**FA Goods** 

Terminal Block Converter Module for Programmable Controller Analog Module

# Model FA-LTB40DAG, FA-TB20TD, FA-LTB40ADGN, FA-LTB40TDG, FA-TB20TC, FA-LTB40ADDG, FA-LTB40RD3G

<u>Terminal Block Converter Module for Programmable Controller</u> High-speed Counter Module

# Model FA-LTB40D63P6V5, FA-LTB40D63P6V12, FA-LTB40D63P6V24

**User's Manual** 

Thank you for purchasing the FA Goods product.

Before using the product, please read this User's Manual and the relevant manuals carefully to ensure correct use.

# MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED

# SAFETY PRECAUTIONS

(Always read these precautions prior to use.)

Before using this product, please read this User's Manual and the relevant manuals carefully and handle the product properly with full attention to safety.

The precautions presented in this manual are concerned with this product only. For programmable controller system safety precautions, refer to the user's manual of the programmable controller used. In this manual, the safety precautions are classified into two levels: "\_\_\_\_\_\_WARNING" and "\_\_\_\_\_CAUTION".



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury, or property damage.

Under some circumstances, failure to observe the precautions given under "A CAUTION" may lead to serious consequences.

Always follow the precautions of both levels because they are important for personal and system safety.

### [Design Precautions]

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- Configure external safety circuits to ensure that the entire system operates safely even when a fault occurs in the external power supply, the programmable controller, or the product. Failure to do so may result in an accident due to an incorrect output or malfunction.
  - (1) Configure external safety circuits, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
- Configure a circuit to turn on the programmable controller and then the external power supply.
   If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.

### [Design Precautions]

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Precautions for the Terminal Block Converter Module for Analog Module

- Do not bundle the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm (3.94 inches) or more between them. Failure to do so may result in a malfunction due to noise.
- At power on/off, voltage or current may be instantaneously output from the output terminal of this product. In such a case, wait until the analog output becomes stable, and then start controlling the external device.

Precautions for the Terminal Block Converter Module for High-speed Counter Module

Do not bundle the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 150mm (5.91 inches) or more between them. Failure to do so may result in a malfunction due to noise.

### [Installation Precautions]

Be sure to shut off the external power supply for the system in all phases before installation. Failure to do so may result in an electric shock.

### [Installation Precautions]

	Use the product in an environment that meets the general specifications described in this User's Manual.
	Failure to do so may result in an electric shock, fire, malfunction, or the product damage or deterioration.
lacksquare	Securely fix the product with a DIN rail or mounting screws. Incorrect mounting may cause the product to
	malfunction, fail, or drop. When using the product in a vibration environment, secure the product by screws.
lacksquare	Tighten the screws within the specified torque range.
	Undertightening can cause the product to drop, short circuit or malfunction.
	Overtightening can damage screws and/or the product, causing the product to drop, short circuit, or
	malfunction.
lacksquare	Be sure to shut off the external power supply for the system in all phases before installing or removing the
	product. Failure to do so may damage the product, or cause the product to malfunction or fail.
lacksquare	Do not directly touch any conductive parts and electronic components of the product. Doing so can cause
	the product to malfunction or fail.

#### [Wiring Precautions]

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Be sure to shut off the external power supply for the system in all phases before installation and wiring.
 Failure to do so may cause an electric shock, or damage the product.

#### [Wiring Precautions]

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- Be sure to ground the FG terminal to the protective ground conductor dedicated to the programmable controller with a ground resistance of 100  $\Omega$  or less. Failure to do so may result in an electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and terminal layout, and then wire the product correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Place the cables in a duct or clamp them; if not, dangling cables may swing or be inadvertently pulled,, resulting in damage to the product or cables, or a malfunction due to poor connection.
- Tighten the terminal screws within the specified torque range.
- Undertightening can cause a short circuit, fire, or malfunction.

Overtightening can damage screws and/or the product, causing the product to drop, short circuit, or malfunction.

