

Analog-Digital Converter Module

User's Manual
(Hardware)

AJ65SBT2B-64AD

Thank you for purchasing the programmable controller.

Prior to use, please read this and relevant manuals thoroughly to fully understand the product.



MODEL	AJ65SBT2B64AD-U-HW
MODEL CODE	13J256
IB(NA)-0800466-D(1806)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.

The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used.

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 and configure an interlock circuit in the sequence program to ensure that the entire system will operate safely.
- Do not use any "use prohibited" signals as a remote input or output signal. These signals are reserved for system use. If they are turned on/off by a user, correct operation of the module cannot be guaranteed.

[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 or more between them. Failure to do so may result in malfunction due to noise.

[Installation Precautions]

CAUTION

- Use the module in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- For protection of the switches, do not remove the cushioning material before installation.
- Securely fix the module with a DIN rail or mounting screws. Tighten the screws within the specified torque range. Undertightening can cause drop of the screw, short circuit or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- Do not directly touch any conductive part of the module. Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

WARNING

- Shut off the external power supply for the system in all phases before wiring. Failure to do so may result in malfunction or damage to the product.

CAUTION

- Ground the FG terminal to the protective ground conductor dedicated to the programmable controller. Failure to do so may result in electric shock or malfunction.
- Tighten any unused terminal screws within the specified torque range (0.42 to 0.50N·m). Failure to do so may cause a short circuit due to contact with a solderless terminal.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

[Wiring Precautions]

CAUTION

- Check the rated voltage and terminal layout before wiring to the module, and connect the cables correctly. Applying a voltage or inputting a current that exceeds the absolute maximum input of the module, connecting a power supply with a different voltage rating, or wiring the cables incorrectly may cause a fire or failure.
- Tighten the terminal screw within the specified torque range. Undertightening can cause short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, 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.

[Starting and Maintenance Precautions]

WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Shut off the external power supply for the system in all phases before cleaning the module or retightening the terminal screws or module mounting screws. Failure to do so may cause the module to fail or malfunction. Undertightening can cause drop of the screw, short circuit or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.

[Starting and Maintenance Precautions]

CAUTION

- Do not disassemble or modify the module. Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away in all directions from the module. Failure to do so may cause malfunction.
- 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 installing or removing a module to/from a control 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). Exceeding the limit of 50 times may cause 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.

Les précautions à observer figurant dans ce manuel ne concernent que ce produit. Quant aux précautions de sécurité à observer pour le système du contrôleur programmable, se reporter au manuel d'utilisation du module CPU utilisé.

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 et constituer un circuit de verrouillage dans le programme séquentiel pour garantir la sécurité de fonctionnement de l'ensemble du système.
- Comme signal d'entrée ou de sortie distante, il ne faut utiliser aucun des signaux dont l'usage est interdit ("use prohibited"). L'usage de ces signaux est réservé au système. Si l'utilisateur procède à des mises sous/hors tension inopinées, on ne peut garantir le bon fonctionnement du module.

[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 100 mm. Faute de quoi, il y a risque de dysfonctionnement par un bruit.*

[Précautions d'installation]

ATTENTION

- *Utiliser le module dans un environnement en conformité avec les spécifications générales que présente ce manuel. Faute de quoi, il a risque d'électrocution, de départ de feu, de dysfonctionnement, d'endommagement ou de détérioration du produit.*
- *Pour la protection des commutateurs, ne pas enlever le matériau de rembourrage avant l'installation.*
- *Fixer fermement le module avec un rail DIN ou avec des vis. Serrer les vis dans les limites du couple serrage prescrit. Si les vis sont insuffisamment serrées, le module risque de tomber et il peut y avoir des court-circuits ou des dysfonctionnements. Un serrage excessif peut endommager les vis et/ou le module, avec aussi un risque de chute, de court-circuits 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]

AVERTISSEMENT

- *Couper l'alimentation externe du système sur toutes les phases avant de commencer à câbler. Faute de quoi, il y a risque de dysfonctionnement ou d'endommagement du produit.*

[Précautions de câblage]

