



Digital-Analog Converter Module Type AJ65VBTCU-68DAVN

User's Manual
(Hardware)

Thank you for buying the programmable controller MELSEC Series

Prior to use, please read both this manual and detailed manual thoroughly and familiarize yourself with the product.



MODEL	AJ65V-68DAN-U-HW
IB(NA)-0800252-I(2410)MEE	

● SAFETY PRECAUTIONS ●

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

These precautions apply only to this equipment.

Refer to the user's manual of the CPU module to use for a description of the programmable controller system safety precautions.

In this manual, the safety precautions are classified into two levels:

"⚠ WARNING" and "⚠ CAUTION".

WARNING

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

CAUTION

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

"⚠ CAUTION" may lead to serious consequences.

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

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

WARNING

- Install a safety circuit external to the programmable controller that keeps the entire system safe even when there are problems with the external power supply or the programmable controller.
Otherwise, trouble could result from erroneous output or erroneous operation.
 - (1) The status of analog output changes depending on the setting of various functions that control the analog output. Take sufficient caution when setting for those functions.
For details of analog output status, refer to Section 3.4.1 "Combinations of various functions" in the User's Manual.
 - (2) Normal output may not be obtained due to malfunctions of output elements or the internal circuits.
So build an external monitoring circuit that will monitor any single outputs that could cause serious trouble.

CAUTION

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

[Security Precautions]

WARNING

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Installation Precautions]

CAUTION

- Use the programmable controller in an environment that meets the general specifications in the detailed manual.
Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- Securely fix the module with a DIN rail or CC-Link connector type metal installation fitting.
Not doing so can cause a drop or malfunction.
- Do not directly touch any conductive part of the module.
Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

CAUTION

- Shut off the external power supply for the system in all phases before wiring. Failure to do so may result in damage to the product.
- Always ground the FG terminal to the protective ground conductor. Not doing so can cause a malfunction.
- Check the rated voltage and pin layout before wiring to the module, and connect the cables correctly.
Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Do not insert the one-touch connector plug for I/O of the one-touch connector type/connector type compact remote I/O unit into the one-touch connector for analog I/O accidentally.
Doing so can cause the module to be damaged.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- Always fit a non-wired, one-touch connector plug to the open one-touch connector for power supply and FG.
Not doing so can cause a failure or malfunction.
- Place the cables in a duct or clamp them.
If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact.
- Do not install the control lines or communication cables together with the main circuit lines or power cables.
Failure to do so may result in malfunction due to noise.
- When disconnecting the cable from the module, do not pull the cable by the cable part.
Loosen the screws of connector before disconnecting the cable.
Failure to do so may result in damage to the module or cable or malfunction due to poor contact.
- Smoke and fire may occur when an overcurrent flows intermittently for a long period of time. To avoid this, configure a safety circuit, such as an external fuse, to protect the product.

[Starting and Maintenance Precautions]

CAUTION

- Do not touch any pin while power is on. Doing so will cause malfunction.
- Shut off the external power supply for the system in all phases before cleaning the module.
Failure to do so may cause the module to fail or malfunction.
- Do not disassemble or modify the modules.
Doing so may cause failure, malfunction, injury, or a fire.
- Do not drop or apply strong shock to the module.
Doing so may damage the module.
- Shut off the external power supply for the system in all phases before mounting or removing the module to or from the panel.
Failure to do so may cause the module to fail or malfunction.
- After the first use of the product, do not mount/remove the terminal block to/from the module more than 50 times. (IEC 61131-2 compliant)
- Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

CAUTION

- When disposing of this product, treat it as industrial waste.

● PRÉCAUTIONS DE SÉCURITÉ ●

(Lire ces précautions avant toute utilisation du produit.)

Avant d'utiliser ce produit, lire attentivement ce manuel ainsi que les manuels auxquels il renvoie, et toujours considérer la sécurité comme de la plus haute importance en manipulant le produit correctement.

Ces précautions ne concernent que cet équipement.

Dans le manuel de l'utilisateur du module CPU correspondant, voir l'exposé des précautions de sécurité concernant le système de l'automate programmable.

Dans ce manuel, les précautions de sécurité sont classées en deux niveaux, à savoir : " ⚠️ AVERTISSEMENT " et " ⚠️ ATTENTION "

⚠️ AVERTISSEMENT

Attire l'attention sur le fait qu'une négligence peut créer une situation de danger avec risque de mort ou de blessures graves.

⚠️ ATTENTION

Attire l'attention sur le fait qu'une négligence peut créer une situation de danger avec risque de blessures légères ou de gravité moyennes ou risque de dégâts matériels.

Dans certaines circonstances, le non-respect d'une précaution de sécurité introduite sous le titre " ⚠️ ATTENTION " peut avoir des conséquences graves.

Les précautions de ces deux niveaux doivent être observées dans leur intégralité car elles ont trait à la sécurité des personnes et aussi du système.

Veiller à ce que les utilisateurs finaux lisent ce manuel qui doit être conservé soigneusement à portée de main pour s'y référer autant que de besoin.

