Outdoor RGB LED Matrix Panel
Single -Channel Gas Detector
Monitoring Unit

GMS-1200

GASDNA

GASDNA Co.,Ltd 101, Bukhang-ro 193beon-gil, Seo-gu, Incheon, 22856, Republic of Korea
Tell: +82-32-584-7420 Fax: +82-32-584-7424 E-mail: sales@gasdna.com Web: www.gasdna.com

http://www.gasdna.com

1. Product Overview

GMS-1200 is a gas detector alarm system designed to effectively monitor gas leakage in a complex & outdoor environments that uses high-brightness 3-color LED display to deliver real-time data information with high visibility.

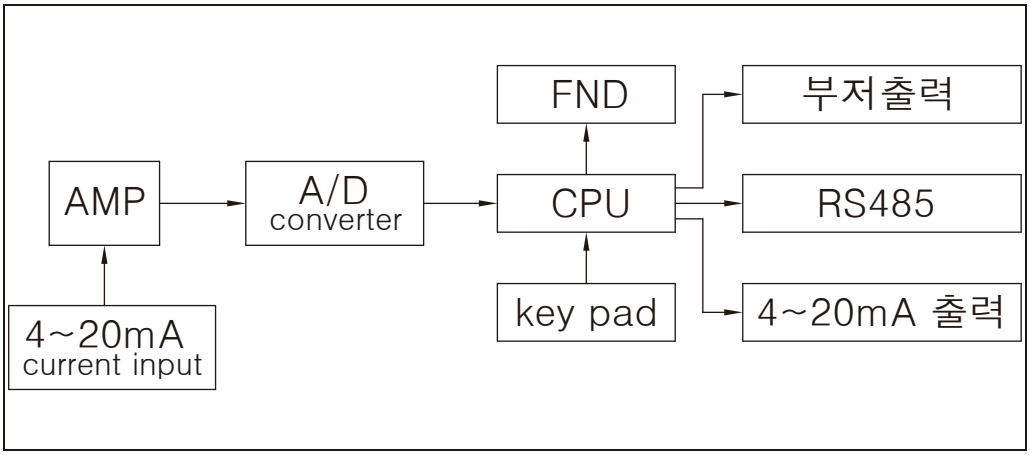
GMS-1200 is a single-point gas detector receiver that connects to only one detector. It receives an analog continuous signal from one connected detector and converts it into a digital signal, providing various alarm and monitoring environments through a microprocessor.

In addition, it converts the digital signal back into a 4-20㎃ standard current signal and outputs it to provide signals to various external devices such as PLC, DDC, and RECODER. This makes it easy to build a more expanded and comprehensive gas monitoring environment.

2. Product Features

- It has various and accurate functions with built-in microprocessor.
- It accurately transmits the indicated value by building in a high-resolution A/D converter.
- It is easy to install with its ultra-small and SIMPLE design.
- It has excellent durability with the waterproof, dustproof, and corrosion-resistant POLYCARBONATE exterior material.
- It can be connected to various external devices such as FAN with AL1 / AL2 2-stage alarm contact.
- It is possible to transmit a signal over a long distance (2.5km) with 4 - 20㎃ external output.
- You can set the user's arbitrary usage environment through programmed menus.
- It has an outdoor high-brightness RGB LED Matrix display.
- It has an external warning light to maximize the visual effect of the alarm function.

