



GREYSTONE
ENERGY SYSTEMS INC



GDT SERIES

Toxic Gas Detector

Setup Guide for Modbus Communication



MODBUS REQUIREMENTS

- Baud Rate – Set via User Menu (9600, 19200, 38400, 57600, 76800 or 115200)
- RTU Mode only
- Parity – Set via User Menu (None, Odd, Even)
- Stop Bits – Set via User Menu (1, 2)
- CRC – Set via User Menu (A001, 1021, 8005, 8408)
- ModBus Delay – Set via User Menu (min, 50, 100, 150, 200, 250, 300, 350)
- Address – Set via User Menu (1-255)

RTU Message Format

Modbus Address	Typical Offset	Units	Data Type	Access	Notes
40001	+0	ppm	Word	Read	16-bit integer, CO sensor value 0 to 500ppm
40002	+1	ppm	Word	Read	16-bit integer, NO2 sensor value x 10 (multiplier = 10) 0 to 100 for 0.0 to 10.0 ppm
40003	+2	ppm	Word	Read	16-bit integer, Temperature Sensor Value x 10 (multiplier = 10) -200 to 500 for -20.0 to 50.0 °C, -40 to 1220 for -4.0 to 122.0 °F
40004	+3		Word	Read	16-bit integer, CO Sensor Status 0 = No Sensor, 1 = Sensor
40005	+4		Word	Read	16-bit integer, NO2 Sensor Status 0 = No Sensor, 1 = Sensor
40006	+5		Word	Read	16-bit integer, Device Status 0 = Normal, 1 = Alarm
40007	+6		Word	Read	16-bit integer, Buzzer Status 0 = Normal, 1 = Alarm
40008	+7		Word	Read	16-bit integer, Alarm1 Status 0 = Normal, 1 = Alarm
40009	+8		Word	Read	16-bit integer, Alarm2 Status 0 = Normal, 1 = Alarm
40010	+9		Word	Read	16-bit integer, Test Mode Status 0 = Normal, 1 = Test Mode
40011	+10		Word	Read	16-bit integer, CO Fault Mode Status 0 = Normal, 1 = CO Fault Mode
40012	+11		Word	Read	16-bit integer, NO2 Fault Mode Status 0 = Normal, 1 = NO2 Fault Mode
40013	+12		Word	Read	16-bit integer, CO ReCal Mode Status 0 = Normal, 1 = ReCal Fault Mode
40014	+13		Word	Read	16-bit integer, NO2 ReCal Mode Status 0 = Normal, 1 = ReCal Fault Mode
40015	+14		Word	R/W	16-bit integer, Strobe Status (Default = 1) 0 = Normal, 1 = Alarm
40016	+15		Word	R/W	16-bit integer, Buzzer Alarm (Default = 0) 0 = Disable, 1 = Enable
40017	+16		Word	R/W	16-bit integer, Buzzer Alarm Test (Default = 0) 0 = Normal, 1 = Test
40018	+17		Word	R/W	16-bit integer, CO Buzzer Alarm (Default = 1) 0 = Disable, 1 = Enable
40019	+18		Word	R/W	16-bit integer, NO2 Buzzer Alarm (Default = 1) 0 = Disable, 1 = Enable
40020	+19	ppm	Word	R/W	16-bit integer, CO Buzzer Setpoint (20 to 500 ppm) Resolution = 10, Default = 150 ppm

