

CC-Link Analog Modules: One-Touch Connector Type

- Compatible with CC-Link Version V2.0
- Switchable input ranges for each channel
- Sampling or averaging processing
- One touch connectors reduce installation time and cost (available separately)

Model Number	AJ65VBTCU-68ADV		AJ65VBTCU-68ADIN				
Stocked Item	-		-				
Certification	UL • cUL • CE						
Analog Input	Voltage	-10 to +10VDC (input resistance 1m)		-			
	Current	-		0 to 20mA DC (input resistance 250)			
Digital Resolution	12-bit +sign (-4096 to +4095)						
Input/Output Characteristics Accuracy (Accuracy Relative to the Maximum Digital Output Value)	AJ65VBTCU-68ADV Voltage	Analog Input Range (Switchable)	Digital Value	Accuracy		Maximum Resolution	
				Ambient Temp. 0 to 50°C	Ambient Temp. 25 ± 5°C		
		-10 to +10V	-4000 to +4000	± 0.3% (± 12 digit)	± 0.2% (± 8 digit)		2.5mV
		User range setting 1 (-10 to +10V)	0 to 4000				1.25mV
		0 to 5V					1.0mV
		1 to 5V					1.25mV
	User range setting 2 (-10 to +10V)						
	AJ65VBTCU-68ADI Current		0 to 4000				
					5µA		
					4µA		
				5µA			
Note 1: 1 digit refers to one digital unit.							
Input Range Switching	For each channel						
Offset/Gain Setting	Yes						
Maximum Conversion Speed	1ms/channel						
Number of Analog Input Points	8 channels/module						
Station Type	Remote device station						
Number of Occupied Stations, Expanded Cyclic Setting	Ver. 1 mode: 3 stations (RWr/RWw 12 words each, RS/Ry 32 points) Ver. 2 mode: 1 station (extended work (RWr/RWw) 16 words each, RX/Ry 32 points), Quadruple						
CC-Link Compatible Function	Cyclic transmission, extended cyclic transmission, station-to-station cable length relaxation						
Isolation Method	Between communication system and batch of analog inputs: Photocoupler isolation / Between power supply system and batch of analog inputs: Photocoupler isolation; Between channels: No isolation / Communication interface: No isolation						
External Connection Method	One-touch connector for communication [transmission circuit] (5-pin/solderless type. The connector plug is sold separately.) One-touch connector for power supply and FG [module power supply and FG] (5-pin/solderless type. The connector plug is sold separately.) One-touch connector for analog input (4-pin/solderless type. The connector plug is sold separately.) (Optional parts) Online connector for communication: A6CON-LJ5P, online connector for power supply: A6CON-PWJ5P						
Applicable Wire Size	One-Touch Connector for Communication	Communication line: CC-Link dedicated cable compatible with Ver. 1.10, 0.5mm ² (AWG20) [f2.2 to 3.3mm] Shielded power supply 0.5mm ² (AWG20)					
	One-Touch Connector for Power Supply	0.66 to 0.98mm ² (AWG18) [f2.2 to 3.0mm], wire size 0.08mm ² or more					
	One-Touch Connector for Analog I/O	f1.0 to 1.4mm (A6CON-P214), f1.4 to 2.0mm (A6CON-P220), [applicable wire size: 0.14 to 0.2mm ²] f1.0 to 1.4mm (A6CON-P514), f1.4 to 2.0mm (A6CON-P520), [applicable wire size: 0.3 to 0.3mm ²]					
External Power Supply	24VDC (20.4 to 26.4VDC with a ripple rate of 5% or less)						
Inrush Current	4.2A, 1.2ms max.						
Internal Current Consumption (24VDC)	0.10A						
Weight (kg)	0.17						
Dimensions (W x H x D) mm	41 x 115 x 67						

