

# **GMT**

## **GMT**CNT

### **PLC EXTENSION MODULES**

### **USER MANUAL**

# PLC Extension Modules

## Module List

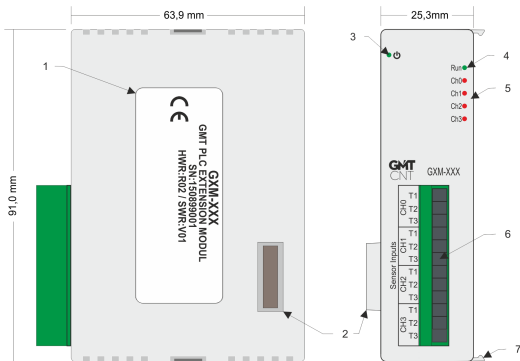
### PLC Extension Modules

PLC extension modules are used to increase the number and variety of the CPU's input/output. PLC extension modules can not be used alone. They are used first with the CPU and then in each other by mounted. They can be use together in any number and order in a way that does not exceed 16 pieces. A maximum of 274 in/out points can be reached. The modules can DIN rail mounted. PLC extension modules can mounted on the DIN rail after mounting to the CPU unit and to each other. They are fixed to the DIN rail with the plug-in clip.

There is no any hardware processing is required for setting and configuring the PLC extension modules. It is enough to make necessary configuration and settings with PLC editor program.

<b>Model</b>	<b>Features</b>
GXM-44RA	4 channel digital input (PNP/NPN), 4 channel relay output
GXM-88RA	8 channel digital input (PNP/NPN), 8 channel relay output
GXM-88TA	8 channel digital input (PNP/NPN), 8 channel transistor output (PNP)
GXM-80IA	8 channel digital input (PNP/NPN)
GXM-08TA	8 channel transistor output (PNP)
GXM-16IA	16 channel digital input (PNP/NPN)
GXM-16TA	16 channel transistor output (PNP)
GXM-20UA	2 channel temperature sensor input
GXM-40UA	4 channel temperature sensor input
GXM-10L	1 channel load cell input
GXM-20L	2 channel load cell input
GXM-02AN	2 channel analog output
GXM-40AN	4 channel analog input
GXM-42AN	4 channel analog input, 2 channel analog output

# PLC Extension Modules Mechanical Properties



**Figure - 1 PLC Extension module**

1	Label; when defining the module in the GMTSuite, the revision is read from this label.
2	PLC Extension module BUS connection port.
3	Module power led.
4	PLC BUS communication led.
5	Sensor fault status LEDs. (If the sensor is broken or short-circuited.)
6	Sensor connection terminal block.
7	Module connection tab.

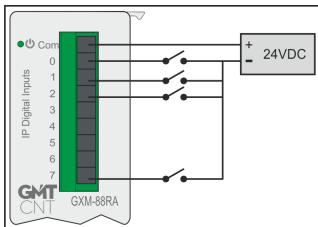
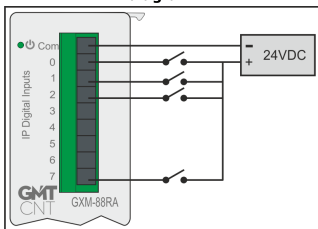
# Digital input / output modules

## General Features

Feature	Section	Description	
General	Supply voltage	Internal (via PLC BUS)	
	Power	Max. 2W (@24VDC)	
	Mounting Type	DIN rail	
Inputs	Quantity and frequency	GXM-44RA	4 pcs 24VDC, PNP/NPN, 500Hz
		GXM-88RA	8 pcs 24VDC, PNP/NPN, 500Hz
		GXM-88TA	8 pcs 24VDC, PNP/NPN, 500Hz
		GXM-80IA	8 pcs 24VDC, PNP/NPN, 500Hz
		GXM-16IA	16 pcs 24VDC, PNP/NPN, 500Hz
Outputs	Quantity and frequency	GXM-44RA	4 pcs relay, 2A@220VAC, 10Hz
		GXM-88RA	8 pcs relay, 2A@220VAC, 10Hz
		GXM-88TA	8 pcs transistor (PNP), 300mA@24VDC, 1kHz
		GXM-08TA	8 pcs transistor (PNP), 300mA@24VDC, 1kHz
		GXM-16TA	16 pcs transistor (PNP), 300mA@24VDC, 1kHz
Relay Load Life	Mechanical	5,000,000 operations min.	
	Electrical (resistive load)	100,000 operations at 250 VAC 5 A, 200,000 operations at 30 VDC 3 A, (with a rated load at 1,800 operations / hour)	
Environment	Temperature	-10..+60°C	
	Moisture	5...95%rH	
	It should be used in environments without flammable or corrosive gas.		