[Précautions lors de la conception]

AVERTISSEMENT

- *Prévoir un circuit de sécurité extérieur à l'automate programmable permettant de garantir la sécurité de l'ensemble du système même en cas de problème avec l'alimentation externe ou avec l'automate programmable.
Faute de quoi, une sortie erronée ou une anomalie de fonctionnement peuvent être source de problèmes.*
 - (1) *L'état des sorties analogiques dépend du paramétrage de diverses fonctions commandant les sorties analogiques. Le paramétrage de ces fonctions doit être fait attentivement.
Pour une présentation détaillée de l'état des sorties analogiques, voir "Combinaison des diverses fonctions" en section 3.4.1 du manuel de l'utilisateur du module correspondant.*
 - (2) *Le dysfonctionnement d'un organe de sortie ou d'un circuit interne peut entraîner l'impossibilité d'obtenir des sorties normales.
On doit donc constituer un circuit de surveillance externe pour le suivi individuel de toute sortie qui pourrait être à l'origine d'accidents ou d'incidents graves.*

ATTENTION

- *Ne pas entremêler les lignes de commandes ou câbles de communication avec les lignes des circuits principaux ou les câbles d'alimentation.
Les installer en maintenant entre eux une distance minimum de 100mm.
Faute de quoi, il y a risque de dysfonctionnement par un bruit.*
- *À la mise sous/hors tension, il peut y avoir instantanément présence d'une tension ou d'un courant aux bornes de sortie de ce module. Dans ce cas, ne faire démarrer la régulation du dispositif externe qu'après la stabilisation des sorties analogiques.*

[Précautions de sécurité]

AVERTISSEMENT

- *Pour maintenir la sécurité (confidentialité, intégrité et disponibilité) de l'automate programmable et du système contre les accès non autorisés, les attaques par déni de service (DoS), les virus informatiques et autres cyberattaques d'appareils externes via le réseau, prendre les mesures appropriées telles que la configuration d'un pare-feu ou d'un réseau privé virtuel (VPN), ou l'installation d'un logiciel antivirus sur l'ordinateur.*

[Précautions d'installation]

ATTENTION

- *Chaque produit doit être utilisé dans un environnement conforme aux "spécifications générales" exposées dans la documentation détaillée. L'utilisation de l'automate programmable hors des conditions prévues dans les spécifications générales peut être à l'origine d'un choc électrique, d'un départ de feu ou d'un dysfonctionnement, ou peut endommager ou détériorer le produit.*
- *Fixer fermement le module avec un rail DIN ou une ferrure de type connecteur CC-Link.
Faute de quoi, il y a risque de chute et de dysfonctionnements.*
- *Éviter tout contact direct avec les parties conductrices du module.
Une manipulation incorrecte peut être à l'origine de dysfonctionnements ou de pannes du module.*

 **ATTENTION**

- *Couper l'alimentation externe du système sur toutes les phases avant de commencer à câbler.
Faute de quoi, le produit risquerait d'être endommagé.*
- *Toujours mettre à la masse la borne FG sur le conducteur de protection de terre.
Faute de quoi, il y a risque de dysfonctionnement.*
- *Vérifier la tension nominale et l'affectation des broches avant le câblage du module, et raccorder les câbles correctement.
Le raccordement d'une alimentation d'une tension autre que la tension nominale ou une erreur de câblage peut être à l'origine d'un départ de feu ou d'une panne.*
- *Veiller à ne pas tenter d'introduire par erreur une fiche de connecteur instantané d'entrée/sortie prévue pour l'unité d'entrée sortie/sortie distante de type compact dans une prise d'entrée/sortie analogique de type à connecteur instantané.
Cela pourrait endommager le module.*
- *Veiller à ne pas laisser la poussière, les copeaux métalliques ou d'autres corps étrangers pénétrer dans le module.
De telles corps étrangers peuvent être à l'origine d'un départ de feu, d'une panne ou d'un dysfonctionnement.*
- *Toujours mettre en place une fiche de connecteur instantané non câblée sur chaque connecteur instantané d'alimentation ou FG qui reste ouvert.
Faute de quoi, il y a risque de panne ou de dysfonctionnement.*
- *Les câbles doivent être placés dans un conduit de câbles ou doivent être attachés. Faute de quoi, le ballonnement ou le déplacement des câbles pourrait endommager le module ou les câbles et être à l'origine de dysfonctionnements par mauvais contact.*
- *Ne pas entremêler les lignes de commandes ou câbles de communication avec les lignes des circuits principaux ou les câbles d'alimentation.
Faute de quoi, il y a risque de dysfonctionnement par un bruit.*
- *Pour débrancher le câble du module, ne tirer directement sur le câble proprement dit.
Desserrer les vis du connecteur avant de débrancher le câble.
Faute de quoi, il y a risque d'endommagement du module ou du câble ou un mauvais contact pourrait être à l'origine de dysfonctionnements.*
- *Des surtensions intermittentes qui se prolongent dans le temps peuvent être à l'origine d'un dégagement de fumée et d'un départ de feu. Pour éviter cela, prévoir un circuit de sécurité, avec fusible externe par exemple, pour protéger le produit.*

[Précautions de démarrage et de maintenance]

