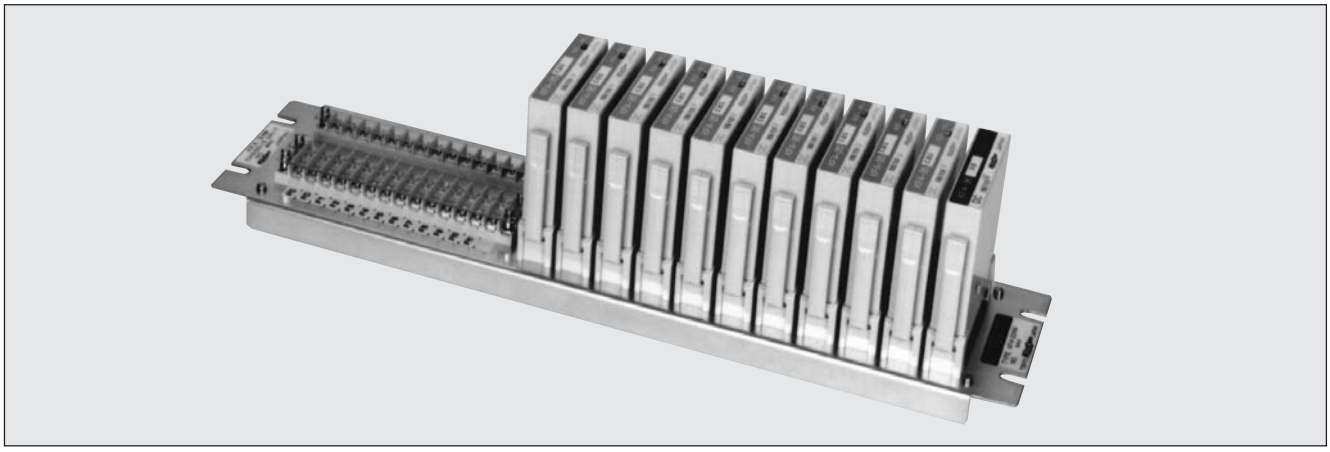
Solid State Annunciator

KFA-330/KFA-330C



■ Features

- A variety of operating voltages can be selected from 24V, 48V, 100/110V, and 125V DC.
- Has a wide variation range of operating voltage and stands for 20% variation of the rated voltage (except for that 125V DC is allowable in a range of +15% and –20%).
- Requires small power consumption. 24V DC type consumes approx. 0.2W (except for indicator lights).
- The sequence patterns conforms to ISA standards.
  KFA-330 has 7 basic sequence patterns to which first-out function can be added.
  KFA-330C has 5 basic sequence patterns to which first-out function can be added.
  KFA-330C also has output contacts added, which synchronize with fault input.
- This model consists high noise-resistance and passes noise-resistance test conforming to IEEE standard. (Surge withstand capability test)
- Structures of various alarm systems can be selected from approx. 40 types considering sequence and operating voltage.

NOTICE

- Be sure to turn off the power when mounting or dismounting alarm or common unit.
- Use twist pair wires when wiring fault input contacts and operation switches.
- Keep unnecessary switches open.
- For lamp test switches, select a type which operating voltages are impressed and which covers all currents of indicator lights.
- The power shall be turned on after 3 sec of turn off to prevent the malfunction of the annunciator.

■ Product Configuration

KFA-330 and KFA-330C are comprised of a chassis unit (KFA-34), alarm unit (KFA-35), and common unit (KFA-36). 10 alarm units and 1 common unit can be mounted on a chassis unit. The chassis includes terminal blocks for fault input/visible output and operation input. One common unit (KFA-36) can drive up to 100 alarm units. If there are 10 or more fault inputs, 11 alarm units can be mounted on the second chassis units and after.