40021	+20	minutes	Word	R/W	16-bit integer, CO Buzzer Delay (0 to 10 minutes) Resolution = 1, Default = 5 minutes
40022	+21	ppm	Word	R/W	16-bit integer, NO2 Buzzer Setpoint x 10 (multiplier = 10) 10 to 100 for 1.0 to 10.0 ppm Resolution = 10, Default = 20 for 2 ppm
40023	+22	minutes	Word	R/W	16-bit integer, NO2 Buzzer Delay (0 to 10 minutes) Resolution = 1, Default = 5 minutes
40024	+23		Word	R/W	16-bit integer, Alarm1 Assignment (Default = 0) 0 = CO, 1 = NO2
40025	+24	ppm	Word	R/W	16-bit integer, Alarm1 Setpoint (20 to 500 ppm) for CO Resolution = 10, Default = 50 ppm
		ppm	Word	R/W	16-bit integer, Alarm1 Setpoint x 10 (multiplier = 10) 10 to 100 for 1.0 to 10.0 ppm for NO2 Resolution = 10, Default = 20 for 2 ppm
40026	+25	ppm	Word	R/W	16-bit integer, Alarm1 Hysteresis (10 to 100 ppm) for CO Resolution = 5, Default = 10 ppm
		ppm	Word	R/W	16-bit integer, Alarm1 Hysteresis (0.5 (5) to 2.0 (20) ppm) for NO2 Resolution = 0.5 (5), Default = 0.5 (5) ppm (multiplier = 10)
40027	+26	minutes	Word	R/W	16-bit integer, Alarm1 Delay (0 to 10 minutes) Resolution = 1, Default = 2 minutes
40028	+27		Word	R/W	16-bit integer, Alarm2 Assignment (Default = 0) 0 = CO, 1 = NO2
40029	+28	ppm	Word	R/W	16-bit integer, Alarm2 Setpoint (20 to 500 ppm) for CO Resolution = 10, Default = 150 ppm
		ppm	Word	R/W	16-bit integer, Alarm2 Setpoint x 10 (multiplier = 10) 10 to 100 for 1.0 to 10.0 ppm for NO2 Resolution = 10, Default = 40 for 4 ppm
40030	+29	ppm	Word	R/W	16-bit integer, Alarm2 Hysteresis (10 to 100 ppm) for CO Resolution = 5, Default = 10 ppm
		ppm	Word	R/W	16-bit integer, Alarm2 Hysteresis (0.5 (5) to 2.0 (20) ppm) for NO2 Resolution = 0.5 (5), Default = 0.5 (5) ppm (multiplier = 10)
40031	+30	minutes	Word	R/W	16-bit integer, Alarm2 Delay (0 to 10 minutes) Resolution = 1, Default = 2 minutes
40032	+31		Word	R/W	16-bit integer, Test Mode Enable (Default = 0) 0 = Disable, 1 = Enable
40033	+32	minutes	Word	R/W	16-bit integer, Test Mode Time (1 to 15 minutes) Resolution = 1, Default = 5 minutes
40034	+33		Word	R/W	16-bit integer, CO Fault Mode Enable (Default = 0) 0 = Disable, 1 = Enable
40035	+34	years	Word	R/W	16-bit integer, CO Fault Mode Time (3 to 6 years) Resolution = 1, Default = 3 years
40036	+35		Word	R/W	16-bit integer, CO Fault Mode Reset (Default = 0) 0 = Normal, 1 = Reset
40037	+36		Word	R/W	16-bit integer, NO2 Fault Mode Enable (Default = 0) 0 = Disable, 1 = Enable
40038	+37	years	Word	R/W	16-bit integer, NO2 Fault Mode Time (1 to 4 years) Resolution = 1, Default = 2 years
40039	+38		Word	R/W	16-bit integer, NO2 Fault Mode Reset (Default = 0) 0 = Normal, 1 = Reset
40040	+39		Word	R/W	16-bit integer, CO ReCal Mode Enable (Default = 1) 0 = Disable, 1 = Enable

