

General Specifications

Cables (for FIO)



GS 33J60J10-01EN

[Release 6]

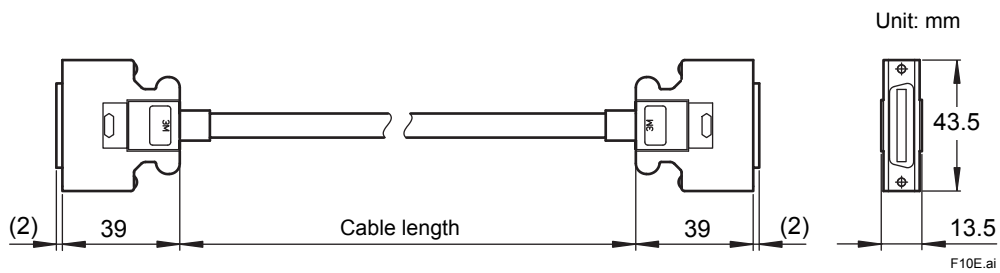
■ GENERAL

This General Specification (GS) covers the specifications of cables which are network cables (ESB bus and HK bus), signal cables and communication cables of the CENTUM VP.

■ EXTERNAL DIMENSIONS, MODELS AND SUFFIX CODES

● Bus Cables and Terminators

YCB301 ESB Bus Cable (36-36 pins)



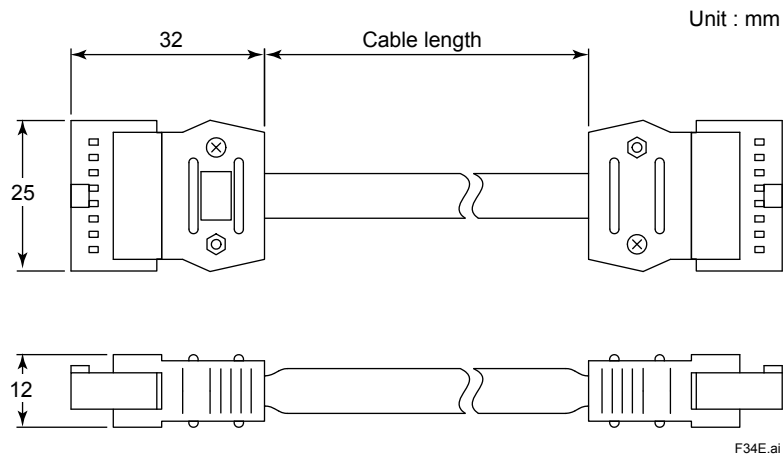
Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

Model	Description
YCB301	ESB Bus Cable (36-36 pins)
Suffix Codes	-C020 Cable length 20 cm
	-C100 Cable length 1 m
	-C200 Cable length 2 m
	-C300 Cable length 3 m
	-C400 Cable length 4 m
	-C600 Cable length 6 m
	-C800 Cable length 8 m

AKBHKU HK Bus Cable



Nominal tolerances of cable length :

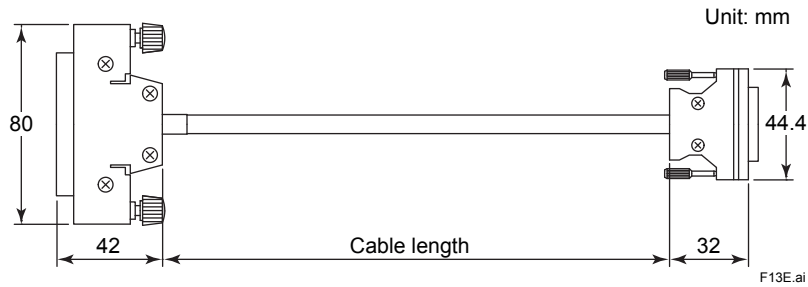
When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKBHKU	HK Bus Cable
Suffix Codes	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length 10 m
	-20	Cable length 20 m
	-30	Cable length 30 m
	-40	Cable length 40 m
	-50	Cable length 50 m

● Cables

AKB301 Signal Cable (36-40 pins)



Nominal tolerances of cable length :

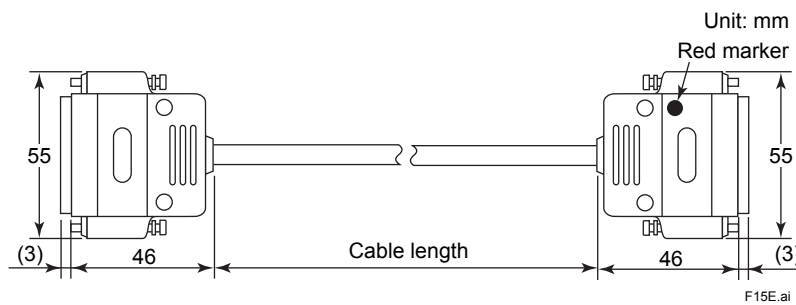
When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB301	Signal Cable (36-40 pins)
Suffix Code	-M□□□	Enter Cable length in □□□ every 5 m. Max. cable length 50 m (Suffix code: -M050).

