General Specifications

Turbomachinery I/O Modules

CENTUM VP

GS 33J60F90-01EN

[Release 6]

■ GENERAL

This document of General Specification (GS) contains the hardware specifications of the Turbomachinery I/O Modules (FIO). For the field control stations that are applicable for the Turbomachinery I/O Modules, please refer to "Turbomachinery I/O Module Logic Builder Package" (GS 33J10U10-01EN).

■ STANDARD SPECIFICATIONS

● Servo Modules (Isolated)

The Servo module receive LVDT or 1 to 5 V DC standardized signal for position feedback signal and 24V DC ON/OFF signals for quick close and outputs up to ± 50 mA signal for servo control.

This can be used in dual redundant configuration.

Item		Specification	
Model		AGS813	
LVDT Inputs	Number of input channels	4, isolated	
	Wiring type	3 Wires; 5 Wires; 6 Wires (*1)	
	Excitation voltage	5 Vrms at 30 mArms (*2)	
	Excitation current	30 mArms (max)	
	Excitation frequency	2.8 k, 3.0 k, 3.2 kHz; Selectable (independently)	
	Accuracy	±1 % Input Voltage: 0.7 to 5 Vrms, Span: 2.5 Vrms minimum	
	Drift due to ambient temperature change	±0.4 % / 10 °C	
	Input impedance	Powered: 220 kΩ; Not powered: 100 kΩ	
	Allowable input voltage	±30 Vpeak	
	External power supply	+11.4 to +13.2 V, 0.3 A (*2)	-13.2 to -11.4 V, 0.3 A (*2)
	Filterring	Collectively	
Voltage Inputs	Number of input channels	4, isolated	
	Input signal	1 to 5 V	
	Accuracy	±4 mV	
	Drift due to ambient temperature change	±4 mV / 10 °C	
	Input impedance	Powered: 1 MΩ; Not powered: 100 kΩ	
	Allowable input voltage	30 V DC	
	Filtering	Collectively	
Current Outputs	Number of output channels	2, isolated	
	Output signal	±25 mA / ±50 mA; Selectable (independently)	
	Accuracy	±150 µA / ±300 µA	
	Drift due to ambient temperature change	±50 µA / 10 °C / ±100 µA / 10 °C	
	Allowable load resistance	270 Ω at ±25 mA 100 Ω at ±50 mA	
	Circuit-open detection	Available	
	External power supply	+11.4 to +13.2 V, 0.3 A	-13.2 to -11.4 V, 0.3 A
	Dither	0 to ±20 % of the range at 33 Hz	
Digital Inputs	Number of input channels	2, isolated	
	Rated input voltage	24 V DC (Sink)	
	Input ON voltage	18 to 26.4 V DC	
	Input OFF voltage	5 V DC or less	
	Input current	4.1 mA ±20 %	
	Maximum allowable input voltage	30 V DC	
Scan cycle		5 ms	
Withstanding voltage		Between system and field: 500 V AC for 1 minute Between different type inputs/outputs: 500 V AC for 1 minute	
External connection		Dedicated cable (AKB337-M005, M007, M010)	
Maximum power consumption		500 mA (5 V DC)	
Weight		Approx. 0.36 kg	

*1: The channel used for Excitation Power and for LVDT Input is same.
*2: This excitation voltage is adjustable 4 to 7 Vrms. When the excitation voltage exceeds 5 Vrms, an external power supply (+14 to +16 V, -14 to -16 V) should be used.

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GS 33J60F90-01EN

3rd Edition Apr. 26, 2017 (YK)

● High Speed Protection Module (Isolated)