40041	+40		Word	R/W	16-bit integer, CO ReCal Mode Reset (Default = 0) 0 = Normal, 1 = Reset
40042	+41		Word	R/W	16-bit integer, CO ReCal Mode Reset (Default = 0) 0 = Normal, 1 = Reset
40043	+42		Word	R/W	16-bit integer, NO2 ReCal Mode Enable (Default = 1) 0 = Disable, 1 = Enable
40044	+43	years	Word	R/W	16-bit integer, NO2 ReCal Mode Time (1 to 3 years) Resolution = 1, Default = 1 year
40045	+44		Word	R/W	16-bit integer, NO2 ReCal Mode Reset (Default = 0) 0 = Normal, 1 = Reset
40046	+45		Word	R/W	16-bit integer, Alarm Mode Operation (Default = 0) 0 = Auto Reset, 1 = Manual Reset
400047	+46		Word	R/W	16-bit integer, Relay1 Direction (Default = 0) 0 = Direct, 1 = Reverse
400048	+47		Word	R/W	16-bit integer, Relay2 Direction (Default = 0) 0 = Direct, 1 = Reverse
400049	+48		Word	R/W	16-bit integer, Relay1 Test (Default = 0) 0 = Normal, 1 = Test
40050	+49		Word	R/W	16-bit integer, Relay2 Test (Default = 0) 0 = Normal, 1 = Test
40051	+50		Word	R/W	16-bit integer, CO Zero Filter (Default = 1) 0 = Disable, 1 = Enable
40052	+51		Word	R/W	16-bit integer, NO2 Zero Filter (Default = 1) 0 = Disable, 1 = Enable
40053	+52		Word	R/W	16-bit integer, LCD Format (Default = 1) 1 = CO, 2 = NO2, 3 = CO + NO2, 4 = Temp, 5 = CO + Temp, 6 = NO2 + Temp, 7 = Status, 8 = None
40054	+53		Word	R/W	16-bit integer, LCD Backlight (Default = 1) 1 = Auto, 2 = Off, 3 = On
40055	+54	°C/°F	Word	R/W	16-bit integer, TEMPERATURE_OFFSET x 10 Multiplier = 10 -50 to 50 for -5.0 to 5.0 °C -100 to 100 for -10.0 to 10.0 °F
40056	+55		Word	R/W	16-bit integer, TEMPERATURE_UNITS 0 = °C, 1 = °F (Default = 0)
40057	+56		Word	R/W	16-bit integer, Strobe Alarm (Default = 1) 0 = Disable, 1 = Enable
40058	+57		Word	R/W	16-bit integer, Strobe Alarm Test (Default = 0) 0 = Normal, 1 = Test
40059	+58		Word	R/W	16-bit integer, CO Strobe Alarm (Default = 1) 0 = Disable, 1 = Enable
40060	+59		Word	R/W	16-bit integer, NO2 Strobe Alarm (Default = 1) 0 = Disable, 1 = Enable
40061	+60	ppm	Word	R/W	16-bit integer, CO Strobe Setpoint (20 to 500 ppm) Resolution = 10, Default = 150 ppm
40062	+61	minutes	Word	R/W	16-bit integer, CO Strobe Delay (0 to 10 minutes) Resolution = 1, Default = 5 minutes
40063	+62	ppm	Word	R/W	16-bit integer, NO2 Strobe Setpoint x 10 (multiplier = 10) 10 to 100 for 1.0 to 10.0 ppm Resolution = 10, Default = 20 for 2 ppm
60064	+63	minutes	Word	R/W	16-bit integer, NO2 Strobe Delay (0 to 10 minutes) Resolution = 1, Default = 5 minutes

This section describes the implementation of the Modbus protocol. This device communicates on standard Modbus networks using RTU mode transmission. It operates as a slave device (address from 1 to 255) and expects a Modbus master device to transmit queries, which it will answer.

RTU Message Format

Modbus Framing	8 bit binary
Data Bits	start bits --- 1, data bits --- 8, parity bits --- none, odd or even, stop bits --- 1 or 2
Baud Rate	9600, 19200, 38400, 57600, 76800 or 115200
Duplex	Half duplex
Error Checking	Cyclical Redundancy Check (CRC) CRC-16 --- polynomial $x^{16}+x^{15}+x^2+x^0$ 0x8005 or reversed version 0xA001 or CRC-CITT --- polynomial $x^{16}+x^{12}+x^5+x^0$ 0x1021 or reversed version 0x8408
Latency	More than 3.5 characters --- minimum, 50, 100, 150, 200, 250, 300 or 350 mS

RTU Framing Support and Bit Sequences

Start	1	2	3	4	5	6	7	8	Stop	
Start	1	2	3	4	5	6	7	8	Stop	Stop
Start	1	2	3	4	5	6	7	8	Odd	Stop
Start	1	2	3	4	5	6	7	8	Even	Stop

RTU FUNCTION CODES

0x03 --- Read holding registers

Query

Slave address (0x01 to 0xFF)	Function code (0x03)	Starting address MSB	Starting address LSB	Quantity of Registers MSB	Quantity of registers MSB	CRC LSB	CRC MSB
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*Starting address = 0x0000 to 0xFFFF, Quantity of registers = 0x0000 to 0x007D

Response

Slave address (0x01 to 0xFF)	Function code (0x03)	Byte count 2N	Register value MSB	Register value LSB	...	CRC LSB	CRC MSB
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*N = Quantity of registers

0x06 --- Write single register

Query

Slave address (0x01 to 0xFF)	Function code 0x06	Register address MSB	Register address LSB	Register value MSB	Register value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	Function code 0x06	Register address MSB	Register address LSB	Register value MSB	Register value LSB	CRC LSB	CRC MSB
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*Register address = 0x0000 to 0xFFFF, Registers value = 0x0000 to 0xFFFF

Exception Response

Slave address (0x01 to 0xFF)	Function code + 0x80	Exception code 0x01, 0x02 or 0x03	CRC LSB	CRC MSB
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*An exception response is only returned if the CRC is correct
Exception code 01 --- illegal function, 02 --- illegal address, 03 --- illegal data value

Note that the registers may be read individually or all registers may be read at the same time by changing the query as shown below.