KB3 RS-232C Modem Cable for Start-Stop Synchronous Communication

KB4 RS-232C Null Modem Cable for Start-Stop Synchronous Communication



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	KB3	RS-232C Modem Cable for Start-Stop Synchronous Communication (D-sub 25 - D-sub 25 male pins)
Suffix Codes	-02	Cable length 2 m
	-05	Cable length 5 m
	-10	Cable length 10 m
	-15	Cable length 15 m
Style Code	*B	Style B

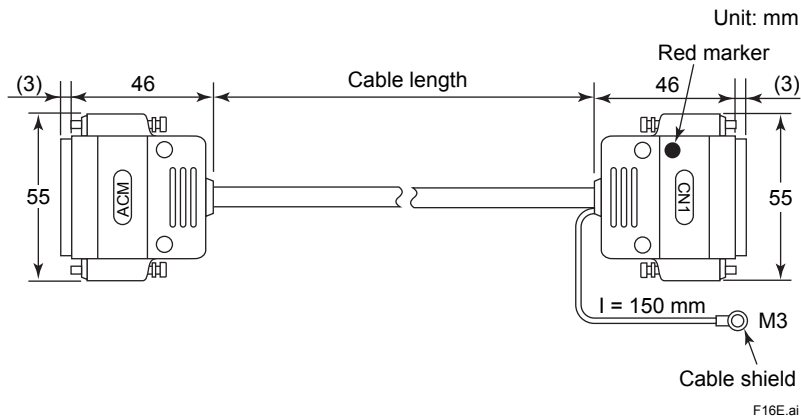
Note: If a RS-232C interface circuit at the partner equipment is insulated, use an AKB141 cable.

		Description
Model	KB4	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 25 - D-sub 25 male pins)
Suffix Codes	-02	Cable length 2 m
	-05	Cable length 5 m
	-10	Cable length 10 m
	-15	Cable length 15 m
Style Code	*A	Style A

Note: If a RS-232C interface circuit at the partner equipment is insulated, use an AKB142 cable.

AKB141 For Connecting RS Circuit Isolated Devices RS-232C Modem Cable for Start-Stop Synchronous Communication

AKB142 For Connecting RS Circuit Isolated Devices RS-232C Null Modem Cable for Start-Stop Synchronous Communication



Nominal tolerances of cable length :

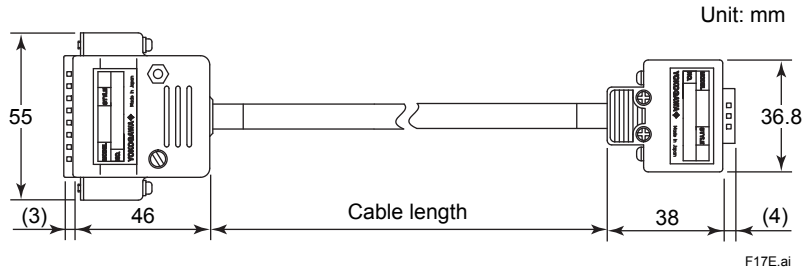
When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB141	For Connecting RS Circuit Isolated Devices RS-232C Modem Cable for Start-Stop Synchronous Communication (D-sub 25 - D-sub 25 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

		Description
Model	AKB142	For Connecting RS Circuit Isolated Devices RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 25 - D-sub 25 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

- AKB143 RS-232C Null Modem Cable for Start-Stop Synchronous Communication**
- AKB144 RS-232C Null Modem Cable for Start-Stop Synchronous Communication**
- AKB135 RS-232C Modem Cable for Start-Stop Synchronous Communication**
- AKB136 RS-232C Null Modem Cable for Start-Stop Synchronous Communication**



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB143	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 25 - D-sub 9 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: To comply with EMC Standards, connect a ferrite code (A1179MN) to this cable. Order it separately.

		Description
Model	AKB144	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 25 - D-sub 9 female pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

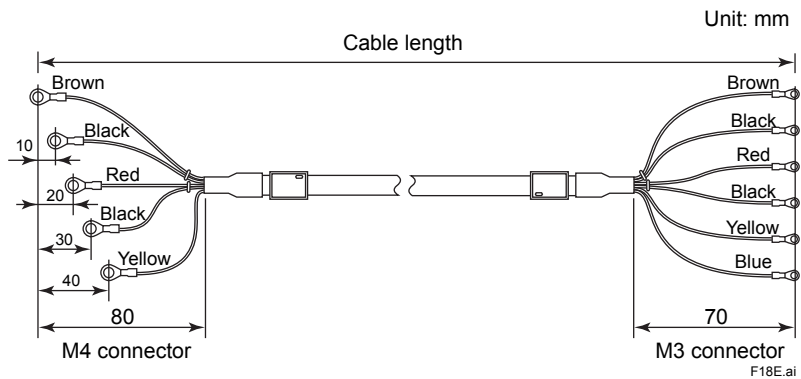
		Description
Model	AKB135	RS-232C Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 25 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: Use under the temperature environment (0 to 50 °C).