- Tighten the connector screws within the specified torque range. Undertightening can cause a short circuit, fire, or malfunction. Overtightening can damage screws and/or the product, causing the product to drop, short circuit, or malfunction.
- Connect the connector to the product securely. Failure to do so may cause a malfunction.
- When disconnecting a cable from the product, do not pull the cable itself. For a cable with connector, hold the connector and pull it out. For a cable connected to a terminal block, loosen the terminal block screws before removing the cable. Failure to do so may result in a malfunction or damage to the product or cable.
- Before connecting the cables, check the type of interface to be connected. Connecting the cables to a wrong interface or erroneous wiring may cause the product or external devices to fail.
- Prevent foreign matter such as dust or wire chips from entering the product. Such foreign matter can cause a fire, failure, or malfunction.
- The product must be installed inside the control panel. Connect the main power supply to the product inside the control panel through a relay terminal block. Only qualified service personnel with knowledge of protection against electric shock should replace and wire the product.
- When connecting the product to the programmable controller, check that the product configuration is correct.
   The modules may be failure or malfunction if the configuration is incorrect.
- Use the product with no pressure applied to its connector. Failure to do so may cause a breakdown or disconnection.

### Precautions for the Terminal Block Converter Module for Analog Module

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm (3.94 inches) or more between them. Failure to do so may result in a malfunction due to noise.
- Keep a distance of 100mm (3.94 inches) or more between a thermocouple or a resistance temperature sensor and the main circuit line or AC control lines. Also, keep the thermocouple or the resistance temperature sensor away from a circuit that includes harmonics, such as a high-voltage circuit and a load circuit of an inverter.
- Do not place the product near a device that generates magnetic noise.

#### Precautions for the Terminal Block Converter Module for High-speed Counter Module

Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 150mm (5.91 inches) or more between them. Failure to do so may result in a malfunction due to noise.

#### [Startup and Maintenance Precautions]



- Do not touch any terminal while power is on. Doing so can cause an electric shock or malfunction.
- Be sure to shut off the external power supply for the system in all phases before cleaning the product or retightening the terminal screws, the mounting screws of the connector, or the fixing screws of the product. Failure to do so may result in an electric shock, or cause the product to fail or malfunction. Undertightening can cause the product to drop, short circuit, or malfunction. Overtightening can damage the screw and/or product, causing the product to drop, short circuit, or malfunction.

#### [Startup and Maintenance Precautions]

	Do not disassemble or modify the product. Doing so may cause a failure, malfunction, injury, or fire.
${ \bullet }$	Use any radio communication device such as a cellular phone or PHS (Personal Handy phone System) more
	than 25cm (9.85 inches) away from the programmable controller and the product in all directions.
	Failure to do so may cause a malfunction.
${ \bullet }$	Be sure to shut off the external power supply for the system in all phases before installing or removing the
	product. Failure to do so may damage the product, or cause the product to fail or malfunction.
${ \bullet }$	After the first use of the product, do not mount or remove the product or cables more than 50 times (IEC
	61131-2 compliant). Exceeding the limit of 50 times may cause a malfunction.
lacksquare	Only qualified service personnel with knowledge of protection against electric shock should start up or service
	the product in the control panel. Lock the control panel so that only qualified service personnel can operate it.
${ \bullet }$	Before handling the product, always touch a conducting object such as a grounded metal to discharge the
	static electricity from the human body.
	Failure to do so may cause the product to fail or malfunction.

#### [Disposal Precautions]

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When disposing this product, treat it as industrial waste.

#### [Transportation Precautions]

Avoid the shock that exceeds the shock resistance described in the general specifications during transportation, as the product is a precision device. Failure to do so can cause the product to fail.

CAUTION

#### **EMC and Low Voltage Directives**

Compliance with the EMC Directive, which is one of the EU Directives, has been mandatory for the products sold in European countries since 1996. Additionally, compliance with the Low Voltage Directive, another EU Directive, has also been mandatory since 1997.

To prove the compliance with the EMC Directive and the Low Voltage Directive, manufactures must issue an EC Declaration of Conformity and the products must bear a CE marking.

#### (1) Compliant products

Terminal Block Converter Module for High-speed Counter Module : FA-LTB40D63P6V12, FA-LTB40D63P6V24

#### (2) Authorized representative in Europe

The authorized representative in Europe is shown below. Name: Mitsubishi Electric Europe B.V. Address: Gothaer strasse 8, 40880 Ratingen, Germany

#### (3) How to use the FA Goods in compliance with the EMC and Low Voltage Directives

For information on how to conform to the EMC and Low Voltage Directives when incorporating the compliant FA Goods into a user's machinery or system,

refer to "EMC and Low Voltage Directives Compliant Manual\_50D-FA9010-108".