To read all registers with one query...

0x03 --- Read NO2 SENSOR VALUE

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x01	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value MSB *	Register value LSB *	CRC LSB	CRC MSB
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* Register value = 0x0000 to 0x00C8, corresponding to 0.0 to 20.0 ppm (multiplier = 10)
This register has a multiplier of 10, the application must divide by 10 to obtain the correct value.

0x03 --- Read TEMPERATURE SENSOR VALUE

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x02	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value MSB *	Register value LSB *	CRC LSB	CRC MSB
---------------------------------	------	------	-------------------------	-------------------------	------------	------------

* Register value = 0xFF38 to 0x01F4, corresponding to -20.0 to 50.0 °C (multiplier = 10)
or = 0xFFD8 to 0x04C4, corresponding to -4.0 to 122.0 °F (multiplier = 10)

The temperature value is either in °C (default) or °F depending on the value of the TEMPERATURE_UNITS register.
This register has a multiplier of 10, the application must divide by 10 to obtain the correct value.

0x03 --- Read CO SENSOR STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x03	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value MSB *	Register value LSB *	CRC LSB	CRC MSB
---------------------------------	------	------	-------------------------	-------------------------	------------	------------

*Register value = 0x0000, corresponding to no sensor
or = 0x0001, corresponding to sensor

0x03 --- Read NO2 SENSOR STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x04	0x00	0x01	CRC LSB	CRC MSB
---------------------------------	------	------	------	------	------	------------	------------

Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value MSB *	Register value LSB *	CRC LSB	CRC MSB
---------------------------------	------	------	-------------------------	-------------------------	------------	------------

*Register value = 0x0000, corresponding to no sensor
or = 0x0001, corresponding to sensor

0x03 --- Read DEVICE STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x05	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
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*Register value = 0x0000, corresponding to no sensor
or = 0x0001, corresponding to sensor

0x03 --- Read BUZZER STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x06	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------------------------	-----------------------	------------	------------

*Register value = 0x0000, corresponding to normal status
or = 0x0001, corresponding to alarm status

0x03 --- Read ALARM1 STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x07	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------------------------	-----------------------	------------	------------

*Register value = 0x0000, corresponding to normal status
or = 0x0001, corresponding to alarm status

0x03 --- Read ALARM2 STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x08	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
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*Register value = 0x0000, corresponding to normal status
or = 0x0001, corresponding to alarm status

0x03 --- Read TEST MODE STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x09	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------------------------	-----------------------	------------	------------

*Register value = 0x0000, corresponding to normal
or = 0x0001, corresponding to test mode

0x03 --- Read NO2 FAULT MODE STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x0B	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------------------------	-----------------------	------------	------------

*Register value = 0x0000, corresponding to normal
or = 0x0001, corresponding to NO2 fault mode

0x03 --- Read STROBE STATUS

Query

Slave address (0x01 to 0xFF)	0x03	0x00	0x0F	0x00	0x01	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x03	0x02	Register value 0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------------------------	-----------------------	------------	------------

*Register value = 0x0000, corresponding to normal status
or = 0x0001, corresponding to alarm status

NOTE: All registers may be read in the same manner as shown above.

0x06--- Write CO BUZZER SETPOINT

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x13	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x13	Register value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the CO buzzer alarm setpoint value

Register value = 0x0014 to 0x01F4, corresponding to 20 to 500 ppm, resolution = 10

0x06 --- Write CO BUZZER DELAY

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x14	0x00	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x14	0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	------	-----------------------	------------	------------

* This register is used to set the CO buzzer delay value

Register value = 0x0000 to 0x000A, corresponding to 0 to 10 minutes, resolution = 1

0x06 --- Write NO2 BUZZER SETPOINT

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x15	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x15	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the NO2 buzzer alarm setpoint value

Register value = 0x000A to 0x00C8, corresponding to 1.0 to 20.0 ppm, resolution = 0.1 (multiplier = 10)

This register has a multiplier of 10, the application must divide by 10 to obtain the correct value.

