

# General Specifications

## Signal Conditioner Nests Signal Conditioner Nest Fan Unit



GS 33J60H70-01EN

[Release 6]

### ■ GENERAL

The Signal Conditioner Nests are 19"-rack-type nests for mounting signal conditioner cards.

Model MHM nest for control I/O modules and model MHC nest for general I/O modules are available. AC power supply unit can be redundant.

### ■ STANDARD SPECIFICATIONS

#### ● Model MHC Signal Conditioner Nest

Model MHC is a signal conditioner nest for multipoint analog I/O module(\*1).

**Number of Signal Conditioner Card Slots:** 16

#### **Limits for Signal Conditioner Card Installation:**

Input card EA7 can be installed when I/O module AAB141 or AAB842 is connected.

Output cards EC0 and EC7 can not be installed in MHC.

#### **Signal Connection:**

For field: 16 sets of M4 screw

For I/O card: One connector

For recorder: One connector

Cable: KS2 Cable

#### **Power Supply:**

90 to 125 V AC (50/60 Hz  $\pm 3$  Hz)

198 to 254.4 V AC (50/60 Hz  $\pm 3$  Hz) (AC: Dual-redundant power supply unit is available)

24 V DC  $\pm 10$  % (DC: Directly supplied to each card)

#### **Power Consumption:**

120 VA (100 V AC)

150 VA (220 V AC)

1.6 A (24 V DC)

Depends on kind and load of cards

#### **Power/Alarm/Ground Connection:**

M4 screw

#### **Power Supply Alarm Output:**

Only for AC supply

A contact output opens if power supply unit or power fails.

If dual-redundant power supply units are used, the contact output opens if one unit fails.

Contact rating: 30 V DC, 300 mA max.

#### **Weight:**

Approx. 6.0 kg (when AC power is dual-redundant; without signal conditioner cards).

\*1: MHC can be connected to only following I/O modules.

I/O module	Adaptor
AAB141, AAV141, AAV544	ATK4A
AAB841, AAB842	ATV4A
AAP149	-

## ● Model MHM Signal Conditioner Nest

Model MHM is a signal conditioner nest for multipoint control analog I/O module(\*1).

### Number of Signal Conditioner Card Slots:

For Input: 8 cards (installed in odd-number slots)  
For Output: 8 cards (installed in even-number slots)

### Limits for Signal Conditioner Card Installation:

For connecting to an analog I/O module (AAB841 or AAB842), input cards other than pulse train input card (EP1) can be installed in odd-number slots.  
For connecting to a pulse input/analog output module for compatible PAC (AAP849), only pulse train input card (EP1) can be installed in odd-number slots.  
EC0, EC7, and EX1 output cards can be installed in even-number slots.  
Output cards EA0 and EH0 can not be installed in MHM.  
Input card EA7 and Output card EC7 can only be installed when I/O module AAB842 is connected.

### Signal Connection:

For field: 16 sets of M4 screw  
For I/O card: Two connectors; KS1 cable is used  
For recorder: One connector; KS4 cable is used

### Power Supply:

90 to 125 V AC (50/60 Hz  $\pm$ 3 Hz)  
198 to 254.4 V AC (50/60 Hz  $\pm$ 3 Hz) (AC: Dual-redundant power supply unit is available)  
24 V DC  $\pm$ 10 % (DC: Directly supplied to each card)

### Power Consumption:

120 VA (100 V AC)  
150 VA (220 V AC)  
1.6 A (24 V DC)  
Depends on kind and load of cards

### Power/Alarm/Ground Connection:

M4 screw

### Power Supply Alarm Output:

Only for AC supply  
A contact output opens if power supply unit or power fails.  
If dual-redundant power supply units are used, the contact output opens if one unit fails.  
Contact rating: 30 V DC, 300 mA max.

### Weight:

Approx. 6.0 kg (when AC power is dual-redundant; without signal conditioner cards).

\*1: MHM can be connected to only following I/O modules.

