

Mitsubishi Electric India

## Integrating Intelligence with Industrial Automation



# GOC

Graphic Operation Controller

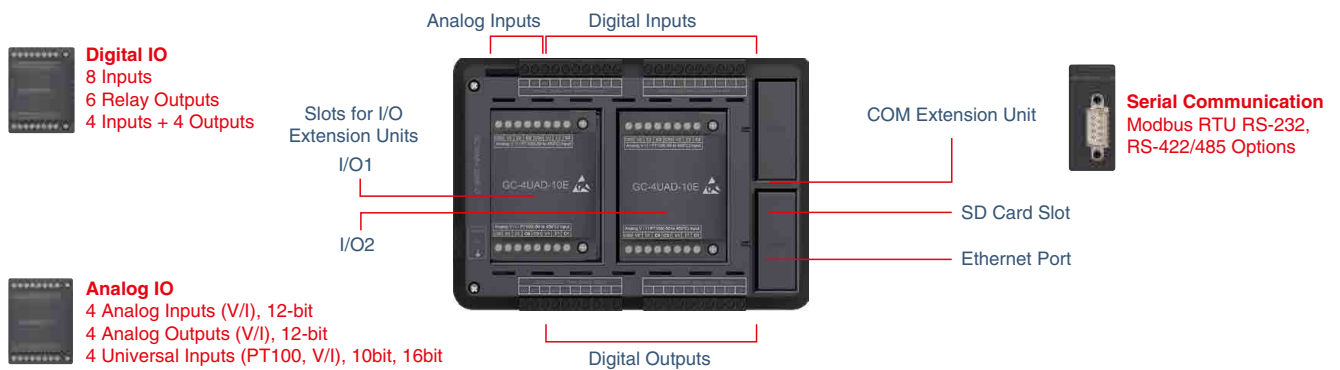
ALL-IN-ONE CONTROLLER

**PLC** **HMI** **ANNUNCIATION**

## Flexible Integrated Design

- I/O capacity - 50
- Main unit - 16 I/O or 32 I/O with 2 AI built-in
- I/O extension unit - analog, DI/DO
- Built-in Ethernet port
- Serial communication options
- Slot for SD card (up to 32gb)
  1. Data logging
  2. Program backup and restore

“ GOC’s compact design reduces assembly time by eliminating the need for separate wiring of the PLC and HMI ”



## Seamless Connectivity

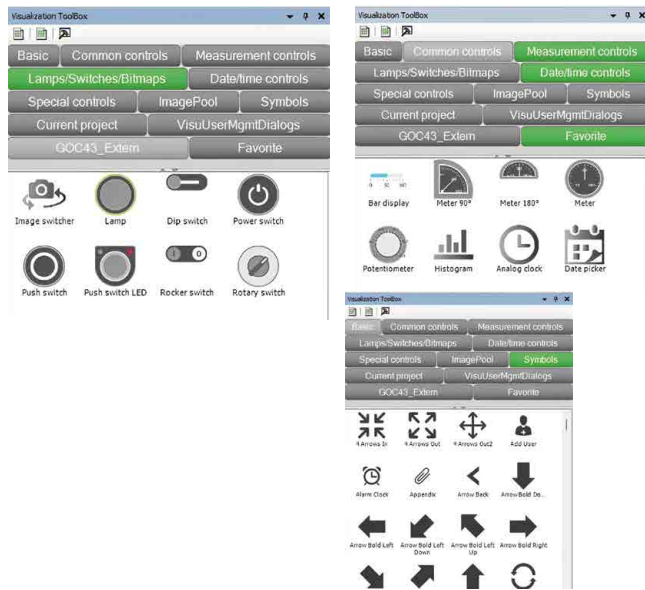


## Ease Of Customization

- 4 Illuminated Keys (keys with bi-colour LEDs)
- User configurable operation Inch / Toggle / GoTo Screen
- LED control Red / Green / Yellow ON / OFF / Blink Slow / Blink Fast
- Multi-fold usage combined with slide-in label



# Vivid Visualization



# Recipe Management

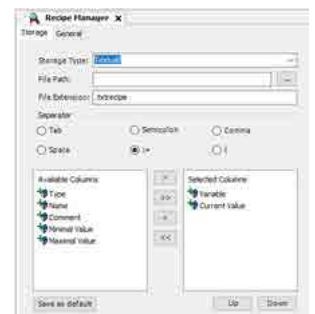
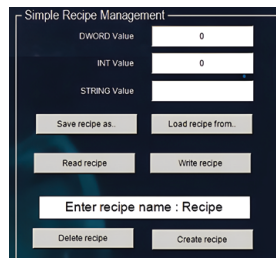
## Specifications