ATTENTION

- *Ne pas toucher à la broche quand l'appareil est sous tension. Cela pourrait être à l'origine de dysfonctionnements.*
- *Avant de nettoyer le module, couper l'alimentation externe du système sur toutes les phases.
Le non-respect de cette précaution peut être à l'origine de pannes ou de dysfonctionnements du module.*
- *Ne pas démonter ni modifier les modules.
Cela pourrait entraîner des pannes ou dysfonctionnements et être à l'origine de blessures ou de départs de feu.*
- *Ne pas faire tomber le module et ne pas le soumettre à des chocs.
Cela risquerait d'endommager le module.*
- *Avant d'installer ou retirer le module du tableau, couper l'alimentation externe du système sur toutes les phases.
Le non-respect de cette précaution peut être à l'origine de pannes ou de dysfonctionnements du module.*
- *Après la première utilisation du produit, le nombre maximum admissible d'opérations de pose/retrait du bornier sur le module est de 50. (selon IEC 61131-2)*
- *Avant de manipuler un module, se débarrasser de la charge électrostatique qu'accumule le corps humain en touchant un objet métallique raccordé à la terre.
Le non-respect de cette précaution peut être à l'origine de pannes ou de dysfonctionnements du module.*

[Précautions de mise au rebut]

ATTENTION

- *Lors de sa mise au rebut, ce produit doit être traité comme un déchet industriel.*

● CONDITIONS OF USE FOR THE PRODUCT ●

- (1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
- where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
 - where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
 - Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
 - Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.
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- (3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

REVISIONS

*The manual number is given on the bottom right of the cover.

Revision date	*Manual number	Description
Mar., 2003	IB(NA)-0800252-A	First edition
Jul., 2005	IB(NA)-0800252-B	Partial correction SAFETY PRECAUTIONS
Dec., 2006	IB(NA)-0800252-C	Partial correction Chapter 3, Chapter 8
Dec., 2010	IB(NA)-0800252-D	Addition CONDITIONS OF USE THE PRODUCT Partial correction SAFETY PRECAUTIONS, About Manuals, Section 2.1, Chapter 3, Section 5.2, 6.2, Chapter 7
Dec., 2011	IB(NA)-0800252-E	Addition SAFETY PRECAUTIONS (Chinese)
Jun., 2012	IB(NA)-0800252-F	Partial correction Section 5.1
Dec., 2016	IB(NA)-0800252-G	Addition SAFETY PRECAUTIONS(French) Partial correction SAFETY PRECAUTIONS, Section 2.1, 2.2, Chapter 3, Section 5.1, 5.2, 6.1, 6.2, Chapter 8
Jul., 2022	IB(NA)-0800252-H	Partial correction Section 2.1
Oct., 2024	IB(NA)-0800252-I	Partial correction SAFETY PRECAUTIONS, MANUAL, Section 2.1, Chapter 3, 8

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MANUAL

The following manuals are relevant to this product.

Detailed Manual

Manual name	Manual number
Digital-Analog Converter Module type AJ65VBTCU-68DAVN User's Manual	SH-080402E

Related Manuals

Manual name	Manual number
CC-Link System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual	IB-66721
CC-Link System Master/Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual	IB-66722
MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)	SH-081269ENG
MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)	SH-081270ENG
MELSEC-Q CC-Link System Master/Local Module User's Manual	SH-080394E
MELSEC-L CC-Link System Master/Local Module User's Manual	SH-080895ENG

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

(1) Method of ensuring compliance

To ensure that Mitsubishi programmable controllers maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to one of the following manuals.

- User's manual for the CPU module or head module used
- Safety Guidelines

(This manual is included with the CPU module, base unit, or head module.)

The CE mark on the side of the programmable controller indicates compliance with EMC and Low Voltage Directives.

(2) Additional measures

To ensure that this product maintains EMC and Low Voltage Directives, please refer to one of the manuals listed under (1).

1. OVERVIEW

This user's manual explains the specifications, names and setting of parts, wiring and others of Type AJ65VBTCU-68DAVN digital-analog converter module (hereafter abbreviated to the "AJ65VBTCU-68DAVN") which is used as a remote device station of a CC-Link system.

Confirm if the following items are included in the package after unpacking.

Item name	Number of items
Digital-Analog Converter Module type AJ65VBTCU-68DAVN	1

2. SPECIFICATION

2.1 Performance specifications

The performance specifications of the AJ65VBTCU-68DAVN are shown below.

For general specifications, refer to detailed manual.

Item	AJ65VBTCU-68DAVN				
Protection class	IP1XB				
Digital input	16-bit signed binary (-4096 to 4095)				
Analog output	-10 to 10VDC (external load resistance: 2k Ω to 1M Ω)				
I/O characteristics, maximum resolution, accuracy (accuracy relative to maximum value of analog output value)	Digital Input Value	Analog Output Range	Accuracy		Max. Resolution
			Ambient temperature 0 to 55°C	Ambient temperature 25 \pm 5°C	
	-4000 to 4000	-10 to 10V	\pm 0.3% (\pm 30mV)	\pm 0.2% (\pm 20mV)	2.5mV
		User range setting 1 (-10 to 10V)			
	0 to 4000	0 to 5V	\pm 0.3% (\pm 15mV)	\pm 0.2% (\pm 10mV)	1.25mV
		1 to 5V			1.0mV
User range setting 2 (0 to 5V)					
Maximum conversion speed	1ms/channel				
Output short-circuit protection	Provided				
Absolute maximum output	\pm 12V				