ATTENTION

- Mettre à la masse la borne FG pour le conducteur de mise à la terre protecteur dédié au contrôleur programmable. Faute de quoi, il y a risque d'électrocution et de dysfonctionnement.
- Serrer les vis des bornes inutilisées dans les limites du couple de serrage prescrit (0,42 à 0,50N•m). Faute de quoi, il y a risque de court-circuit par contact avec une borne sans soudure.
- Utiliser des bornes sans soudure de type approprié et serrer au couple de serrage prescrit. Si on utilise des bornes sans soudure de type embrochable, il y a risque de déconnexion et de panne au cas où une vis de borne se desserrerait.
- Vérifier la tension nominale et l'affectation des bornes avant le câblage du module et raccorder les câbles correctement. Toute exposition d'une entrée du module à une tension ou à un courant dépassant la valeur maximum admissible, tout raccordement d'une alimentation d'une tension nominale incorrecte ou toute erreur de câblage peuvent être à l'origine d'un départ de feu ou d'une panne.
- Serrer les vis de borne dans les limites du couple de serrage prescrit. Si les vis sont insuffisamment serrées, il y a risque de court-circuits, départ de feu ou dysfonctionnement. Un serrage excessif peut endommager les vis et/ou le module, avec aussi un risque de chute, de court-circuits et de dysfonctionnements.
- 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.
- 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 d'un dysfonctionnement 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.

[Précautions de câblage]

ATTENTION

- *Vérifier la tension nominale et l'affectation des bornes avant le câblage du module et raccorder les câbles correctement. Toute exposition d'une entrée du module à une tension ou à un courant dépassant la valeur maximum admissible, tout raccordement d'une alimentation d'une tension nominale incorrecte ou toute erreur de câblage peuvent être à l'origine d'un départ de feu ou d'une panne.*
- *Serrer les vis de borne dans les limites du couple de serrage prescrit. Si les vis sont insuffisamment serrées, il y a risque de court-circuits, départ de feu ou dysfonctionnement. Un serrage excessif peut endommager les vis et/ou le module, avec aussi un risque de chute, de court-circuits et de dysfonctionnements.*
- *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.*
- *Les câbles doivent être placés dans un conduit de câbles ou doivent être attachés. Faute de quoi, le ballotement ou le déplacement des câbles pourrait endommager le module ou les câbles et être à l'origine d'un dysfonctionnement 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.*

[Précautions de démarrage et de maintenance]

AVERTISSEMENT

- *Ne toucher à aucun des bornes quand le système est sous tension. Faute de quoi, il y a risque d'électrocutions et de dysfonctionnements.*
- *Avant de nettoyer le module ou de resserrer les vis de borne ou les vis de fixation, couper l'alimentation externe utilisée par le système sur toutes les phases. Le non-respect de cette précaution peut être à l'origine de pannes ou de dysfonctionnements du module. Si les vis sont insuffisamment serrées, le module risque de tomber et il peut y avoir des court-circuits ou des dysfonctionnements. Un serrage excessif peut endommager les vis et/ou le module, avec aussi un risque de chute, de court-circuits et de dysfonctionnements.*

[Précautions de démarrage et de maintenance]

ATTENTION

- *Ne pas démonter ni modifier le module. Cela pourrait entraîner des pannes ou dysfonctionnements et être à l'origine de blessures ou de départs de feu.*
- *Utiliser les appareils de communication radio tels que les PHS (systèmes de téléphone portable) à une distance de plus de 25cm du module dans toutes les directions. Le non-respect de cette précaution peut être à l'origine de dysfonctionnements.*
- *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 un module d'un tableau de commande, 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 mise en service du produit, le nombre maximum admissible d'opérations de pose/retrait de la plaque à bornes sur le module est de 50 (selon IEC 61131-2). Dépasser ce nombre maximum de 50 opérations d'insertion/retrait peut être à l'origine de dysfonctionnements.*
- *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., 2011	IB(NA)-0800466-A	First edition
Dec., 2011	IB(NA)-0800466-B	Addition of descriptions of SAFETY PRECAUTIONS(Chinese)
Dec., 2016	IB(NA)-0800466-C	<u>Addition</u> SAFETY PRECAUTIONS(French) <u>Partial correction</u> Section 2.1, 2.2, 3.1, 4.1, 5.1, 5.2, 5.3, 6.2, Chapter 7
Jun., 2018	IB(NA)-0800466-D	<u>Partial correction</u> Section 2.2

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MANUALS

The manual related to this product is shown below.
Please place an order as needed.