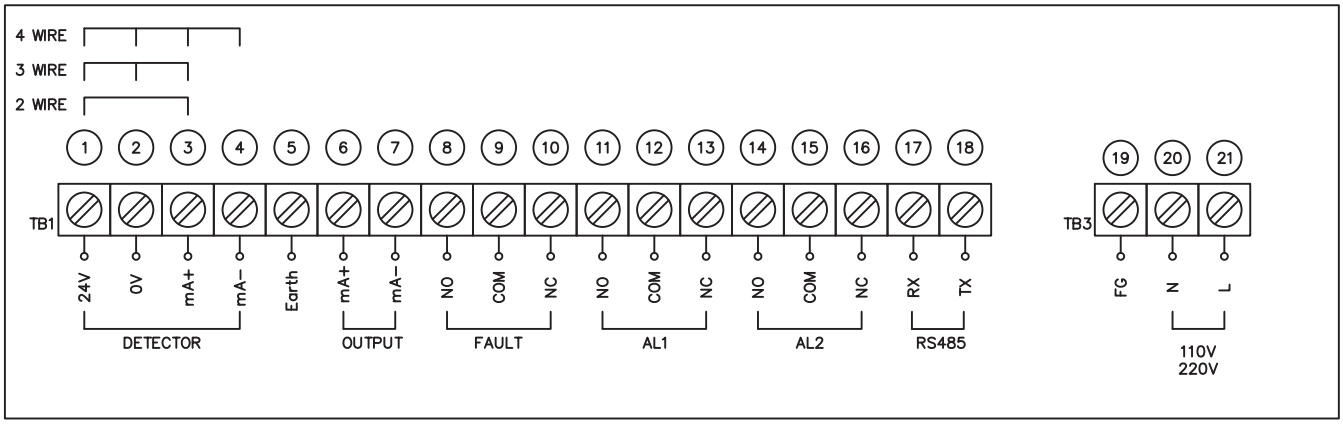
3. System Configuration



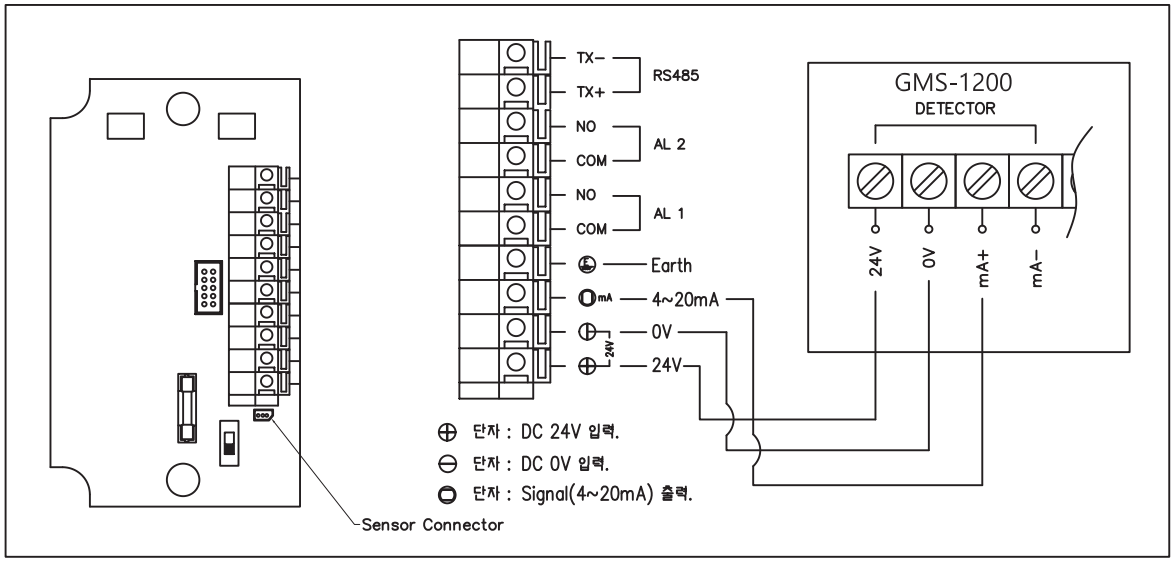
4. Product Specifications

Product Code	GMS-1200
Product Structure	Wall Mounted
Display	16x32dot RGB LED Matrix (Pixel 6mm) [display Size96x192mm]
Detectors Connection Type	For single-point type (1 connected detectors)/1 circuit
Input Power	AC / 60 Hz
Power Consumption	MAX 24W
Battery Power	DC 24 V 2.5 AH
Input Signal	4-20 mA DC/ F. S
Output Signal	4-20 mA DC/F. S
Output Power	DC 24 V (250mA)
Communication Output	485 mode bus
Signal Resolution Capability	A/D Converter 16bit
	D/A Converter 16bit
Alarm Signal	AL1 Alert - Orange border displayed
	AL2 alarm - red border display
	FAULT alarm - FAULT red text display
Alarm Method	Visual - External warning lights
	Hearing - Buzz Bass (over 80㏈)
Alarm Value Setting	AL1, AL2 2-stage alarm- Set as per user requirement
Alarm Delay Time	0~99 sec Set as per user requirement
Temperatures & Humidity Range	-10℃ ~ 50 ℃, 5 ~ 95% RH (Non-condensing)
Alarm Output	2-stage (AL1, AL2) alarm RELAY CONTACT

5. Terminal Description



6. Wiring Method (Detector ↔ Receiver)



7. Device Operation

1.1. Startup Routine

When power is Supplies, the GMS-1200 will display the following screen:

- Company Name and Product Name Screen 

- Warming-up Screen: This time can be skipped by holding down the RESET key for 3 seconds 