CC-Link Analog Modules: Analog to Digital Converter Modules

Model Number		AJ65SBT-64AD	AJ65BT-64AD				
Stocked Item		S	S				
Analog Input	Voltage	-10 to +10VDC (input resistance 1m)	-10 to +10VDC (input resistance 1m)				
	Current	0 to 20mA DC (input resistance 250)	-20 to +20mA DC (input resistance 250)				
Digital Resolution		12 bit +sign (-4096 to +4095)	12 bit or 11 bit +sign (0 to 4000, or -2000 to +2000)				
Input/Output Characteristics Accuracy (Accuracy Relative to the Maximum Digital Output Value)	Analog Input Range (Switchable)		Digital Value	Maximum Resolution	Accuracy		
	Voltage	-10 to +10V	-4000 to +4000	2.5mV	± 0.4% (± 16 digit)	± 0.2% (± 8 digit)	
		User range setting 1 (-10 to +10V)					
		0 to 5V	0 to 4000	1.25mV			
		1 to 5V		1.0mV			
		User range setting 2 (0 to +5V)		1.25mV			
	Current	0 to 20mA	0 to 4000	5μA			
		4 to 20mA		4μA			
		User range setting 3 (0 to +20mA)		5μA			
Note 1: 1 digit refers to one digital unit.							
Input Range Switching		For each channel		All channels in the batch			
Offset/Gain Setting		Yes					
Max. Conversion Speed		1ms/channel					
No. of Analog Input Points		4 channels/module					
Station Type		1 station (32 points each for RX/RX, 4 points each for RWr/RWw) Remote device station		2 stations (32 points each for RX/RX, 8 points each for RWr/RWw)			
Isolation Method		Between power supply system and batch of analog inputs: Photocoupler isolation / Between communication system and batch of analog inputs: Photocoupler isolation / Between channels: No isolation					
External Connection Method		7-point 2-piece terminal block (transmission, power supply), directly mounted 18-point terminal block (analog output area)		27-point terminal block (M3.5)			
Applicable Wire Size		0.3 to 0.75mm ²		0.75 to 2.00mm ²			
Internal Current Consumption (24VDC)		0.09A		0.12A			
Weight (kg)		0.20		0.35			
Dimensions (W x H x D) mm		118 x 50 x 40		151.9 x 65 x 63			

CC-Link Analog Module: Analog to Digital Converter Module

Model Number		AJ65SBT2B-64AD					
Stocked Item		-					
Analog Input	Voltage	-10 to +10VDC (input resistance 1MΩ)					
	Current	0 to 20mA DC (input resistance 250Ω)					
Digital Resolution		16 bit +sign (-16384 to +16383)					
Input/Output Characteristics Accuracy (Accuracy Relative to the Maximum Digital Output Value)	Analog Input Range (Switchable)		Digital Value	Maximum Resolution	Accuracy Ambient Temperature 0 to 55°C		
	Voltage	-10 to +10V	-16000 to +16000	0 to 16000	0.625mV	± 0.2% (± 32 digit)	
		User Range Setting 1 (-10 to +10V)			0.5mV		
		User Range Setting 2 (-5 to 5V)			0.25mV		
		1 to 5V			0.3125mV		
		1 to 5V			0.25mV		
	Current	0 to 20mA	0 to 16000	1.25μA			
		4 to 20mA		1μA			
		User Range Setting 2		1μA			
Conversion Speed							200μs/channel
Absolute Maximum Input							Voltage: ±15V Current: ±30mA
No. of Analog Input Points							4 channels
Offset/Gain Setting Times							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							CC-Link dedicated cable
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 1μs, noise frequency 25 to 60Hz (DC type noise simulator condition)
Built-in Terminating Resistor							Provided (110Ω)
External Connection System	Communication/Module Power Supply Part	7-point two-piece terminal block M3 x 5.2 screw (tightening torque range: 0.59 to 0.88N·m) Applicable solderless terminal: 2 or less					
	I/O Part	18-point two-piece terminal block M3 x 5.2 screw (tightening torque range: 0.59 to 0.88N·m) Applicable solderless terminal: 2 or less					
Applicable Wire Size							0.3 to 2.0mm ²
Applicable Solderless Terminal							RAV1.25-3 (compliant with JIS C 2805) [Applicable wire size: 0.3 to 1.25mm ²] V2-MS3, RAP2-3SL, TGV2-3N [Applicable wire size: 1.25 to 2.0mm ²]
Module Mounting Screw							M4 screw x 0.7mm x 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 (20.4 to 28.8VDC); Inrush current: 16A, 4.0ms or less; Current consumption: 0.12A (24VDC)
Weight (kg)							0.25
Dimensions (W x H x D) mm							122 x 50 x 54