Sr. No.	Item	Description
1	No. of recipe definitions	4
2	No. of recipes per recipe definition	16
3	No. of variables in a recipe definition	32
4	Recipe operations	Load, Save, Delete
5	Recipe saving	Internal flash memory

## Configuration

Variable	Type	Name	Comment	Minimal Value	Maximal Value	Current Value	ABC123
PLC_PRG.a	DINT	A					0
PLC_PRG.b	DINT	B					0
PLC_PRG.c	DINT	C					0

## Visualization



# Data Logging

## Specifications

Sr. No.	Items	Description	
1	Number of data log groups	2	
2	Number of data elements	32 per group	
3	Data types supported	Bit, Word, Dword, Int, Dint, Real, String	
4	Max. size of log record	512 bytes	
5	Sampling method	Time trigger: Periodic time sampling	
		Condition trigger: Trigger based sampling	
6	Minimum sampling time	msec	Record size (bytes)
		500	< 256
		1000	<512 & >256
7	File format	.CSV	



Data Logging in SD Card

# Alarm Configuration

## Specifications

Sr. No.	Items	Description
1	No. of alarm configurations	1
2	No. of alarms	64
3	Alarm states	Active
		WaitACK
		Normal
4	Alarm types	Acknowledgeable
		Archivable
		Acknowledgeable and Archivable
5	No. of Alarm tables	1
6	Maximum alarm events in history	256

## Configuration

Alarm No.	Enable Alarm	Alarm Name	Message	Acknowledge	Archiving
0	True	Zone1 Temperature High	High temperature is reached.	True	False
1	True	Zone1 Temperature Low	Low temperature is reached.	False	True
2	True	Zone1 Pressure High	High pressure is reached.	True	True
3	True	Zone1 Pressure Low	Low pressure is reached.	True	True
4	True	Zone2 Level High	High level is reached.	True	True
5	True	Zone2 Level Low	Low level is reached.	True	True
6	True	Zone2 Temperature High	High temperature is reached.	True	True
7	True	Zone2 Temperature Low	Low temperature is reached.	True	True
8	True	Zone2 Pressure High	High pressure is reached.	True	True
9	True	Zone2 Pressure Low	Low pressure is reached.	True	True

## Visualization

No.	Timestamp	Message	State
%s		%s	%s
%s		%s	%s
%s		%s	%s
%s		%s	%s

Ack Selected    Ack Visible    History    ▲    ▼

dd:MM:yyyy HH:mm %s

Alarm Table

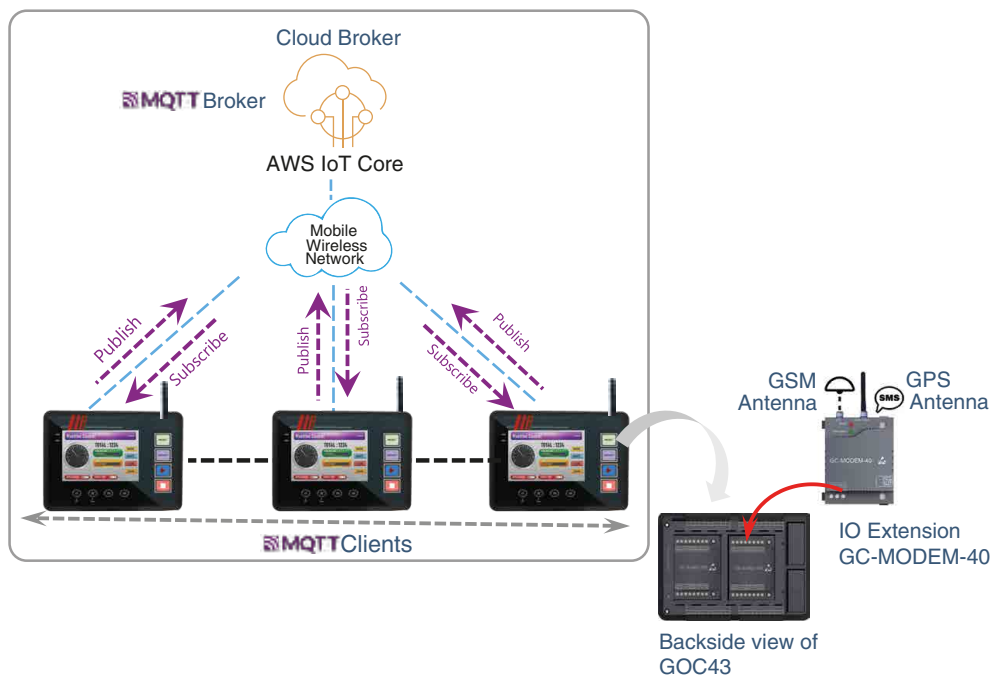
Alarm Banner



### GC-MODEM-40 module : 4G LTE MODEM with GSM, GPRS, GPS connectivity

- GC-MODEM-40 functions as an MQTT client device, which supports broker configuration, publish, and subscribe message configuration using GOCToolkit V3.
- Quick and secured data collection with direct link to the cloud.
- Supports connection with cloud services like AWS IoT core and Mosquitto message broker.
- Protect data with user configurable modes of secured communication.
- Simple to use GUI for easy configuration