		Description
Model	AKB136	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 25 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: Use under the temperature environment (0 to 50 °C).

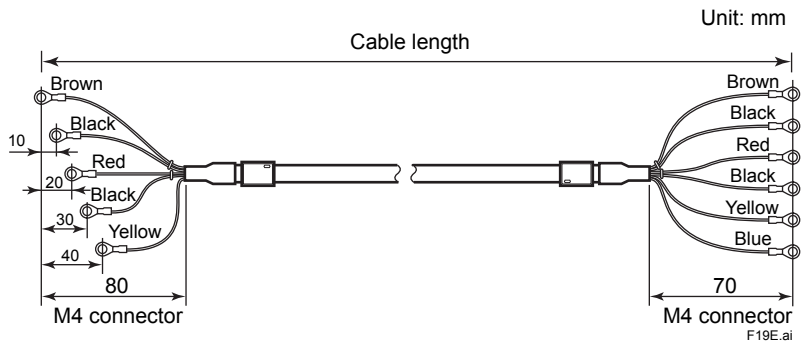
AKB161 RS-422/RS-485 Cable (Crimp terminal M4-M3)



Nominal tolerances of cable length :
 When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.
 When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB161	RS-422/RS-485 Cable (Crimp terminal M4-M3)
Suffix Code	-M□□□	Enter Cable length in □□□ every 5 m. Max. cable length 100 m (Suffix code: -M100).

AKB162 RS-422/RS-485 Cable (Crimp terminal M4-M4)

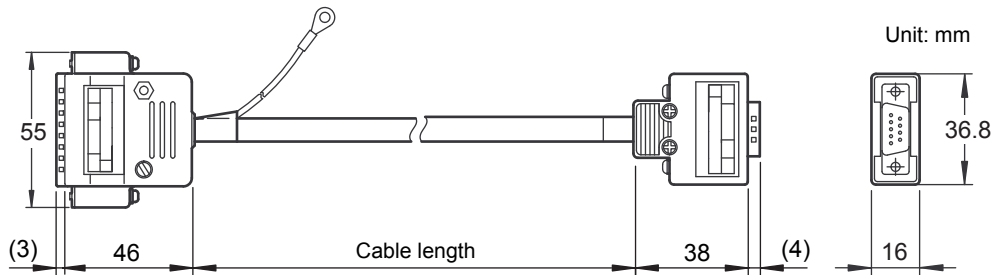


Nominal tolerances of cable length :
 When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.
 When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB162	RS-422/RS-485 Cable (Crimp terminal M4-M4)
Suffix Code	-M□□□	Enter Cable length in □□□ every 5 m. Max. cable length 100 m (Suffix code: -M100).

AKB131 For Connecting RS Circuit Isolated Devices RS-232C Modem Cable for Start-Stop Synchronous Communication

AKB132 For Connecting RS Circuit Isolated Devices RS-232C Null Modem Cable for Start-Stop Synchronous Communication



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Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

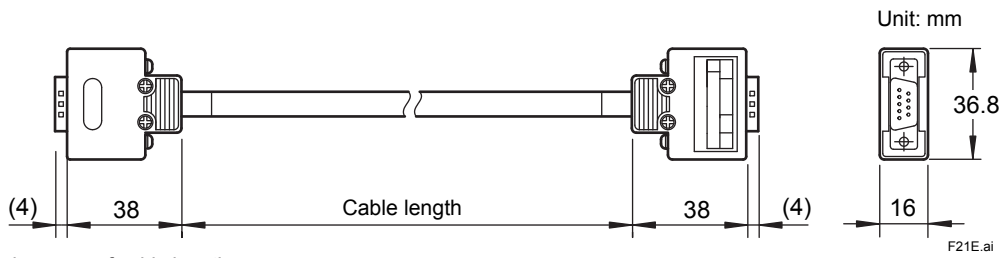
		Description
Model	AKB131	For Connecting RS Circuit Isolated Devices RS-232C Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 25 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: Use under the temperature environment (0 to 50 °C).

		Description
Model	AKB132	For Connecting RS Circuit Isolated Devices RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 25 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: Use under the temperature environment (0 to 50 °C).