■ Model Designation

KFA-330 (without output contact)

Chassis Unit

KFA - 34

- Basic type

Alarm Unit

KFA - 35 F 6 A4

- Sequence No. **A1, A2, A3, A4, A5, A6, A7** (Refer to pages 6-16 and 6-17 for Sequence No.)
- Operating voltage
  - **6**: 24V DC
  - **7**: 48V DC
  - **8**: 100/110V DC
  - **9**: 125V DC
- First-out function
  - **F**: With
  - **C**: Without
- Basic type

Common Unit

KFA - 36 A 6

- Operating voltage
  - **6**: 24V DC
  - **7**: 48V DC
  - **8**: 100/110V DC
  - **9**: 125V DC
- Flicker type
  - **A**: Available for Sequence Nos. A1~A5
  - **B**: For Sequence No. A6
  - **C**: For Sequence No. A7
- Basic type

Dummy Unit

KFA-35D

- Basic type

KFA-330C (with output contact)

Chassis Unit

KFA - 34C

- Basic type

Alarm Unit

KFA - 35 C 9 A5 C

- Sequence No. A1, A2, A3, A4, A5 (Refer to pages 6-16 and 6-17 for Sequence No.)
- Operating voltage
  - **6**: 24V DC
  - **7**: 48V DC
  - **8**: 100/110V DC
  - **9**: 125V DC
- First-out function
  - **F**: With
  - **C**: Without
- Basic type

Common Unit

KFA - 36 A 9 C

- Operating voltage
  - **6**: 24V DC
  - **7**: 48V DC
  - **8**: 100/110V DC
  - **9**: 125V DC
- Flicker type
  - Available for Sequence Nos. A1~A5.
- Basic type

Dummy Unit

KFA-35D

- Basic type

■ Specifications

KFA-330 System

Operating voltage	**DC**	24V	48V	100V/110V	125V
	Allowable range	±20% of rated voltage			+15%/–20%
Operation environment		Temperature: –10~+60°C, Humidity: 45~95% RH (No freezing or condensation)			
Storage temperature		–20~+70°C, (No freezing or condensation)			
Vibration resistance		JIS C0911*			
Shock resistance		JIS C0912 (10G, XYZ axis, 3 times each)			
Noise resistance		Pulse duration 1μs, 2000V, o - p			

* Double amplitude 1.5mm, vibration range 10~55Hz
No damages in all parts after applying XYZ axis vibration for 1 hour with sweep time of 1 minute.

Chassis Unit KFA-34

Insulation resistance	50MΩ or more between live parts and ground by 500V DC meghommeter
Withstand voltage	2000V AC for 1 minute between live parts and ground

Alarm Unit KFA-35

Item \ Model		Without output contact				With output contact			
		KFA-35 □6□	**KFA-35 □7□**	**KFA-35 □8□**	**KFA-35 □9□**	**KFA-35 □6□C**	**KFA-35 □7□C**	**KFA-35 □8□C**	**KFA-35 □9□C**
Power consumption (except for indicator light)		0.2W max.	0.4W max.	0.9W max.	1.0W max.	0.6W	0.8W	1.5W	1.65W
Fault input	**Contact**	N.O./N.C. contact selected by slide switch (solid state input is available)							
	Voltage	7.5 ±1V				24V	48V	100/110V	125V
	Resistance	10KΩ ±10%				1.47KΩ±10%	5.9KΩ±10%	22.8KΩ±10%	25.8KΩ±10%
	Response time	30ms				15ms			
Operating input	**Field contact**	N.O.							
	Contact voltage	9.5 ±1V							
	Input resistance	20KΩ ±10%							
Operation time	**BS**	150ms				120ms			
	ACK	300ms				240ms			
	RST	500ms				480ms			
	LT	The lamp voltage is applied to the LT switch. Set a switch that can cover all the current of the indicator lamp.							
Alarm output	**Lamp**	250mA (open collector)				300mA (open collector) Max.			
	Contact	—				N.O., contact capacity: 100V AC/DC 0.3A (resistance load)			

Common Unit KFA-36

Item \ Model		Without output contact				With output contact			
		KFA-36 □6	**KFA-36 □7**	**KFA-36 □8**	**KFA-36 □9**	**KFA-36 A6C**	**KFA-36 A7C**	**KFA-36 A8C**	**KFA-36 A9C**
Power consumption (without audible)		0.2W max.	0.4W max.	0.9W max.	1.0W max.	0.2W max.	0.4W max.	0.9W max.	1.0W max.
Alarm output (audible)		250mA (open collector)				300mA (open collector) max.			
Flicker speed	**Fast**	0.5 sec ±15%				0.5 sec ±15%			
	Slow	1.0 sec ±15%				—			
No. of Alarm Units connected		100 units max.							