**GXM-80IA, GXM-16IA, GXM-44RA, GXM-88RA & GXM-88TA  
Connection diagram**

Optical isolation was used for inputs. For optical isolation to be valid, the supply-voltage of the CPU and the digital inputs must be separated. Switch-output devices such as photocells, proximity sensors or mechanical switches can be connected to the inputs. Input filters are set from the GMTSuite software.

**Figure - 2 DI, npn type connection diagram****Figure - 3 DI, pnp type connection diagram**

# Digital (On/Off) Relay outputs

## GXM-44RA / GXM-88RA Connection diagram

### GXM-44RA & GXM-88RA Connection diagram

Divided into common groups as below ;

QP[0] and QP[1] relays are separate,

QP[2] and QP[3] common group,

QP[4] ... QP[7] common group.

Any load can be switched so as not to exceed the voltage and current limits, because of the outputs are dry contact.

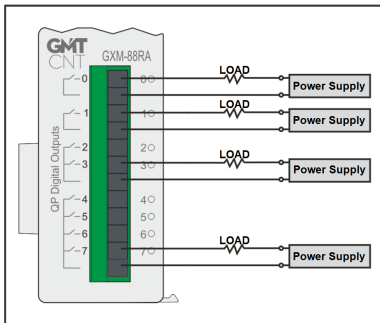


Figure - 4 DO, Relay output connection diagram

# Digital (On/Off) Transistor outputs GXM-08TA / GXM-16TA / GXM-88TA

## GXM-08TA, GXM-16TA & GXM-88TA Connection diagram

When output is active, gives out + 24VDC. The maximum applied current is 300mA. Outputs are short-circuit protected. It can be connected directly to relay, contactor and valve coils. The output frequency is maximum 1kHz.

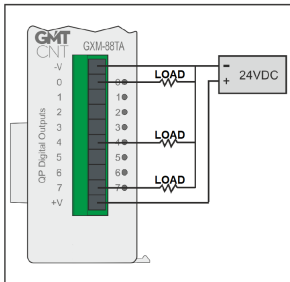


Figure - 5 DO, Transistor output connection diagrams

# GXM-20UA / GXM-40UA

## General Features

The module has 2/4 channel sensor inputs. Reads the temperature information with 0.1 ° C precision measured by the sensors and writes to selected addresses in PLC. Sensor inputs are read with 15bit resolution.

Channels divided into groups as below;

0. and 1. channels are 1. group,

2. and 3. channels are 2. group.

Thermocouple / mV / NTC or Pt100 / Pt1000 sensors must be connected to each group at the same time.

At the same time if necessary, precision temperature control can be achieved by operating the PID function for each channel. PID function works inside the module so that PLC CPU's speed and capacity do not decrease.

The module can make sensor cable compensation. Therefore, the length of the cable length does not affect the measurement accuracy.

### Sensor types and reading range

- type (Cu-Const), -260°C...380°C
- type (Fe-Const), -180°C...800°C
- type (Cr-Const), -40°C...900°C
- type (Cr-Al), -180°C...1370°C
- type (Nikrosil-Nisil), -260°C...1290°C
- type (Pt% 10Rh-Pt), -40°C...1750°C
- type (Pt% 13Rh-Pt), -40°C...1760°C
- type (Pt% 18Rh-Pt), +240°C...1810°C
- t100 sensor, -200...+800°C
- t1000 sensor, -200...+600°C
- TC sensor, -30...+100°C
- V, (0...60 mV), Accuracy of 0.01mV
- hm, (0..20 Ohm), Accuracy of 0.2 Ohm



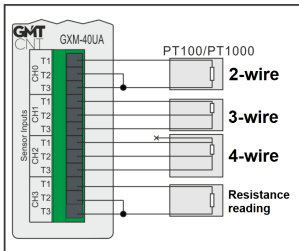
# GXM-20UA / GXM-40UA

## Technical specifications

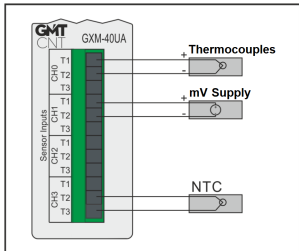
Feature	Section	Description	
General	Supply voltage	Internal (via PLC BUS)	
	Power	Max 2W (@24VDC)	
	Mounting Type	DIN rail	
Inputs	GXM-20UA	2 channels	
		GXM-40UA	4 channels
	Fault detection	Sensor connected/ disconnected/ short circuit detection	
	Resolution	15 bit resolution, 0.1 ° C reading accuracy	
	Numbers of groups	0. and 1. channels 1. group, 2. and 3. channels 2. group.	
	Protection	Short-circuit and surge voltage load protectors are available.	
	Connection types	2 or 3 wire sensor connection type.	
	Input repetition rate	Each channel 1kHz	
	Sensor types	PT	PT100 or PT1000, accuracy $\pm 0.2\%$ on full scale
		Thermocouple	B, E, J, K, N, R, S, T types, accuracy $\pm 0.2\%$ on full scale
		NTC	25 ° C @ 10kOhm NTC, accuracy $\pm 0.2\%$ on full scale
mV		0.01mV reading accuracy in 0..60mV range	
Resistance		0..200hm 0.2 Ohm reading accuracy	
Environment	Temperature	-10..+60°C	
	Moisture	5...95%rH	
	It should be used in environments without flammable or corrosive gas.		