I/O module	Adaptor
AAB841, AAB842	ATM4A
AAP849	-

## ● Model SCFAN1 Signal Conditioner Nest Fan Unit

### Power Supply:

24 V DC  $\pm$ 10 %

### Current Consumption:

1.0 A

### Connection:

M4 screw

### Alarm Output:

A contact output open if fan fails.  
Contact rating: max. 30 V DC, 300 mA

### Withstanding Voltage:

1000 V AC/min. (between power supply terminals (24 V +, -) and ground)

### Isolation Resistance:

More than 100 M $\Omega$  (500 V DC) (between power supply terminals (24 V +, -) and ground)

### Weight:

Approx. 2.3 kg

### Color:

Black

## ■ OPERATING ENVIRONMENT

- Ambient Temperature: 0 to 50 °C
- Ambient Humidity: 5 to 90 %RH (non-condensing)

## ■ INSTALLING MHM AND MHC

Signal conditioner nests are available both for AC and DC power supply.

### ● Signal Conditioner Nest with AC power adapter

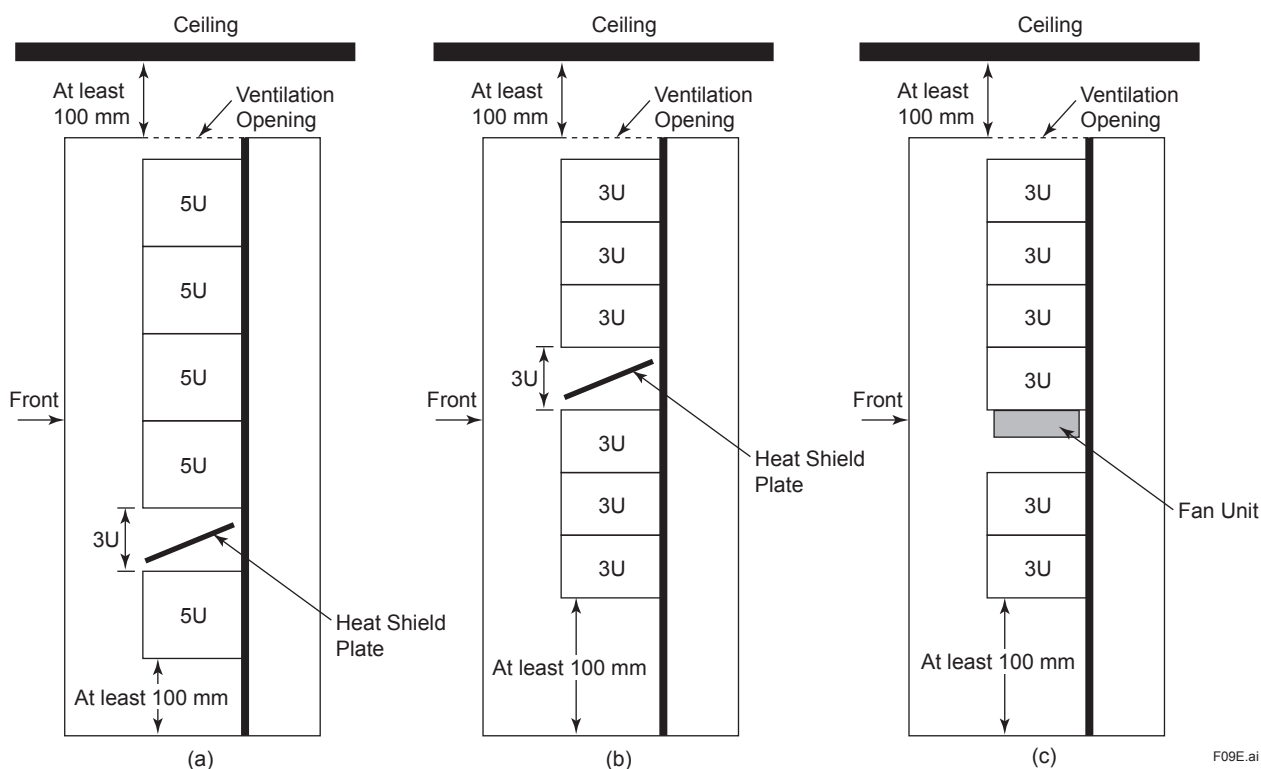
Model: MHM-1, MHM-2, MHM-5, MHM-6,  
MHC-1, MHC-2, MHC-5, and MHC-6  
Height: 5U (Unit: 1U = 44.45 mm)

### ● Signal Conditioner Nest with DC power adapter

Model: MHM-3 and MHC-3  
Height: 3U (Unit: 1U = 44.45 mm)

When installing a signal conditioner nest, observe the following conditions.

