MITSUBISHI ELECTRIC

Analog-Digital Converter Module

User's Manual
(Hardware)

AJ65VBTCU-68ADVN/ADIN

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.

MELSEC

MODEL	AJ65V-68ADN-U-HW
MODEL CODE	13JP19
IB(NA)-0800251-H(1612)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
● In the case of a communication failure in the network, data in the master module are held. Check the communication status information (SB, SW) and configure an interlock circuit in the sequence program to ensure that the entire system will operate safely.

[Design Precautions]

⚠ CAUTION
● 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 malfunction due to noise.

[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.
- Ground the FG pin and FG1 pin to the protective ground conductor dedicated to the programmable controller.
  Failure to do so may result in 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.

[Wiring Precautions]

⚠ CAUTION
● 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. ● 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*
● *En cas de problème de communication dans le réseau, les données sont gardées en mémoire du module maître.* *Vérifier les infos d'état de communication (SB, SW) et constituer un circuit de verrouillage dans le programme séquentiel pour garantir la sécurité de fonctionnement de l'ensemble du système.*

[Précautions lors de la conception]

⚠ 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 (3,94 pouces).* *Faute de quoi, il y a risque de dysfonctionnement par un bruit.*

[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.*

[Précautions de câblage]

⚠ *ATTENTION*

- *Couper l'alimentation externe du système sur toutes les phases avant de commencer à câbler.*
  Faute quoi, le produit risquerait d'être endommagé.
- *Mettez à la terre la broche FG et la broche de FG1 au conducteur de protection à la terre dédié au contrôleur programmable.*
  Faute de quoi, cela peut entraîner un 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 q risque de panne ou de dysfonctionnement.
- *Les câbles doivent être placés dans un conduit de câbles ou doivent être attachés.*
  Faute de quoi, le ballottement 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.

[Pécautions de câblage]

⚠ ***ATTENTION***
● *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.* ● *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) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) 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 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'S USER, 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.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

REVISIONS

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

Print date	*Manual number	Revision
Mar., 2003	IB(NA)-0800251-A	First edition
Jul., 2005	IB(NA)-0800251-B	Partial correction SAFETY PRECAUTIONS
Sep., 2006	IB(NA)-0800251-C	Partial correction Chapter 3, Chapter 8
Apr., 2007	IB(NA)-0800251-D	Partial correction Section 2.1, Section 6.2, Chapter 8
Sep., 2010	IB(NA)-0800251-E	Addition CONDITIONS OF USE THE PRODUCT Partial correction SAFETY PRECAUTIONS, About Manuals, Compliance with the EMC and Low Voltage Directives, Section 2.1, Chapter 3, Section 5.2, Section 6.1, Section 6.2, Chapter 7 Deletion Section 5.1
Dec., 2011	IB(NA)-0800251-F	Addition SAFETY PRECAUTIONS(Chinese) Partial correction COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES
Jun., 2012	IB(NA)-0800251-G	Partial correction Section 5.1, 6.2
Dec., 2016	IB(NA)-0800251-H	Addition SAFETY PRECAUTIONS(French) Partial correction Section 2.1, Chapter 3, Section 5.1, Section 6.1, Section 6.2, Chapter 8

CONTENTS

MANUAL

The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.

Detailed Manual

Manual name	Manual number (Model code)
Analog-Digital Converter Module type AJ65VBTCU-68ADVN/ADIN User's Manual	SH-080401E (13JR65)

Related Manual

Manual name	Manual number (Model code)
CC-Link System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual	IB-66721 (13J872)
CC-Link System Master/Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual	IB-66722 (13J873)
MELSEC-Q CC-Link System Master/Local Module User's Manual	SH-080394E (13JR64)
MELSEC-L CC-Link System Master/Local Module User's Manual	SH-080895ENG (13JZ41)

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-68ADVN analog-digital converter module (hereafter abbreviated to the "AJ65VBTCU-68ADVN") and Type AJ65VBTCU-68ADIN analog-digital converter module (hereafter abbreviated to the "AJ65VBTCU-68ADIN") which is used as a remote device station of a CC-Link system.
In this manual, the AJ65VBTCU-68ADVN and AJ65VBTCU-68ADIN are generically referred to as the AJ65VBTCU-68ADVN/ADIN.