# GXM-20UA / GXM-40UA

## Connection diagrams



**Figure - 6 PT100, PT1000 and Resistance connections**



**Figure - 7 Thermocouple, NTC and mV connections**

## **Module configuration**

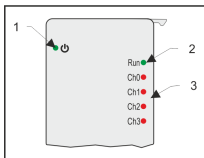
The types and sequence of expansion modules to be connected to the CPU module must be properly configured in the GMTSuite editor. Otherwise, information retrieval and control not occur from the modules. Sensor channels are measured in ° C (Celsius) (Further information, please use the GMTSuite help document).

By changing the filter values of the measurements, the desired scanning speed can be set. If the filter value is set to 0, the filtering function is completely disabled.

### **Status LEDs**

The meanings of the LEDs on the module are listed below.

- 1) Power LED: Normally illuminates permanently. This led indicates that the module has a power.
- 2) Run LED: If the module is successfully communicating with the CPU, this led lights up permanently. If this led flashing, the PLC is in stop mode or not correctly configured.
- 3) Ch0, Ch1, Ch2 & Ch3 LEDs: Normally these LEDs should not light but if these LEDs lights up, which indicates that there is fault on each channel. If temperature sensor defined but not connected or the line is short circuited, the fault LED lights.



**Figure - 8 Status LEDs**

# GXM-02AN / GXM-40AN / GXM-42AN

## General features

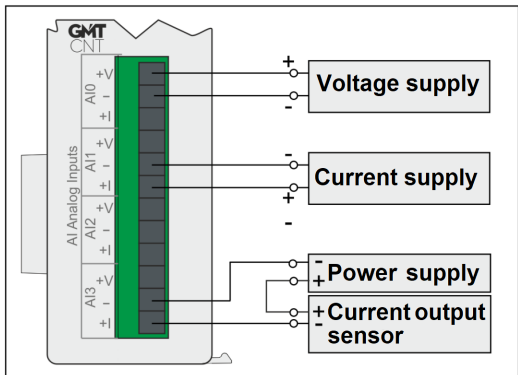
Provides measurement and / or production of analog signals. Up to 16 expansion modules can be connected to a single CPU.

Feature	Section	Description	
General	Supply voltage	Internal (via PLC BUS)	
	Power	Max 2W (@24VDC)	
	Mounting Type	DIN rail	
Inputs	Quantity	GXM-40AN	4 channels
		GXM-42AN	4 channels
	Resolution	16bit (0..65535)	
	Signal types	0-10VDC, 0-20mA, 4-20mA	
	Accuracy	±%0.5	
	Repetition rate	for each channel 1kHz	
Outputs	Quantity	GXM-02AN	2 channels
		GXM-42AN	2 channels
	Resolution	16bit (0..65535)	
	Signal types	0-10VDC, 0-20mA, 4-20mA	
	Accuracy	±%0.5	
Repetition rate	5Hz		
Environment	Temperature	-10..+60°C	
	Moisture	5...95%rH	
	It should be used in environments without flammable or corrosive gas.		

# GXM-40AN / GXM-42AN

## Analog input connection diagram

GXM-42AN and GXM-40AN modules have 4 analog input channels. Depending on the software configuration and connection type, current or voltage input types are obtained. The channels are used independently of each other.



**Figure - 9 Analog input connection diagram**

## GXM-02AN / GXM-42AN

### Analog output connection diagram

GXM-42AN and GXM-02AN modules have 2 analog output channels. Depending on the software configuration and connection type, current or voltage output types are obtained. The channels are used independently of each other.