- Keep nests at least 100 mm away from the floor, as shown in the following figures.
- Keep the top of the instrumentation cabinet at least 100 mm away from the ceiling, and cut a ventilation hole of 200 cm<sup>2</sup> or larger on the top of it, as shown in the following figures.
- Do not install both 5U and 3U nests in the same instrumentation cabinet.
- Up to four 5U nests can be installed side by side. To install more nests side by side, keep the fifth nest at least 3U long from the fourth nest for ventilation, or install a heat shield between the fourth and the fifth nests, as shown in Figure a.
- Up to three 3U nests can be installed side by side. There are two ways to install more nests side by side. Keep the fourth nest at least 3U long from the third nest for ventilation, or install a heat shield between the third and the fourth nests, as shown in Figure b. Otherwise, install SCFAN1 Fan Unit between the fourth and the fifth 3U nests making SCFAN1 in contact with the nests, as shown in Figure c.



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## ■ MODELS AND SUFFIX CODES

### Signal Conditioner Nest

		Description
Model	MHC	I/O Signal Conditioner Nest
	MHM	Control I/O Signal Conditioner Nest
Suffix Code	-1	100/110/115/120 V AC single
	-2	220/230/240 V AC single
	-3	24 V DC (3-UNIT type)
	-5	100/110/115/120 V AC dual-redundant
	-6	220/230/240 V AC dual-redundant
	0	Without Communication Function
	1	With Communication Function (ESC card)
Style Code	*B	Style B (*1)
Option Code	/□□□	Specify the card according to the following options.

\*1: Style code \*B is described as SUFFIX on the actual products.

### Option

Option Code	Specification	
/□M1	EM1 mV input card	Without Burnout
/□MU	EM1 mV input card	Up-scale Burnout
/□MD	EM1 mV input card	Down-scale Burnout
/□T5	ET5 TC input card	Without Burnout
/□TU	ET5 TC input card	Up-scale Burnout
/□TD	ET5 TC input card	Down-scale Burnout
/□TF	ET5 TC input card	Without Burnout Temperature indication in Fahrenheit
/□TH	ET5 TC input card	Up-scale Burnout Temperature indication in Fahrenheit
/□TL	ET5 TC input card	Down-scale Burnout Temperature indication in Fahrenheit
/□R5	ER5 RTD input card	Without Burnout
/□RU	ER5 RTD input card	Up-scale Burnout
/□RD	ER5 RTD input card	Down-scale Burnout
/□RF	ER5 RTD input card	Without Burnout Temperature indication in Fahrenheit
/□RH	ER5 RTD input card	Up-scale Burnout Temperature indication in Fahrenheit
/□RL	ER5 RTD input card	Down-scale Burnout Temperature indication in Fahrenheit
/□S1	ES1 Potentiometer input card	Without Burnout
/□SU	ES1 Potentiometer input card	Up-scale Burnout
/□SD	ES1 Potentiometer input card	Down-scale Burnout
/□H1	EH1 Input isolator card	
/□H5	EH5 Input isolator card with square root extraction	
/□A1	EA1 2-wire transmitter input card	
/□A2	EA2 2-wire transmitter input card with BRAIN communication function	
/□A5	EA5 2-wire transmitter input card with square root extraction	
/□P1	EP1 Pulse train input card	
/□P3	EP3 Input frequency card	
/□C0	EC0 Control output isolator card	(Exclusive to MHM)
/□A0	EA0 Output isolator card	(Exclusive to MHC)
/□H0	EH0 Output isolator card (1 to 5 V output)	(Exclusive to MHC)
/□X1	EX1 I/O through card	
/T	With tag numbers (all cards in a nest)	

Note: - In the box □, fill in the slot number to insert a card, in hexadecimal notation (1 to 9, A, B, C, D, E, F, G)

- Limits for Signal Conditioner Card Installation in MHC:

Input card EA7 can be installed when I/O module AAB141 or AAB842 is connected.

Output cards EC0 and EC7 can not be installed in MHC.