### 1. INTRODUCTION

This User's Manual describes the specifications and others of the terminal block converter module used in combination with Mitsubishi Analog Module or High-speed Counter Module.

### 2. GENERAL SPECIFICATIONS

Item	Specifications											
Operating ambient temperature			0 to 55°C									
Storage ambient temperature		-25 to 75°C										
Operating ambient humidity		5 to 95% RH, no condensation										
Storage ambient humidity		5 to 9	95% RH, no con	densation								
	Conforming standards	JIS B 3502, IEC61131-2										
		Frequency	Acceleration	Amplitude	Sweep count							
Vibration resistance	Under	5 to 8.4Hz		3.5mm	10 times each in X. Y.							
VIDIATION TESIStance	intermittent vibration	8.4 to 150Hz	9.8m/s² (1G)		and Z directions							
	Under	5 to 8.4Hz	—	1.75mm								
	continuous vibration	8.4 to 150Hz	4.9m/s <sup>2</sup> (0.5G)	_								
Shock resistance	Compliant with JIS B 3502 and IEC61131-2 (147m/s <sup>2</sup> (15G), 3 times each in X, Y, and Z directions)											
Operating atmosphere			No corrosive ç	jas								
Operating altitude <sup>(*1)</sup>	2,000m or lower											
Installation location		l.	nside the control	panel								
Overvoltage category <sup>(*2)</sup>			II or lower									
Pollution level (*3)			2 or lower									

\*1: Do not use or store the module under the atmospheric pressure greater than that at an altitude of 0m.
\*2: Indicates the section of the power supply to which the equipment is assumed to be connected, between the public power grid and the machinery within the premises.

\*3: This is a guideline indicating the degree of the generation of conducting substances in the environment in which a device is used.

### 3. PERFORMANCE SPECIFICATIONS

#### 3-1. Terminal Block Converter Module for Channel Isolated Thermocouple Input Module

Item	Model name	FA-LTB40TDG				
Connectable mo	dule	Q68TD-G-H01, Q68TD-G-H02, R60TD8-G				
	Terminal screw	M3 regular screw, 7.62mm pitch				
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal)				
	Tightening torque	50 to 75N·cm (5.2 to 7.6kgf·cm)				
	Mounting corow	M4 x 0.7mm x 8mm or greater				
Module	Mounting screw	Tightening torque range: 78 to 118N ⋅ cm (8 to 12kgf ⋅ cm)				
mounting	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (IEC60715 compliant)				
Withstand voltage	ge	Between analog input CHs: 1000VAC for 1 minute; Other: 500VAC for 1 minut				
Insulation resista	ance (initial)	10M $\Omega$ or more by 500VDC insulation resistance tester				
Weight		About 200g				

#### 3-2. Terminal Block Converter Module for Thermocouple Input Module

Item	Model name	FA-TB20TD			
Connectable modu	le	Q64TD, Q64TDV-GH			
	Terminal screw	M3 captive screw, 7.62mm pitch			
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal),			
	Tightening torque	58.8 to 88.2N ⋅ cm (6 to 9kgf ⋅ cm)			
	Mounting corow	M4 x 0.7mm x 22mm or greater			
Module mounting	Mounting screw	Tightening torque range: 78 to 118N ⋅ cm (8 to 12kgf ⋅ cm)			
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (IEC60715 compliant)			
Cold junction cor	npensation resistor	Supplied with the module			
Withstand voltage		1500VAC (50/60Hz) for 1 minute			
Insulation resistan	ce (initial)	100M $\Omega$ or more by 500VDC insulation resistance tester			
Weight		125g			

#### 3-3. Terminal Block Converter Module for Temperature Control Module

Item	Model name	FA-TB20TC				
Connectable modul	е	Q64TCTTN, Q64TCTTBWN,				
	Terminal screw	M3 captive screw, 7.62mm pitch				
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal),				
	Tightening torque	58.8 to 88.2N · cm (6 to 9kgf · cm)				
	N 4	M4 x 0.7mm x 22mm or greater				
Module mounting	Mounting screw	Tightening torque range: 78 to 118N ⋅ cm (8 to 12kgf ⋅ cm)				
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (IEC60715 compliant)				
Cold junction com	pensation resistor	Built in the module				
Withstand voltage		1500VAC (50/60Hz) for 1 minute				
Insulation resistance	æ (initial)	100M $\Omega$ or more by 500VDC insulation resistance tester				
Weight		125g				

