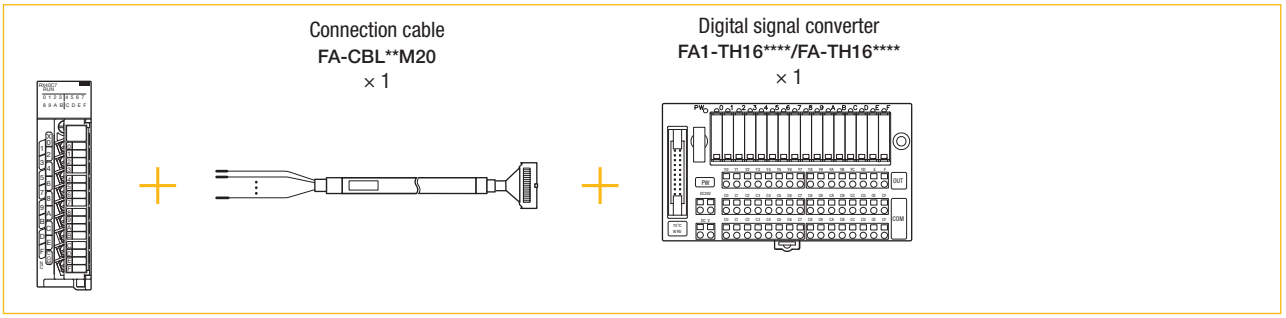
Selection notes

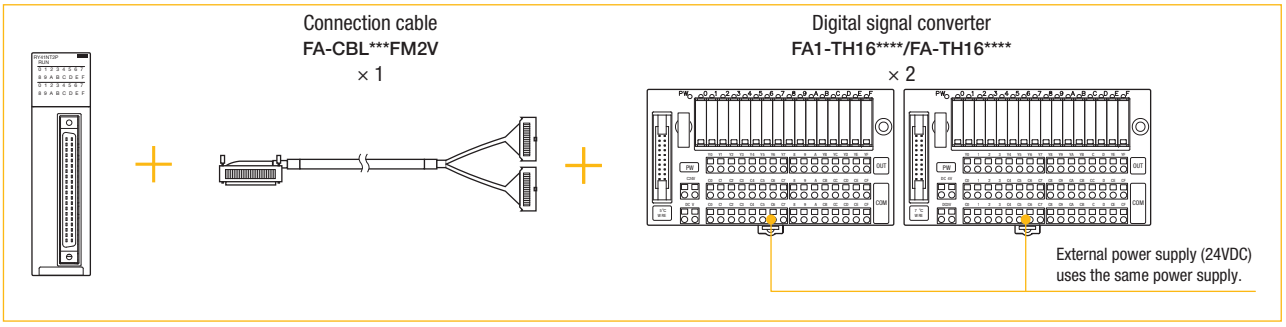
Number of cables and digital signal converters depending on the number of I/O points

- As a digital signal converter is a 16-point product, the number of converters used depends on the number of I/O points of the MELSEC I/O module used.