## System configuration



Sr. No.	Items		Description
1	Versions		MQTT V3.1.1, TLS 1.2
2	Port number		1883, 8883
3	Broker connection		IP address, URL
4	Modes supported	Unsecured	Plain MQTT
		TLS (Transport Layer Security)	CA certificate only
			CA and client certificate
			Encryption only
5	No. of publish messages		64 (Transmits 1 message at a time)
6	No. of subscriptions		8 maximum
7	Size of topic name		128 characters maximum
8	Size of message		512 bytes maximum
9	Message format		Byte Array, String
10	Quality of Service for message delivery		QoS level 0,1 & 2
11	Auto - reconnect		Supported
12	Auto - subscription at power on		Supported
13	Wildcard support (#, +) for subscription		No
14	User configuration		Clean session, Retain, User Name and Password, Keep Alive, Last will topic and message
15	Supported cloud services	AWS IoT Core	✓
		Microsoft Azure IoT Hub	Under development
		Mosquito message broker	✓

## Features

- Allows to send / receive SMS to authorised users.
- Send messages
  - Static: Messages with fixed text e.g. Alarm text
  - Dynamic: Messages with variable text e.g. Production data etc.
- Receive messages : Trigger actions by sending sms
  - SET / RESET bool e.g. Turn ON/OFF output
  - Set value of PLC variable
  - Request GPS data: Location, Time etc.