#### 3-4. Terminal Block Converter Module for Channel Isolated RTD Input Module

Item	Model name	FA-LTB40RD3G				
Connectable module	е	Q68RD3-G, R60RD8-G				
	Terminal screw	M3 regular screw, 7.62mm pitch				
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal),				
	Tightening torque	50 to 75N ⋅ cm (5.2 to 7.6kgf ⋅ cm)				
		M4 x 0.7mm x 8mm or greater				
Module mounting	Mounting screw	Tightening torque range: 78 to 118N ⋅ cm (8 to 12kgf ⋅ m)				
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (IEC60715 compliant)				
Withstand voltage		Between analog input CHs: 1000VAC for 1 minute, Other: 500VAC for 1 minute				
Insulation resistance	æ (initial)	$10M\Omega$ or more by 500VDC insulation resistance tester				
Weight		About 200g				

#### 3-5. Terminal Block Converter Module for Channel Isolated Analog Input Module

Item	Model name	FA-LTB40ADGN	FA-LTB40ADDG					
Connectable modu	ule	Q68AD-G, R60AD8-G, R60AD16-G	Q66AD-DG					
	Terminal screw	M3 regular screw, 7.62mm pitch						
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal),						
	Tightening torque	50 to 75N·cm (5.2 to 7.6kgf·cm)						
		M4 x 0.7mm x 8mm or greater						
Module	Mounting screw	Tightening torque range: 78 to 118N⋅cm (8 to 12kgf⋅cm)						
mounting	DIN rail	H35-7.5Al (IEC60715 compliant)						
Withstand voltage		Between CHs: 1000VAC for 1 minute, Other: 500VAC for 1 minute						
Insulation resistar	nce(initial)	$10M\Omega$ or more by 500VDC insulation resistance tester						
Weight		About 200g						

#### 3-6. Terminal Block Converter Module for Channel Isolated Analog Output Module

Item	Model name	FA-LTB40DAG				
Connectable mod	lule	Q66DA-G, R60DA8-G, R60DA16-G				
	Terminal screw	M3 regular screw, 7.62mm pitch				
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal),				
	Tightening torque	50 to 75N·cm (5.2 to 7.6kgf·cm)				
	<b>N</b> A such as a successive	M4 x 0.7mm x 8mm or greater				
Module	Mounting screw	Tightening torque range: 78 to 118N ⋅ cm (8 to 12kgf ⋅ cm)				
mounting	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (IEC60715 compliant)				
Withstand voltag	e	Between CHs: 1000VAC for 1 minute, Other: 500VAC for 1 minute				
Insulation resista	nce(initial)	10M $\Omega$ or more by 500VDC insulation resistance tester				
Accessory		Marking strip for R60DA8-G / R60DA16-G				
Weight		About 200g				

### 3-7. Terminal Block Converter Module for Multichannel High-speed Counter Module

Item	Model name	FA-LTB40D63P6V5	FA-LTB40D63P6V12	FA-LTB40D63P6V24				
Connectable modu	le	 QD63P6						
Country	Voltage	5V±10%	12V±10%	24V±10%				
	Current	6.4 to 11.5mA	10.8 to 15.9mA	10.5 to 14.9mA				
input signal	Pulse width	Compliant with t	he performance specification	ons of QD63P6				
Connectable encod	der	Open collector output, CMOS voltage output	Open collector output					
	Terminal screw	M3 regular screw, 7.62mm pitch						
Terminal block	Applicable wire,	0.3 to 2mm <sup>2</sup> (with solderless terminal),						
	Tightening torque	50 to 75N ⋅ cm (5.2 to 7.6kgf ⋅ cm)						
	Mounting corour	M4 x 0.7mm x 8mm or greater						
Module mounting	Mounting screw	Tightening torque range: 78 to 118N ⋅ cm (8 to 12kgf ⋅ cm)						
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5AI (IEC60715 compliant)						
Withstand voltage		500VAC for 1 minute						
Insulation resistance	e (initial)	$10M\Omega$ or more by 500VDC insulation resistance tester						
Weight		About 200g						