RELEVANT MANUAL

Manual name	Manual Number (Model code)
Analog-Digital Converter Module Type AJ65SBT2B-64AD User's Manual	SH-080979ENG-A (13JZ57)

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, part names, and wiring of the AJ65SBT2B-64AD analog-digital converter module (hereafter abbreviated as AJ65SBT2B-64AD) used as a remote device station of a CC-Link system.

Before use, check that the following product is included.

Table 1.1 Included product

Model	Product name	Quantity
AJ65SBT2B-64AD	AJ65SBT2B-64AD analog-digital converter module	1

2. SPECIFICATIONS

2.1 General Specifications

The general specifications of the AJ65SBT2B-64AD are shown in the following table.

Table 2.1 General specifications

Item	Specifications					
Operating ambient temperature <i>Température ambiante de fonctionnement</i>	0 to 55°C 0 à 55°C					
Storage ambient temperature	-20 to 75°C					
Operating ambient humidity	10 to 90%RH, non-condensing					
Storage ambient humidity						
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2	Under intermittent vibration	Frequency	Constant acceleration	Half amplitude	Sweep count
			5 to 8.4Hz	-	3.5mm	10 times each in X, Y, Z directions
		8.4 to 150Hz	9.8m/s ²	-		
		Under continuous vibration	5 to 8.4Hz	-	1.75mm	-
8.4 to 150Hz	4.9m/s ²	-				
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s ² , 3 times each in 3 directions X, Y, Z)					
Operating atmosphere	No corrosive gases					
Operating altitude* ¹	0 to 2000m					
Installation location	Inside a control panel					
Overvoltage category* ²	II or less					
Pollution degree* ³	2 or less					

- *1 Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction. When using the programmable controller under pressure, please consult your local Mitsubishi Electric representative.
- *2 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300V is 2500V.
- *3 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

2.2 Performance Specifications

The performance specifications of the AJ65SBT2B-64AD are shown in the following table.

Item		AJ65SBT2B-64AD				
Analog input	Voltage	-10 to 10VDC (Input resistance: 1M Ω)				
	Current	0 to 20mADC (Input resistance: 250 Ω)				
Digital output		16-bit singed binary (-16384 to 16383)				
I/O characteristics, resolution, accuracy (accuracy at the maximum digital output value)		Analog input range	Digital output value	Accuracy* ¹ (ambient temperature: 0 to 55 $^{\circ}$ C)	Resolution	
	Voltage	-10 to 10V	-16000 to 16000	$\pm 0.2\%$ (± 32 digits)	0.625mV	
		User range setting 1 (-10 to 10V)			0.5mV* ²	
		User range setting 2 (-5 to 5V)			0.25mV* ²	
		0 to 5V			0 to 16000	0.3125mV
		1 to 5V			0 to 16000	0.25mV
	Current	0 to 20mA	0 to 16000		1.25 μ A	
		4 to 20mA	0 to 16000		1 μ A	
		User range setting 2	-16000 to 16000		1 μ A* ²	
	Conversion speed		200 μ s/channel			
Absolute maximum input		Voltage: ± 15 V Current: ± 30 mA* ³				
Number of analog input channels		4 channels				
Number of offset/gain setting times* ⁴		Max. 10,000 times				
CC-Link version		CC-Link Ver.1.10				
CC-Link station type		Remote device station				
Number of occupied stations		1 station				
Connection cable <i>Câble de connexion</i>		CC-Link dedicated cable <i>Câble dédié pour CC-Link</i>				
Withstand voltage		500VAC for 1 minute between all power supply and communication system terminals and all analog input terminals				
Insulation method		Between communication system terminal and all analog input terminals: Photocoupler isolation Between power supply system terminal and all analog input terminals: Transformer insulation Between input channels: Non-insulation				
Noise immunity		Noise voltage 500Vp-p, noise width 1 μ s, noise frequency 25 to 60Hz (DC type noise simulator condition)				