- Normal Display Screen: After warming up, it moves to the normal display screen and displays the concentration values. 

1.2. Device Operating Status

상태	LED PANEL
Normal Display	
No Input Current or Input Current LOW(0~2MA)	
Alarm 1 Operation	
Alarm 2 Operation	
Alarm 1 and 2 operate simultaneously	
In case of, Input Current exceeds the MAX value (MAX value: 22MA)	
Device Error	

1.3. Output 4~20MA and RELAY

Status	RELAY 1	RELAY 2	RELAY Trouble	Output Current
Warming Up Time	OFF	OFF	OFF	1 MA
No input current or input current LOW (0~2MA)	OFF	OFF	ON	2 MA
Input Current LOW (2~4MA)	OFF	OFF	OFF	4MA
Normal Operation	ON/OFF	ON/OFF	OFF	4~22 MA
OVER	ON/OFF	ON/OFF	OFF	22 MA
FAULT	OFF	OFF	OFF	3 MA

1.4. Settings Menu

1.4.1. Menu Order

1.3.2. Menu Description

MENU	Description
	Decimal display. [DEFAULT: 000.0]
	In compare to FULL SCALE, 4mA setting menu [DEFAULT: 0.0]
	20㎃ setting menu for FULL SCALE. [DEFAULT: 1000.0]
	Alarm type setting 〈1〉 [H-H] AL-1 ALARM: Alarm output when the measured value is higher than the AL-1 alarm value. 〈2〉 [L-L] AL-1 ALARM: Alarm output when the measured value is lower than the AL-1 alarm value.
	AL-1 Alarm value setting menu.
	Alarm type setting 〈1〉 [H-H] AL-2 ALARM: Alarm output when the measured value is above the AL-2 alarm value. 〈2〉 [L-L] AL-2 ALARM: Alarm output when the measured value is below the AL-2 alarm value.
	AL-2 Alarm Value Setting Menu