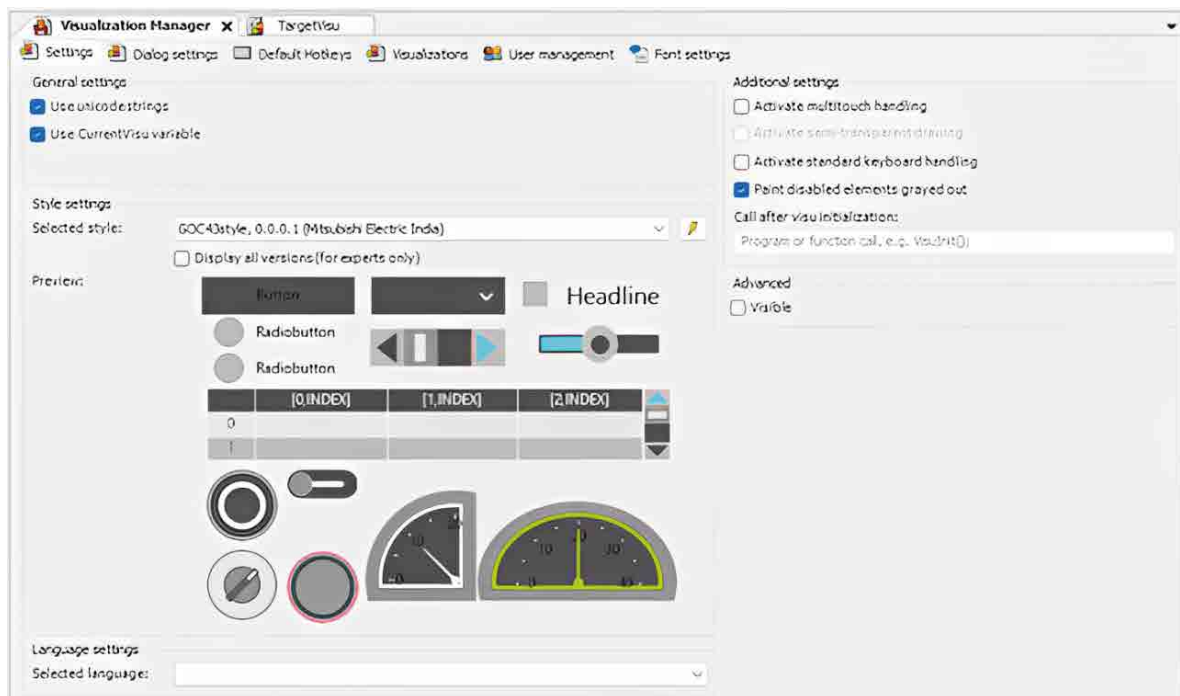
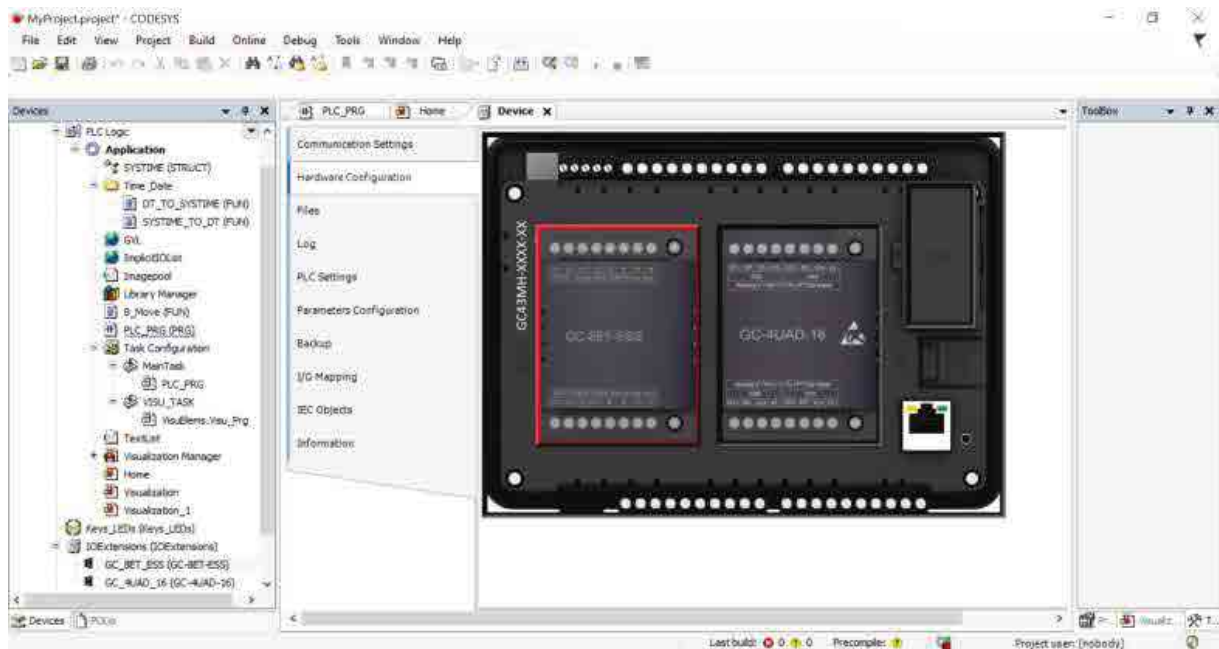


Sr. No.	Items	Description
1	Max. no of users	32
2	Max. no of groups	16
3	Max. no of users per group	10
4	Max. no of sent messages	32
5	Max. length of message (Sent)	160 characters
6	Max. no of received messages	32
7	Max. length of message (Received)	50 characters

# IEC 61131-3 Programming Platform

## Single Programming Platform for PLC and HMI

### Hardware Configuration



## Major Specifications

Main Unit	Models	Main unit I/O range	Max I/O supported	Output type	DI	DO	AI	AO
GOC35	GC35MH-16MR-D	16	48	Relay	8	8	0	0
	GC35MH-16MT-DS	16	48	Transistor (Sink)	8	8	0	0
	GC35MH-16MT-DSS	16	48	Transistor (Source)	8	8	0	0
	GC35MH-32MR-D	32	48	Relay	16	16	0	0
	GC35MH-32MT-DS	32	48	Transistor (Sink)	16	16	0	0
	GC35MH-32MT-DSS	32	48	Transistor (Source)	16	16	0	0
GOC43	GC43MH-16MR-D	18	50	Relay	8	8	2	0
	GC43MH-16MT-DSS	18	50	Transistor (Source)	8	8	2	0
	GC43MH-32MR-D	34	50	Relay	16	16	2	0
	GC43MH-32MT-DSS	34	50	Transistor (Source)	16	16	2	0