Item			Specification
Model			AGP813
Voltage Inputs	Number of input channels		4 channels at high-speed cycle; isolated 6 channels at basic cycle; isolated
	Input signal		1 to 5 V
	Accuracy		±4 mV
	Drift due to ambient temperature change		±4 mV / 10 °C
	Input impedance		Powered: 1 MΩ, Not powered: 100 kΩ
	Allowable input voltage		30 V DC
	Filtering		Collectively
Pulse Inputs	Number of input channels		4 channels at basic cycle ; isolated
	Input impedance		10 kΩ (at AEGP1D)
	Magnetic Pickup (MPU)	Input signal	0.5 to 150 Vpp
		Input frequency	50 Hz to 25 kHz
		Accuracy	±1 Hz (50 Hz to 2 kHz) ±0.05 % of reading (2 kHz to 25 kHz)
		Input sensitivity	Without hysteresis 50 to 500 Hz: 0.5 Vpp or more 500 Hz to 5 kHz: 1.0 Vpp or more 5 to 25 kHz: 2.0 Vpp or more With Hysteresis 50 to 500 Hz: 1.0 Vpp or more 500 Hz to 5 kHz: 2.0 Vpp or more 5 to 25 kHz: 4.0 Vpp or more
	Active Pickup	Input signal	When the threshold is TYPE1 V_H: 2.0 to 24 V V_L: 0 to 0.8 V Duty: 50 % ±5 % When the threshold is TYPE2 V_H: 2.4 to 24 V V_L: 0 to 1.2 V Duty: 50 % ±5 %
		Input frequency	0.04 Hz to 2 kHz
		Accuracy	±0.1 % of reading
Digital Inputs (SOE)	Number of input channels		4 channels at high-speed cycle; isolated 8 channels at basic cycle; isolated
	Rated input voltage		24 V DC (Sink)
	Input ON voltage		18 to 26.4 V DC
	Input OFF voltage		5 V DC or less
	Input current		4.1 mA ±20 %
	Maximum allowable input voltage		30 V DC
Digital Outputs	Number of output channels		4 channels at high-speed cycle; isolated 8 channels at basic cycle; isolated
	Output type		Current sinking
	Maximum load (*1)		100 mA / channel; 30 V DC
	Maximum voltage for On		0.3 V DC (*2)
	Maximum current leak for Off		0.1 mA
	On/Off delay		1 ms (Typ.)
Scan cycle			5 ms at high-speed cycle 10 ms at basic cycle
Withstanding voltage			Between system and field: 500 V AC for 1 minute Between different type inputs/outputs: 500 V AC for 1 minute
External connection			Dedicated cable (AKB337-M005, M007, M010)
Maximum power consumption			900 mA (5 V DC)
Weight			Approx. 0.28 kg

*1: Connect a spark killer diode when driving DC relay.
*2: By the length of the cable, added 0.22 V/m.

● Terminal Board

Model	Application	Number of Channels	Module Connected	Cable Connected	Weight	Insulation Resistance	Withstanding Voltage
AEGS1D	Servo Module (Single and dual-redundant)	LVDT: 4 Inputs (*1) Voltage: 4 Inputs Current: 2 Outputs Digital: 2 Inputs	AGS813	AKB337-M005, M007, M010	Approx. 2.0 kg	10 MΩ or more at 500 V DC.	500 V AC for 1 minute. (Between inputs/outputs and case. Between different type inputs/outputs.)
AEGP1D	High Speed Protection Module (Single and dual-redundant)	Voltage: 4 or 6 Inputs Pulse: 0 or 4 Inputs (*2) (*3) Digital: 4 or 8 Inputs and 4 or 8 Outputs	AGP813	AKB337-M005, M007, M010	Approx. 2.0 kg		