AKB133, AKB134 RS-232C Null Modem Cable for Start-Stop Synchronous Communication



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

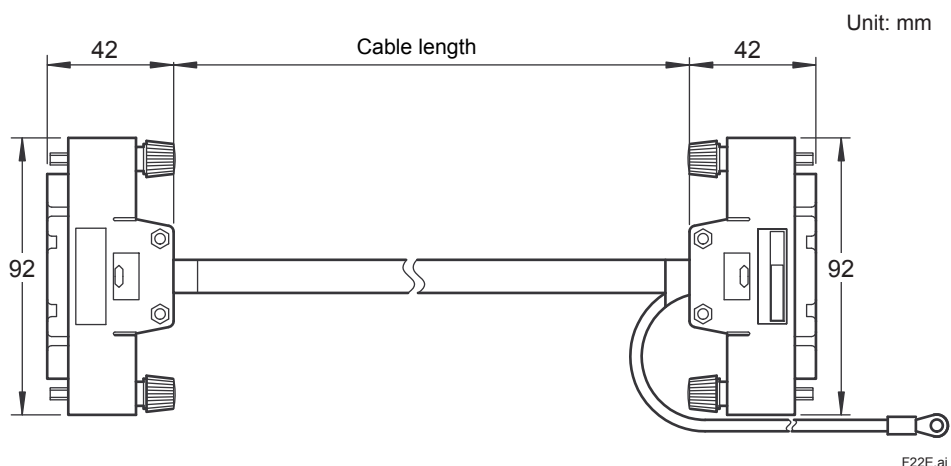
		Description
Model	AKB133	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 9 male pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: Use under the temperature environment (0 to 50 °C).

		Description
Model	AKB134	RS-232C Null Modem Cable for Start-Stop Synchronous Communication (D-sub 9 - D-sub 9 female pins)
Suffix Codes	-M002	Cable length 2 m
	-M005	Cable length 5 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m

Note: Use under the temperature environment (0 to 50 °C).

AKB331, AKB335 Signal Cable (50-50 pins)



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB331	Signal Cable (50-50 pins)
Suffix Code	-M001	Cable length 1 m
	-M002	Cable length 2 m
	-M003	Cable length 3 m
	-M005	Cable length 5 m
	-M007	Cable length 7 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m
	-M020	Cable length 20 m
	-M025	Cable length 25 m
	-M030	Cable length 30 m
	-M035	Cable length 35 m
	-M040	Cable length 40 m
	-M045	Cable length 45 m
	-M050	Cable length 50 m
Option Code	/NL	Supports CSA Non-Incendive instrumentation

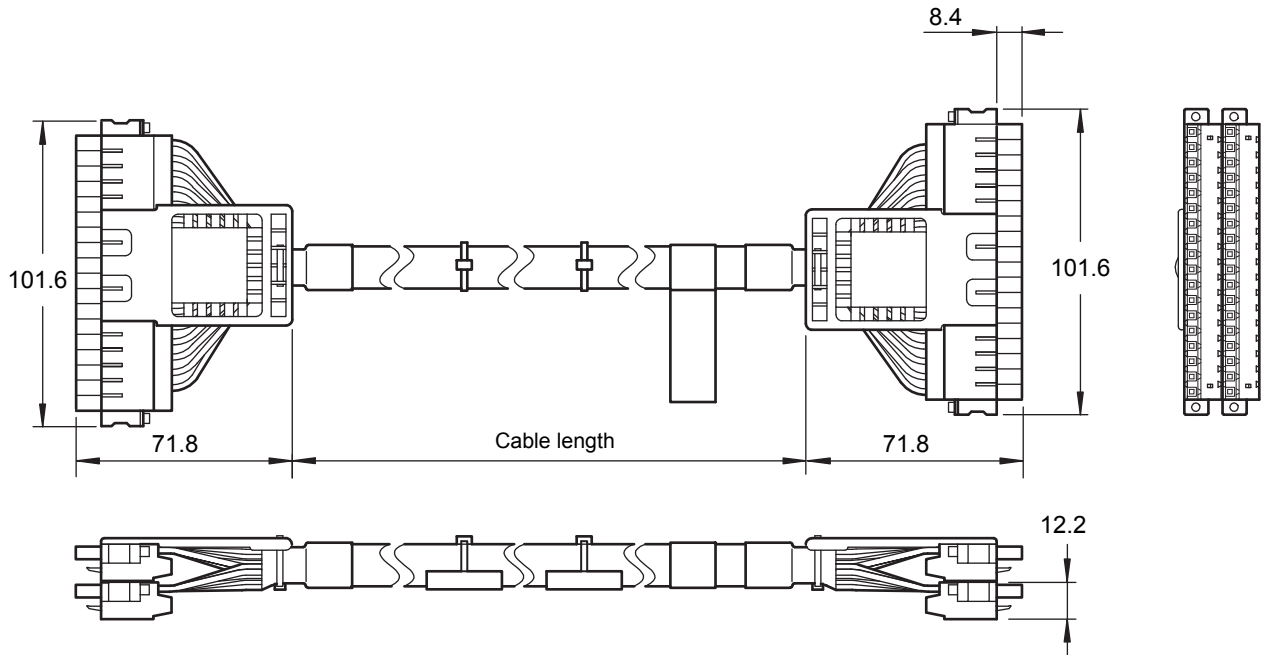
Note: Use under the temperature environment (-20 to 70 °C).

		Description
Model	AKB335	Signal Cable (50-50 pins)
Suffix Code	-M002	Cable length 2 m
	-M005	Cable length 5 m
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).