Item	AJ65VBTCU-68DAVN			
Number of analog output channels	8 channels/module			
CC-Link station type	Remote device station (Ver.1 remote device station, Ver.2 remote device station)			
Number of occupied stations	Ver.1 remote device station (Ver.1 compatible device station) setting: 3 stations (32 points for RX and RY, 12 points for RWr and RWw) Ver.2 remote device station (Ver.2 compatible device station) setting: 1 station (32 points for RX and RY, 16 points for RWr and RWw, expanded cyclic settings: 4 times)			
Communication cable <i>Câble de connexion</i>	Ver.1.10 compatible CC-Link dedicated cable: FANC-110SBH, FA-CBL200PSBH, CS-110 <i>Câble dédié CC-Link compatible Ver1,10:</i> FANC-110SBH, FA-CBL200PSBH, CS-110			
Isolation specifications	Specific isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance
	Across communication system terminals and all analog input terminals	Photocoupler isolation	500V AC for 1 minute	5MΩ or higher, measured with 500V DC insulation resistance tester
	Across power supply system terminals and all analog input terminals	Transformer isolation		
	Between channels	Not isolated	-	-
Noise durability	By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency			
External wiring system <i>Système de câblage externe</i>	<p>One-touch connector for communication [Transmission circuit] (5 pins pressure welding type, the plug for the connector is sold separately) One-touch connector for power supply and FG [Unit power supply and FG] (5 pins pressure welding type, the plug for the connector is sold separately) One-touch connector for analog I/O (4 pins pressure welding type, the plug for the connector is sold separately) <Option></p> <p>Online connector for communication : A6CON-LJ5P Online connector for power supply : A6CON-PWJ5P <i>Connecteur instantané pour communication [circuit de transmission]</i> <i>(Le connecteur 5-broches à déplacement d'isolant est vendu séparément)</i> <i>Connecteur instantané pour alimentation et FG [Unité d'alimentation et FG]</i> <i>(Le connecteur 5-broches à déplacement d'isolant est vendu séparément)</i> <i>Connecteur instantané pour entrée/sortie analogique</i> <i>(Le connecteur 4-broches à déplacement d'isolant est vendu séparément)</i> <Option></p> <p>Connecteur en ligne pour communication : A6CON-LJ5P Connecteur en ligne pour alimentation : A6CON-PWJ5P</p>			

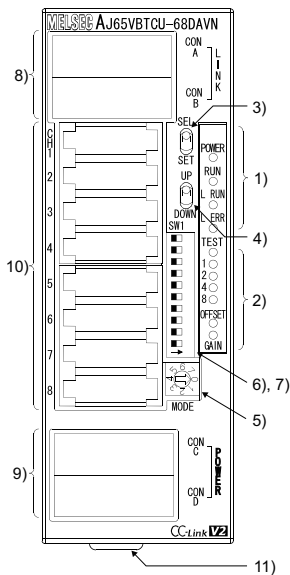
Item		AJ65VBTUCU-68DAVN
Applicable wire size Taille du fil à utiliser	One-touch connector for communication Connecteur instantané pour communication	Communication line : Ver. 1.10 compatible CC-Link dedicated cable 0.5mm ² (20AWG) [ϕ 2.2 to 3.0], shielded wire 0.5mm ² (20AWG) Ligne de communication : câble dédié CC-Link compatible Ver. 1,10 0,5mm ² (20AWG) [ϕ 2,2 à 3,0], fil de blindage 0,5mm ² (20AWG)
	One-touch connector for power supply and FG Connecteur instantané pour alimentation et FG	0.66 to 0.98 mm ² (18AWG) [ϕ 2.2 to 3.0] Wire diameter 0.16 mm or more 0,66 à 0,98 mm ² (18AWG)[ϕ 2,2 à 3,0] Diamètre de fil de 0,16 mm ou plus
	One-touch connector for analog I/O Connecteur instantané pour entrée/sortie analogique	ϕ 1.0 to 1.4 (A6CON-P214), ϕ 1.4 to 2.0 (A6CON-P220) [Applicable cable : 0.14 to 0.2 mm ²] ϕ 1.0 to 1.4 (A6CON-P514), ϕ 1.4 to 2.0 (A6CON-P520) [Applicable cable : 0.3 to 0.5 mm ²] ϕ 1,0 à 1,4 (A6CON-P214), ϕ 1,4 à 2,0 (A6CON-P220) [Câbles à utiliser: 0,14 à 0,2 mm ²] ϕ 1,0 à 1,4 (A6CON-P514), ϕ 1,4 à 2,0 (A6CON-P520) [Câbles à utiliser: 0,3 à 0,5 mm ²]
Applicable DIN rail		TH35-7.5Fe, TH35-7.5Al (conforming to JIS C 2812) CC-Link connector type metal installation fitting : A6PLT-J65V1
External supply power		24V DC (20.4V DC to 26.4V DC, ripple factor within 5%) Inrush current : 6.1A, within 1.2ms Current consumption 0.15A (When 24V DC)
Weight		0.16kg

Point
D/A conversion needs to be powered on 30 minutes prior to operation for compliance to the specification (scuracy).

3. NAMES AND SETTING OF PARTS

The name of each part in the AJ65VBTCU-68DAVN is shown.