CC-Link Analog I/O Modules: Digital To Analog Converter Module

- Compatible with CC-Link V2.0.
- One-touch connectors reduce installation time and cost (available separately).

Model Number	AJ65VBTCU-68DAVN						
Stocked Item	-						
Certification	UL • cUL • CE						
Digital Resolution	12 bit +sign (-4096 to +4095)						
Analog Output	-10 to +10VDC (external load resistance: 2k to 1M)						
Input/Output Characteristics Accuracy (Accuracy Relative to the Maximum Analog Output Value)	Voltage	Digital	Analog	Accuracy		Maximum Resolution	
				Ambient Temperature 0 to 55°C	Ambient Temperature 25 ± 5°C		
		-4000 to +4000	-10 to +10V User range setting 1 (-10 to +10V)	± 0.3% (± 30mV)	± 0.2% (± 20mV)		2.5mV
		0 to 4000	0 to 5V 1 to 5V User range setting 2 (0 to 5V)	± 0.3% (± 15mV)	± 0.2% (± 10mV)		1.25mV 1.0mV 1.0mV
Output Range Switching	For each channel						
Offset/Gain Setting	Yes						
Maximum Conversion Speed	1ms/channel						
Output Short-Circuit Protection	Yes						
Number of Analog Output Points	8 channels/module						
Station Type	Remote device station						
Number of Occupied Stations, Expanded Cyclic Setting	Ver. 1 mode: 3 stations (RWr/RWw 12 words each, RS/Ry 32 points) Ver. 2 mode: 1 station (extended work (RWr/RWw) 16 words each, RX/Ry 32 points), Quadruple						
CC-Link Compatible Function	Cyclic transmission, extended cyclic transmission, station-to-station cable length relaxation						
Isolation Method	Between communication system and batch of analog Outputs: Photocoupler isolation Between power supply system and batch of analog Outputs: Photocoupler isolation Between channels: No isolation						
External Connection Method	One-touch connector for communication [transmission circuit] (5-pin/solderless type. The connector plug is sold separately.) One-touch connector for power supply and FG [module power supply and FG] (5-pin/solderless type. The connector plug is sold separately.) One-touch connector for analog input (4-pin/solderless type. The connector plug is sold separately.) (Optional parts) Online connector for communication: A6CON-LJ5P, online connector for power supply: A6CON-PWJ5P						
Applicable Wire Size	One-Touch Connector for Communication	Communication line: CC-Link dedicated cable compatible with Ver. 1.10, 0.5mm ² (AWG20) [f2.2 to 3.3mm] Shielded power supply 0.5mm ² (AWG20)					
	One-Touch Connector for Power Supply	0.66 to 0.98mm ² (AWG18) [f2.2 to 3.0mm], wire size 0.16mm ² or more					
	One-Touch Connector for Analog I/O	f1.0 to 1.4mm (A6CON-P214), f1.4 to 2.0mm (A6CON-P220), [applicable wire size: 0.14 to 0.2mm ²] f1.0 to 1.4mm (A6CON-P514), f1.4 to 2.0mm (A6CON-P520), [applicable wire size: 0.3 to 0.3mm ²]					
External Power Supply	24VDC (20.4 to 26.4VDC with a ripple rate of 5% or less)						
Inrush Current	4.3A, 1.2ms max.						
Internal Current Consumption	0.15A						
Weight (kg)	0.16						
Dimensions (W x H x D) mm	41 x 115 x 67						