## 4. TARGET PLC MODULES AND CONNECTION CABLES

PLC Module Model	Connection Cable Model	Module Model		
Channel Isolated Analog Input Module	Q68AD-G R60AD8-0 R60AD16	G -G	FA-CBL**Q68ADGN	FA-LTB40ADGN
	Q66AD-D	G	FA-CBL**Q66ADDG	FA-LTB40ADDG
	Q66DA-G		FA-CBL**Q66DAG	FA-LTB40DAG
Channel Isolated Analog Output Module	R60DA8-0 R60DA16	G -G	FA1-CBL**R60DA8G	FA-LTB40DAG
Channel Isolated Thermocouple Input Module	Q68TD-G Q68TD-G R60TD8-0	-H01 -H02 G	FA-CBL**Q68TDG	FA-LTB40TDG
Thermocouple Input Module	Q64TD Q64TDV-	GH	FA-CBLQ64TD**	FA-TB20TD
Channel Isolated RTD Input Module	Q68RD3- R60RD8-	G G	FA-CBL**Q68RD3G	FA-LTB40RD3G
Temperature Control Module	Q64TCTT Q64TCTT	N BWN	FA-CBLQ64TC**	FA-TB20TC
		5V input signal	FA-CBL**QD63P6	FA-LTB40D63P6V5
Multichannel High-Speed Counter Module	QD63P6	12V input signal	FA-CBL**QD63P6	FA-LTB40D63P6V12
		24V input signal	FA-CBL**QD63P6	FA-LTB40D63P6V24

### 5. EXTERNAL DIMENSIONS

5-1. Terminal Block Converter Module for Channel Isolated Thermocouple Input Module (FA-LTB40TDG) Terminal Block Converter Module for Channel Isolated Analog Input Module (FA-LTB40ADGN/ADDG) Terminal Block Converter Module for Channel Isolated Analog Output Module (FA-LTB40DAG) Terminal Block Converter Module for Channel Isolated RTD Input Module (FA-LTB40RD3G) Terminal Block Converter Module for Multichannel High-speed Counter Module (FA-LTB40D63P6V5/V12/V24)



5-2. Terminal Block Converter Module for Thermocouple Input Module (FA-TB20TD)



5-3. Terminal Block Converter Module for Temperature Control Module (FA-TB20TC)



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## 6. CONNECTING METHOD

- 6-1 Connection to the terminal block type PLC module
  - 6-1-1. When a connection cable with terminal block is used



### 6-2. Connection to the connector type PLC module

6-2-1. When a connector cable with FG wire on both ends is used



6-2-2. When a connector cable with FG wire on one end is used



## 7. EXTERNAL CONNECTION EXAMPLE

#### 7-1. FA-LTB40ADGN

1	3	5	7	9	11	13	15	17	19		21	23	25	2	7	29	31	3	3 3	35	37	39		
CH1 V+	CH1 Is	CH2 V+	CH2 Is	-	CH3 V+	CH3 Is	CH V+	4 CH	4 -		CH5 V+	CH5 Is	CH V+	6 Cl	-16 S	-	CH V+		H7 C s \	H8 /+	CH8 Is	-		
	2	4	6	8	10	12	14	16	18	20	2	22	24	26	28	;	30	32	34	3	6	38	40	
C V	H1 C -/I- I	H1 C + V	H2 ( -/I-	CH2 I+	- \	CH3 ( /-/I-	CH3 I+	CH4 V-/I-	CH4 I+	-	C V-	H5 ( /I -	CH5 I+	CH6 V-/I-	CH6 I+	;	-	CH7 V-/I-	CH7 I+	Cł V-	H8 C -/I-	CH8  +	-	
													JL				L							
Input1 Input2 Input3							Input4 Input5 Input6 Input7 Input8																	
Current input       Voltage input (Note 2)         V+       Is         V-/I-       I+         V-/I-       I+         V+       V-/I-         I-       I+         V-/I-       I+         V+       V-/I-         V+       V-/I-         V-/I-       I+         V-/V-       V-/I-         V-/V-       V-/I-         V+       V-/I-         V-       V-/I-         V-       V-/I-         V-       V-/I-         V-       <													ninal tion											
72																								