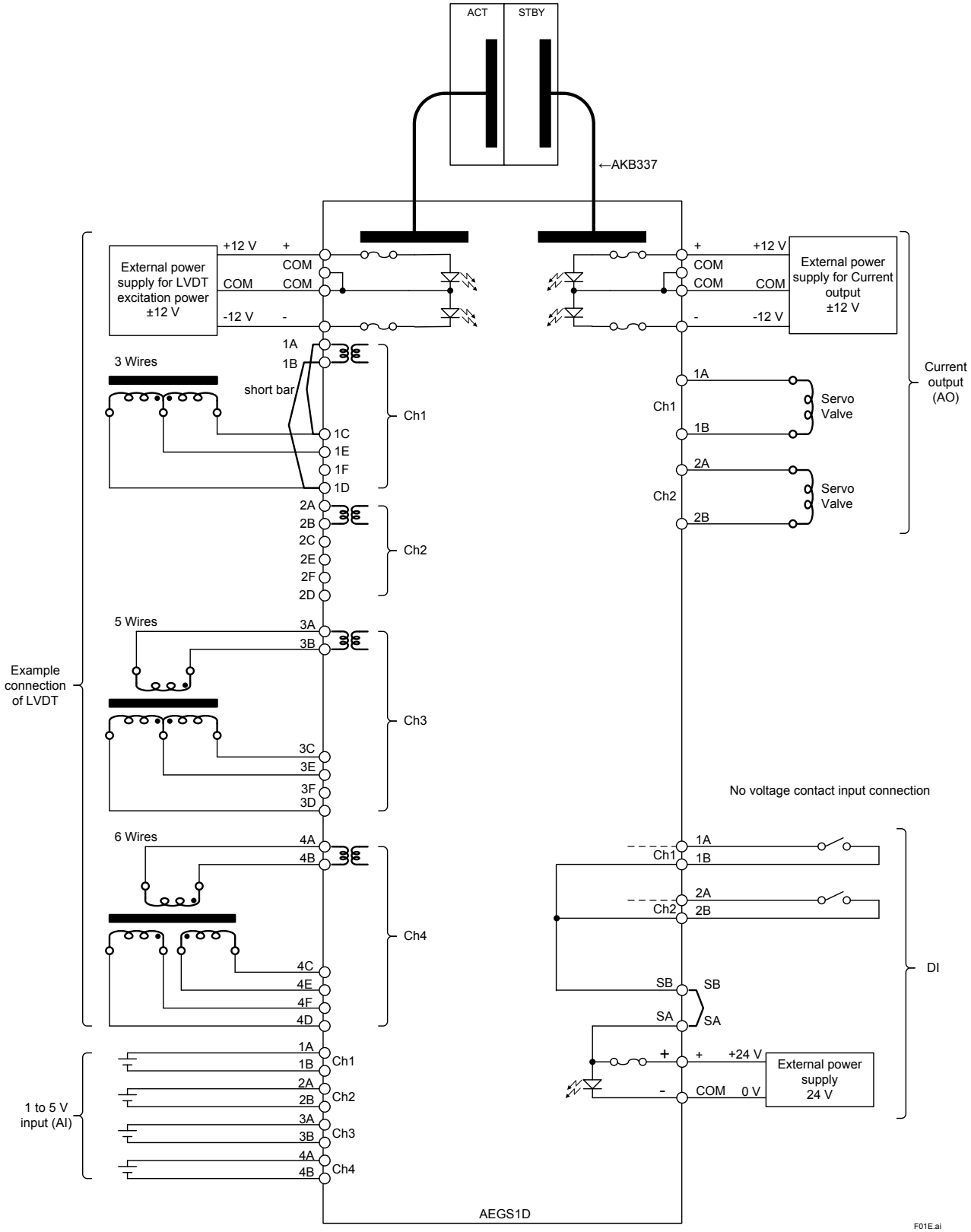
*1: In case of 3 Wiring, A terminal and C terminal or B terminal and D terminal of each channel would be connected with affiliated short bar.
Affiliated short bar (T9084CH): 8

*2: The Shield of MPU and Active Pickup is connected to the SHLD terminal of PI.