AKB332, AKB333, AKB334 Signal Cable (40-40 pins)

Unit: mm



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Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB332	Signal Cable (40-40 pins)
Suffix Code	-M001	Cable length 1 m
	-M002	Cable length 2 m
	-M003	Cable length 3 m
	-M005	Cable length 5 m
	-M007	Cable length 7 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m
	-M020	Cable length 20 m
	-M025	Cable length 25 m
	-M030	Cable length 30 m
	-M035	Cable length 35 m
	-M040	Cable length 40 m
	-M045	Cable length 45 m
-M050	Cable length 50 m	
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).

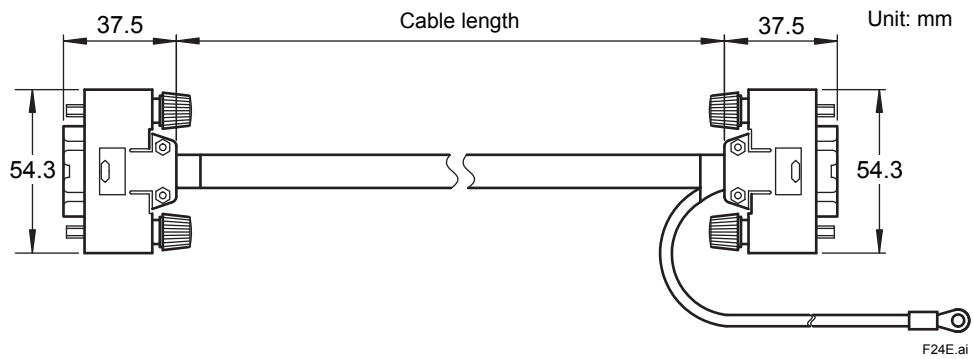
		Description
Model	AKB333	Signal Cable (40-40 pins)
Suffix Code	-M001	Cable length 1 m
	-M002	Cable length 2 m
	-M003	Cable length 3 m
	-M005	Cable length 5 m
	-M007	Cable length 7 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m
	-M020	Cable length 20 m
	-M025	Cable length 25 m
	-M030	Cable length 30 m
	-M035	Cable length 35 m
	-M040	Cable length 40 m
	-M045	Cable length 45 m
	-M050	Cable length 50 m

Note: Use under the temperature environment (-20 to 70 °C).

		Description
Model	AKB334	Signal Cable (40-40 pins)
Suffix Code	-M001	Cable length 1 m
	-M002	Cable length 2 m
	-M003	Cable length 3 m
	-M005	Cable length 5 m
	-M007	Cable length 7 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m
	-M020	Cable length 20 m
	-M025	Cable length 25 m
	-M030	Cable length 30 m
	-M035	Cable length 35 m
	-M040	Cable length 40 m
	-M045	Cable length 45 m
	-M050	Cable length 50 m
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).

AKB336 Signal Cable (20-20 pins)



Nominal tolerances of cable length :

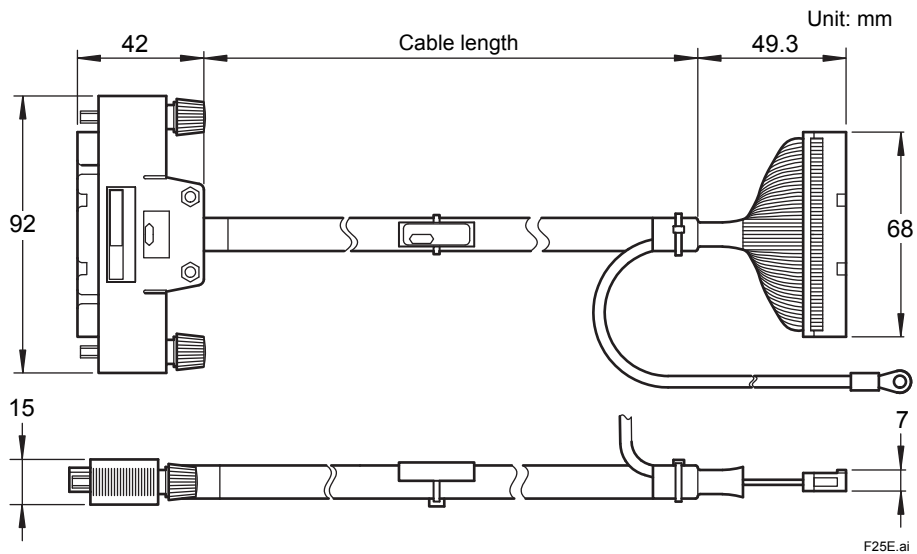
When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB336	Signal Cable (20-20 pins)
Suffix Code	-M001	Cable length 1 m
	-M002	Cable length 2 m
	-M003	Cable length 3 m
	-M005	Cable length 5 m
	-M007	Cable length 7 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m
	-M020	Cable length 20 m
	-M025	Cable length 25 m
	-M030	Cable length 30 m
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).