[Pin layout and signals name]



Pin arrangement	Pin No.	Signal name
	1	DA
	2	DB
	3	DG
	4	NC
	5	SLD
	1	CH□ V+* ¹
	2	NC
	3	CH□ COM* ¹
	4	NC
	1	FG
	2	+24V (UNIT)
	3	24G (UNIT)
	4	NC
	5	NC
<p>*1: □ indicates the connector number. (For CON1, the value in □ is 1.)</p>		

A module view from the top

No.	Name and appearance	Description		
1)	Operation status display LED	POWER	ON : Power supply on OFF : Power supply off	
		RUN	Normal mode	On : Normal operation Flickering: 0.1s intervals: Output range setting error, mode select switch setting error. This module is used as the Ver.2 remote device station (Ver.2 compatible device station) when the network parameter mode is set to remote network Ver.1 mode. 0.5s intervals: Average value setting (count) time error. Mode select switch setting is changed after power-on. Off :24VDC power supply shutoff or watchdog timer error occurred.
			Test mode	On : Indicate that the SELECT/SET switch is in the SET position. Flickering: 0.1s intervals: Mode select switch setting error 0.5s intervals: An attempt was made to make setting outside the setting range at the time of offset/gain setting. Off : Indicates that the SELECT/SET switch is in the SELECT or center position.
		L RUN	On : Normal communication Off : Communication cutoff (time expiration error)	
		L ERR.	On : Indicates that transmission speed setting or station number setting is outside the range. Flicker at fixed intervals:Indicates that transmission speed setting or station number setting was changed from that at power-on. Flicker at unfixed intervals:Indicates that you forgot fitting the terminating resistor or the module or CC-Link dedicated cable is affected by noise. Off : Indicates normal communications.	
2)	Offset/gain adjusting LEDs	TEST CH <input type="checkbox"/>	Normal mode Normally OFF.	
		OFFSET GAIN <input type="checkbox"/>	TEST : ON The OFFSET/GAIN/ CH <input type="checkbox"/> LEDs lit change every time the SELECT/SET switch is moved to SELECT.	
3)	SELECT/SET switch	The switch to be used for making the offset/gain settings during test mode.		
4)	UP/DOWN switch	Used to adjust the offset value and gain value of the channel specified by the SELECT/SET switch.		
5)	Mode select switch (Factory-set to "0")	The switch to be used for selecting the mode among Ver. <input type="checkbox"/> remote device station (Ver. <input type="checkbox"/> -compatible device station)/Normal mode/Test mode		
		AJ65VBTU-68DAVN		
		Ver.1 remote device station (Ver.1-compatible device station)	0: Normal mode 1: Test mode (User range setting 1) 2: Test mode (User range setting 2)	
		Ver.2 remote device station (Ver.2-compatible device station)	3: Normal mode 4: Test mode (User range setting 1) 5: Test mode (User range setting 2)	
		-	6 to 7: Use prohibited	

No.	Name and appearance	Description																																																																																																														
6)	Transmission speed setting switches 	<table border="1" data-bbox="251 139 914 358"> <thead> <tr> <th rowspan="2">Set Value</th> <th colspan="3">Setting Switches</th> <th rowspan="2">Transmission Speed</th> </tr> <tr> <th>4</th> <th>2</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>156kbps</td> </tr> <tr> <td>1</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>625kbps</td> </tr> <tr> <td>2</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>2.5Mbps</td> </tr> <tr> <td>3</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>5.0Mbps</td> </tr> <tr> <td>4</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>10Mbps</td> </tr> </tbody> </table> <p data-bbox="246 365 933 467"> Always set the transmission speed within the above range. The switches are all factory-set to OFF. Making any other setting than the above will result in an error flickering the "L ERR." LED. Confirm the transmission speed setting switch numbers on the seal located on the side face of the connector for analog I/O. </p>	Set Value	Setting Switches			Transmission Speed	4	2	1	0	OFF	OFF	OFF	156kbps	1	OFF	OFF	ON	625kbps	2	OFF	ON	OFF	2.5Mbps	3	OFF	ON	ON	5.0Mbps	4	ON	OFF	OFF	10Mbps																																																																													
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7)	Station number setting switches 	<p data-bbox="246 481 933 627"> Use the switches in STATION NO. "10", "20" and "40" to set the tens of the station number. Use the switches in STATION NO. "1", "2", "4" and "8" to set the units of the station number. The switches are all factory-set to OFF. Always set the station number within the range 1 to 64. You cannot set the same station number to two or more stations. Setting any other number than 1 to 64 will result in an error, flickering the "L ERR." LED. </p> <table border="1" data-bbox="251 634 914 976"> <thead> <tr> <th rowspan="2">Station Number</th> <th colspan="3">Tens</th> <th colspan="4">Units</th> </tr> <tr> <th>40</th> <th>20</th> <th>10</th> <th>8</th> <th>4</th> <th>2</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>2</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>3</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>4</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> </tr> <tr> <td>10</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>11</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> <td>:</td> </tr> <tr> <td>64</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> </tbody> </table> <p data-bbox="246 991 933 1020"> (Example) To set the station number to "32", set the switches as indicated below. </p> <table border="1" data-bbox="251 1027 914 1115"> <thead> <tr> <th rowspan="2">Station Number</th> <th colspan="3">Tens</th> <th colspan="4">Units</th> </tr> <tr> <th>40</th> <th>20</th> <th>10</th> <th>8</th> <th>4</th> <th>2</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>32</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> </tbody> </table> <p data-bbox="246 1129 933 1166"> Confirm the station number setting switch numbers on the seal located on the side face of the connector for analog I/O. </p>	Station Number	Tens			Units				40	20	10	8	4	2	1	1	OFF	OFF	OFF	OFF	OFF	OFF	ON	2	OFF	OFF	OFF	OFF	OFF	ON	OFF	3	OFF	OFF	OFF	OFF	OFF	ON	ON	4	OFF	OFF	OFF	OFF	ON	OFF	OFF	:	:	:	:	:	:	:	:	10	OFF	OFF	ON	OFF	OFF	OFF	OFF	11	OFF	OFF	ON	OFF	OFF	OFF	ON	:	:	:	:	:	:	:	:	64	ON	ON	OFF	OFF	ON	OFF	OFF	Station Number	Tens			Units				40	20	10	8	4	2	1	32	OFF	ON	ON	OFF	OFF	ON	OFF
Station Number	Tens			Units																																																																																																												
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8)	One-touch connector for communication	A one-touch connector for connection of the communication line When carrying out wiring, connect two optional one-touch connector plugs for communication at top and bottom.																																																																																																														
9)	One-touch connector for power supply and FG	A one-touch connector for connection of the module power supply line and FG When carrying out jumper wiring, connect two optional one-touch connector plugs for power supply and FG at top and bottom.																																																																																																														