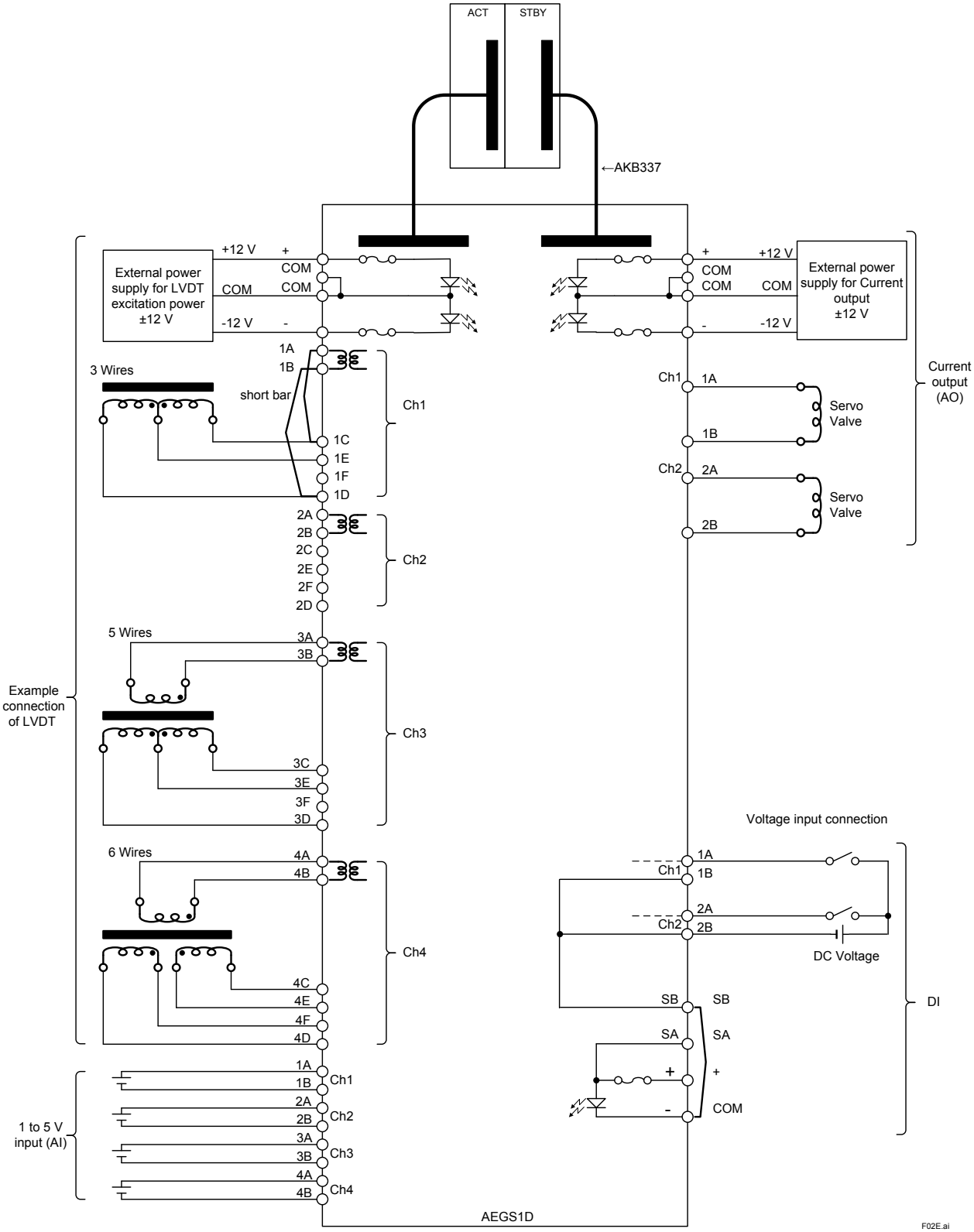
*3: For Active Pickup Input requiring external feeding, COM terminal and C terminal of each channel would be connected with affiliated short bar. The channel should be used respectively Ch4, Ch3, Ch2 and Ch1.
C terminal of unused Ch should not be connected with short bar.
Affiliated short bar
For the connection between COM terminal and C terminal of Ch4 (T9084CH): 1
For the connection between each C terminal of channel (T9084CJ): 3