Item		AJ65SBT2B-64AD
Built-in terminating resistor		Provided (110Ω)
External connection system Système des connexions externes	Communication part, module power supply part <i>Partie communication, Partie alimentation du module</i>	7-point two-piece terminal block M3X 5.2 screw (tightening torque range: 0.59 to 0.88N•m) Applicable solderless terminal: 2 or less <i>Plaque à bornes 7-points deux pièces</i> <i>M3X 5,2 Couple de serrage : 0,59 à 0,88 N•m</i> <i>Borne sans soudure à utiliser : 2 ou moins</i>
	I/O part <i>Partie entrée/sortie</i>	18-point two-piece terminal block M3X 5.2 screw (tightening torque range: 0.59 to 0.88N•m) Applicable solderless terminal: 2 or less <i>Plaque à bornes 18-points deux pièces</i> <i>M3X 5,2 Couple de serrage : 0,59 à 0,88 N•m</i> <i>Borne sans soudure à utiliser : 2 ou moins</i>
Applicable wire size <i>Taille du fil à utiliser</i>		0.3 to 2.0mm ² <i>0,3 à 2,0 mm²</i>
Applicable solderless terminal <i>Borne sans soudure à utiliser</i>		<ul style="list-style-type: none"> • RAV1.25-3 (compliant with JIS C 2805) [Applicable wire size: 0.3 to 1.25mm²] • V2-MS3, RAP2-3SL, TGV2-3N [Applicable wire size: 1.25 to 2.0mm²] • RAV1.25-3 (conforme à la norme JIS C 2805) [Taille de fil à utiliser : 0,3 à 1,25mm²] • V2-MS3, RAP2-3SL, TGV2-3N [Taille de fil à utiliser : 1,25 à 2,0mm²]
Module mounting screw		M4 screwX0.7mmX 16mm or more (tightening torque range: 0.78 to 1.08 N•m) Mountable with a DIN rail
Applicable DIN rail		TH35-7.5Fe, TH35-7.5Al (compliant with IEC 60715)
External power supply		24VDC (ripple ratio: within 5%) (allowable voltage range 20.4 to 28.8VDC)
		Inrush current: 1.6A, 4.0ms or less
		Current consumption: 0.12A (24VDC)
Weight		0.25kg

*1 Except when receiving noise influence.

*2 These values indicate the maximum resolution with user range setting.

*3 This value indicates a momentary input current value at which the built-in resistor will not be broken.

*4 The number of times that the SELECT/SET switch is set to SET in test mode.

3. PART NAMES

3.1 Part Names

This section explains the part names of the AJ65SBT2B-64AD.