- Limits for Signal Conditioner Card Installation in MHM:

For connecting to an analog I/O module (AAB841 or AAB842), input cards other than pulse train input card (EP1) can be installed in odd-number slots.

For connecting to a pulse input/analog output module for compatible PAC (AAP849), only pulse train input card (EP1) can be installed in odd-number slots.

EC0, EC7, and EX1 output cards can be installed in even-number slots.

Output cards EA0 and EH0 can not be installed in MHM.

Input card EA7 and Output card EC7 can only be installed when I/O module AAB842 is connected.

- Refer to "Signal Conditioner Cards" (GS 33K50H80-50E) for each signal conditioner card.

Signal Conditioner Nest Fan Unit

		Description
Model	SCFAN1	Signal Conditioner Nest Fan Unit
Style Code	*A	Style A

■ SIGNAL AND TERMINAL DIAGRAM

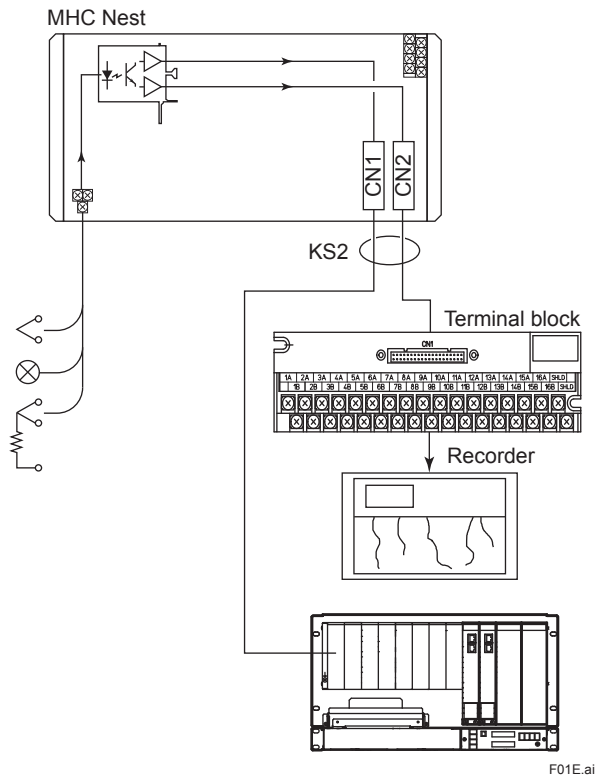


Figure 1. MHC-50 Nest Connection

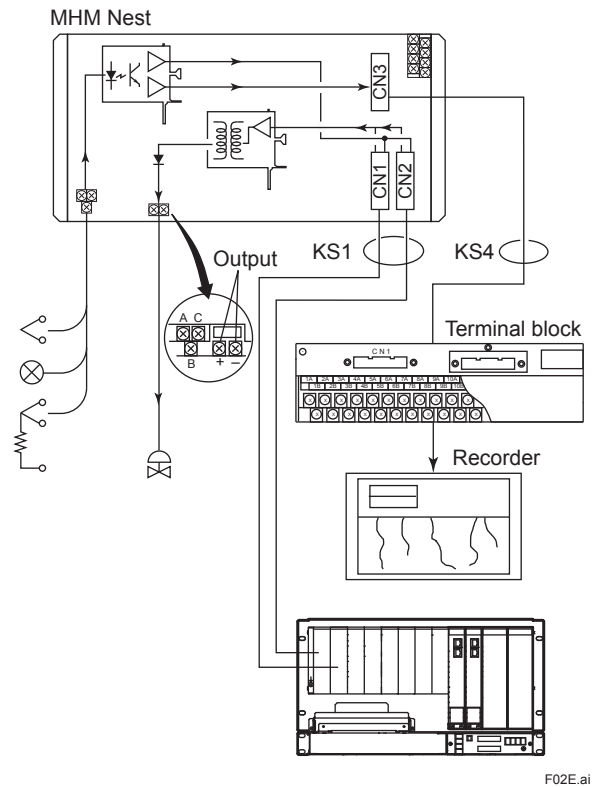


Figure 2. MHM-50 Nest Connection

## ■ FIELD SIDE TERMINAL

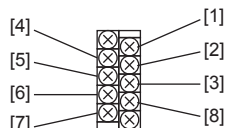
Signal Conditioner Nest		Terminal		
		A	B	C
EM1		+		-
ET5 (*1)				
ER5 (*2)				
ES1 (*3)				
EP1, EP3	Two-wire type	+		-
	Two-wire type power supply	Signal	power supply	
	Three-wire type power supply	+	power supply	-
EH1, EH5		+		-
EA1, EA2, EA5, EA7 (*4) (*5) (*6)				
EH0, EA0, EC0, EC7		+		-
EX1		+		-