● CONNECTION

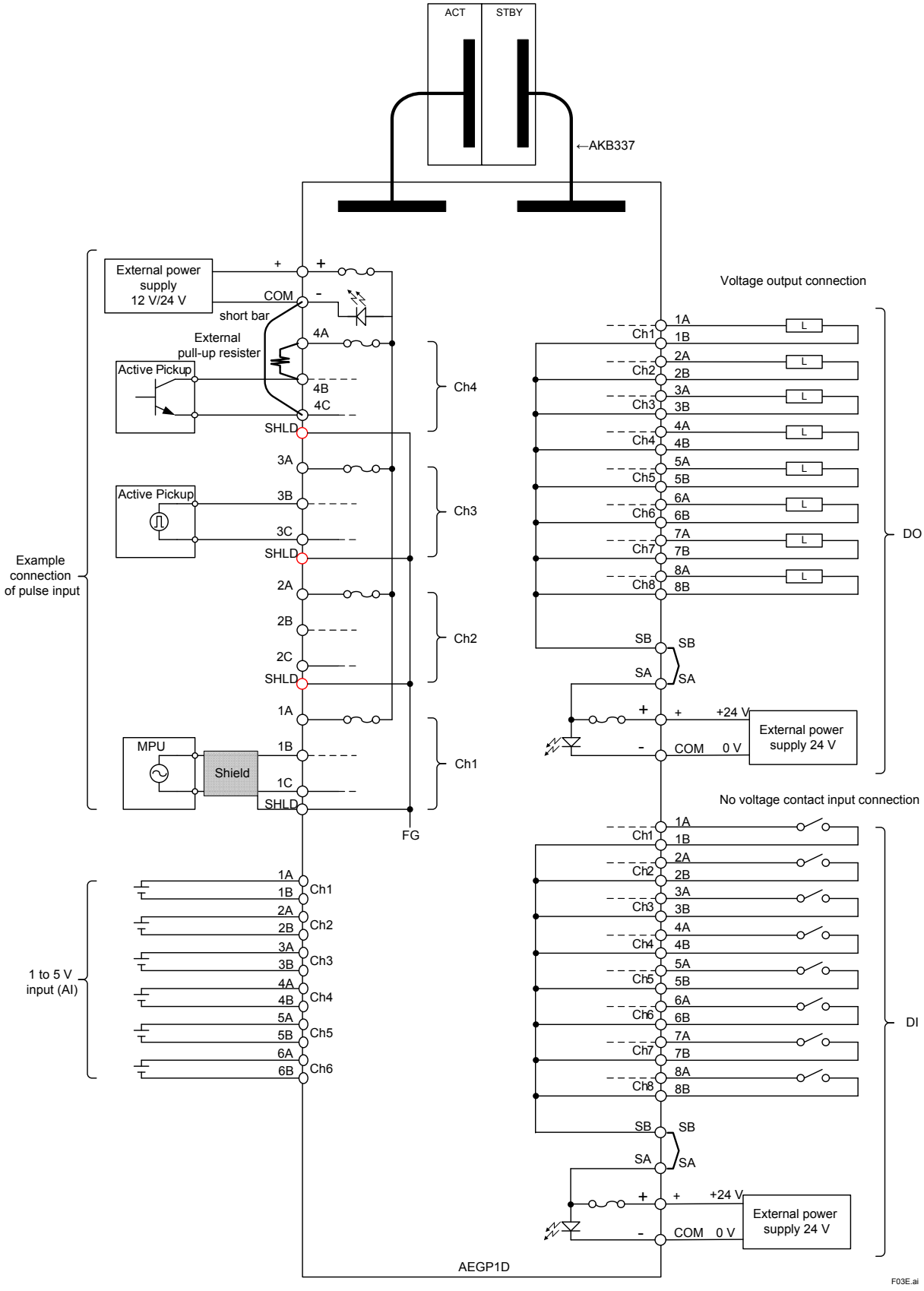
Example Connection for AEGS1D



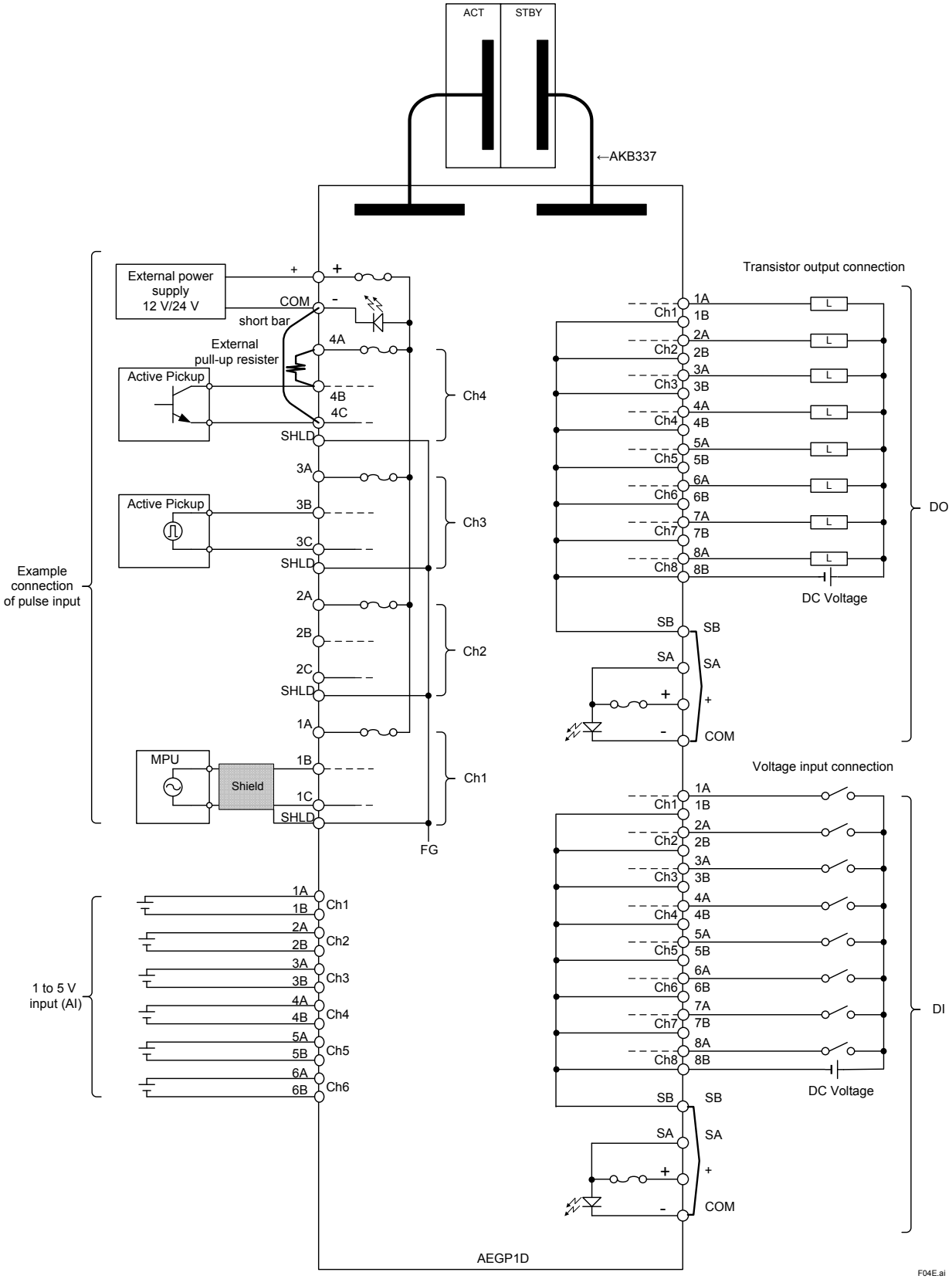
Example Connection for AEGS1D



Example Connection for AEGP1D