AKB337 Signal Cable (50-50 pins)

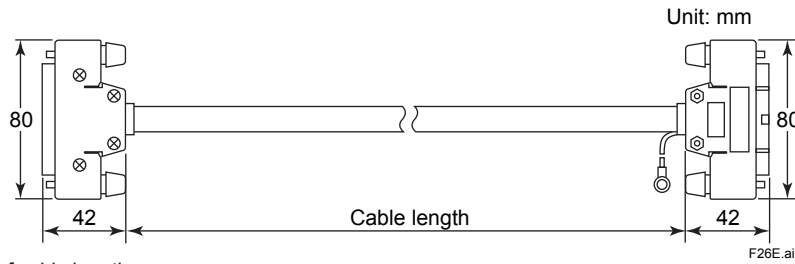


Nominal tolerances of cable length :
 When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.
 When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	AKB337	Signal Cable (50-50 pins)
Suffix Code	-M001	Cable length 1 m
	-M002	Cable length 2 m
	-M003	Cable length 3 m
	-M005	Cable length 5 m
	-M007	Cable length 7 m
	-M010	Cable length 10 m
	-M015	Cable length 15 m
	-M020	Cable length 20 m
	-M025	Cable length 25 m
	-M030	Cable length 30 m
	-M035	Cable length 35 m
	-M040	Cable length 40 m
	-M045	Cable length 45 m
-M050	Cable length 50 m	
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).

KS1, KS2 Signal Cable (40-40 pins)



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

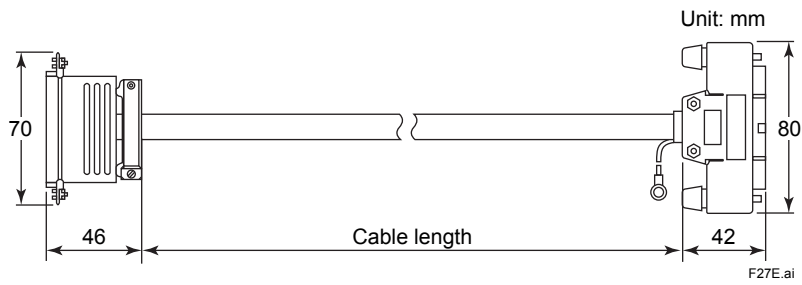
		Description
Model	KS1	Signal Cable (40-40 pins)
Suffix Code	-01	Cable length 1 m
	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length up to 10 m
	-15	Cable length 15 m
	-20	Cable length up to 20 m
	-25	Cable length 25 m
	-30	Cable length up to 30 m
	-35	Cable length 35 m
	-40	Cable length up to 40 m
	-45	Cable length 45 m
	-50	Cable length up to 50 m
Style Code	*B	Style B
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C). “Cable length up to □□ m” means the customer can specify the cable length but the cable length cannot exceed □□ meters.

		Description
Model	KS2	Signal Cable (40-40 pins)
Suffix Code	-01	Cable length 1 m
	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length up to 10 m
	-15	Cable length 15 m
	-20	Cable length up to 20 m
	-25	Cable length 25 m
	-30	Cable length up to 30 m
	-35	Cable length 35 m
	-40	Cable length up to 40 m
	-45	Cable length 45 m
	-50	Cable length up to 50 m
Style Code	*B	Style B
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C). “Cable length up to □□ m” means the customer can specify the cable length but the cable length cannot exceed □□ meters.

KS3 Signal Cable (40-37 pins)



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

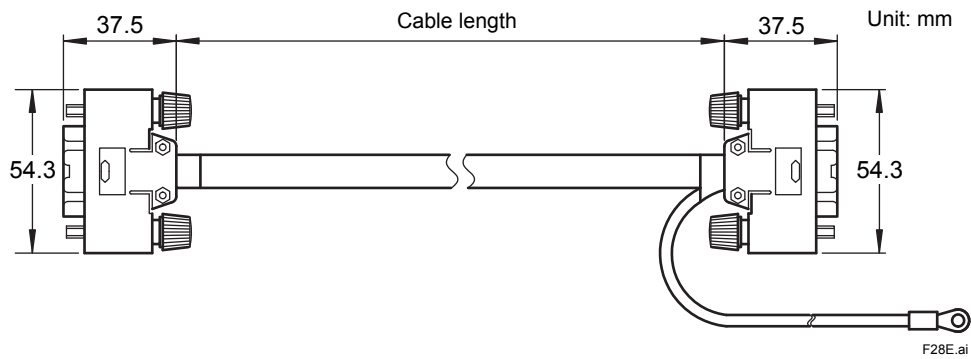
When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.\

		Description
Model	KS3	Signal Cable (40-37 pins)
Suffix Code	-01	Cable length 1 m
	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length up to 10 m
	-15	Cable length 15 m
	-20	Cable length up to 20 m
	-25	Cable length 25 m
	-30	Cable length up to 30 m
	-35	Cable length 35 m
	-40	Cable length up to 40 m
	-45	Cable length 45 m
-50	Cable length up to 50 m	
Style Code	*A	Style A

Note: Use under the temperature environment (-20 to 60 °C).

“Cable length up to □□ m” means the customer can specify the cable length but the cable length cannot exceed □□ meters.