■ Materials

Terminal block	TS-135	(TB1·2·3)
Terminal screw	Carbon steel (nickel plated)	M3×6
Terminal block cover	Polycarbonate resin	(transparent)
Printed board	Glass epoxy resin	1.6 mm thickness
Alarm/common module case	Polycarbonate resin	(gray)
Chassis	Steel sheet	

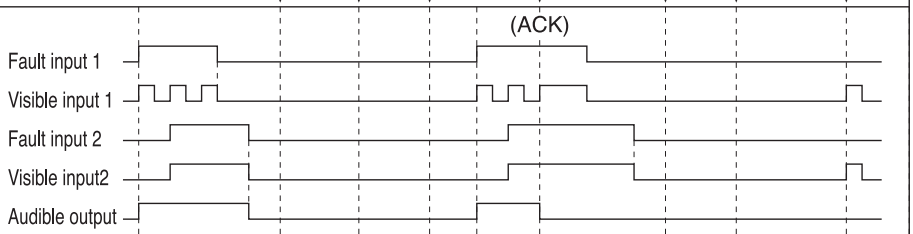
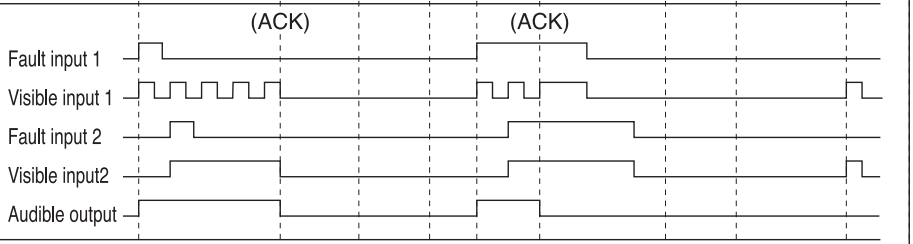
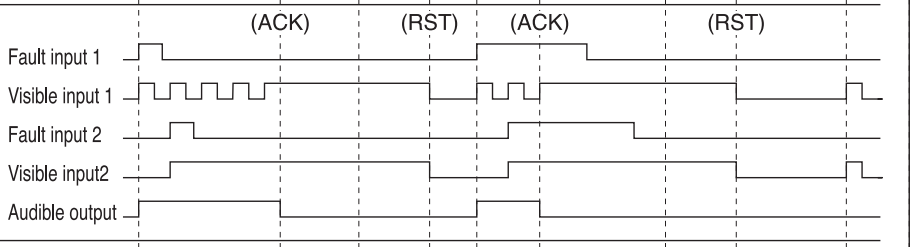
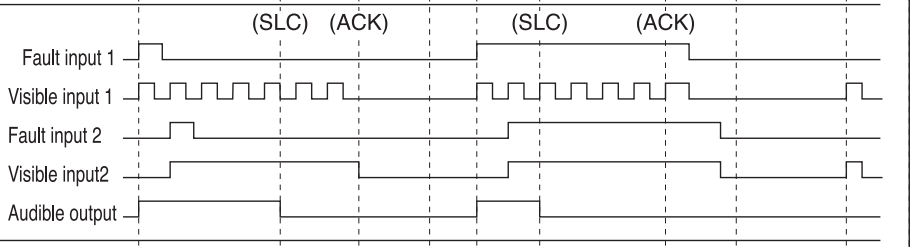
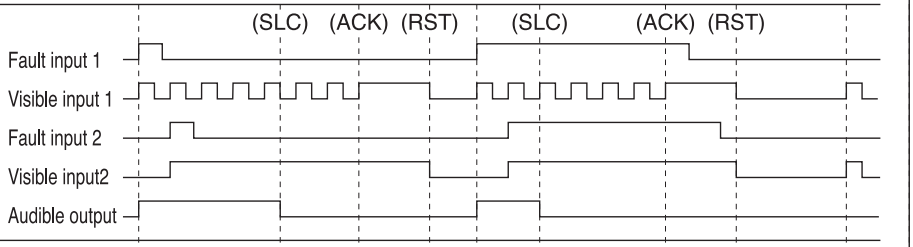
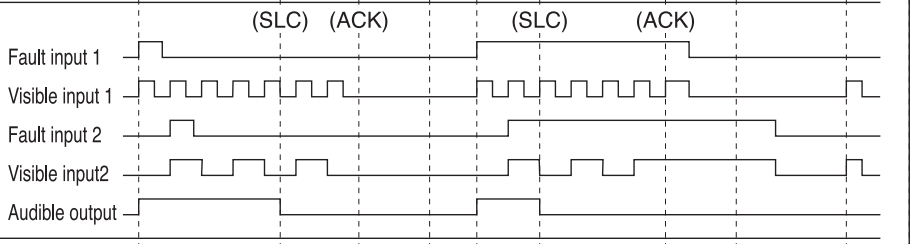
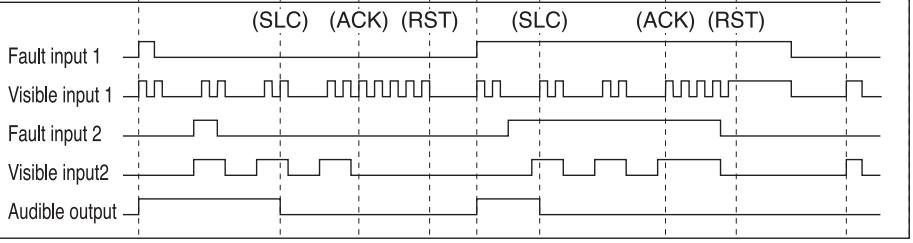
■ Weight