Example Connection for AEGP1D



● LIMITATIONS

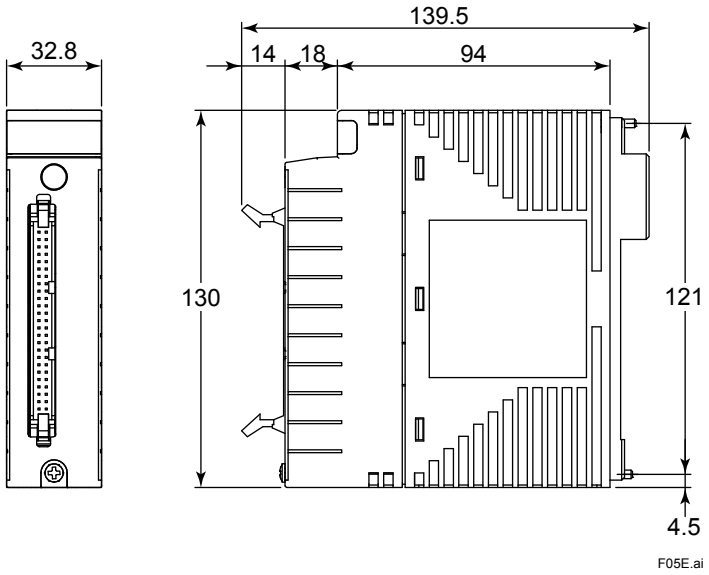
As for mounting limitations, please refer to FIO System Overview (GS 33J60A10-01EN).