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- \*1: The Reference Junction Compensation Sensor (RJC Sensor) is attached to ET5. Connected it to B and C terminals of signal conditioner.
- \*2: Must be wiring resistance of A as same as B.
- \*3: Must be wiring resistance of A as same as C.
- \*4: B terminal is used when combined with BARD safety barrier.
- \*5: In the case of 4-to-20 mA input that requires no transmitter power supply, connect to C-terminal (+) and B-terminal (-). Input resistance of EA1, EA2, and EA5 is 250 Ω.  
For EA7, input resistance is equivalent to 250 Ω (voltage drop is 5 V or less, at 20 mA input).
- \*6: EA7 cannot be used with SPBD standby manual station.

## ■ Power Supply, Alarm and ESC Terminals

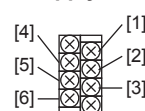
### < AC Power Supply >



Terminal	MH $\frac{M}{C}$ - 1 0		MH $\frac{M}{C}$ - 1 1	MH $\frac{M}{C}$ - 2 0		MH $\frac{M}{C}$ - 2 1
[1]	L	100/110/115/120 V AC		L	220/230/240 V AC	
[2]	N			N		
[3]	⊕			⊕		
[4]	ALARM 30 V DC, 300 mA max.			ALARM 30 V DC, 300 mA max.		
[5]						
[6]			A			A
B			for ESC card communication			B
SG						SG
[8]						

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### < DC Power Supply >

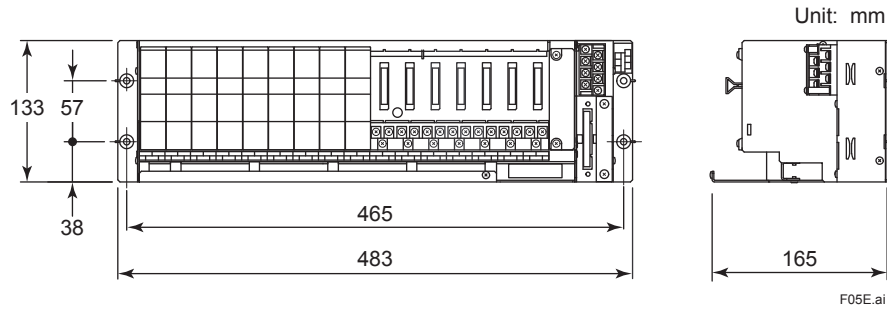


Terminal	MH M - 30 C - 30	MH M - 31 C - 31
[1]	+	24 V DC
[2]	-	
[3]	⊕	
[4]		A
[5]		B
[6]		SG

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## EXTERNAL DIMENSIONS

### ● MHC-3□

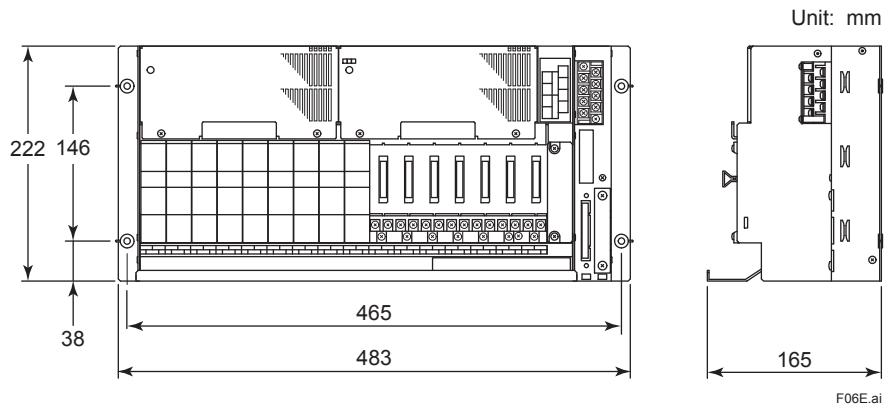


#### Nominal Tolerances :

Nominal tolerance is  $\pm 0.8$  mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is  $\pm 1.5$  mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

