

# Magnescale

EtherCAT Interface module

MG80-EC

Specifications

1st edition

June. 28, 2021 issued

**Magnescale Co., Ltd.**

**Contents**

	Page
1. Overview . . . . .	2
2. Applied standard . . . . .	2
3. Operating cautions . . . . .	3
4. System configuration . . . . .	4
5. Name of each part . . . . .	5
6. Pin assignment of connectors . . . . .	5
7. LED display . . . . .	6
8. Specifications . . . . .	7
9. Setting application for Windows PC . . . . .	9
10. Dimensions . . . . .	10

## **1. Overview**

The interface module MG80-EC outputs measurement data, judgment and calculation results of multi-axis measuring units by connecting to a computer or PLC via EtherCAT. MG80-EC can connect up to 16 MG80-CM units (16 measuring units).

## **2. Applied Standard**

This product is compatible with following standards.

EMI : EN61000-6-4

EMS : EN61000-6-2

FCC Part 15 Subpart B Class A

ICES-003 Class A Digital Apparatus

When using this device with equipment governed by Machine Directives (about installation, location and protection) measures should be taken to ensure conformance with those directives.

### 3. Operating cautions

Before and during operations, be sure to check that our products function properly.

Provide adequate safety measures to prevent damages in case our products should develop malfunctions.

Use out of indicated specifications or purposes and by modification of our products will void any warranty of the functions and performance as specified for our products.

When using our products in combination with other equipment, the functions and performances as noted in this manual may not be attained, depending on operating and environmental conditions.

Be sure to turn off the power before connecting or disconnecting connectors in order to prevent damage or misoperation.

Fix the cable in a suitable position to prevent possible cable breakage. Never handle the cable by forcibly pulling or bending it. (Inside bend :  $R=20\text{mm}$  or more)

Place the Interface module more than 0.5m away from a high voltage source, large current source, large power relay etc.,

Do not route the connecting cable through the same duct as the machine power line.

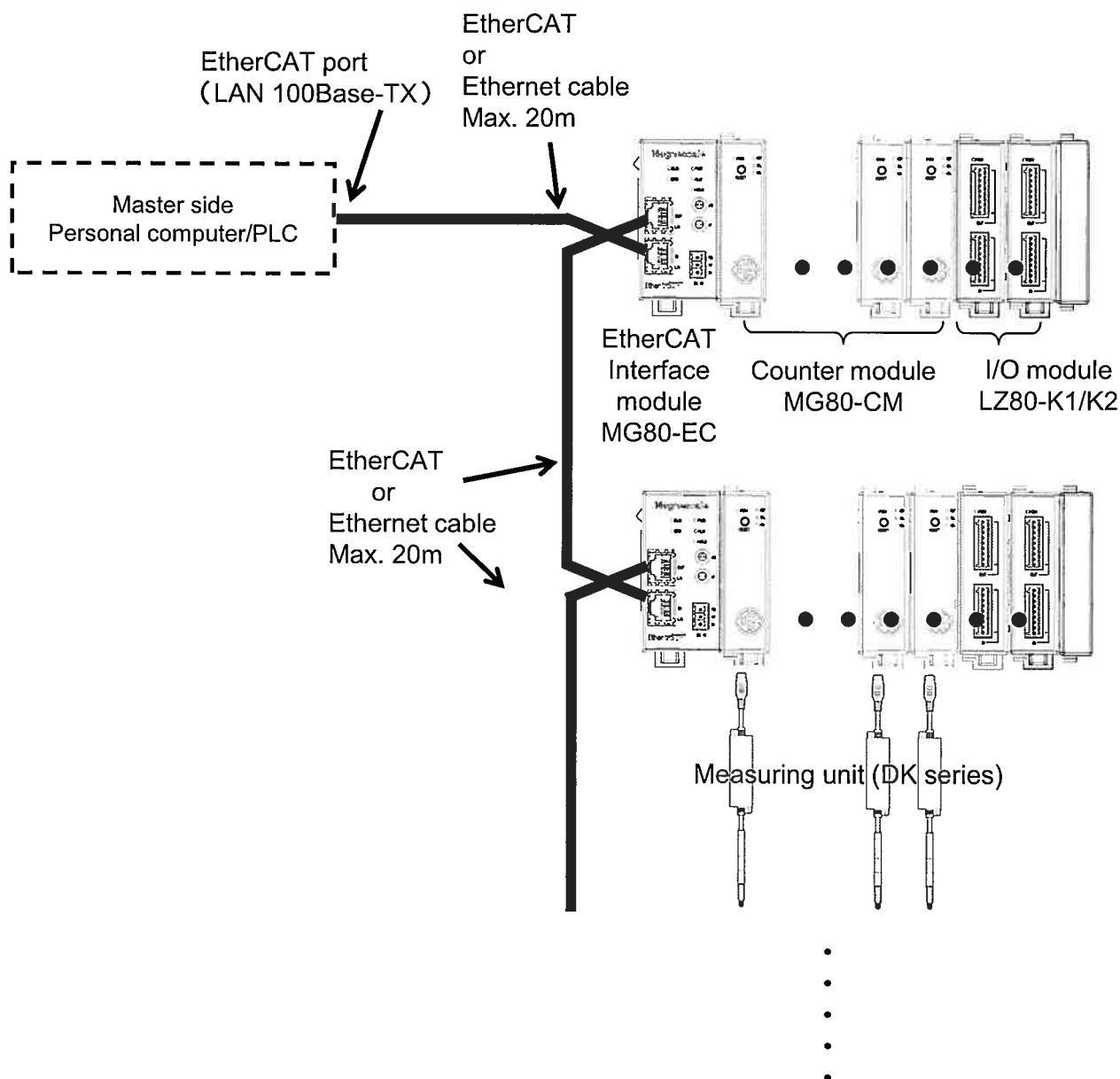
Please take measures to prevent noise for relays, solenoids, motors etc., connected to this system.