KS4 Signal Cable (20-20 pins)



Nominal tolerances of cable length :

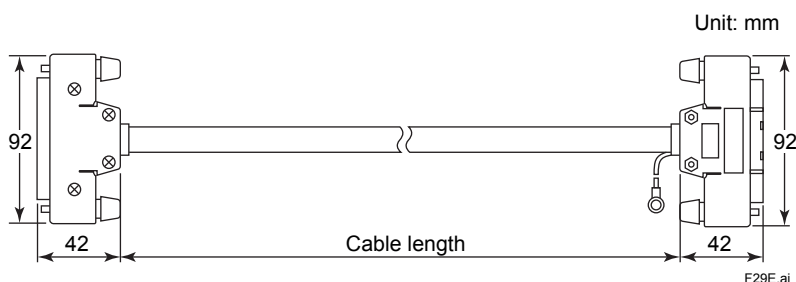
When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	KS4	Signal Cable (20-20 pins)
Suffix Code	-01	Cable length 1 m
	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length up to 10 m
	-15	Cable length 15 m
	-20	Cable length up to 20 m
	-25	Cable length 25 m
	-30	Cable length up to 30 m
	-35	Cable length 35 m
	-40	Cable length up to 40 m
-45	Cable length 45 m	
-50	Cable length up to 50 m	
Style Code	*A	Style A

Note: "Cable length up to □□ m" means the customer can specify the cable length but the cable length cannot exceed □□ meters.

KS8, KS9 Signal Cable (50-50 pins)



Nominal tolerances of cable length :
 When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.
 When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

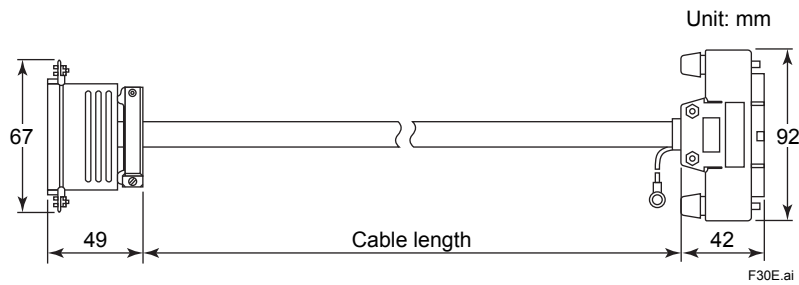
		Description
Model	KS8	Signal Cable (50-50 pins)
Suffix Code	-02	Cable length 2 m
	-05	Cable length 5 m
Style Code	*B	Style B
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).

		Description
Model	KS9	Signal Cable (50-50 pins)
Suffix Code	-01	Cable length 1 m
	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length up to 10 m
	-15	Cable length 15 m
	-20	Cable length up to 20 m
	-25	Cable length 25 m
	-30	Cable length up to 30 m
	-35	Cable length 35 m
	-40	Cable length up to 40 m
	-45	Cable length 45 m
	-50	Cable length up to 50 m
Style Code	*B	Style B
Option Code	/NL	Supports CSA Non-Incendive instrumentation

Note: Use under the temperature environment (-20 to 70 °C).
 "Cable length up to □□ m" means the customer can specify the cable length but the cable length cannot exceed □□ meters.

KS10 Signal Cable (50-50 pins)



Nominal tolerances of cable length :

When the reference dimension is less than or equal to 3000 mm, its nominal tolerance is +5%, -0%.

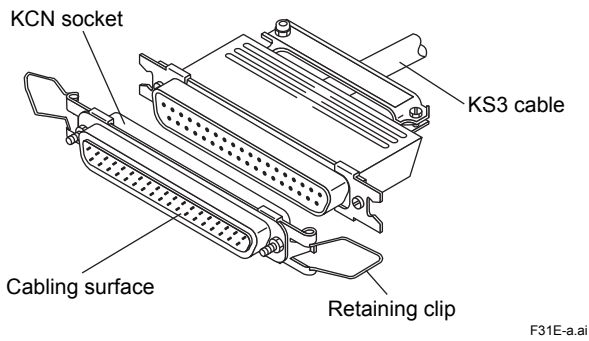
When the reference dimension is over 3000 mm, its nominal tolerance is +3% or +1m(whichever is smaller), -0%.

		Description
Model	KS10	Signal Cable (50-50 pins)
Suffix Code	-01	Cable length 1 m
	-02	Cable length 2 m
	-03	Cable length 3 m
	-05	Cable length 5 m
	-07	Cable length 7 m
	-10	Cable length up to 10 m
	-15	Cable length 15 m
	-20	Cable length up to 20 m
	-25	Cable length 25 m
	-30	Cable length up to 30 m
	-35	Cable length 35 m
	-40	Cable length up to 40 m
-45	Cable length 45 m	
-50	Cable length up to 50 m	
Style Code	*A	Style A

Note: Use under the temperature environment (-20 to 60 °C).

"Cable length up to □□ m" means the customer can specify the cable length but the cable length cannot exceed □□ meters.