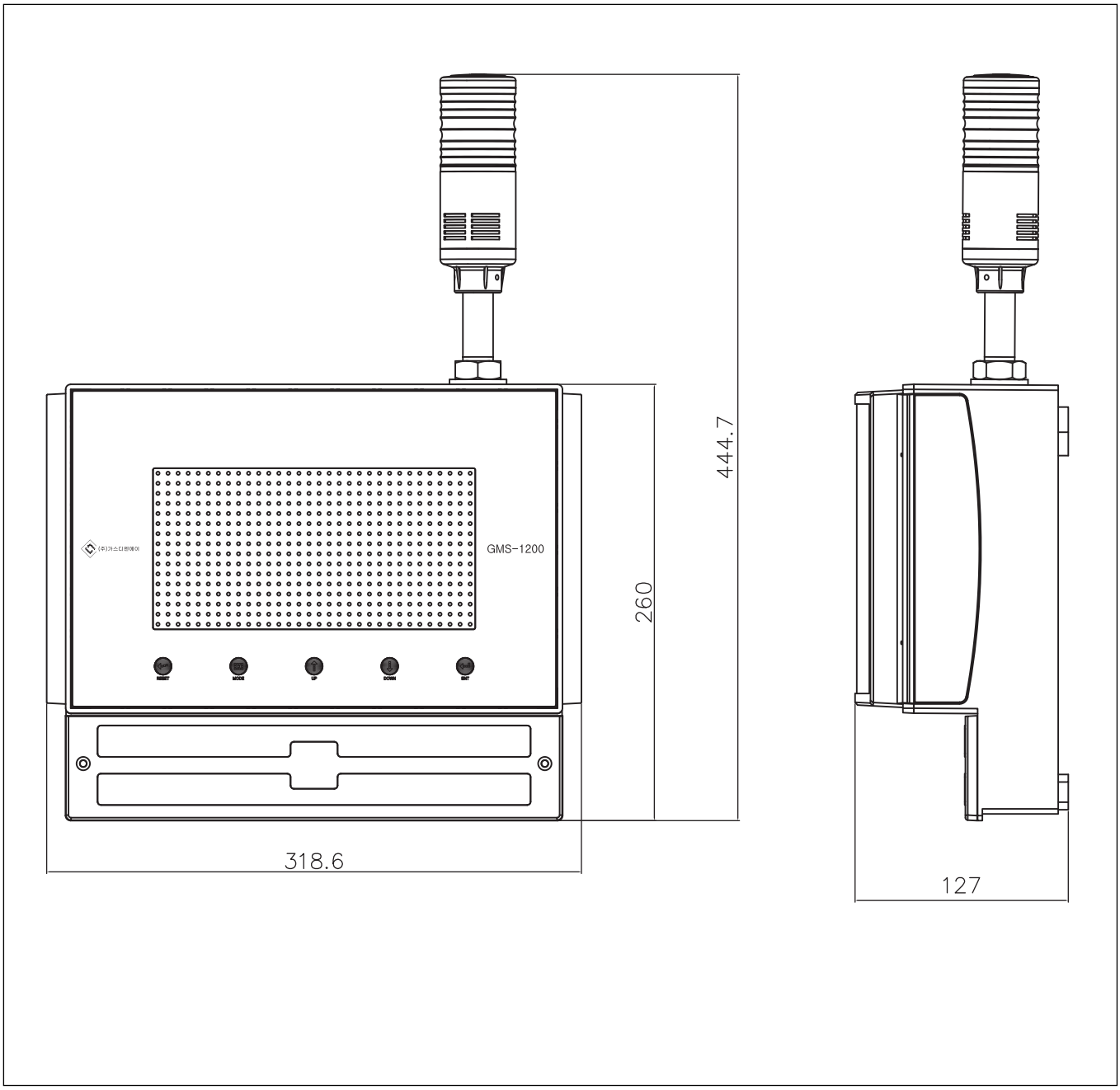
MENU	Description
	AL-1, AL-2 alarm delay time setting menu. (0 ~ 99 seconds). [DEFAULT: 3]
	AL-1, AL-2 alarm DELAY BAND setting. [DEFAULT: 3]
	Alarm release function selection menu - Manual/automatic release method selection. [DEFAULT: AUTO] ※ AUTO automatic release mode. ※ MAN manual release mode. (AL-1, AL-2 Relay can be released only when the reset switch is pressed)
	Initialization time when power is supplied. [0~99 seconds]
	Set the OFFSET for the measurement value.
	RS485 communication address [1~127]
	RS485 communication baud rate (4800, 9600, 19200, 38400, 57600 bps)

1.3.3. Menu order

Order	MENU	Menu Selection	Menu Value Setting	Menu Value Save
1	Press the [MODE] key to select the menu mode and the D-Po menu will be displayed.			
2		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
3		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
4		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
5		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
6		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
7		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
8		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key