#### 7-2. FA-LIB40ADDG



### 7-3. FA-LTB40DAG

#### < Connection to Q66DA-G >

1	3	5		7	9	1	1 1	3	15	17	1	9	21	23	3 2	5	27	29	3	1 3	3	35	37	7 3	9
CH1 V+	CH1 I+	-	(	CH2 V+	CH	2	- C \	H3 /+	CH3 I+	-	CH V	-14 +	CH4 I+	-	CH V	15 ( +	CH5 I+	-	CH V	l6 CI + Ι	H6 +	-	-	DC	24V
	2	4	6		8	10	12	1	4	16	18	2	0	22	24	26		28	30	32	3	4	36	38	40
CC	DM1	-	-	С	OM2	-	-	со	М3	-	-	со	M4	-	-	CON	15	-	-	COM6	; -	-	-	-	DC24G
							L								L				L						
Out	put1			Ou	tput2	2	(	Dut	out3		С	)utp	out4		C	Dutpi	ut5		C	Dutpu	t6			24	4VDC
	V+ COI	I+	t ]			Curren V+	t outpu I+ OM	ıt 																	

#### < Connection to R60DA8-G or R60DA16-G (Note 1)>

(Note1)

RTD

1	3	5	7	g	) 1'	1	3	15	17	19	9	21	2	3 25	5	27	29	3	1 3	33	35	37	7 3	89
CH1 V+/I+	-	CH2 V+/I+	-	CH V+	13 /I+ -	Cł V+	-14 /I+	-	-	CH V+,	15 /I+	-	C⊦ V+,	16 /I+ -	,	CH7 √+/I+	-	CH V+/	18 /I+	-	-	-	2 2	OC 4V
	2	4	6	8	10	12	14		16	18	20	) :	22	24	26		28	30	32	3	4	36	38	40
C V	H1 -/I-	- ,	CH2 /-/I-	-	CH3 V-/I-	-	CH V-/	4  -	-	-	CH V-/	15 1-	-	CH6 V-/I-	-	C V	:H7 /-/I-	-	CH8 V-/I-		-	-	-	DC 24G
															L									
Out	put1	Outp	out2	Οι	utput3	Οι	utpu	t4		Οι	Itpu	t5	Οι	utput6	(	Dutp	ut7	Οι	itput8	3			2	4VDC
	bltage ( +/ +	output			Current	-/I-	ıt		lote 1	: W mo	hen odul	con le's r	nec mari	ting th king s	ie R trip	60D with	A8-0 the	6 or F provid	R60D ded n	A16 nark	S-G, r king s	epla strip.	ce th	e

#### 7-4. FA-LTB40TDG

1	3	5		7	9	11	1;	3 '	5	17	19	21	1 23	3 2	25 2	7 2	29 :	31	33	35	37	7 3	9
CH1 +	-	CH +	2	- (	CH3 +	-	CH +	14	-	CH5 +	-	CH +	16 -	С	H7 +	C	H8 +	-	-	-	-	RI	TD G
	2	4	6	8	1	10	12	14	16	} .	18	20	22	24	26	28	30	32	2 3	34	36	38	40
C	H1 -	-	CH2 -	-	C	- H3	-	CH4 -	-	C	- -	-	CH6 -	-	CH7 -	-	CH8	-		-	-	RID +	- RID
Inpu	ut1	L In	put2	JL	Inpu	ut3	L Ir	nput4		Inp	ut5	L In	put6		nput7		nput8					 	
Therm	10COL +	uple in	put		R	RTD in RTD(	put G		In: Co blo	stall t onne ock.	the m ct the	odul ther	e in a mocc	loca uple	ion ha or cor	iving npens	a con sation	stan leac	t amb d wire	bient dire	temp ctly t	oerati to the	irē. termina

Note 1: For the cold junction compensation resistor (RTD), connect the Q68TD-G-H01/H02 accessory between terminal numbers 38 and 40 as illustrated above. Terminal number 38 (RTD G) and terminal number 40 (RTD -) are connected inside the conversion module, and therefore do not require external wiring.

#### 7-5. FA-LTB40RD3G

1	3	5	7	<b>′</b>	9	11	1	3	15	17	19	9	21	23	5	25	27	/ 2	9	31	33	35	5 3	7 3	9
CH1 A1	CH1 b1	-	CH	12 2	-	CH A?	3 CH	13 3	-	CH4 B4	+ -		CH	5 CH	5	-	CH	16	- (	CH7 A7	CH7 b7	-	CI	-18 -8	-
	2 4	4	6	8	1	10	12	14	4	16	18	2	20	22	24	1	26	28	30		32	34	36	38	40
C	H1 31	-	CH2 A2	CH2 b2	2	-	CH3 B3	-	C	H4 \4	CH4 b4		-	CH5 B5	-	(	CH6 A6	CH6 b6	-	C	H7 37	-	CH8 A8	CH8 b8	-
									L							l									
Inp	ut1		Inp	ut2		h	nput3			Inpu	t4		Ir	nput5			Inpu	ut6		Inp	out7		Inp	ut8	



#### 7-6. FA-TB20TD



Install the module in a location having a constant ambient temperature.