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

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

2. SPECIFICATION

2.1 Performance specifications

The performance specifications of the AJ65VBTCU-68ADVN/ADIN are shown below. For general specifications, refer to detailed manual.

<table>
<tr><td colspan="2">Item</td><td>AJ65VBTCU-68ADVN</td><td>AJ65VBTCU-68ADIN</td></tr>
<tr><td colspan="2">Protection class</td><td colspan="2">IP1XB</td></tr>
<tr><td rowspan="2">Analog input</td><td>Voltage</td><td>-10 to 0 to 10V DC
(input resistance 1MΩ)</td><td>-</td></tr>
<tr><td>Current</td><td>-</td><td>0 to +20mA DC
(input resistance 250Ω)</td></tr>
<tr><td colspan="2">Digital output</td><td>16-bit signed binary (-4096 to 4095)</td><td>16-bit signed binary (-96 to 4095)</td></tr>
<tr><td colspan="2">I/O characteristics, maximum resolution, accuracy (accuracy relative to maximum value of digital output value)</td><td colspan="2">
<table>
<tr><td></td><td>Analog input range</td><td>Digital output</td><td>Accuracy
Ambient temperature 0 to 55°C</td><td>Accuracy
Ambient temperature 25±5°C</td><td>Max. Resolution</td></tr>
<tr><td rowspan="5">AJ65VBTCU-68ADVN (Voltage)</td><td>-10 to 10V</td><td rowspan="2">-4000 to 4000</td><td rowspan="8">±0.3%
(±12 digit*1)</td><td rowspan="8">±0.2%
(±8 digit*1)</td><td>2.5mV</td></tr>
<tr><td>User range setting 1
(-10 to 10V)</td><td rowspan="4">0 to 4000</td><td>1.25mV</td></tr>
<tr><td>0 to 5V</td><td rowspan="2">1.0mV</td></tr>
<tr><td>1 to 5V</td></tr>
<tr><td>User range setting 2
(0 to 5V)</td></tr>
<tr><td rowspan="3">AJ65VBTCU-68ADIN (Current)</td><td>0 to 20mA</td><td rowspan="3">0 to 4000</td><td>5μA</td></tr>
<tr><td>4 to 20mA</td><td rowspan="2">4μA</td></tr>
<tr><td>User range setting
(0 to 20mA)</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Maximum conversion speed</td><td colspan="2">1ms/channel.</td></tr>
<tr><td colspan="2">Absolute maximum input</td><td>Voltage ±15 V</td><td>Current ±30mA*2</td></tr>
<tr><td colspan="2">Analog input points</td><td colspan="2">8 channels/module</td></tr>
<tr><td colspan="2">CC-Link station type</td><td colspan="2">Remote device station
(Ver.1 remote device station, Ver.2 remote device station)</td></tr>
<tr><td colspan="2">Number of occupied stations</td><td colspan="2">Ver.1 remote device station (Ver.1 compatible slave station) setting:
3 stations (32 points for RX and RY, 12 points for RWr and RWw)
Ver.2 remote device station (Ver.2 compatible slave station) setting:
1 station (32 points for RX and RY, 16 points for RWr and RWw,
expanded cyclic settings: 4 times)</td></tr>
<tr><td colspan="2">Communication cable
Câble de connexion</td><td colspan="2">Ver.1.10 compatible CC-Link dedicated cable:
FANC-110SBH, FA-CBL200PSBH, CS-110
Câble dédié CC-Link compatible Ver1,10:
FANC-110SBH, FA-CBL200PSBH, CS-110</td></tr>
</table>