■ EXTERNAL DIMENSIONS

● I/O Module

AGS813/AGP813

Unit : mm



Nominal Tolerances :

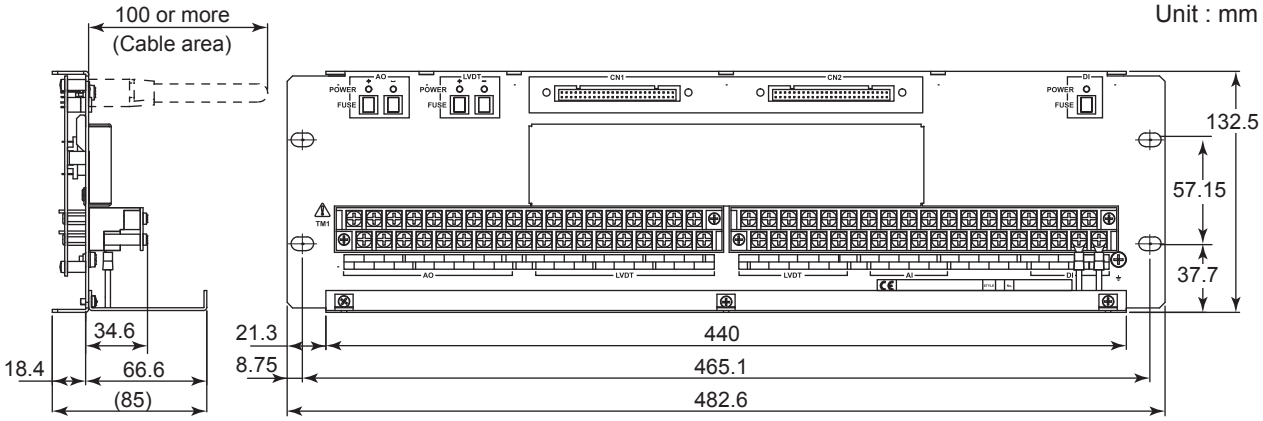
When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.

When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

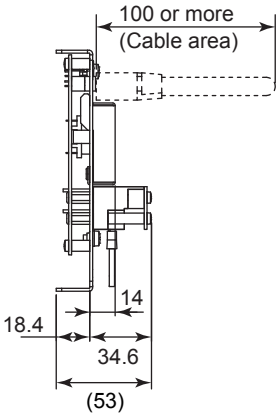
● Terminal Board

AEGS1D

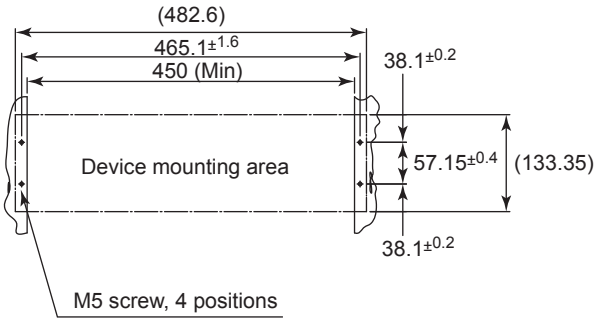
Unit : mm



When option code is “/NTRY”.



Rack Mounting Dimension



Left side terminal No.

1A	NC	NC	2A	NC	NC	+	COM	NC	1A	1C	1E	2A	2C	2E	3A	3C	3E				
	1B	NC	NC	2B	NC	NC	COM	—	NC	1B	1D	1F	2B	2D	2F	3B	3D	3F			
AO										LVDT											

Right side terminal No.

4A	4C	4E	+	COM	NC	1A	2A	3A	4A	NC	NC	NC	NC	1A	2A	SA	+				
	4B	4D	4F	COM	—	NC	1B	2B	3B	4B	NC	NC	NC	NC	1B	2B	SB	COM			
LVDT							AI								DI						

NC: Not connected.