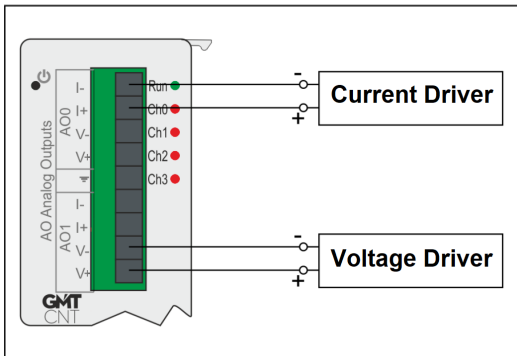


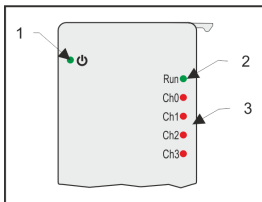
Figure - 10 Analog output connection diagram

# GXM-02AN / GXM-40AN / GXM-42AN

## Status LEDs

The meanings of the LEDs on the module are listed below.

- 1) Power LED: Normally illuminates permanently. This led indicates that the module has a power.
- 2) Run LED: If the module is successfully communicating with the CPU, this led lights up permanently. If this led flashing, the PLC is in stop mode or not correctly configured.
- 3) Ch0, Ch1, Ch2 and Ch3 input status LEDs: Normally these LEDs should not light but if these LEDs lights up, which indicates that there is fault on each channel. For example, if input 4-20mA is defined but the incoming signal is out of this range, the fault LED lights up.



**Figure - 11 Status LEDs**

This modules measures the weight and provides the various weight information. A total of 16 modules can be use with a single CPU.

The type and order of the extension modules to be connected to the PLC CPU module must be correctly configured in the GMTSuite editor program.

Otherwise, information can not be received from the modules in the CPU and control can not be performed. (Further information, please use the GMTSuite help document).

The full load and gain value (mv / V) of the load cell are read from the manufacturer's technical manual and specified in the GMTSuite hardware configuration. Incorrect input of these values will result in incorrect readings.

Depending on the full load value entered by defining the load cell, the system starts to measure the value. In addition to that, tare can be taken or re-calibrate the measuring system to its maximum load. For this, it is recommended to use the linear function.



# GXM-10L / GXM-20L

## Technical specifications

The load cell supply voltage is 5V. The load cells can be use with all products supporting this voltage regardless of load cell type and capacity.

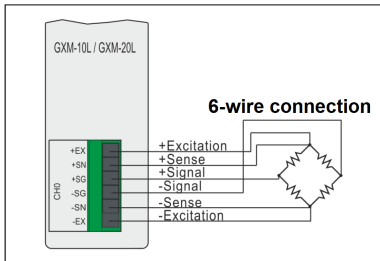
Supports 4 and 6 wired connections. When 6-wire is preferred, the cable length does not affect the measurement result because of the cable compensation is made and it is less affected by electromagnetic noise.

Feature	Section	Description	
General	Supply Voltage	Internal (via PLC BUS)	
	Power	Max 2W (@24VDC)	
	Mounting Type	DIN rail	
Inputs	Number of channels	GXM-10L	1 channel
		GXM-20L	2 channels
	Fault detection	Load cell connected / broken	
	Resolution	24Bit	
	Excitation voltage	5VDC	
	Offset shift	$\pm 5\text{nV}/^{\circ}\text{C}$	
	Gain shift	$\pm 1\text{ppm}/^{\circ}\text{C}$	
	Automatic calibration	Automatic reset and full load offset correction	
Repetition rate	100Hz		
Environment	Temperature	-10..+60°C	
	Moisture	5...95%rH	
	It should be used in environments without flammable or corrosive gas.		

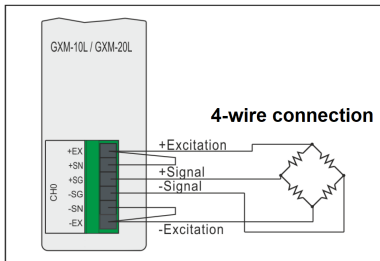
# GXM-10L / GXM-20L

## Connection diagram

4-wire or 6-wire load cell connections can be made. It is recommended to use a 6-wire load cell.



**Figure - 12 6-wired load cell connection**

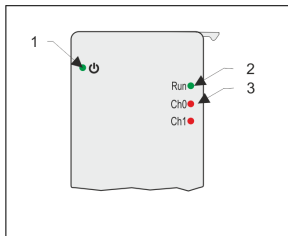


**Figure - 13 4-wired load cell connection**

## GXM-10L / GXM-20L Status LEDs

The meanings of the LEDs on the module are listed below.

- 1) Power LED: Normally illuminates permanently. This led indicates that the module has a power.
- 2) Run LED: If the module is successfully communicating with the CPU, this led lights up permanently. If this led flashing, the PLC is in stop mode or not correctly configured.
- 3) Ch0 and Ch1 Input Status LEDs: Normally these LEDs should not light but if these LEDs lights up, which indicates that there is fault on each channel. If the load cell is defined but not connected or the cable is broken, the fault LED light on.



**Figure - 14 Status LEDs**



<http://www.gmtcontrol.com>

Rev:1