## Other Specifications

	Specifications	GOC35	GOC43	
CPU performance	BOOL	0.3 µsec	1.2 µsec	
	MOVE (BYTE,WORD)	0.3 µsec	1.2 µsec	
	MOVE (DWORD, REAL)	0.1 µsec	1.3 µsec, 1.5µsec	
Memory size	Program	192 KB	8 MB	
	Source code & comments	1.5 MB	40 MB	
	Data memory	24 KB	32 KB	
	Retention memory	1 KB	4 KB	
	Real Time Clock	2 weeks retention		
Integrated functions	Communication	RS232, RS422/RS485		
		Ethernet* (via COM Extension unit, Built-in)		
	Communication protocols	Modbus TCP Slave	Modbus TCP Master/ Slave	
		Modbus RTU Master/Slave	Modbus RTU Master/Slave	
CC-Link IE Field Basic Master/Slave		CC-Link IE Field Basic Master		
Programming	Software	GOC Toolkit (CODESYS)	GOC Toolkit V3 (CODESYS)	
	Languages	LADDER, ST, SFC, FBD, IL		
	Customised Function blocks	Yes		
Environments	IP rating	IP65 front, IP20 rear		
	Temperature range	Operating: 0 to 55°C, Storage: -20 to 75°C		
	Dimensions	External dimensions: 177(W) x 123(H) x 42.3(D)	External dimensions: 177(W) x 127(H) x 47.2(D)	
Cut-out dimensions: 166.5(W) X 107.5(H)		Cut-out dimensions: 166.5(W) X 107.5(H)		
Illuminated keys		8 keys	4 keys	
		Bi-colour LEDs & slide-in label	Bi-colour LEDs & slide-in label	
I/O expandibility		2 x I/O extension slots	2 x I/O extension slots	
Communication Expandibility		2 x COM extension slots	1 x COM extension slot	
Display		3.5" LCD display	4.3" TFT touch screen	
		128 x 64 pixels	480 x 272 pixels	
		Blue monochrome display	64K Colour	
Keys		10 keys for navigation & data entry	4 keys for navigation	
		5 keys are user configurable	All 4 keys are user configurable	
Power		24 VDC, 400 mA, 9.6 W		
Built-in analog inputs		-	2 Ch. (12bit V/I)	
Single phase counter/ Encoder interface		20 KHz/ 10 KHz max (2 Nos.)		
Approvals		CE		

\*GOC43 has built-in Ethernet port. Ethernet is trademark of Xerox corporation.

## IO Expansion cards

Model	Inputs	Outputs	Input type	Output type	Resolution	Isolation	Protection	GOC 35	GOC 43
<b>Digital input &amp; output cards</b>									
GC-8EX-ES	8	0	24 VDC Sink/Source	-	-	Optical 1.5 KV between input & internal circuit	-	✓	✓
GC-6EYR-ES	0	6	-	Relay (500mA at 250 VAC & 30 VDC)	-	Galvanic isolation between output & internal circuits	-	✓	✓
GC-8ET-ESS	4	4	24 VDC Sink/Source	24 VDC Source type 1.5A/output	-	Optical 1.5 KV between input/output & internal circuit	Short circuit protection for output	✓	✓
<b>High speed digital input card</b>									
GC-4HSXPY	2 Ch HSC/ Encoder. 100/50KHz max	2 Ch PTO, 100KHz max	24 VDC Sink/Source	5 VDC differential	-	Optical 1.5 KV between input & internal circuit. No isolation between PTO & internal circuit	No short circuit protection for PTO	✓	✗
<b>Analog input &amp; output cards</b>									
GC-4AD-12	4	0	Voltage 0-10V / -10 to+10V Current 0-20mA / 4-20mA	-	12 Bit	No isolation	-	✓	✗
GC-4DA-12	0	4	-	Voltage 0~10V / -10 ~ +10V Current 0-20mA / 4-20mA*			Short circuit protection for voltage output	✓	✓
GC-4UAD-10	4	0	Voltage: 0-10V Current: 0-20mA RTD PT100: -50°C to 150°C	-	GOC35 : 10Bit GOC43 : 12Bit		-	✓	✓
GC-4UAD-10E	4	0	Voltage: 0-10V Current: 0-20mA RTD PT100: -50°C to 450°C	-			-	✓	✓
GC-4UAD-16	4	0	Voltage: 0-10V Current: 0-20mA RTD PT100,PT1000, Thermocouple	-	16 Bit		-	✓	✓
GC-4A-12	2	2	Voltage 0-10V / -10 to +10V Current 0-20mA / 4-20mA	Voltage 0-10V / -10 to +10V Current 0-20mA / 4-20mA	12 Bit		Short circuit protection for voltage output	✗	✓

COM expansion cards					
Interface	COM ports	Speed	Connector type	GOC35	GOC43
RS232	1	9600, 19200, 38400, 57600, 115200	9-pin D-male	✓	✓
RS422 / RS485	1		5 pt. removable terminal block	✓	✓
10/100 Base -TX	1	10/100 Mbps	RJ45 female, Shielded	✓	✗*

\*Base unit supported