Be sure to ground the FG terminal of the Interface module before use.

#### 4. System configurations

MG80-EC  
MG80-CM

EtherCAT Interface module  
Counter module that can be connected with MG80 series.

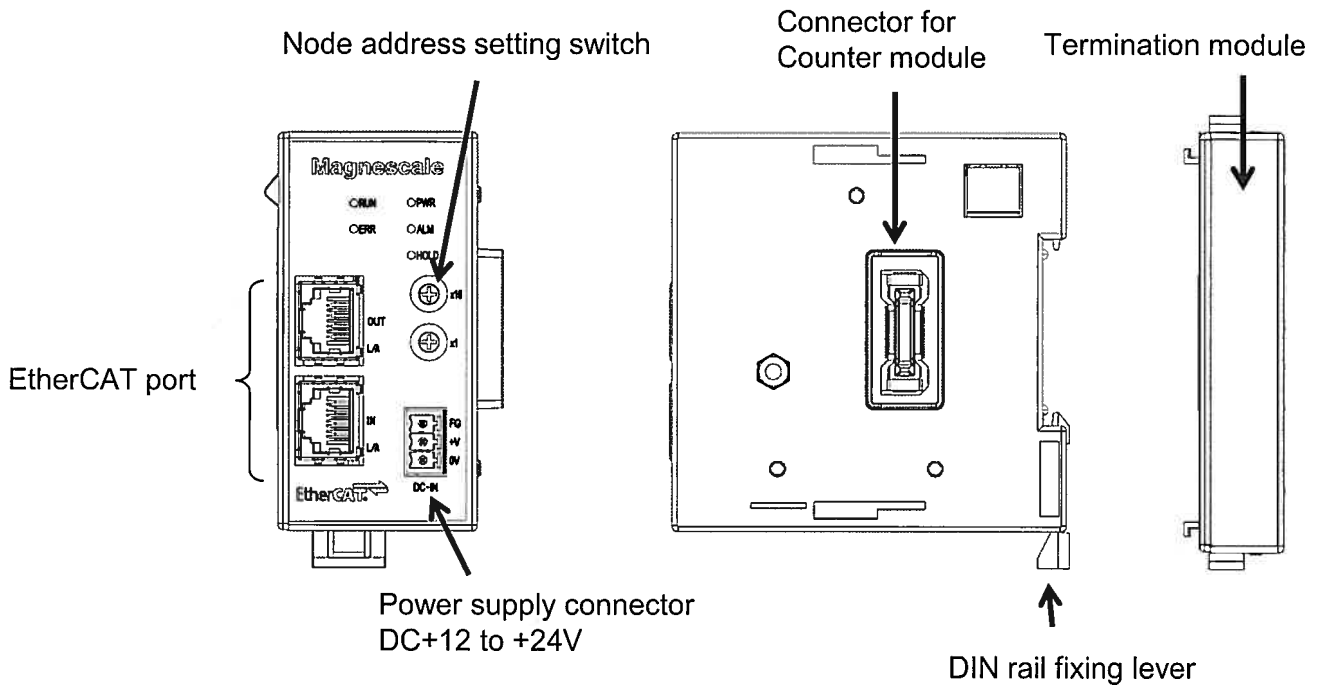


- Maximum number of connectors and configuration

The number of connectable units depends on the number of available node address.  
MG80-LM cannot be used.