Order	MENU	Menu Selection	Menu Value Setting	Menu Value Save
9		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
10		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
11		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
12		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
13		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
14		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key
15		[ENT]-Key	Set values with [UP]-Key and [DOWN]-Key	[ENT]-Key

8. External Dimensions



9. MODBUS RTU Registration Address

1) Input registers(Fuction Code=0x04)

index	Address	Item	Content	Note (0x = 16 decimal)
0	30001	Gas concentration value	Gas concentration value, infrared temperature value	Integer (16BIT)
1	30002	Decimal point	0x0000 = No decimal point (ex. 12345) 0x0001 = One decimal place (ex. 1234.5) 0x0002 = Second decimal place (ex. 123.45) 0x0003 = Third decimal place (ex. 12.345) 0x0004 = Fourth decimal place (ex. 1.2345)	BIT 0~7
		Unit setting value	0x0000 = %Volume 0x0500 =ug/㎥ 0x0100 = %LEL 0x0200 = ppb 0x0300 = ppm 0x0400 = ℃	BIT 8~15 Ex) Second decimal place, ppm . 0x0302
2	30003	Gas Detector Status Value	ALARM1 relay operating status: 0x0000(OFF) & 0x0001(ON)	
			ALARM2 relay operating status: 0x0000(OFF) & 0x0002(ON)	
			FAULT relay operating status: 0x0000(OFF) & 0x0004(ON)	
12	30013	Model Name Prefix	Model name prefix Ex) DA, GM, IR	Integer (16BIT), 2-digit code
13	30014	Model name last number	Model name last number Ex)50,100,500,75707, 0,800,1000,1500,200 0	Integer (16BIT)
14	30015	Product Version	x.xx	Integer (16BIT)

2) Holding Register(Function Code=0x03), Support Function(0x03,0x06)

index	Address	Item	Content	Remarks
0	40001	Gas concentration value	Gas concentration value	Integer (16BIT)
1	40002	Decimal point	0x0000 = No decimal point (ex. 12345) 0x0001 = One decimal place (ex. 1234.5) 0x0002 = Second decimal place (ex. 123.45) 0x0003 = Third decimal place (ex. 12.345) 0x0004 = Fourth decimal place (ex. 1.2345)	BIT 0~7
		Unit setting value	0x0000 = %Volume 0x0100 = %LEL 0x0200 = ppb 0x0300 = ppm 0x400=℃ 0x0500 =ug/㎥	BIT 8~15 Ex) Second decimal place, ppm =>0x0302
2	40003	HIGH SCALE setting value	HIGH SCALE setting value	Integer (16BIT)
3	40004	ALARM 1 setting value	ALARM 1 setting value	Integer (16BIT)
4	40005	ALARM 2 setting value	ALARM 2 setting value	Integer (16BIT)
5	40006	AL-1, AL-2 Alarm Type	0x0000 = (AL-1: HIGH, AL-2 LOW) 0x0001 = (AL-1: LOW, AL-2 HIGH) 0x0002 = (AL-1: LOW, AL-2 LOW) 0x0003 = (AL-1: HIGH, AL-2 HIGH)	Integer (16BIT)
6	40007	OFFSET	Correction of measurement values	Integer (16BIT)
7	40008	ID	Communication Address (1~127)	Integer (16BIT)
8	40009	Baud rate	0x0000 = 4800 BPS 0x0001 = 9600 BPS 0x0002 = 19200 BPS 0x0003 = 38400 BPS	

- Communication ID: 1~127
- Baud rate: 4800,9600,19200,38400, 57600 bps (default: 9600bps)
- DATA BIT: 8
- STOP BIT: 1
- PARITY: NONE

04 (0x04) Read Input Registers

Function code 4 is a function to read the input status value. The data is 16 bits in size. If you input the start address and the number, the input data corresponding to the requested number from the corresponding address is returned in response.