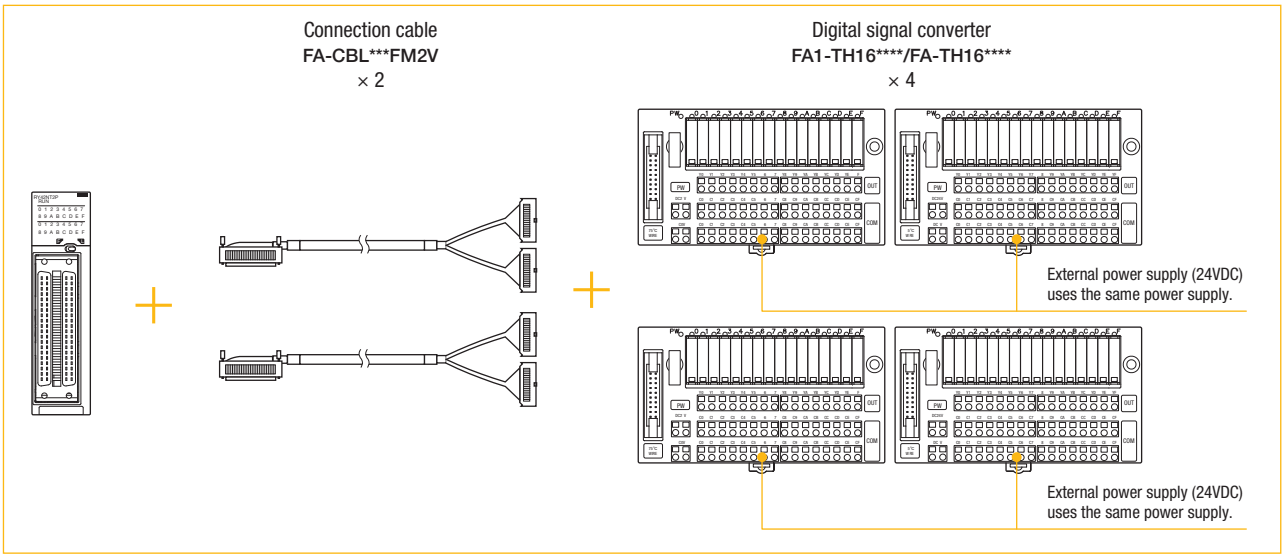
1) When using 16-point I/O module



2) When using 32-point I/O module



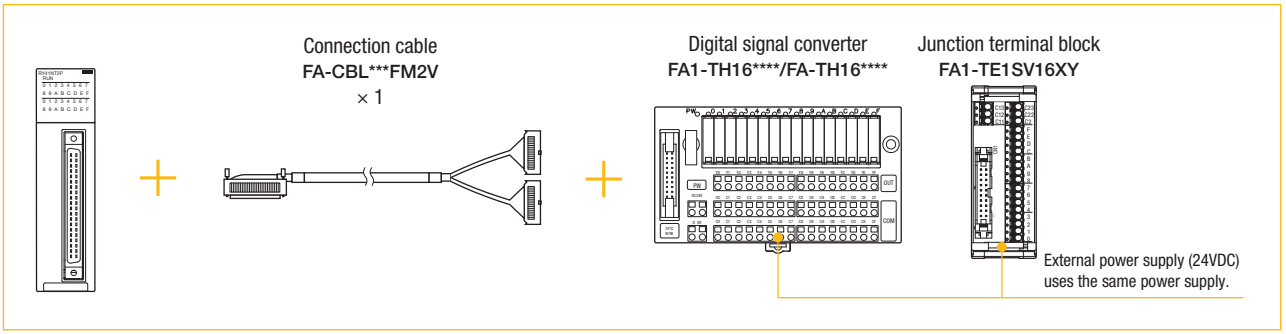
3) When using 64-point I/O module



Combination of a digital signal converter and a junction terminal block

- A 16-point digital signal converter can be used with a 16-point junction terminal block.

1) When using 32-point I/O module with a digital signal converter and a junction terminal block



Selection notes for digital signal converters for input signals

Selection of 24VDC input modules

(1) To make system maintenance-free

Select a photocoupler input module rather than a relay module having long life.
(FA-TH16X24D31, FA-TH16X24D31L, FA1-TH*X2SC20S1E+FA1-TM1X24D-*)

(2) When 24VDC input wiring is parallel to the power line or other wiring

Select a photocoupler input module whose off voltage is high. (FA-TH16X24D31, FA-TH16X24D31L, FA1-TH*X2SC20S1E+FA1-TM1X24D-*)

(3) To wire a module with a 2mm^2 cable compliant with the Japanese Industrial Standard (JIS C 2811)

Select a module using M3.5 screws on its terminal block. (FA-TH16X24D31L, FA1-TH*X2SC20S1E+FA1-TM1X24D-*)
(Notes: Wiring is possible by connecting a solderless terminal for 2mm^2 cable with an M3 screw.)