### ● MHC-5□, MHC-6□, MHC-1□, MHC-2□

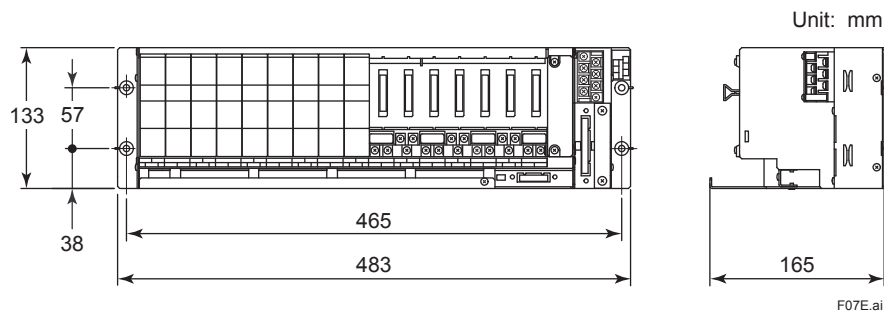


#### Nominal Tolerances :

Nominal tolerance is  $\pm 0.8$  mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is  $\pm 1.5$  mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

### ● MHM-3□

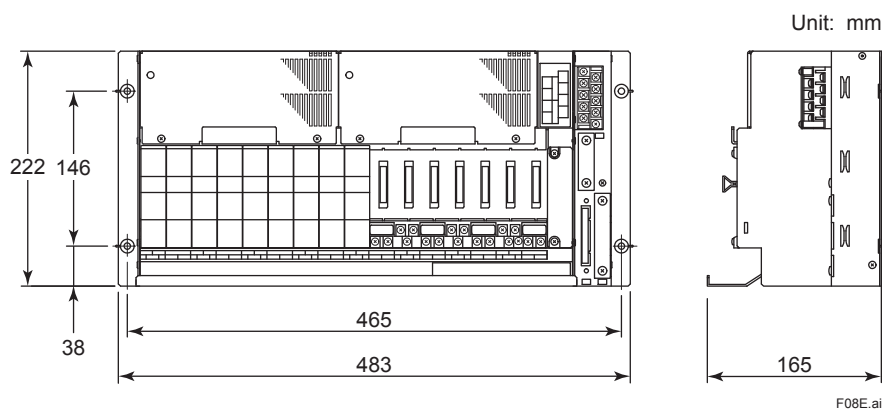


#### Nominal Tolerances :

Nominal tolerance is  $\pm 0.8$  mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is  $\pm 1.5$  mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

### ● MHM-5□, MHM-6□, MHM-1□, MHM-2□

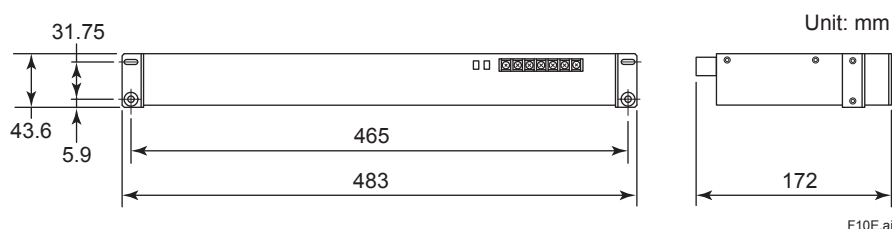


#### Nominal Tolerances :

Nominal tolerance is  $\pm 0.8$  mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is  $\pm 1.5$  mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

### ● SCFAN1



#### Nominal Tolerances :

Nominal tolerance is  $\pm 0.8$  mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is  $\pm 1.5$  mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

## ■ APPLICABLE STANDARDS

Refer to the GS "Integrated Production Control System CENTUM VP System Overview" (GS 33J01A10-01EN).

## ■ ORDERING INFORMATION

Specify the model, suffix code(s), and option code(s).

## ■ TRADEMARK ACKNOWLEDGMENT

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