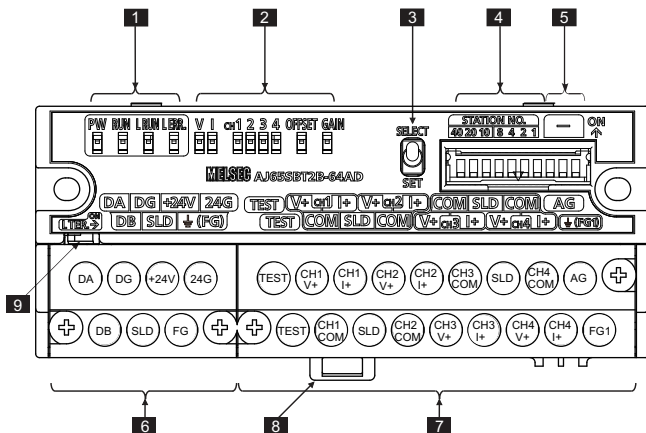


Figure 3.1 Appearance of the AJ65SBT2B-64AD

Table 3.1 Part names

No.	Name	Description		
1	Operating status indication LED	PW LED	On: Power supply on Off: Power supply off	
		RUN LED	Normal mode On: Normal operation Flashing: 0.1s intervals: Any of the following occurs: An analog value outside the analog input range is input. An user range read error occurs. Hardware failure occurs. 0.5s intervals: An out of averaging processing setting range error occurs. Off: The 24VDC power supply is shut off or a watchdog timer error occurs.	
			Test mode On: The SELECT/SET switch is in the SET position. Flashing: Any of the following occurs: The offset/gain setting has been configured outside the range. A flash memory write error occurs. Hardware failure occurs. Off: The SELECT/SET switch is in the SELECT or center position.	
		L RUN LED	On: Normal communication Off: Communication is cut off. (timeout error)	
		L ERR. LED ^{*1}	On: The station number outside the range is set. Flashing regularly: The station number was changed from that at power-on. ^{*2} Flashing irregularly: The module or the CC-Link dedicated cable is affected by noise. The L TER. switch status and the installation status of the terminating resistor is inconsistent. For details, refer to the user's manual. Off: Normal communication	
2	Offset/gain adjustment LED ^{*3}	V LED	LEDs for checking the channel for which the offset/gain setting is configured in test mode	
		I LED		
		CH□ LED		Normal mode: Always on
		OFFSE T LED		Test mode: The on/off status of the LEDs changes whenever the SELECT/SET switch is set to SELECT.
3	SELECT/SET switch	A switch for configuring the offset/gain setting in test mode		

Table 3.1 Part names

No.	Name	Description																																																																																																														
4	Station number setting switch	<p>With the STATION NO. "10", "20", and "40" switches, the tens place of the station number is set. With the STATION NO. "1", "2", "4", and "8" switches, the ones place of the station number is set. These switches are all set to off at default. A station number must be set within 1 to 64. Setting any number other than that will result in an error, and the L ERR. LED will turn on. The same station number cannot be set to several stations.</p> <table border="1"> <thead> <tr> <th rowspan="2">Station number</th> <th colspan="3">Tens place</th> <th colspan="4">Ones place</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>(Example) To specify "32" for a station number, set the switches as shown below.</p> <table border="1"> <thead> <tr> <th rowspan="2">Station number</th> <th colspan="3">Tens place</th> <th colspan="4">Ones place</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>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> </tbody> </table>	Station number	Tens place			Ones place				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 place			Ones place				40	20	10	8	4	2	1	1	OFF	ON	ON	OFF	OFF	ON	OFF
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6	Terminal block for transmission and module power supply lines	<p>A terminal block for transmission and module power supply lines</p> <table border="1"> <thead> <tr> <th>Terminal</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>DA</td> <td rowspan="4">Terminals for connecting CC-Link dedicated cables</td> </tr> <tr> <td>DB</td> </tr> <tr> <td>DG</td> </tr> <tr> <td>SLD</td> </tr> <tr> <td>FG</td> <td>A terminal for grounding to the protective ground conductor</td> </tr> <tr> <td>+24V</td> <td rowspan="2">Terminals for connecting an external power supply</td> </tr> <tr> <td>24G</td> </tr> </tbody> </table>	Terminal	Description	DA	Terminals for connecting CC-Link dedicated cables	DB	DG	SLD	FG	A terminal for grounding to the protective ground conductor	+24V	Terminals for connecting an external power supply	24G																																																																																																		
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Table 3.1 Part names

No.	Name	Description													
7	Terminal block for analog input signal	A terminal block for connecting input signals													
		<table border="1"> <thead> <tr> <th>Terminal</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>CH□V+</td> <td rowspan="4">Terminals for connecting external input signal cables and shielded twisted pair cables</td> </tr> <tr> <td>CH□I+</td> </tr> <tr> <td>CH□COM</td> </tr> <tr> <td>SLD</td> </tr> <tr> <td>TEST</td> <td>A terminal for short in test mode</td> </tr> <tr> <td>AG</td> <td>A ground terminal (spare) (For application, refer to Section 6.2.)</td> </tr> <tr> <td>FG1</td> <td>A terminal for grounding to the protective ground conductor</td> </tr> </tbody> </table>	Terminal	Description	CH□V+	Terminals for connecting external input signal cables and shielded twisted pair cables	CH□I+	CH□COM	SLD	TEST	A terminal for short in test mode	AG	A ground terminal (spare) (For application, refer to Section 6.2.)	FG1	A terminal for grounding to the protective ground conductor
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AG	A ground terminal (spare) (For application, refer to Section 6.2.)														
FG1	A terminal for grounding to the protective ground conductor														
8	DIN rail hook	A hook to mount the module to a DIN rail													
9	L TER. (Line Termination) switch	This switch is turned on to enable the built-in terminating resistor. This switch is used when the AJ65SBT2B-64AD is connected at the end of the network. Its factory default setting is off.													