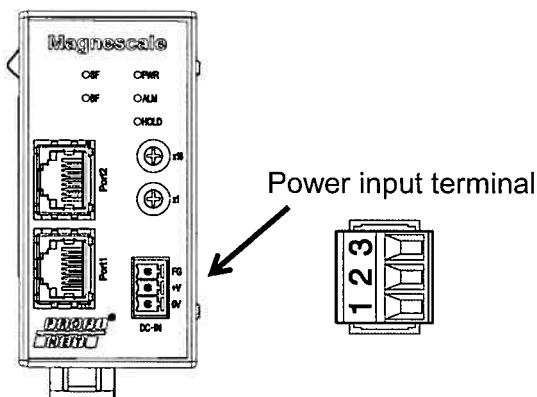
Be sure to use IN Port for EtherCAT connection with the master side and host side.

## 5. Name of each part



## 6. Pin assignment of connectors

- Power supply input connector and power supply method  
Supply power from terminal block of MG80-EC

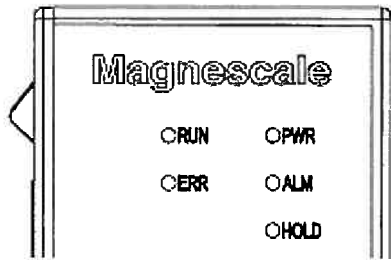


No.	Signal name	signal
1	FG	Frame ground
2	Vin	DC+12 to 24V
3	0V	0V

※The power supply of the module connected to MG80-CM is supplied from MG80-EC.  
Supply power is 2.4W plus the total power of the connected module is required.

## 7. LED display

The LED display of the interface module is described below.



[PWR] LED : Displays the operation status of this module.

Color	Status	Content
Green	Off	Power OFF state
	On	Unit operation ready when power is ON

[ALM] LED : Displays the alarm status of all modules.

Color	Status	Content
Red	Off	Normal operation
	On	Alarm occurrence detected

[HOLD] LED : Displays the HOLD status.

Color	Status	Content
Orange	Off	Not HOLD state of count data
	On	HOLD state of count data

[RUN] LED : Lights on / off according to the operating status.

Color	Status *1	Content *2
—	Off	Power off or Init state
Green	Blinking	Pre-Operational state
	Single flash	Safe-Operational state
	On	Operational state

[ERR] LED : Lights on / off according to the error status.

Color	Status *1	Content *2
—	Off	No error
Red	Blinking	Communications setting error
	Single flash	Synchronization error or communication data error
	Flickering	Boot error
	On	PDI WDT timeout

- \*1 Blink(200ms on → 200ms off : Repeated lighting)
- Single Flash(200ms on → 1000ms off : Repeated lighting)
- Double Flash(200ms on → 200ms off → 200ms on → 1000ms off : Repeated lighting)
- Flickering(50ms on → 50ms off : Repeated lighting)

\*2 State based on EtherCAT standard.

## 8. Specifications

### 8.1. Specifications list

Model name	MG80-EC
Product name	EtherCAT Interface module
Power supply	DC10.8 to 26.4.V
Power consumption	2.4W or less
Module configuration	
Number of connectable modules <sup>※1</sup>	Counter module MG80-CM : From 1 to 16units (Measuring unit 1 to 16 axes) I/O module LZ80-K1/K2 : Max. 2units
Connectable measuring unit	Voltage differential line driver output (conforms to EIA-422) A / B / Reference point ※ Can be used without reference point
Power supply connector	Input terminal x1 (3pole)
Interface connector	For data communication :RJ45 x2 (with shield)
Communication protocol	EtherCAT (100BASE-TX)
Communication speed	100 Mbit/s
Max. cable length	20m (CAT5e shield type recommended <sup>※2</sup> )
Node address setting	By rotary switch
Indicator	Power LED : green X1, Alarm LED :redx1, Hold LED :orange x1 RUN : green LED X1, ERR : red LED X1
Operating temperature	0 to 50°C (No condensation)
Storage temperature	-20 to 60°C (20 to 90%RH)
Operating ambient atmosphere	No corrosive gas
Mass	Approx. 130g
Mounting method	DIN rail
Accessory	Termination module, Instruction manual
Applied standard	EMI : EN61000-6-4 EMS : EN61000-6-2 FCC Part 15 Subpart B Class A ICES-003 Class A Digital Apparatus

※1 The number of connections indicates the number of measurement units, as one MG80-CM is required for each measurement unit.