<table>
<tr><th colspan="2">Item</th><th>AJ65VBTCU-68ADVN</th><th>AJ65VBTCU-68ADIN</th></tr>
<tr><td colspan="2">Insulation</td><td colspan="2">
<table>
<tr><th>Insulated area</th><th>Insulation method</th><th>Dielectric withstand voltage</th><th>Insulation resistance</th></tr>
<tr><td>Across communication system terminals and all analog input terminals</td><td>Photocoupler</td><td rowspan="2">500VAC for 1 minute</td><td rowspan="2">5MΩ or higher, measured with 500VDC insulation resistance tester</td></tr>
<tr><td>Across power supply system terminals and all analog input terminals</td><td>Transformer</td></tr>
<tr><td>Between channels</td><td>Non-insulation</td><td>-</td><td>-</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Noise durability</td><td colspan="2">By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency</td></tr>
<tr><td colspan="2">External wiring system
Système de câblage externe</td><td colspan="2">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>
Online connector for communication: A6CON-LJ5P
Online connector for power supply: A6CON-PWJ5P
Connecteur instantané pour communication [circuit de transmission]
(Le connecteur 5-broches à déplacement d'isolant est vendu séparément)
Connecteur instantané pour alimentation et FG [Unité d'alimentation et FG]
(Le connecteur 5-broches à déplacement d'isolant est vendu séparément)
Connecteur instantané pour entrée/sortie analogique
(Le connecteur 4-broches à déplacement d'isolant est vendu séparément)
<Option>
Connecteur en ligne pour communication : A6CON-LJ5P
Connecteur en ligne pour alimentation : A6CON-PWJ5P</td></tr>
<tr><td rowspan="3">Applicable wire size
Taille du fil à utiliser</td><td>One-touch connector for communication
Connecteur instantané pour communication</td><td colspan="2">Communication line : Ver. 1.10 compatible CC-Link dedicated cable
0.5mm^2 (20AWG) [φ2.2 to 3.0], shielded wire 0.5mm^2 (20AWG)
Ligne de communication : câble dédié CC-Link compatible Ver. 1,10 0,5mm^2 (20AWG) [φ2,2 à 3,0], fil de blindage 0,5mm^2 (20AWG)</td></tr>
<tr><td>One-touch connector for power supply and FG
Connecteur instantané pour alimentation et FG</td><td colspan="2">0.66 to 0.98 mm^2 (18AWG) [φ2.2 to 3.0]
Wire diameter 0.16 mm or more
0,66 à 0,98 mm^2(18AWG)[φ2,2 à 3,0]
Diamètre de fil de 0,16 mm ou plus</td></tr>
<tr><td>One-touch connector for analog I/O
Connecteur instantané pour entrée/sortie analogique</td><td colspan="2">φ1.0 to 1.4 (A6CON-P214), φ1.4 to 2.0 (A6CON-P220)
[Applicable cable: 0.14 to 0.2 mm^2]
φ1.0 to 1.4 (A6CON-P514), φ1.4 to 2.0 (A6CON-P520)
[Applicable cable: 0.3 to 0.5 mm^2]
φ1,0 à 1,4 (A6CON-P214), φ1,4 à 2,0 (A6CON-P220)
[Câbles à utiliser: 0,14 à 0,2 mm^2]
φ1,0 à 1,4 (A6CON-P514), φ1,4 à 2,0 (A6CON-P520)
[Câbles à utiliser: 0,3 à 0,5 mm^2]</td></tr>
<tr><td colspan="2" rowspan="2">Applicable DIN rail</td><td colspan="2">TH35-7.5Fe, TH35-7.5Al (conforming to JIS C 2812)</td></tr>
<tr><td colspan="2">CC-Link connector type metal installation fitting: A6PLT-J65V1</td></tr>
</table>

