active for sending FF00H, inactive for sending 0000H.
426	427	Reserved	Active for sending FF00H, inactive for sending 0000H.
427	428	Reserved	Active for sending FF00H, inactive for sending 0000H.
428	429	Reserved	Active for sending FF00H, inactive for sending 0000H.

NOTE: Remote command in the above table can be sent once only.

Example:

Remotely control manual key, firstly get its address is 404 by checking the table.

Assume that slave address is 01, the master request command is as following:

Table 11 Master Request Command

Slave Address	Function Code	Remote Address (404)		Remote Data		CRC 16 Calibration	
		MSB	LSB	MSB	LSB	LSB	MSB
01	05	01	94	FF	00	CC	2A

Slave response command is as following:

Table 12 Slave Response Command

Slave Address	Function Code	Remote Address (404)		Remote Data		CRC 16 Calibration	
		MSB	LSB	MSB	LSB	LSB	MSB
01	05	01	94	FF	00	CC	2A

3.5 DATA FIELD CORRESPONDING TO FUNCTION CODE 06H

Table 13 Data Field

Modus Address	PLC Address	Name	Description
4351	44353	Load Mode Control Selection	0: Gen Control Mode; 1: Mains Control Mode; 2: Load Takeover
4352	44353	Load Parallel Output Active Power Percentage	Data range: 0-1000 Percentage: 0.0%-100.0%
4354	44355	Load Parallel Output Reactive Power Percentage	Set percentage as genset output power percentage in gen control mode; Set percentage as mains clipping percentage in mains control mode.

Table 14 Master Request Command

Slave Address	Function Code	Load Mode Control Select (4351)		Load Mode Control Select		CRC 16 Calibration	
		MSB	LSB	MSB	LSB	LSB	MSB
01	06	10	FF	00	00	BD	3A

Table 15 Slave Response Command

Slave Address	Function Code	Load Mode Control Select (4351)		Load Mode Control Select		CRC 16 Calibration	
		MSB	LSB	MSB	LSB	LSB	MSB
01	06	10	FF	00	00	BD	3A

3.6 GENERATOR STATUS TABLE

Table 16 Generator Status Table

No.	Content	Description
0	Standby	No delay value for this status.
1	Preheat	
2	Fuel Output	No delay value for this status.
3	Cranking	
4	Crank Rest	
5	Safety Delay	
6	Start Idle	
7	High-speed Warming Up	
8	Wait for Load	No delay value for this status.
9	Normal Running	No delay value for this status.
10	High-speed Cooling	
11	Stop Idle	

No.	Content	Description
12	ETS	
13	Wait for Stop	
14	Stop Failure	No delay value for this status.
15	After Stop	

3.7 REMOTE START STATUS TABLE

Table 17 Remote Start Status Table

Value (No.)	Status	Description
0	No Delay	No delay value for this status.
1	Start Delay	
2	Stop Delay	

3.8 SWITCH STATUS TABLE

Table 18 Switch Status Table

Value (No.)	Content	Description
0	Synchronizing	No delay value for this status.
1	Close Delay	
2	Wait for Closed Input	No delay value for this status.
3	Closed	No delay value for this status.
4	Unloading	No delay value for this status.
5	Open Delay	
6	Wait for Opened Input	No delay value for this status.
7	Opened	No delay value for this status.

3.9 MAINS STATUS TABLE

Table 19 Mains Status Table

Value (No.)	Content	Description
0	Mains Normal	No delay value for this status.
1	Mains Normal Delay	
2	Mains Abnormal	No delay value for this status.
3	Mains Abnormal Delay	

4 COMMUNICATION PARAMETERS VIEW AND CONFIGURATION

4.1 VIEW CURRENT COMMUNICATION PARAMETERS

In controller main interface, press  key, the following interface is displayed.

Comm. 	Comm. Address 1 RS485-1 ☐ 9600bps, 8, N, 2 RS485-2 ☐ 9600bps, 8, N, 2 USB ☐
TIME 	Current Continuous Supply Time 0:00:00(h:m:s) Last Continuous Supply Time 0:00:00(h:m:s)
----- Manual Mode	2021-05-31(1)20:39:19

Fig.3 Communication Parameter Interface

This interface displays **RS485-1 9600bps, 8, N, 2**, which indicates that the current communication rate of RS485-1 is 9600bps, data bit is 8-bit, no parity (N: No parity/E: Odd parity/E: even parity), stop bit is 2-bit.

4.2 COMMUNICATION PARAMETERS CONFIGURATION

- 1) In the home page of main interface, press  key to enter menu interface;
- 2) Press Down key to select "Parameter Setting", then press  key to enter parameter password interface;
- 3) Input correct password (default 01234), press  key to enter the main interface of parameter;
- 4) Select "Module Setting" via  key, press  key to enter submenu;
- 5) Select "Module Address" via ,  key, Press  key to enter parameter edit function, corresponding parameters will be in the selected status;
- 6) Set the current selected content via ,  key, press  key to complete editing, then the selected status disappear;
- 7) Long press  key to return the main interface.

NOTE: The configuration will be active after parameter setting is completed.

5 FAQ

5.1 COMMUNICATION LINE SHIELDING LAYER GROUNDED

In order to prevent coupled interference signal on communication line, its single end needs to be grounded.

5.2 TERMINAL RESISTOR

At both ends of the linear network (on the two communication ports furthest apart), it is necessary to connect 120Ω terminal resistor in parallel on a pair of communication lines. According to the transmission line theory, the terminal resistor can absorb reflected waves on the network, effectively enhancing the signal strength. The value of two terminal resistors in parallel should be approximately equal to the characteristic impedance of the transmission line at the communication frequency.

A regular RS485 network usually uses terminal resistor. It can also be not used in the case of network connection line is very short, temporary or laboratory test.

5.3 RS485 TO USB COMMUNICATION ADAPTOR

PC can communicate with SG72A module produced by our company.

5.4 EXTENDED COMMUNICATION DISTANCE

Long distance (up to 10km) communication can be realized by a pair of SGCAN300 CANBUS relay modules.

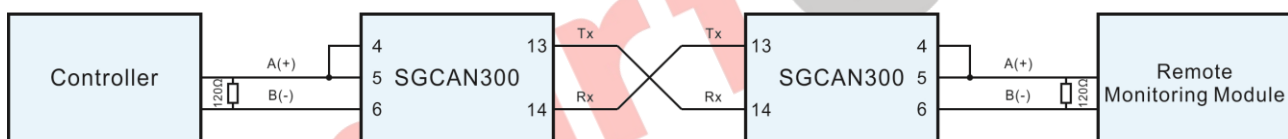


Fig.4 SGCAN300 Application Diagram

5.5 COMMON SOLUTIONS OF COMMUNICATION FAILURE

- 1) Check whether the positive and negative of RS485 is correctly connected;
- 2) Check whether the communication parameter setting in parameter setting is correct;
- 3) Check whether the RS485 converter (if configured) is normal;
- 4) Check whether the terminal resistor is correctly connected;
- 5) Disconnect the connection line of controller's RS485, measure the voltage difference of RS485's A and B terminal. If the difference is between $\pm 200\text{mV}$, it means communication port has abnormal situation;
- 6) It is recommended to download third-party communication software such as modscan32, modbus poll to check whether communication is normal.