No.	Name and appearance	Description
10)	One-touch connector for analog I/O	One-touch connector for analog I/O Connect a one-touch connector plug when wiring.
11)	DIN rail hook	Used to mount the module to the DIN rail.

Point
<p>After power-on, do not change the mode select switch setting. If you change it midway during operation, the setting at power-on is valid.</p>

4. LOADING AND INSTALLATION

4.1 Precautions when handling

The following is an explanation of handling precautions of the module.

- (1) Because the case of the module is made of resin, be careful not to drop it or expose it to strong impact.

4.2 Installation environment

Never install the module in the following environments:

- (1) Locations where the ambient temperature is outside the range of 0 to 55°C.
- (2) Locations where the ambient humidity is outside the range of 10 to 90%RH.
- (3) Locations where dew condensation takes place due to sudden temperature changes.
- (4) Locations where there are corrosive and/or combustible gasses.
- (5) Locations where there is a high level of conductive power (such as dust and iron filings, oil mist, salt, and organic solvents).
- (6) Locations exposed to the direct rays of the sun.
- (7) Locations where strong power and magnetic fields are generated.
- (8) Locations where vibration and shock are directly transmitted to the main module.

5. DATA LINK CABLE WIRING

5.1 Instructions for handling the CC-Link dedicated cables *Instructions de traitement des câbles dédiés CC-Link*

Do not handle the CC-Link dedicated cables roughly as described below. Doing so can damage the cables.

- Compact with a sharp object.
- Twist the cable excessively.
- Pull the cable hard. (more than the permitted elasticity.)
- Step on the cable.
- Place an object on the top.
- Scratch the cable's protective layer.

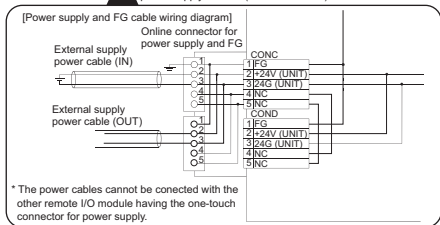
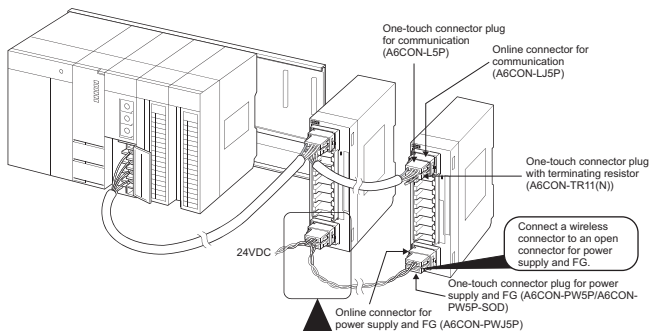
Éviter de manipuler brutalement les câbles dédiés CC-Link comme dans les exemples ci-dessous. Cela pourrait endommager les câbles.

- *Compacter avec un objet pointu.*
- *Courbure excessive du câble*
- *Exercer une forte traction sur le câble (au-delà e la limite d'élasticité).*
- *Marcher sur le câble.*
- *Placer un objet en dessus.*
- *Gratter la couche de protection du câble.*

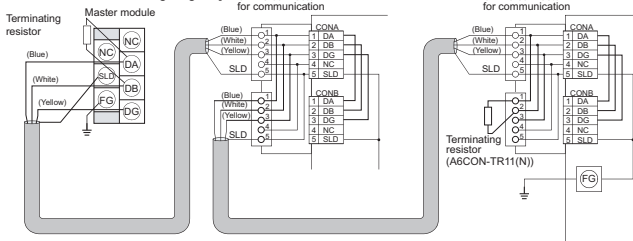
5.2 Connection of the CC-Link dedicated cables *Raccordement des câbles dédiés CC-Link*

Connect the CC-Link dedicated cable between the AJ65VBTCU-68DAVN and master module as shown below.

Raccorder le câble dédié CC-Link entre AJ65VBTCU-68DAVN et le module maître comme illustré ci-dessous.