- *1 This LED may turn on for a moment when the power is turned on; though the AJ 65SBT2B-64AD operates normally.
- *2 When station number setting switch setting is changed while communication is disconnected, the LED will start flashing irregularly.
- *3 When using the user range setting 2 (-5 to 5V) in test mode, set "I" for the offset/gain adjustment LED.
- *4 The transmission speed is automatically set depending on the master module setting; therefore, it does not need to be set on the AJ65SBT2B-64AD side.

4. LOADING AND INSTALLATION

4.1 Handling Precautions

This section describes precautions for handling the AJ65SBT2B-64AD.

- (1) Tighten screws (such as a module fixing screw) within the tightening torque range specified in the table below.

Table 4.1 Tightening torque range

Screw	Tightening torque range
Module mounting screw (M4)	0.78 to 1.08N•m
Terminal block terminal screw (M3) <i>Vis de borne sur plaque à bornes(vis M3)</i>	0.59 to 0.88N•m <i>0,59 à 0,88 N•m</i>
Terminal block mounting screw (M3.5)	0.68 to 0.98N•m

- (2) When using a DIN rail, pay attention to the following:
 - (a) Applicable DIN rail (compliant with IEC 60715)
TH35-7.5Fe
TH35-7.5Al
 - (b) Installation screw intervals
Tighten the screws at intervals of 200mm or less.
- (3) When mounting the AJ65SBT2B-64AD to a DIN rail, push in the DIN rail hook until it clicks.

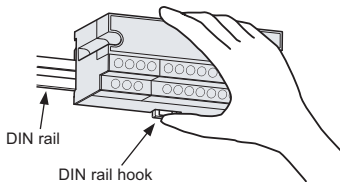


Figure 4.1 Mounting a module to a DIN rail

- (4) For names, specifications, and manufacturers of applicable cables, refer to the user's manual for the master module used.

5. WIRING OF DATA LINK CABLES

5.1 Wiring Precautions

Pécautions de câblage

Communication terminal blocks differ between the AJ65SBT-64AD and the AJ65SBT2B-64AD. When replacing the AJ65SBT-64AD with the AJ65SBT2B-64AD, rewire the system using a communication terminal block for the AJ65SBT2B-64AD.

Les borniers de communication sont différents pour les AJ65SBT-64AD et pour les AJ65SBT2B-64AD. Si on remplace le AJ65SBT-62DA par un AJ65SBT-64DA, il faut recâbler le système en utilisant des borniers de communication prévus pour le AJ65SBT-64DA.

5.2 Connecting Modules Using CC-Link Dedicated Cables

Raccordement des modules avec des câbles dédiés CC-Link

The following shows how to connect the AJ65SBT2B-64AD to a master module and a remote module with CC-Link dedicated cables.

The following shows how to connect the AJ65SBT2B-64AD to a master module and a remote module with CC-Link dedicated cables.

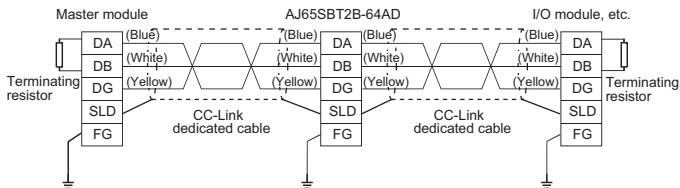


Figure 5.1 Connecting modules using CC-Link dedicated cables

English	French
Master module	<i>Module maître</i>
I/O module, etc.	<i>Module d'entrée/sortie, etc.</i>
Terminating resistor	<i>Résistance d'extrémité</i>
CC-Link dedicated cable	<i>Câble dédié pour CC-Link</i>
Blue	<i>bleu</i>
White	<i>blanc</i>
Yellow	<i>jaune</i>
Connection of the CC-Link dedicated cables	<i>Raccordement des modules par câbles dédiés CC-Link</i>

5.3 Connecting Terminating Resistors

The AJ65SBT2B-64AD has a built-in terminating resistor of 110Ω. There is no need to connect a terminating resistor externally. When using the AJ65SBT2B-64AD at the network termination, turn on the L TER. Switch. The factory default setting of the switch is off.

(1) Precautions

- (a) Move the L TER. switch until it clicks.