MG80-LM cannot be used.

※2 Please prepare the communication cable by the customer.  
Both straight and cross cables can be used.



## 8.2. Functions list

Item	Condition	Contents
Resolution	Measuring unit Input resolution	0.1 $\mu$ m/0.5 $\mu$ m/1 $\mu$ m/2 $\mu$ m/5 $\mu$ m/10 $\mu$ m
Data format		7-digit fixed length with sign and decimal point (Top zero suppress)
Peak hold function		Calculate maximum value, minimum value, peak to peak value of each frame
		Hold updating peak value during pause period
		Start recalculation of peak value by start
Output data type	Single axis	Current value, maximum value, minimum value, peak to peak value of each axis
	Addition and subtraction function	Current value, maximum value, minimum value, peak to peak value of 2-axis add/sub
Comparator		Compare the measurement data of each frame <sup>※3</sup> and output the comparator result.
	Number of steps	2 steps / 4 steps
	Number of sets	8 sets
Reset		Reset count value to zero
Reference point		When using the reference point of the measuring unit, set the reference point position is use as the reference value
Preset		Preset to set value
Master preset		Master preset to set value
I/O module		The specified function can be assigned to each terminal of the I/O module. Perform the operation according to the assigned terminal function.

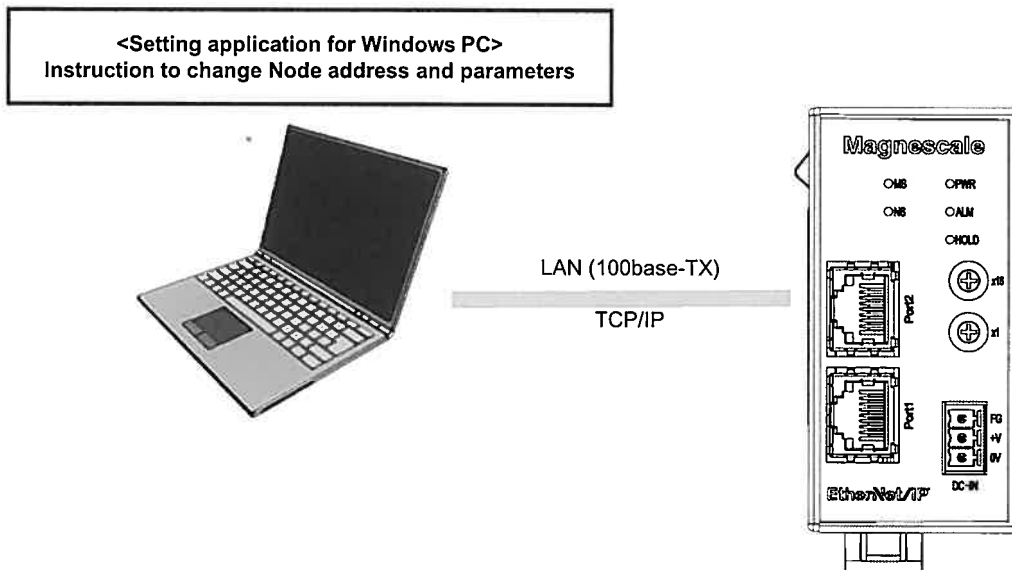
※3 "Frame" is a function that can be set the measured value or calculated  
For details, refer to the MG80-EC operation manual that can be downloaded from our website.

## 9. Setting application for Windows PC

For MG80-EC settings, you can use the setting application for Windows PC provided by our company.