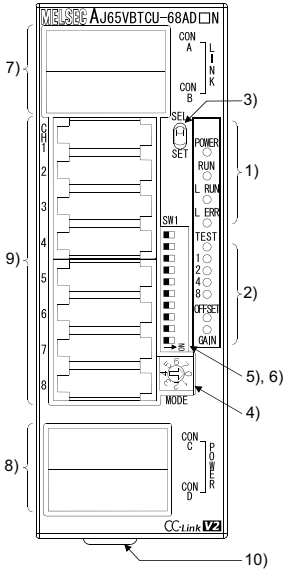
Item	AJ65VBTCU-68ADVN	AJ65VBTCU-68ADIN
External power supply	24VDC (20.4 to 26.4VDC, ripple factor within 5%)	
	Inrush current: 4.2A, within 1.2ms	
	Current consumption: 0.10A (When 24VDC)	
Weight	0.17kg	

*1: digit indicates digital value.
*2: Current value indicates value of instant input current that does not break module inner electrical resistance.

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

3. NAMES AND SETTING OF PARTS

The name of each part in the AJ65VBTCU-68ADVN/ADIN is shown.



[Pin layout and signals name]

Pin arrangement	Pin No.		Signal name
5 4 3 2 1 CONA CONB	CONA,B	1	DA
		2	DB
		3	DG
		4	NC
		5	SLD
4 3 2 1 CON1 CON2 CON3 CON4 CON5 CON6 CON7 CON8	CON1 to 8	1	CH□ V+/I+*1
		2	CH□ V-/I-*1
		3	NC
		4	SLD
5 4 3 2 1 CONC COND	CONC,D	1	FG
		2	+24V (UNIT)
		3	24G (UNIT)
		4	AG
		5	FG1
A module view from the top	*1: □ indicates the connector number. (For CON1, the value in □ is 1.)		

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: Input range setting error, mode select switch setting error. This module is used as the Ver.2 remote device station (Ver.2 compatible slave 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 : Indicates 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□ OFFSET GAIN	Normal mode	Normally OFF
			Test mode	TEST:ON The OFFSET/GAIN/ CH□ LEDs lit change every time the SELECT/SET switch is moved to SELECT.
3)	SELECT/SET switch	Used to make offset/gain setting in the test mode.		

<table>
<tr><th>No.</th><th>Name and appearance</th><th>Description</th></tr>
<tr><td>4)</td><td>Mode select switch (Factory-set to "0")</td><td>
The switch to be used for selecting the mode among Ver.☐ remote device station (Ver.☐ -compatible slave station)/Normal mode/Test mode
<table>
<tr><th colspan="2">AJ65VBTCU-68ADVN</th><th colspan="2">AJ65VBTCU-68ADIN</th></tr>
<tr><td>Ver.1 remote device station (Ver.1-compatible slave station)</td><td>0: Normal mode
1: Test mode (User range setting 1)
2: Test mode (User range setting 2)</td><td>Ver.1 remote device station (Ver.1-compatible slave station)</td><td>0: Normal mode
1: Test mode (User range setting)</td></tr>
<tr><td>Ver.2 remote device station (Ver.2-compatible slave station)</td><td>3: Normal mode
4: Test mode (User range setting 1)
5: Test mode (User range setting 2)</td><td>Ver.2 remote device station (Ver.2-compatible slave station)</td><td>3: Normal mode
4: Test mode (User range setting)</td></tr>
<tr><td>-</td><td>6 to 7: Use prohibited</td><td>-</td><td>2, 5 to 7: Use prohibited</td></tr>
</table>
</td></tr>
<tr><td>5)</td><td>Transmission speed setting switches
 
</td><td>
<table>
<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>
<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>
</table>
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.
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name and appearance</th><th>Description</th></tr>
<tr><td>6)</td><td>Station number setting switches
 
</td><td>
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.
Setting any other number than 1 to 64 will result in an error, flickering the "L ERR." LED.
You cannot set the same station number to two or more stations.
<table>
<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>
<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>
</table>
(Example) To set the station number to "32", set the switches as indicated below.
<table>
<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>
<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>
</table>
Confirm the station number setting switch numbers on the seal located on the side face of the connector for analog I/O.
</td></tr>
<tr><td>7)</td><td>One-touch connector for communication</td><td>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.</td></tr>
<tr><td>8)</td><td>One-touch connector for power supply and FG</td><td>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.</td></tr>
<tr><td>9)</td><td>One-touch connector for analog I/O</td><td>One-touch connector for analog I/O
Connect a one-touch connector plug when wiring.</td></tr>
<tr><td>10)</td><td>DIN rail hook</td><td>Used to mount the module to the DIN rail.</td></tr>
</table>

Point

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.