[CC-Link dedicated cable wiring diagram]



Ver.1.10 Compatible CC-Link dedicated cable (FANC-110SBH,CS-110,FA-CBL200PSBH)

English	French
One-touch connector plug for communication(A6CON-L5P)	<i>Fiche de connecteur rapide pour communication(A6CON-L5P)</i>
Online connector for communication(A6CON-LJ5P)	<i>Connecteur en ligne pour communication(A6CON-LJ5P)</i>
One-touch connector plug with terminating resistor(A6CON-TR11(N))	<i>Fiche de connecteur rapide avec résistance d'extrémité (A6CON-TR11(N))</i>
One-touch connector plug for power supply and FG(A6CON-PW5P/A6CONPW5P-SOD)	<i>Fiche de connecteur instantané pour alimentation et FG(A6CON-PW5P/A6CONPW5P-SOD)</i>
Online connector for power supply and FG(A6CON-PWJ5P)	<i>Connecteur en ligne pour alimentation et FG(A6CON-PWJ5P)</i>
Connect a wireless connector to an open connector for power supply and FG.	<i>Enficher une fiche de connecteur non câblée sur les connecteurs d'alimentation et FG qui restent ouverts.</i>
[Power supply and FG cable wiring diagram]	<i>[Schéma de câblage pour câbles d'alimentation et FG]</i>
Online connector for power supply and FG	<i>Connecteur en ligne pour alimentation et FG</i>
External supply power cable	<i>Câble d'alimentation externe</i>
The power cables cannot be conected with the other remote I/O module having the one-touch connector for power supply.	<i>Les câbles d'alimentation ne peuvent pas se raccorder à un autre module d'entrée/sortie distant muni d'un connecteur instantané pour l'alimentation.</i>
[CC-Link dedicated cable wiring diagram]	<i>[Schéma de câblage par câbles dédiés CC-Link]</i>
Online connector for communication	<i>Connecteur en ligne pour communication</i>
Master module	<i>Module maître</i>
Terminating resistor	<i>Résistance d'extrémité</i>
Blue	<i>bleu</i>
White	<i>blanc</i>
Yellow	<i>jaune</i>
Ver. 1.10 Compatible CC-Link dedicated cable (FANC-110SBH,CS-110,FA-CBL200PSBH)	<i>Câble dédié CC-Link compatible Ver. 1.10 (FANC-110SBH,CS-110,FA-CBL200PSBH)</i>

Point

- On this unit, use the Ver. 1.10-compatible CC-Link dedicated cable (FANC-110SBH, CS-110, FA-CBL200PSBH). You cannot use the Ver. 1.10-compatible CC-Link dedicated cables of other than the above types, CC-Link dedicated cables and CC-Link dedicated, high-performance cables.
- The shield cable of the CC-Link dedicated cable should be connected to "SLD" in each module, and both ends should be grounded through "FG".
- *Sur cette unité, utiliser des câbles dédiés CC-Link compatibles Ver. 1.10 (FANC-110SBH, CS-110, FA-CBL200PSBH). On ne peut pas utiliser des câbles dédiées CC-Link compatibles Ver. 1,10 autres que les câbles dédiés CC-Link ou câbles dédiées CC-Link haute-performance dont les types sont mentionnés ci-dessus.*
- *Le tresse de blindage du câble dédié CC-Link doit être raccordé à "SLD" sur chaque module, et les deux extrémités doivent être mises à la terre via "FG".*

6. WIRING

6.1 Wiring precautions

Pécautions de câblage

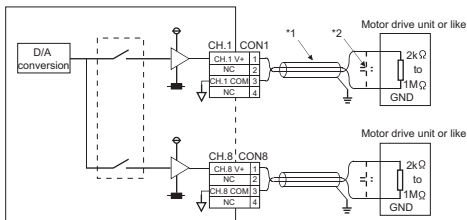
To obtain maximum performance from the functions of AJ65VBTCU-68DAVN and improve the system reliability, an external wiring with high durability against noise is required.

The precautions when performing external wiring are as follows:

Pour obtenir les meilleures performances des fonctionnalités du AJ65VBTCU-68DAVN et améliorer la fiabilité du système, il est important que le câblage soit durablement résistant aux interférences. Les précautions suivantes doivent être observées lors de de l'exécution du câblage externe.

- (1) Use separate cables for the AC and AJ65VBTCU-68DAVN external input signals, in order not to be affected by the AC side surge or conductivity.
Utiliser des câbles séparés pour le courant alternatif et les signaux externes en entrée du AJ65VBTCU-68DAVN de façon à éviter les effets des phénomènes de surtension et de conductivité du côté courant alternatif.
- (2) Do not bundle or place with load carrying wires other than the main circuit line, high voltage line or programmable controller. Noises, surges, or conductivity may affect the system.
Ne pas grouper en faisceau ou placer avec des fils porteurs de charges autres que les lignes de circuit principal ou haute tension, ni avec les lignes d'automate programmable. Des phénomènes d'interférence, surtension ou conductivité peuvent affecter le système.
- (3) Place a one-point grounding on the programmable controller side for the shielded line or shielded cable.
Côté automate programmable, prévoir un point de mise à la terre pour la ligne blindée ou le câble blindé.
- (4) Smoke and fire may occur when an overcurrent flows intermittently for a long period of time. To avoid this, configure a safety circuit, such as an external fuse, to protect the product.
Des surtensions intermittentes qui se prolongent dans le temps peuvent être à l'origine d'un dégagement de fumée et d'un départ de feu. Pour éviter cela, prévoir un circuit de sécurité, avec fusible externe par exemple, pour protéger le produit.