Request

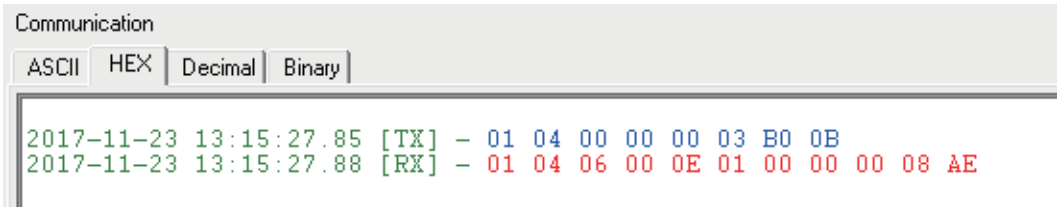
Function code	1 Byte	**0x04**
Starting Address	2 Bytes	0x0000 to 0xFFFF
Quantity of Input Registers	2 Bytes	0x0001 to 0x007D

Response

Function code	1 Byte	**0x04**
Byte count	1 Byte	2 x **N***
Input Registers	**N*** x 2 Bytes	

*N = Quantity of Input Registers

(Reference)
Read Input Register (0x4) address 0x0 ~ 0x2 (concentration, decimal point, unit, status display)



TX:01(address)+04(function)+00.00(start address) +00.03(quantity of registers) +B0.0B(bcc)
RX: 01(address)+04(function)+06(byte count) +00.0E (gas value) +01.00
(unit setting value+ decimal point)
+00.00(gas detector status) +08.AE(bcc)

Gas Concentration: 0x000e => 14 Unit Setting Value: 0x1000 => %LEL, Decimal Point: 0x0000 => No Decimal Point.
Status: 0x0000 → No Alarm.

03 (0x03) Read Holding Registers

Function code 3 is a function to read output data values. The data is 16 bits in size, and when you input the start address and number, the output data corresponding to the requested number from the corresponding address is returned in response.

Request

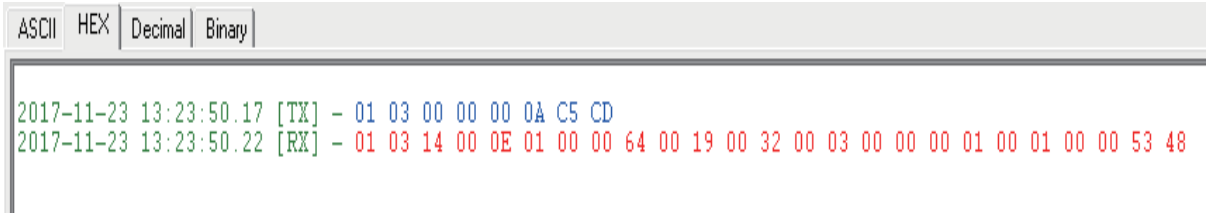
Function code	1 Byte	**0x03**
Starting Address	2 Bytes	0x0000 to 0xFFFF
Quantity of Registers	2 Bytes	1 to 125 (0x7D)

Response

Function code	1 Byte	**0x03**
Byte count	1 Byte	2 x **N***
Register value	**N*** x 2 Bytes	

*N = Quantity of Registers

(Reference)
Reading Holding Register (0x3) address till 0x0 to 0x9



TX: 01(address)+03(function)+00.00(start address) +00.0A (quantity of input registers) +C5.CD (bcc)
RX: 01(address)+03(function)+0E6(byte count) +00.0E (gas concentration value) +01.00(unit setting value +decimal point)
+00.64(high scale) +00.19(alarm1) +00.32(alarm2) +00.03(alarm type)
+00.00(offset)+00.01(id)+00.01(baud rate) +00.00(LOCK)+53.48(bcc)

Gas Concentration Value: 0x00e
HIGH SCALE: 0x0064
OFFSET: 0x0000, ID: 0x0001, Baud Rate: 0x0001, LOCK: 0x0000

Unit setting value: 0x1000, Decimal point: 0x000 => No decimal point
ALARM 1: 0x0019, ALARM 2: 0x0032, ALARM TYPE: 0x003