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 99%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.

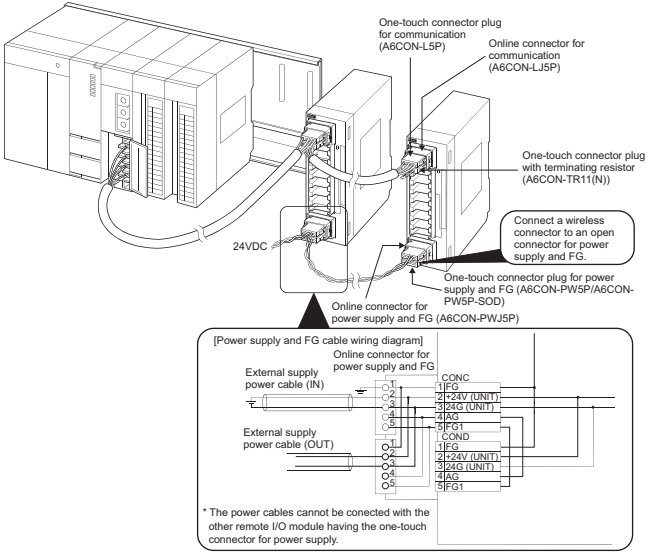
(8) Locations where vibration and shock are directly transmitted to the main module.

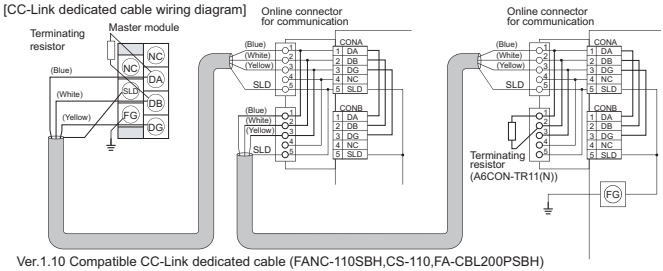
5. DATA LINK CABLE WIRING

5.1 Connection of the CC-Link dedicated cables

Raccordement des câbles dédiés CC-Link

Connect the CC-Link dedicated cable between the AJ65VBTCU-68ADVN/ADIN and master module as shown below.
Raccorder le câble dédié CC-Link entre AJ65VBTCU-68ADVN/ADIN et le module maître comme illustré ci-dessous.





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

English	*French*
One-touch connector plug for communication(A6CON-L5P)	*Fiche de connecteur rapide pour communication(A6CON-L5P)*
Online connector for communication(A6CON-LJ5P)	*Connecteur en ligne pour communication(A6CON-LJ5P)*
One-touch connector plug with terminating resistor(A6CON-TR11(N))	*Fiche de connecteur rapide avec résistance d'extrémité (A6CON-TR11(N))*
One-touch connector plug for power supply and FG(A6CON-PW5P/A6CONPW5P-SOD)	*Fiche de connecteur instantané pour alimentation et FG(A6CON-PW5P/A6CONPW5P-SOD)*
Online connector for power supply and FG(A6CON-PWJ5P)	*Connecteur en ligne pour alimentation et FG(A6CON-PWJ5P)*
Connect a wireless connector to an open connector for power supply and FG.	*Enficher une fiche de connecteur non câblée sur les connecteurs d'alimentation et FG qui restent ouverts.*
[Power supply and FG cable wiring diagram]	*[Schéma de câblage pour câbles d'alimentation et FG]*
Online connector for power supply and FG	*Connecteur en ligne pour alimentation et FG*
External supply power cable	*Câble d'alimentation externe*
The power cables cannot be conected with the other remote I/O module having the one-touch connector for power supply.	*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.*
[CC-Link dedicated cable wiring diagram]	*[Schéma de câblage par câbles dédiés CC-Link]*
Online connector for communication	*Connecteur en ligne pour communication*
Master module	*Module maître*
Terminating resistor	*Résistance d'extrémité*
Blue	*bleu*
White	*blanc*
Yellow	*jaune*