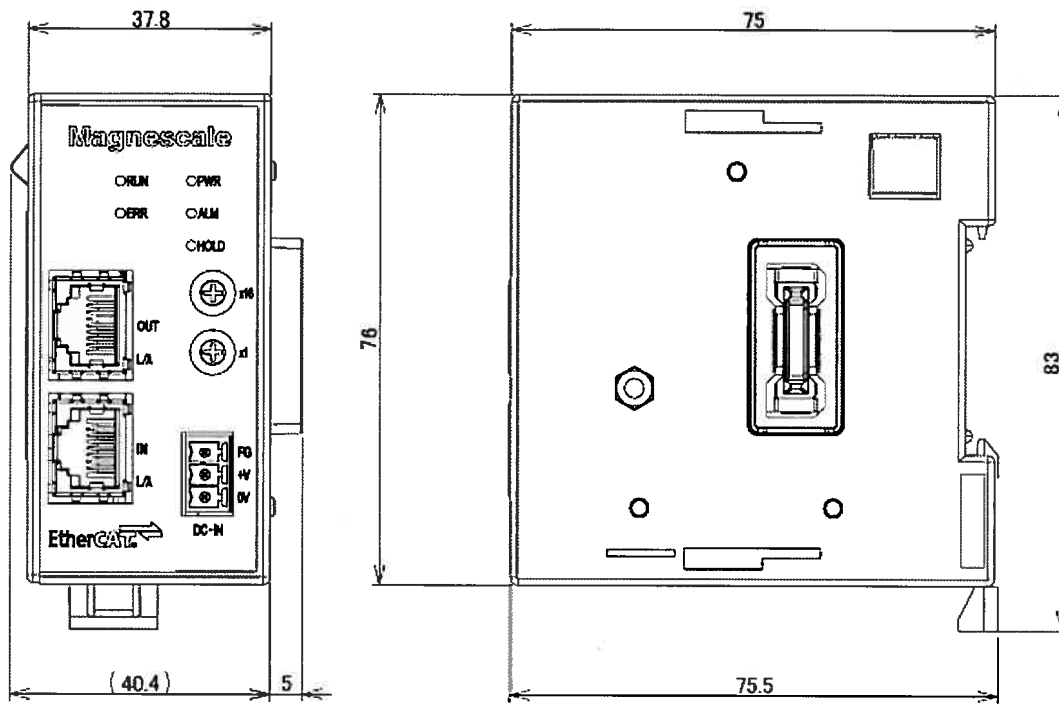
Prepare a general-purpose PC with the setting application for Windows PC installed, and set various measurement parameters on the PC by connecting the MG80-EC directly with an Ethernet cable.

For details, refer to the MG80-EC operation manual on our website.

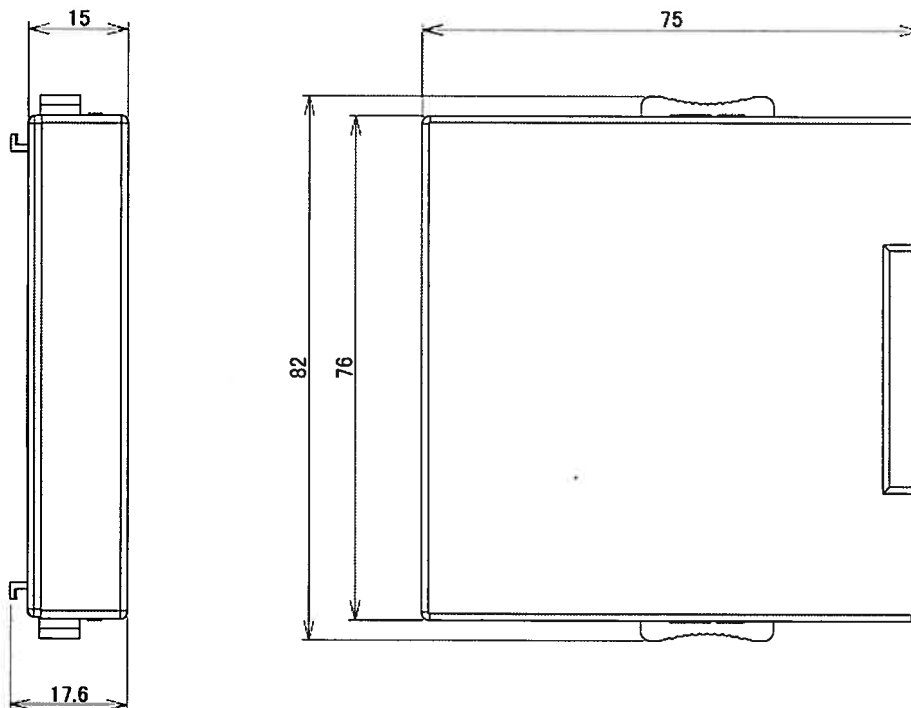


## 10. Dimensions

### MG80-EC



### Termination module



Unit : mm