Connect the thermocouple or compensation lead wire directly to the terminal block. For FA-CBLQ64TD\*\*, a ground wire is not wired. Grounding with FA-TB20TD is not possible.

Ground Q64TD to terminal number 18 on the terminal block of FA-CBLQ64TD\*\* that is connected to the programmable controller module.

Note 1: The cold junction compensation resistor (RTD) is supplied with FA-TB20TD.

### 7-7. FA-TB20TC



#### 7-8. FA-LTB40D63P6V\*\*

### <FA-LTB40D63P6V5 (For 5V signal)>

1	3	5	7		9	11	13	15	17	7 1	9	21	23	3 25	5	27	29	31	3	3 3	35	37	39	9
-	CH1 A+(5)	CH B+(5	1 5) -	C A·	CH2 ( +(5) B	CH2 +(5)	-	CH3 A+(5	CH ) B+(	13 (5) -		CH4 A+(5)	CH B+(	14 5) -		CH5 A+(5)	CH5 B+(5	5	Cl A+	H6 C (5) BH	H6 ·(5)	-	-	
	2	4	6	8	10	12	,	4	16	18	20	0	22	24	2	26 2	28	30	32	34	36	5	38	40
	- 0	CH1 A-	CH1 B-	I	CH2 A-	CH: B-	2	- (	CH3 A-	CH3 B-	-	. 0	CH4 A-	CH4 B-		- 0	:H5 A-	CH5 B-	-	CH6 A-	CH B-	6	-	-
								L																
	Ir	nput1			Inp	ut2		I	nput	3		l	nput	4		In	put5			Inpu	t6			

### <FA-LTB40D63P6V12 (For 12V signal)>

1	3	3	5	7	9	1'	1	13	15	17	1	9	21	23	3 3	25	27	29	31	33	3	53	7 3	9
-	CH A+(	H1 ( (12) B <sup>·</sup>	CH1 +(12)	-	CH2 A+(12	C⊦ 2) B+(	l2 12)	-	CH3 A+(12)	CH B+(1	3 2) ·	-	CH4 A+(12	⊢ CF 2) B+(	l4 12)	-	CH5 A+(12)	CH5 B+(12	) -	CH A+(1	6 CH 2) B+(	l6 12)	-	-
	2	4	6	6	8	10	12	1	4	16	18	2	0	22	24	2	26 2	28	30	32	34	36	38	40
	-	CH1 A-	1 Cł E	H1 3-	- (	CH2 A-	CH2 B-		- 0	:Н3 А-	CH3 B-	-	-	CH4 A-	CH4 B-		- 0	H5 C A-	CH5 B-	-	CH6 A-	CH6 B-	-	-
					L				L				L						J	L				
		Inp	ut1		I	nput	2		li	nput	3			Input	4		In	put5			Input	6		

### <FA-LTB40D63P6V24 (For 24V signal)>

1	3	5	5	7	9	11	1 1	3	15	17	' 1	9	21	23	3	25	27	29	31	33	3 3	35	37	39	
-	CH A+(2	1 CH 24) B+(	11 24)	-	CH2 A+(24)	C⊦ ) B+(2	12 24)	-	CH3 A+(24)	CH B+(2	3 24) ·	-	CH4 A+(24	1 C⊦ 4) B+(i	14 24)	-	CH5 A+(24	CH5 ) B+(24	-) -	C⊢ A+(2	l6 C 24) B+	H6 (24)	-	-	
	2	4	6		8	10	12	1	4 <sup>·</sup>	16	18	2	20	22	24	1	26	28	30	32	34	36	6.5	38 4	40
	-	CH1 A-	CH1 B-		- 0	CH2 A-	CH2 B-	-	C	H3 4-	CH3 B-	-	-	CH4 A-	CH4 B-	1	- (	CH5 A-	CH5 B-	-	CH6 A-	CH6 B-	;	-	-
	L												L							l					
		Input	1		II	nput	2		lr	nput	3			Input	t4		Ir	nput5			Inpu	t6			