(4) To use an inexpensive 24VDC input module

Select the most inexpensive one from 24VDC input modules. (FA-TH16X24D31, FA1-TH*X2SC20S1E+FA1-TM1X24D-*)

(5) To insulate signals electrically by a relay

Select a relay input module. (FA-TH16XRA20S, FA1-TH*X2SC20S1E+FA1-TM1X24RA-*)

(6) To use a slim module

Select a 160mm wide relay input module. (FA-TH16XRA20S, FA1-TH*X2SC20S1E+FA1-TM1X24RA-*)

(7) When two or more 24VDC power supplies for input signals are used

Select a module having an independent input circuit. (FA-TH16XRA20S, FA1-TH*X2SC20S1E+FA1-TM1X24RA-*)

(8) To connect two cables from external devices such as a limit switch to a module

Select a module whose input specification is 16 points/common, 2-wire type, WET type.
(FA-TH16X24D31, FA-TH16X24D31L, FA1-TH*X2SC20S1E+FA1-TM1X24D-*)

Selection of 48VDC input modules

(1) When input wiring is parallel to the power line or other wiring in medium distance

Select a 48VDC photocoupler input module whose off voltage is high. (FA-TH16X48D31L, FA1-TH*X2SC20S1E+FA1-TM1X48D-*)

Selection of 100VDC input modules

(1) When input wiring is parallel to the power line or other wiring in long distance

Select a 100VDC photocoupler input module whose off voltage is high. (FA-TH16X100D31L, FA1-TH*X2SC20S1E+FA1-TM1X100D-*)

Selection of 100VAC input modules

(1) To wire a module with a 2mm^2 cable compliant with the Japanese Industrial Standard (JIS C 2811)

Select a module using M3.5 screws on its terminal block. (FA-TH16X100A31L)
(Notes: Wiring is possible by connecting a solderless terminal for 2mm^2 cable with an M3 screw.)

(2) To use an inexpensive 100VAC input module

Select an inexpensive one from 100VAC input modules. (FA-TH16X100A31, FA1-TH*X2SC20S1E+FA1-TM1X100A-*)

Selection of 200VAC input modules

(1) To wire a module with a 2mm^2 cable compliant with the Japanese Industrial Standard (JIS C 2811)

Select a module using M3.5 screws on its terminal block. (FA-TH16X200A31L)
(Notes: Wiring is possible by connecting a solderless terminal for 2mm^2 cable with an M3 screw.)

(2) To use an inexpensive 200VAC input module

Select an inexpensive one from 200VAC input modules. (FA-TH16X200A31, FA1-TH*X2SC20S1E+FA1-TM1X200A-*)

Selection notes for digital signal converters for output signals

Selection of output modules with 5/12/24VDC load

<FA1-TH16Y2RA20S1E, FA1-TH16Y1TR20S1E, FA-TH16YRA11/11S, FA-TH16YRA21/21S, FA-TH16YRA20/20S/20SL, FA-TH16YRAB20SL, FA-TH16YRAC20S, FA-TH16YTL11S, FA-TH16YTH11S, FA-TH16YTL21S, FA-TH16YTR20S, FA-TH16Y2TR20, FA1-TH1E16Y2RA20S1E, FA1-TH1E16Y1TR20S1E, FA1-TH1E16Y2RA20S, FA-THE16YTH11S, FA-THE16YTR20S>

(1) To make system maintenance-free

Select a transistor output module rather than a relay module having long life.

(FA1-TH*16Y1TR20S1E, FA-TH*16YT***S, FA-TH16Y2TR20)

(2) To drive a load with high switching frequency, or to make load turning on/off time 1s or less

Select a transistor output module not having mechanical life.

(FA1-TH16Y1TR20S1E, FA1-TH1E16Y1TR20S1E, FA-TH16YTL11S, FA-TH16YTH11S, FA-TH16YTL21S, FA-TH16YTR20S, FA-TH16Y2TR20, FA-THE16YTH11S, FA-THE16YTR20S)

(When the transistor output is turned off, a leakage current of 0.1mA flows. Check the specifications to ensure that the load connected is turned off if such leakage current flows.)

(3) To drive a load with an inrush current (such as a lamp, a timer with the power supply of a DC-DC converter inside, or a counter)

Select a transistor output module rather than a relay module having the risk of contact welding.

(FA1-TH16Y1TR20S1E, FA1-TH1E16Y1TR20S1E, FA-TH16YTR20S, FA-TH16YTL11S, FA-TH16YTH11S, FA-TH16YTL21S, FA-TH16Y2TR20, FA-THE16YTH11S, FA-THE16YTR20S)

(4) To drive an inductive load with high DC time constant (L is large and R is small) (such as an electromagnetic contactor or a solenoid)

Select a transistor output module with a built-in zener diode as a protection circuit.