6.2 Module connection example



English	French
D/A conversion	Conversion N/A
Motor drive unit or like	Unité d'entraînement du moteur ou similaire

*1 Use a two-core twist shielded line for the wiring.

*2 If noise or ripples occur in the external wiring, connect a 0.1 to 0.47 μF capacitor (25V or higher voltage-resistant product) to the input terminals of the external device.

*1 Utilisez une ligne blindée à torsion double-base pour le câblage.

*2 Si un bruit ou des ondulations se produisent dans le câblage externe, connectez un condensateur 0,1 à 0,47 μF (produit résistant à une tension de 25 V ou plus) aux bornes d'entrée de l'appareil externe.


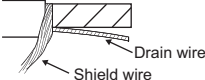
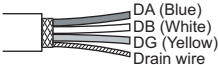
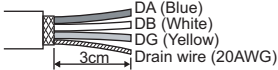


Point
<ul style="list-style-type: none"> Do not insert the one-touch connector plug for I/O of the one-touch connector type/connector type compact remote I/O unit into the one-touch connector for analog I/O accidentally. Doing so can cause the module to be damaged. Veiller à ne pas tenter d'introduire par erreur une fiche de connecteur instantané d'entrée/sortie prévue pour l'unité d'entrée sortie distante de type compact dans une prise d'entrée/sortie analogique de type à connecteur instantané. Cela pourrait endommager le module.

7. HOW TO WIRE THE ONE-TOUCH CONNECTOR PLUG

This section describes the way to wire the one-touch connector plug. Refer to the AJ65VBTCU-68DAVN Digital-Analog User's Manual for more information on the types and specifications of the one-touch connector plugs which conform to the AJ65VBTCU-68DAVN.

(1) Cable termination work

Do the following work on the cable terminations of the communication that are inserted into the one-touch connector plugs.

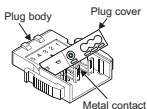
Communication cable termination work	
<p>1. Cut the outer insulation layer.</p> 	<p>2. Separate the shield and drain wire and cut the shield.</p> 
<p>3. Cut the aluminum tape and Braid.</p> 	<p>4. Stretch the drain wire and twist it from the base. (3cm in length, 7 times or more)</p> 
Termination work for analog output cable	
<p>1. Cut the outer insulation layer.</p> 	<p>2. Cut the ends of shielded wires to make them adequate in length.</p> 

Point

- Where possible, round the tip that was cut with nippers or like. If the section of the cable to be inserted is not round, the cable may be caught at any point and not go far enough.
- Do insulation work as necessary on the area of the shield that will not be inserted into the one-touch connector plug.

(2) Checking the plug cover

Check whether the plug cover is installed in the plug.



Caution:

Before inserting the cable, do not push the plug cover into the plug. Once insulation-displaced, the plug cannot be reused.

(3) Inserting the cable

Lift the back of the plug cover and insert the cable until it makes contact with the plug.

Insert the signal cables into the one-touch connector plug as shown below.



<For communication>

<For power supply and FG>

<For analog output>



Signal name
DA (Blue)
DB (White)
DG (Yellow)
NC
SLD

Signal name
FG
+24V (UNIT)
24G (UNIT)
NC
NC

Signal name
V+
COM

Point

- Insert the cables far enough. Not doing so can cause an insulation displacement fault.
- The cable inserted may come out of the cover front. At this time, pull it back until the cable tip goes back into the plug cover.

(4) Insulation displacement of plug cover

Using pliers or like, push the plug cover into the plug to insulation-displace it.

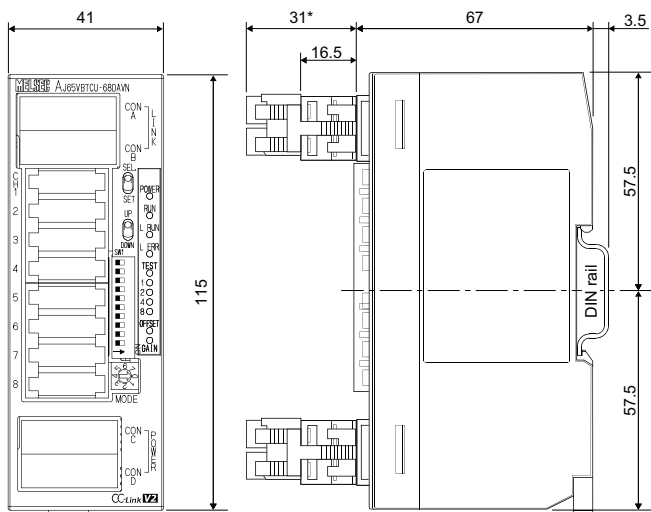
After insulation displacement, make sure that the plug cover is securely installed in the plug as shown below.



Point

- The plug cover and plug latches may not engage at the time of insulation displacement, raising the cover. Since the plug cover has not been insulation-displaced sufficiently in this state, push the cover into the plug until it is installed securely.

8. EXTERNAL DIMENSION DIAGRAM



*: This section should be 14.5mm when an online connector is not installed.

Unit: mm

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 2. Failure caused by unapproved modifications, etc., to the product by the user.
 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

INFORMATION AND SERVICES

For further information and services, please contact your local Mitsubishi Electric sales office or representative.

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Locations Worldwide

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In some cases, trademark symbols such as TM or [®] are not specified in this manual.

MEMO

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