CC-Link Analog Modules: Digital To Analog Converter Module

Model Number	AJ65SBT-62DA	AJ65BT-64DAV	AJ65BT-64DAI																												
Stocked Item	S	S	-																												
Certification	UL • cUL • CE																														
Digital Resolution	Voltage	12 bit +sign (-4096 to +4095)	11 bit +sign (-2048 to +2047)																												
	Current	12 bit (0 to +4095)	-																												
Analog Output	Voltage	-10 to +10VDC (external load resistance: 2k to 1M)	-10 to +10VDC (external load resistance: 2k to 1M)																												
	Current	0 to 20mA DC (external load resistance: 0 to 600)	-																												
Input/Output Characteristics Accuracy (Accuracy Relative to the Maximum Analog Output Value)	Voltage	Digital Value	Analog Output (Switchable)	Maximum Resolution	Accuracy		<table border="1"> <thead> <tr> <th>Digital Value</th> <th>Analog Output</th> <th>Maximum Resolution</th> <th>Accuracy (overall)</th> </tr> </thead> <tbody> <tr> <td>+2000</td> <td>+10V</td> <td rowspan="6">5mV</td> <td rowspan="6">± 1 (± 0mV)</td> </tr> <tr> <td>+1000</td> <td>+5V</td> </tr> <tr> <td>0</td> <td>± 0</td> </tr> <tr> <td>-1000</td> <td>-5V</td> </tr> <tr> <td>-2000</td> <td>-10V</td> </tr> <tr> <td>0</td> <td>+4mA</td> <td rowspan="3">4μA</td> <td rowspan="3">± 1 (± 200mA)</td> </tr> <tr> <td>2000</td> <td>+12mA</td> </tr> <tr> <td>4000</td> <td>+20mA</td> </tr> </tbody> </table>	Digital Value	Analog Output	Maximum Resolution	Accuracy (overall)	+2000	+10V	5mV	± 1 (± 0mV)	+1000	+5V	0	± 0	-1000	-5V	-2000	-10V	0	+4mA	4μA	± 1 (± 200mA)	2000	+12mA	4000	+20mA
		Digital Value	Analog Output	Maximum Resolution	Accuracy (overall)																										
		+2000	+10V	5mV	± 1 (± 0mV)																										
		+1000	+5V																												
		0	± 0																												
		-1000	-5V																												
	-2000	-10V																													
	0	+4mA	4μA			± 1 (± 200mA)																									
	2000	+12mA																													
	4000	+20mA																													
-4000 to +4000	-10 to +10V	2.5mV	± 0.4% (± 40mV)	± 0.2% (± 20mV)																											
-4000 to +4000	User range setting 1 (-10 to +10V)	2.5mV	± 0.4% (± 20mV)	± 0.2% (± 10mV)																											
0 to 4000	0 to 5V	1.25mV	± 0.4% (± 20mV)	± 0.2% (± 10mV)																											
0 to 4000	1 to 5V	1.0mV	± 0.4% (± 20mV)	± 0.2% (± 10mV)																											
0 to 4000	User range setting 2 (0 to 5V)	1.25mV	± 0.4% (± 80μA)	± 0.2% (± 40μA)																											
Current	0 to 4000	0 to 20mA	5μA	± 0.4% (± 80μA)	± 0.2% (± 40μA)																										
	0 to 4000	4 to 20mA	4μA																												
	0 to 4000	User range setting 3 (0 to 20mA)	5μA																												
	0 to 4000	0 to 20mA	5μA																												
Output Range Switching	For each channel		None																												
Offset/Gain Setting	Yes																														
Output Short-Circuit Protection	Yes																														
Maximum Conversion Speed	1ms/channel																														
Number of Analog Output Points	2 channels/module		4 channels/module																												
Number of Occupied Stations	1 station (32 points each for RS/Ry, 4 points each for RWr/RWw)		2 stations (32 points each for RS/Ry, 8 points each for RWr/RWw)																												
Connection Terminal Block	7 point 2 piece terminal block (transmission, power supply), directly mounted 18 point terminal block (analog output area), M3 screw		27 point terminal block, M3.5 screws																												
Applicable Wire Size	0.3 to 0.75mm ²		0.75 to 2.00mm ²																												
Applicable Solderless Term.	RAV1.25 to 3.5 (compliant to JIS C 2805)		RAV1.25 to 3.5, RAV2 to 3.5																												
Internal Current Consumption (24VDC)	0.16A		0.18A																												
Weight (kg)	0.2		0.4																												
Dimensions (W x H x D) mm	118 x 50 x 40		151.9 x 65 x 63																												