0x06 --- Write NO2 BUZZER DELAY

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x16	0x00	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x16	0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	------	-----------------------	------------	------------

* This register is used to set the NO2 buzzer delay value

Register value = 0x0000 to 0x000A, corresponding to 0 to 10 minutes, resolution = 1

0x06 --- Write ALARM1 SETPOINT

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x18	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x18	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the alarm1 setpoint value. Register operation depends on the Alarm1 Assignment

For CO alarm, Register value = 0x0014 to 0x01F4, corresponding to 20 to 500 ppm, resolution = 10 (multiplier = 1)
For NO2 alarm, Register value = 0x000A to 0x00C8, corresponding to 1.0 to 20.0 ppm, resolution = 0.1 (multiplier = 10)
For NO2, this register has a multiplier of 10, the application must divide by 10 to obtain the correct value.

0x06 --- Write ALARM1 HYSTERESIS

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x19	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x19	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the alarm1 hysteresis value
Register operation depends on the Alarm1 Assignment

For CO, Register value = 0x000A to 0x0064, corresponding to 10 to 100 ppm, resolution = 5 (multiplier = 1)
For NO2, Register value = 0x0005 to 0x0014, corresponding to 0.5 to 2.0 ppm, resolution = 0.5 (multiplier = 10)

0x06 --- Write ALARM1 DELAY

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x1A	0x00	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x1A	0x00	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	------	-----------------------	------------	------------

* This register is used to set the alarm1 delay value

Register value = 0x0000 to 0x000A, corresponding to 0 to 10 minutes, resolution = 1

0x06 --- Write ALARM2 SETPOINT

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x1C	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x1C	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
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* This register is used to set the alarm2 setpoint value, register operation depends on the Alarm2 Assignment

For CO alarm, Register value = 0x0014 to 0x01F4, corresponding to 20 to 500 ppm, resolution = 10

For NO2 alarm, Register value = 0x000A to 0x00C8, corresponding to 1.0 to 20.0 ppm, resolution = 0.1 (multiplier = 10)

For NO2, this register has a multiplier of 10, the application must divide by 10 to obtain the correct value.

0x06 --- Write ALARM2 HYSTERESIS

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x1D	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x1D	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the alarm2 hysteresis value, register operation depends on the Alarm2 Assignment

For CO, Register value = 0x000A to 0x0064, corresponding to 10 to 100 ppm, resolution = 5 (multiplier = 1)

For NO2, Register value = 0x0005 to 0x0014, corresponding to 0.5 to 2.0 ppm, resolution = 0.5 (multiplier = 10)

0x06 --- Write ALARM2 DELAY

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x1E	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x1E	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the alarm2 delay value

Register value = 0x0000 to 0x000A, corresponding to 0 to 10 minutes, resolution = 1

0x06 --- Write CO STROBE SETPOINT

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x38	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x38	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the CO Strobe alarm setpoint value

Register value = 0x0014 to 0x01F4, corresponding to 20 to 500 ppm, resolution = 10

0x06 --- Write CO STROBE DELAY

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x39	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x39	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
---------------------------------	------	------	------	-----------------------	-----------------------	------------	------------

* This register is used to set the CO Strobe delay value
 Register value = 0x0000 to 0x000A, corresponding to 0 to 10 minutes, resolution = 1

0x06 --- Write NO2 STROBE SETPOINT

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x3A	Register Value MSB	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x3A	Register Value MSB	Register value LSB	CRC LSB	CRC MSB
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* This register is used to set the NO2 Strobe alarm setpoint value
 Register value = 0x000A to 0x00C8, corresponding to 1.0 to 20.0 ppm, resolution = 0.1 (multiplier = 10)
 This register has a multiplier of 10, the application must divide by 10 to obtain the correct value.

0x06 --- Write NO2 STROBE DELAY

Query

Slave address (0x01 to 0xFF)	0x06	0x00	0x3B	0x00	Register Value LSB	CRC LSB	CRC MSB
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Response

Slave address (0x01 to 0xFF)	0x06	0x00	0x3B	0x00	Register value LSB	CRC LSB	CRC MSB
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* This register is used to set the NO2 Strobe delay value
 Register value = 0x0000 to 0x000A, corresponding to 0 to 10 minutes, resolution = 1

NOTE: All registers may be write to in the same manner as shown above.

Exception Response

Slave address (0x01 to 0xFF)	Function code + 0x80	Exception code * 0x01, 0x02 or 0x03	CRC LSB	CRC MSB
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* An exception response is only returned if the CRC is correct
 Exception code 01 --- illegal function
 Exception code 02 --- illegal address
 Exception code 03 --- illegal data value