English	*French*
Ver.1.10 Compatible CC-Link dedicated cable (FANC-110SBH,CS-110,FA-CBL200PSBH)	*Câble dédié CC-Link compatible Ver.1.10 (FANC-110SBH,CS-110,FA-CBL200PSBH)*

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-68ADVN/ADIN 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-68ADVN/ADIN 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-68ADVN/ADIN 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-68ADVN/ADIN de façon à éviter les effets des phénomènes de surtension et de conductivité du côté courant alternatif.

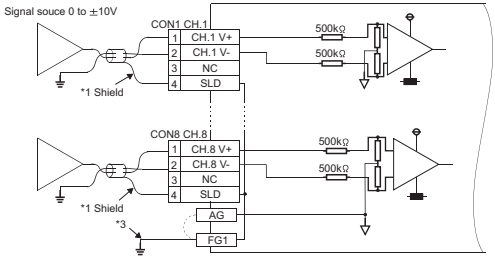
(2) Do not bundle or place with load carrying wires other than the main circuit line, high voltage line or programmable controller. Noises, surges, or conductivity may affect the system.
Ne pas grouper en faisceau ou placer avec des fils porteurs de charges autres que les lignes de circuit principal 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. However, depending on the external noise conditions, it may be better have a grounding externally.
Côté automate programmable, prévoir un point de mise à la terre pour la ligne blindée ou le câble blindé. Cependant, compte tenu de l'exposition à des interférences externes, il peut être préférable que la mise à la terre soit externe.

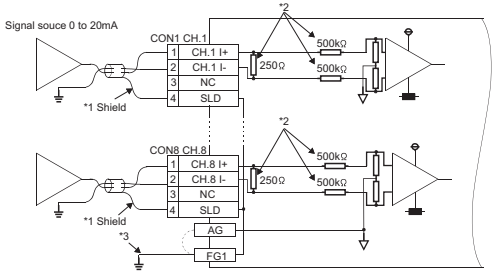
(4) Smoke and fire may occur when an overcurrent flows intermittently for a long period of time. To avoid this, configure a safety circuit, such as an external fuse, to protect the product.
Des surtensions intermittentes qui se prolongent dans le temps peuvent être à l'origine d'un dégagement de fumée 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 Wiring of module with external equipment

(1) AJ65VBTCU-68ADVN (For voltage input)
AJ65VBTCU-68ADVN (Pour entrée de tension)



(2) AJ65VBTCU-68ADIN (For current input)
AJ65VBTCU-68ADIN (Pour entrée de courant)



*1: Use a two-core twisted shield line for the power cable.
*2: Indicates the AJ65VBTCU-68ADIN input resistor.
*3: Always perform grounding for FG1. When there is a lot of noise, it may be better ground AG as well.
If the grounding wiring (grounding yes/no) is changed after the offset and gain are set, perform the setting of the offset/gain values again.

**1: Utilisez une ligne blindée à torsion double-base pour le câble d'alimentation.*
**2: Indique la résistance d'entrée AJ65VBTCU-68ADIN.*
**3: Mettez toujours à la terre pour FG1. Lorsqu'il y a beaucoup de bruit, il peut être préférable de mettre AG à la terre également.*
Si le câblage mis à la terre (mise à la terre oui/non) est modifié après le réglage du décalage et du gain, effectuez à nouveau le réglage des valeurs de décalage/gain.