CC-Link Analog Modules: Temperature Input Modules

AJ65BT-68TD

- Assign any thermocouple type to each channel
- Enable/disable conversion for each channel
- Disconnection detection
- Select either sampling or moving average processing for each channel
- Automatic cold junction compensation for PT100 RTD

AJ65BT-64RD3 / 64RD4

- Four RTD inputs per module
- Enable/disable conversion for each channel
- Disconnection detection
- Offers moving average processing to reduce effects of noise
- Accurate to $\pm 0.25\%$ of full scale measurement

Model Number	AJ65BT-68TD	AJ65BT-64RD3	AJ65BT-64RD4	AJ65SBT2B-64TD
Stocked Item	S	-	-	S
Certification	UL • cUL • CE			
Measurement Method	-	Three wire type	Four wire type	-
Connectable Platinum Resistance Temp. Sensors	-	Pt100, JPt100		PT100
Connectable Thermocouples	B, R, S, K, E, J, T	-		B, R, S, N, K, E, J, T
Temperature Input Range	-200 to 1700°C	-180 to 600°C		-270 to 1820°C
Temperature Detection Value	16-bit signed binary (-2000 to 17000: Value up to the first decimal place x 10)	16-bit signed binary (-1800 to 6000: Value up to the first decimal place x 10) 32-bit signed binary (-80000 to 600000: Value up to the third decimal place x 1000)		16-bit signed binary (-2700 to 18200: value rounded to one decimal place x 10)
Scaling Value	16-bit signed binary (0 to 2000)	-		16 bit signed binary (-2700 to 18200)
Overall Accuracy	(*1)	Ambient temperature (20°C or less, 30°C or more)	$\pm 0.1\%$ (accuracy relative to the maximum value) $\pm 0.25\%$ (accuracy relative to the maximum value)	(*1)
Cold-Junction Compensation System (C)	± 1.0	-		$\pm 1.0^\circ\text{C}$
Resolution (C)	B, R, S, 0.3°C K, E, J, T: 0.1°C	0.025°C		B, R, S, N: 0.3°C K, E, J, T: 0.1°C
Conversion Speed (Sampling Time: ms/ch)	45ms/channel	40ms/channel		640ms/4 channels
Temperature Sensor Input Channel	8 channels + 1 channel for connecting the Pt100 sensor	4 channels/module		
Station Type	Remote device station			
Number of Occupied Stations	4 stations (128 points each for RX/RX, 16 points each for RWr/RWw)			1 station (RX/RX: 32 points each, RWr/RWw: 4 points each)
Isolation Method	Between thermocouple input and CC-Link transmission system and between channels: Transformer isolation	Between platinum resistance temperature sensor input and CC-Link transmission system: Photocoupler isolation / Between channels: No isolation		Between all power supply systems and all communication systems and cold junction compensation channels; Between thermocouple input and all communication systems and cold junction compensation channels; Between thermocouple input channels: Transformer isolation
Applicable Solderless Terminal	RAV1.25 to 3.5 (compliant to JIS C 2805), RAV 2-3.5	RAV1.25 to 3.5, RAV2 to 3.5 (compliant to JIS C2805)		RAV1.25-3(JIS C 2805 compliant) V2-MS3, RAP2-3SL, TGV2-3N
Connection Terminal Block	27-point terminal block (M3.5 x 7 screws)			18-point, 2-piece terminal block
Applicable Wire Size	0.75 to 2.00mm ²			0.3 to 2.0mm ²
External Power Supply	24VDC (18 to 30VDC)			24VDC (20.4VDC to 28.8VDC); Inrush current: 1.5A, 1.3ms
Internal Current Consumption (24VDC)	0.081A	0.17A		0.12A
Weight (kg)	0.40			0.3
Dimensions (W x H x D) mm	151.9 x 65 x 63			122 x 50 x 54