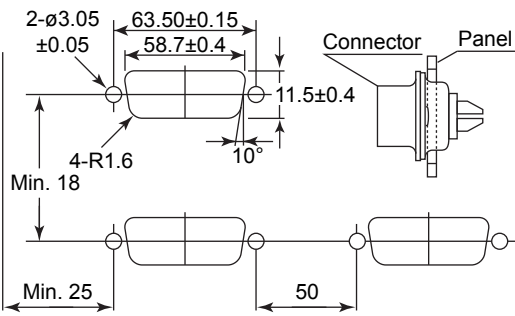
KCN Socket (Used with KS3 Cable)



F31E-a.ai

• Panel Cutout

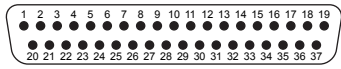
• Side View



Unit: mm

F31E-b.ai

• Pin Number Allocation (Connection Surface)

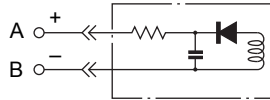


F31E-c.ai

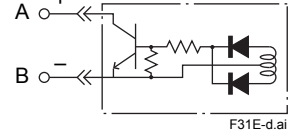
• Specifications

- Number of Signals: 16
- Terminal Type: Solder terminal
- Wiring: AWG #20, #22, #24
(cross sectional areas 0.2 to 0.5 mm²)
- Terminal Block Connection: TE16
- Cable Used to Connect I/O Cards: KS3 cable
- Output Specifications:
 - Voltage: Max. 60 V DC
 - Current: Max. 0.2 A

Input terminals:



Output terminals:

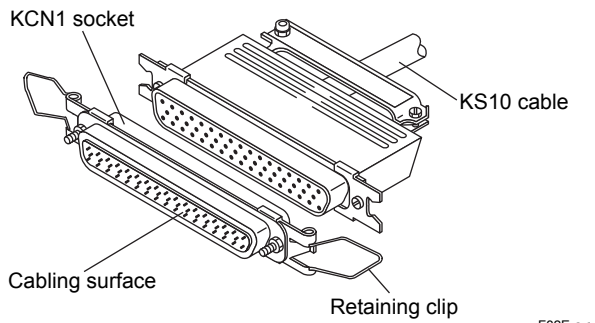


F31E-d.ai

For inductive load, connect spark killer (RC network for AC, diode for DC) parallel to the load.

		Description
Model	KCN	Socket (Used with KS3 Cable)
Style Code	*A	Style A

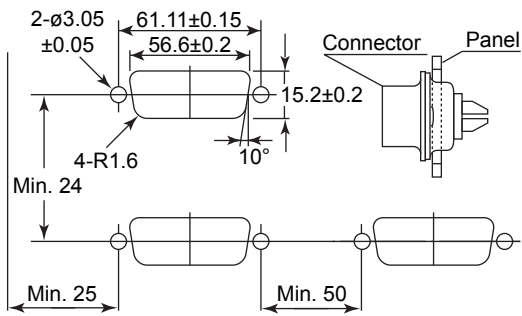
KCN1 Socket (Used with KS10 Cable)



F32E-a.e

- Specifications
- Number of Signals: 32
- Terminal Type: Solder terminal
- Wiring: AWG #20, #22, #24
(cross sectional areas 0.2 to 0.5 mm²)
- Terminal Block Connection: TE32
- Cable Used to Connect I/O Cards: KS10 cable
- Output Specifications:
 - Voltage: Max. 60 V DC
 - Current: Max. 0.2 A

• Panel Cutout

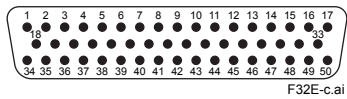


• Side View

Unit: mm

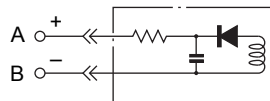
F32E-b.ai

• Pin Number Allocation (Connection Surface)

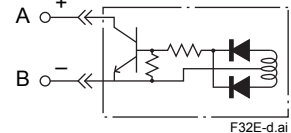


F32E-c.ai

Input terminals:



Output terminals:

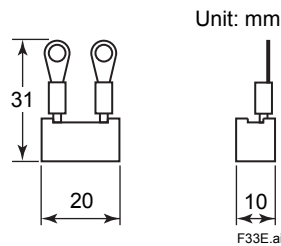


F32E-d.ai

For inductive load, connect spark killer (RC network for AC, diode for DC) parallel to the load.

		Description
Model	KCN1	Socket (Used with KS10 Cable)
Style Code	*A	Style A

YCB138 Fieldbus Terminator



F33E.ai

		Description
Model	YCB138	Fieldbus Terminator

■ MINIMUM BENDING RADIUS OF CABLE

Item	ESB bus	HK bus	SIGNAL CABLE
Minimum bending radius (mm)	80	50	(*1)

*1: Refer to the Installation Guidance (TI 33J01J10-01EN) for details.

■ ORDERING INFORMATION

Specify models, suffix codes, option codes, and style codes when ordering.

■ TRADEMARK

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