(FA1-TH16Y1TR20S1E, FA1-TH1E16Y1TR20S1E, FA-TH16YTL11S, FA-TH16YTH11S, FA-TH16YTL21S, FA-TH16YTR20S, FA-TH16Y2TR20, FA-THE16YTH11S, FA-THE16YTR20S)

(When the temperature in panel is 55°C and 8 points (every other point) are turned on at the same time, the following models can be used for a specified inductive load, and their life need not be considered, unlike a relay contact: FA1-TH16Y1TR20S1E, FA1-TH1E16Y1TR20S1E, FA-TH16YTL11S/TH11S, and FA-THE16YTH11S for a load current of 0.65A or less; FA-TH16YTL21S/TR20S and FA-THE16YTR20S for a load current of 0.7A or less; FA-TH16Y2TR20 for a load current of 2A or less)

(5) To wire a module with a 2mm^2 cable compliant with the Japanese Industrial Standard (JIS C 2811)

Select a module using M3.5 screws on its terminal block.

(FA-TH16YRA20SL/RAB20SL)

(Notes: Wiring is possible by connecting a solderless terminal for 2mm^2 cable with an M3 screw.)

(6) To use an inexpensive 24VDC output module

Select the most inexpensive one from 24VDC output modules.

(FA-TH16YRA11: Relay cannot be removed.)

(7) To use an inexpensive 24VDC transistor output module

Select the most inexpensive one from transistor output modules.

(FA-TH16Y2TR20)

(8) To insulate signals electrically by a relay

Select a relay output module.

(FA1-TH16Y2RA20S1E, FA1-TH1E16Y2RA20S1E, FA1-TH1E16Y2RA20S, FA-TH16YRA11/11S, FA-TH16YRA21/21S, FA-TH16YRA20/20S/20SL, FA-TH16YRAB20SL, FA-TH16YRAC20S)

(9) To use a slim module

Select a 115mm wide relay input module.

(FA-TH16YRA11, 11S, FA-TH16YTL11S, FA-TH16YTH11S, FA-THE16YTH11S)

(10) To use two or more 5/12/24VDC power supplies for output signals together

Select a module having an independent output circuit.

(FA1-TH16Y2RA20S1E, FA1-TH1E16Y2RA20S1E, FA1-TH16Y1TR20S1E, FA1-TH1E16Y1TR20S1E, FA1-TH1E16Y2RA20S, FA-TH16YRA20/S/SL, FA-TH16YTR20S, FA-TH16Y2TR20, FA-THE16YTR20S)

(11) To drive 5VDC/12VDC/24VDC/100VAC/200VAC load together

Select a socket type module having an independent output circuit.

(FA1-TH16Y2SC20S1E, FA1-TH1E16Y2SC20S1E, FA-TH16YRA20S/SL)

(Relay/transistor/triac modules can be mixed.)

(12) To minimize the number of cables from modules in control panel to external load devices in system

Select a module whose specification is 16 points/common, 1-wire type. The common terminal must be wired on the device used.

(FA-TH16YRA11/11S, FA-TH16YTL11S, FA-TH16YTH11S, FA-THE16YTH11S)

(13) To connect two cables from external devices, such as a solenoid, directly to a module

Select a module whose output specification is 16 points/common, 2-wire type.

(FA-TH16YRA21/21S, FA-TH16YTL21S)

(14) To drive a sink load using a transistor output module

Select a sink type or independent type module.

(FA1-TH16Y1TR20S1E, FA-TH16YTL11S, FA-TH16YTL21S, FA-TH16YTR20S, FA-TH16Y2TR20)

(15) To drive a source load using a transistor output module

Select a source type or independent type module.