## 8. APPLICABLE SOLDERLESS TERMINALS

Тур	е	R	ound		Y
Monufacturor	Applicable	Non-insulated	Insulated	Non-insulated	Insulated
wanulaculer	wire size	solderless terminal	solderless terminal	solderless terminal	solderless terminal
				1.25Y-3	TG <sub>N</sub> 1.25Y-3
	$0.2 \times 1.25 \text{mm}^2$	R1.25-3N	TG ∖ 1.25-3N	1.25Y-3N	TG <sup>v</sup> 1.25Y-3N
Nichifu, CO., Ltd.	0.3~1.25mm	R1.25-3.5N	TG №1.25-3.5N	1.25Y-3L (Note 1)	TG <sup>∨</sup> 1.25Y-3L (Note 1)
NTM				1.25Y-3.5	TG <sup>×</sup> 1.25Y-3.5
	$1.25 \approx 2.0 \text{mm}^2$	R2-3N	TG V2-3N	2Y-3	TG <sup>v</sup> 2Y-3
	1.25~2.0mm	112-511	10 <sub>N</sub> 2-5N	2Y-3.5S	TG <sup>∨</sup> 2Y-3.5S
				1.25-B3A	
Japan Solderless	$0.3 \approx 1.25 \text{mm}^2$	1 25-MS3	V1 25-MS3	1.25-C3A	V1.25-B3A
Terminal Co. Ltd	0.5** 1.2511111	1.20 1000	1.20 1100	1.25-N3A (Note 1)	V1.25-N3A (Note 1)
IST				1.25-C3.5A	
001	$1.25 \sim 2.0 \text{mm}^2$	2-MS3	V2-MS3	2-N3A	V2-N3A
	1.25**2.000	2 11100	12 1100	2-M3A (Note 1)	
		R1 25-3MI	RAV1 25-3MI	VD1.25-3L	VDAV1.25-3L
Nippon Tanshi	0.3~1.25mm <sup>2</sup>	R1 25-3 5SI	RAP1 25-3MI	VD1.25-3.5SS	VDAV1.25-3.5SS
Co I td		IN1.20-0.00L	1041 1.25-51WE	VD1.25-3.5S (Note 1)	VDAV1.25-3.5S (Note 1)
			RAV2-3SI	VD2-3S	VDAV2-3 555
	1.25~2.0mm <sup>2</sup>	R2-3SL	RAP2-3SI	VD2-3.5SS	VDAV2-3 5S (Note 1)
1				VD2-3.5S (Note 1)	10,02 0.00 (1000 1)

Note 1: This solderless terminal is suitable to captive screws only. Do not apply the terminal to regular screws.

Solderless terminal dimensions

Round non-insulated solderless terminal



Y non-insulated solderless terminal



Round insulated solderless terminal



Y insulated solderless terminal



Solderless te	erminal dime	ensions
	A	В
Captive screw	MIN 5.0	MAX 6.3
Regular screw	MIN 5.5	MAX 6.1

Terminal block shape

7.62

 $\left\{ \right\}$ 

6.4

8.84

K

1.22

7

1.22

Captive screw



[Unit: mm]

[Unit: mm]

### 9. PRECAUTIONS

- (1) For wiring to the terminal block, refer to the manual of the connected programmable controller module, published by Mitsubishi Electric Corporation.
- (2) Ground the FG wire provided with the cable in the same manner as the programmable controller module. Note that the bunched-up extra wire without grounding may act as an antenna, possibly introducing noise.

# FOR YOUR SAFETY

- This product has been manufactured as a general-purpose product for general industry applications, etc. The product is not designed or manufactured to be used in equipment or systems in situations that can affect or endanger human life.
- When considering this product for operation in special applications such as machinery or systems used in passenger transportation, atomic power, electric power, aerospace, or medical applications, please contact your nearest Mitsubishi sales representative.
  - Although this product was manufactured under conditions of strict quality control, the product shall be systematically provided with backup and fail-safe functions when it is used in facilities where breakdowns of the product are likely to cause a serious accident or damage.

## MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED

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Before using this product, ensure the safety in case of failure. We assume no responsibility for consequential damages caused by failure of the product. 50D-FA9010-127-B

Specifications subject to change without notice.

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