Point

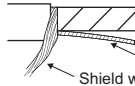
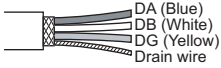
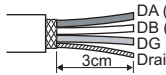
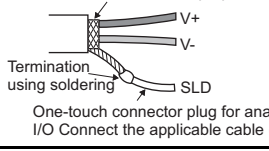
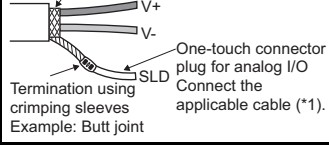
- Do not insert the one-touch connector plug for I/O of the one-touch connector type/connector type compact remote I/O unit into the one-touch connector for analog I/O accidentally.
  Doing so can cause the module to be damaged.
- In an unused channel, if terminals remain open, an erratic digital value may be output.
  To prevent this, take any of the following measures.
  1.Select Prohibit in the A/D conversion enable/prohibit setting for the unused channel. Note that changing the setting from Enable to Prohibit will reduce the sampling cycle.
  2.Short-circuit the input terminals (terminal V+ and V-) of the unused channel.
  3.Connect the AG terminal to the GND terminal of the external device.
- *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.

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-68ADVN/ADIN Analog-Digital User's Manual for more information on the types and specifications of the one-touch connector plugs which conform to the AJ65VBTCU-68ADVN/ADIN.

(1) Cable termination work

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

<table>
<tr><td colspan="2">Communication cable termination work</td></tr>
<tr><td>1. Cut the sheath.
  </td><td>2. Separate the shield and drain wire and cut the shield.
 
</td></tr>
<tr><td>3. Cut the aluminum tape and braid.
 
</td><td>4. Stretch the drain wire and twist it from the base. (3cm in length, 7 times or more)
 
</td></tr>
<tr><td colspan="2">Analog input cable termination work</td></tr>
<tr><td>Termination using soldering</td><td>Termination using crimping sleeves</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

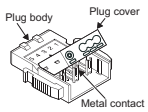
*1: For the applicable cable size, refer to the AJ65VBTCU-68ADVN/ADIN Analog-Digital User's Manual.

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) Check the plug cover

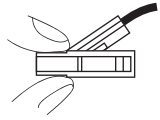
Check that the plug cover is attached to in the plug.



Note:
Do not push the plug cover into the plug body. Once pressed, the plug cannot be used any more.

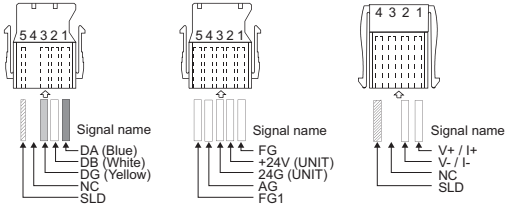
(3) Insert the cable

Lift the end of the plug cover and insert the cable until it almost reaches the plug body (within 1mm from the other end of the plug cover).



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

<For communication> <For power supply and FG> <For analog input>



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

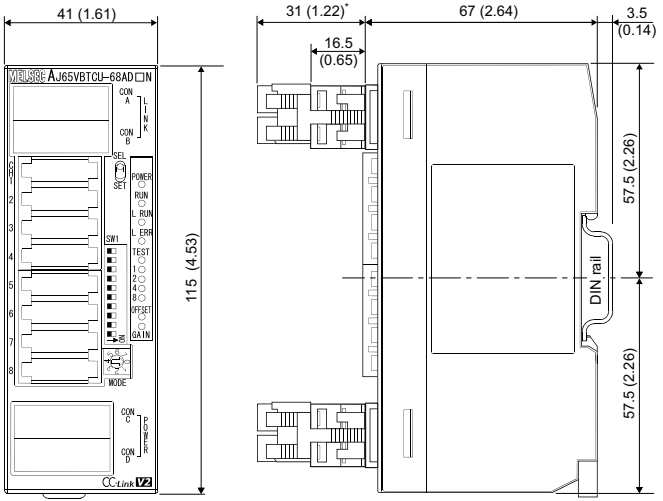
Using pliers or like, push the plug cover into the plug to insulation-displace it.
After insulation displacement, make sure that the plug cover is securely installed in the plug as shown right.

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

[AJ65VBTCU-68ADVN/ADIN]



*: This section should be 14.5mm (0.57inch) when an online connector is not installed.

Unit: mm (inch)

WARRANTY

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

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