(FA1-TH1E16Y1TR20S1E, FA-TH16YTH11S, FA-TH16YTR20S, FA-TH16Y2TR20, FA-THE16YTH11S, FA-THE16YTR20S)

Selection of output modules with 100/200VAC load

<FA1-TH16Y2RA20S1E, FA1-TH16Y1SR20S1E, FA-TH16YRA11/11S, FA-TH16YRA21/21S, FA-TH16YRA20/20S/20SL, FA-TH16YRAB20SL, FA-TH16YRAC20S, FA-TH16YSR11S, FA-TH16YSR21S, FA-TH16YSR20S, FA1-TH1E16Y2RA20S1E, FA1-TH1E16Y1SR20S1E, FA1-TH1E16Y2RA20S>

(1) To make system maintenance-free

Select a triac output module rather than a relay module having long life.
(FA1-TH16Y1SR20S1E, FA1-TH1E16Y1SR20S1E, FA-TH16YSR11S, FA-TH16YSR21S, FA-TH16YSR20S)

(2) To drive a load with high switching frequency

Select a triac output module not having mechanical life.
(FA1-TH16Y1SR20S1E, FA1-TH1E16Y1SR20S1E, FA-TH16YSR11S, FA-TH16YSR21S, FA-TH16YSR20S)
(When the triac output is turned off, a leakage current (1.5mA for 100VAC or 3mA for 200VAC) flows. Check the specifications to ensure that the load connected is turned off if such leakage current flows.)

(3) To drive a load with an inrush current (such as a lamp, a timer with the AC/DC switching power supply inside, or a counter)

Select a triac output module rather than a relay module having the risk of contact welding.
(FA1-TH16Y1SR20S1E, FA1-TH1E16Y1SR20S1E, FA-TH16YSR11S, FA-TH16YSR21S, FA-TH16YSR20S)

(4) To drive an inductive load with small power factor (cosϕ is small and L is large) (such as an electromagnetic contactor or a solenoid)

Select a triac output module with a built-in varistor in parallel with a capacitor + resistor as a protection circuit.
(FA1-TH16Y1SR20S1E, FA1-TH1E16Y1SR20S1E, FA-TH16YSR11S, FA-TH16YSR21S, FA-TH16YSR20S)
(When the temperature in panel is 55°C and 8 points (every other point) are turned on at the same time, the following models can be used for a specified inductive load, and their life need not be considered, unlike a relay contact: FA1-TH16Y1SR20S1E, FA1-TH1E16Y1SR20S1E, and FA-TH16YSR11S for a load current of 0.5A or less; FA-TH16YSR21S/20S for a load current of 0.55A or less)

(5) To wire a module with a 2mm^2 cable compliant with the Japanese Industrial Standard (JIS C 2811)

Select a module using M3.5 screws on its terminal block.
(FA-TH16YRA20SL/RAB20SL)
(Notes: Wiring is possible by connecting a solderless terminal for 2mm^2 cable with an M3 screw.)

(6) To use an inexpensive 100/200VAC output module

Select the most inexpensive one from 100/200VAC output modules.
(FA-TH16YRA11: Relay cannot be removed.)

(7) To use an inexpensive 100/200VAC triac output module

Select the most inexpensive one from triac output modules.
(FA-TH16YSR11S)

(8) To insulate signals electrically by a relay

Select a relay output module.
(FA1-TH16Y2RA20S1E, FA1-TH1E16Y2RA20S1E, FA1-TH1E16Y2RA20S, FA-TH16YRA11/11S, FA-TH16YRA21/21S, FA-TH16YRA20/20S/20SL)

(9) To use a slim module

Select a 115mm wide relay input module.
(FA-TH16YRA11/S, FA-TH16YSR11S)

(10) To use two or more 100/200VAC power supplies for output signals together

Select a module having an independent output circuit.
(FA1-TH16Y2RA20S1E, FA1-TH1E16Y2RA20S1E, FA1-TH16Y1SR20S1E, FA1-TH1E16Y1SR20S1E, FA1-TH1E16Y2RA20S, FA-TH16YRA20/S/SL, TH16YSR20S)

(11) To drive 5VDC/12VDC/24VDC/100VAC/200VAC load together

Select a socket type module having an independent output circuit.
(FA1-TH16Y2SC20S1E, FA1-TH1E16Y2SC20S1E, FA-TH16YRA20S/SL)
(Relay/transistor/triac modules can be mixed.)

(12) To minimize the number of cables from modules in control panel to external load devices in system

Select a module whose specification is 16 points/common, 1-wire type. The common terminal must be wired on the device used.
(FA-TH16YRA11/11S, FA-TH16YSR11S)

(13) To connect two cables from external devices, such as a solenoid, directly to a module

Select a module whose output specification is 16 points/common, 2-wire type.
(FA-TH16YRA21/21S, FA-TH16YSR21S)