- (b) The built-in terminating resistor cannot be used in the following cases.
- There is a possibility that the AJ65SBT2B-64AD will be replaced during data link.
 - A CC-Link system is configured using CC-Link dedicated cables of 130Ω.

6. WIRING

6.1 Wiring Precautions

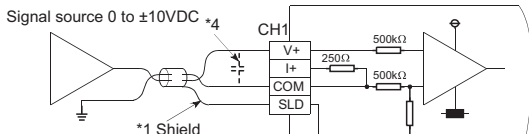
To obtain the maximum performance from the functions of the AJ65SBT2B-64AD and improve the system reliability, an external wiring with high durability against noise is required.

Precautions for external wiring are as follows:

- (1) Use separate cables for the AC control circuit and the external input signals of the AJ65SBT2B-64AD to avoid the influence of the AC side surges or induction.
- (2) Do not install cables together with the main circuit lines, high voltage lines, or power cables for equipment other than the programmable controller. Noise, surges, or induction may affect the system.
- (3) Ground the shielded wires or shielded cables at one point on the programmable controller side.
However, depending on the external noise conditions, it may be better to ground them externally.

6.2 Wiring with External Devices

(1) For voltage input



(2) For current input

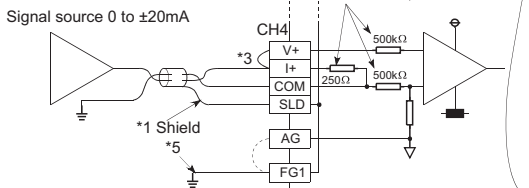


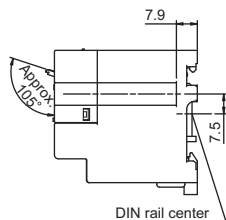
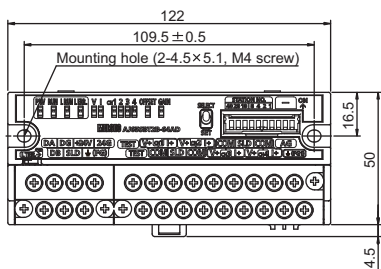
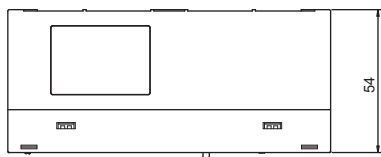
Figure 6.1 Wiring with external devices

- *1 Use shielded twisted pair cables.
- *2 Input resistors of the AJ65SBT2B-64AD
- *3 For the current input, wire between the V+ and I+ terminals.
- *4 If there is noise or ripples in the external wiring, connect a 0.1 to 0.47 μF capacitor (25V or higher voltage-resistant product) between the V+ and COM terminals.
- *5 Ground the FG1 terminal without fail. If there is much noise, it may be better to ground the AG terminal as well. If the grounding status of the AG terminal is changed after the offset/gain values are set, set the values again.
- *1 *Utiliser des paires torsadées blindées.*
- *2 *Résistances d'entrée du AJ65SBT2B-64AD*
- *3 *Pour l'entrée de courant, raccordez entre les bornes V+ et I+.*
- *4 *Si il y a un bruit ou des ondulations dans le câblage externe, connectez un condensateur de 0,1 à 0,47 μF (produit résistant à une tension de 25 V ou plus) aux bornes d'entrée de l'appareil externe.*
- *5 *Mettez la borne FG1 à la terre sans échouer. S'il y a trop de bruit, il peut être préférable de mettre à la terre la borne AG également. Si l'état de mise à la terre de la borne AG est modifié après le réglage des valeurs de décalage/gain, définissez à nouveau les valeurs.*

English	French
For voltage input	<i>Pour entrée de tension</i>
For current input	<i>Pour entrée de courant</i>
Signal source 0 to ± 10 VDC	<i>Source de signal 0 à ± 10V cc</i>
Signal source 0 to ± 20 mA	<i>Source de signal 0 à ± 20mA</i>
Shield	<i>Blindage</i>
Wiring with external devices	<i>Câblage à l'aide de périphériques externes</i>

7. EXTERNAL DIMENSIONS

The following diagrams show the external dimensions of the AJ65SBT2B-64AD.



Unit : mm

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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Specifications subject to change without notice.