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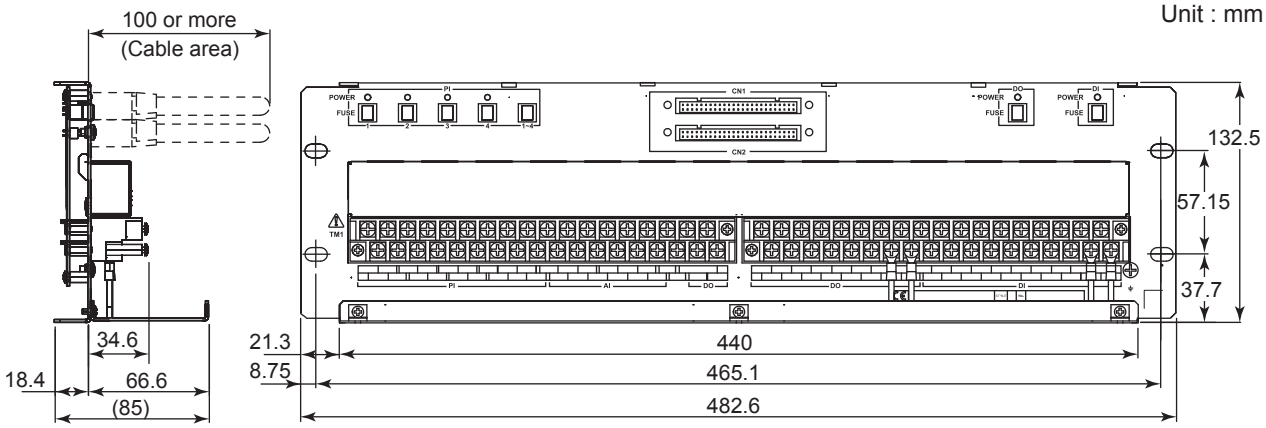
Nominal Tolerances :

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.

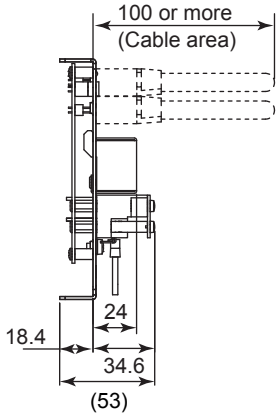
When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

AEGP1D

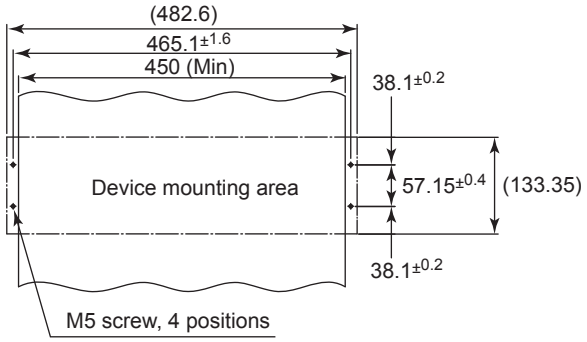
Unit : mm



When option code is "/NTRY".



Rack Mounting Dimension



Left side terminal No.

1A	1B	2A	2B	3A	3B	4A	4B	+	1A	2A	3A	4A	5A	6A	NC	1A	2A	
	SHLD	1C	SHLD	2C	SHLD	3C	SHLD	4C	COM	1B	2B	3B	4B	5B	6B	NC	1B	2B
PI										AI							DO	

Right side terminal No.

3A	4A	5A	6A	7A	8A	SA	+	1A	2A	3A	4A	5A	6A	7A	8A	SA	+	
	3B	4B	5B	6B	7B	8B	SB	COM	1B	2B	3B	4B	5B	6B	7B	8B	SB	COM
DO									DI									

NC: Not connected.

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Nominal Tolerances :

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.

When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

■ MODEL AND SUFFIX CODES

		Description
Model	AGS813	Servo Module (Isolated)
Suffix Codes	-S	Standard type
	1	Always 1
	0	Basic type
	1	With ISA Standard G3 option

		Description
Model	AGP813	High Speed Protection Module (Isolated)
Suffix Codes	-S	Standard type
	1	Always 1
	0	Basic type
	1	With ISA Standard G3 option

		Description
Model	AEGS1D	Terminal Board for Servo (Single and dual-redundant)
Suffix Codes	-0	Always 0
	0	Basic type
	1	With ISA Standard G3 option
Option Code	/NTRY	Without cable tray

		Description
Model	AEGP1D	Terminal Board for High Speed Protection (Single and dual-redundant)
Suffix Codes	-0	Always 0
	0	Basic type
	1	With ISA Standard G3 option
Option Code	/NTRY	Without cable tray

■ APPLICABLE STANDARDS

Refer to the GS “Integrated Production Control System CENTUM VP System Overview” (GS 33J01A10-01EN).

■ ORDERING INFORMATION

When placing an order, the models and suffix codes must be correctly specified.

■ TRADEMARKS

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