Note 1: The calculation of overall accuracy is as shown below
 (Overall accuracy) + (Conversion accuracy) x (Temperature characteristic) + (Operating ambient temperature change) + (Cold-junction compensation accuracy). Here the operating ambient temperature change denotes a value not within the operating ambient temperature range of 25 \pm 5°C.

Analog I/O Modules

The ST Series Analog Input/Output modules add 1 to 2 channels of analog-to-digital or digital-to-analog conversion per slice. These modules can be assembled in any order and mixed with digital I/O modules as well. Each I/O module requires a corresponding base module, which will be individually keyed to that type of I/O module after the first use. This prevents spare modules to be placed in incorrect position during maintenance such as Online Module Change.

Analog Input Modules

Model Number	ST1AD2-V	ST1AD2-I	ST1TD2	ST1RD2
Stocked Item	S	S	S	S
Certification	CE	CE	CE	CE
Occupied Slices	1	1	1	1
Number of Input Channels	2	2	2	2
Analog Input	-10 to +10V, 0 to +10V, 0 to 5V, 1 to 5V	0 to 20mA, 4 to 20mA	Thermocouple Input: K,T:0.3°C; E:0.2°C; J:0.1°C; B:0.7°C; R,S:0.8°C; N:0.4°C	PT100/PT1000
Absolute Maximum Input	±15V	±30mA	±4V, ±80µV	
Resolution	12bit+sign		4µV	0.1°C
Conversion Speed	0.1ms per channel		Cold junction temperature compensation setting not set: 30ms/ch, set: 60ms/ch	80ms per channel
5VDC Internal Power Consumption	110mA		95mA	80mA
Weight (kg)	0.04			
Dimensions (W x H x D) mm	12.6 x 55.4 x 74.1		12.6 x 55.4 x 77.6	
Applicable Base Modules	Spring Clamp	ST1B-S4IR2	ST1B-S4TD2	
	Screw Clamp	ST1B-E4IR2	ST1B-E4TD2	

Analog Output Modules

Model Number	ST1DA2-V-F01	ST1DA1-I-F01
Stocked Item	S	S
Certification	CE	CE
Occupied Slices	1	1
Number of Output Channels	2	1
Analog Output Range	-10 to +10V, 0 to +10V, 0 to 5V, 1 to 5V	0 to 20mA, 4 to 20mA
Absolute Maximum Input	±15V	±30mA
Resolution	12bit+sign	
Conversion Speed	0.1ms per channel	
5VDC Internal Power Consumption	95mA	
Weight (kg)	0.04	
Dimensions (W x H x D) mm	12.6 x 55.4 x 74.1	
Applicable Base Modules	Spring Clamp	ST1B-S4IR2
	Screw Clamp	ST1B-E4IR2

Absolute Encoder Input Module

Model Number	ST1SS1	
Stocked Item	S	
Certification	CE	
Occupied Slices	2	
Counting Range	31-bit binary (0 to 2147483647)	
Resolution	2 to 31bits	
SSI Baud Rate	125kHz, 250kHz, 500kHz, 1MHz, 2MHz	
External Input	1pt, 24VDC, 12mA	
5VDC Internal Power Consumption (mA)	80	
Weight (kg)	0.04	
Dimensions (W x H x D) mm	12.6 x 77.6 x 55.4	
Applicable Base Modules	Spring Clamp	ST1B-S4IR2
	Screw Clamp	ST1B-E4IR2