Chassis unit	:	1,600g
Alarm unit	:	100g
Common unit	:	90g
Dummy unit	:	48g

■ Sequence Patterns

With first-out sequence

( ) - Description by ISA Standards

Sequence Patterns	Model Name KFA-35	Description by ISA Standards	Symbol Pin No. Operating Input
A1	F□A1	F2A-4-14	
A2	F□A2	F2A-14	
A3	F□A3	F2M-14	
A4	F□A4	F2A-1-2-14	
A5	F□A5	F2M-1-2-14	
A6	F□A6	—	
A7	F□A7	—	

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■ Sequence Patterns

Without first-out sequence

( ) - Description by ISA Standards

Sequence No.	Model name KFA-35	Description by ISA Standards	Symbol / Pin No. / Operation input — B. S 23 · ACK 21 · RST 19 · B.S 23 · ACK 21 · RST 19 · L T 11
A1	C□A1	A-4-14	(ACK) (ACK) — Alarm input 1, Visible input 1, Alarm input 2, Visible input 2, Audible output
A2	C□A2	A-14	(ACK) (ACK) — Alarm input 1, Visible input 1, Alarm input 2, Visible input 2, Audible output
A3	C□A3	M-14	(ACK) (RST) (ACK) (RST) — Alarm input 1, Visible input 1, Alarm input 2, Visible input 2, Audible output
A4	C□A4	A-1-2-14	(SLC) (ACK) (SLC) (ACK) — Alarm input 1, Visible input 1, Alarm input 2, Visible input 2, Audible output
A5	C□A5	M-1-2-14	(SLC) (ACK) (RST) (SLC) (ACK) (RST) — Alarm input 1, Visible input 1, Alarm input 2, Visible input 2, Audible output

Sequence No and sequence contents

A1: Non-lock-in type. Indicator output continues until fault input is reset.
A2: Lock-in type. After BS (ACK), indicator output continues until fault input is reset.
A3: Lock-in type. After BS (ACK), indicator output continues even if fault input is reset.
Indicator output is reset by RST.
A4: Lock-in type. After BS (SLC), flashing is stopped by ACK (ACK) and indicator input continues until the fault input is reset.
A5: Lock-in type. After BS (SLC), indicator output continues even if flashing is stopped by ACK (ACK) and the fault input is reset.
Indicator output is reset by RST.
A6: Lock-in type. After BS (SLC), indicator output continues until flashing is stopped by ACKI (ACK) and the fault input is reset.
The second fault is displayed at a delayed period.
A7: Lock-in type. After BS (SLC), the first-out sequence can also be distinguished after ACK (ACK) input and is then reset by RST (RST).
Thereafter, indicator output continues until the fault input is reset.
After that, indicator output continues until the fault input is reset.
The first-out sequence can be reset by pressing RST even before BS (SLC).

NOTICE

- First-out sequence is a function to distinguish the first fault and subsequent fault. First-out is released when flashing stops. After this operation, the first input is identified to be the first fault.

■ Input/Output Terminal Nos. of Alarm/Common Unit

Terminal No.	Symbol	Function
1	LAMP OUT	An alarm indicator lamp output terminal The terminal drives indicator lamps by open collector output
3	P	P (+) pole terminal for rated operating voltage
5	BZ OUT	Buzzer output terminal The terminal drives audible output by open collector
7	FB	A slow flashing signal terminal This is an input from the common unit to the alarm unit and makes the alarm lamp flashing
9	FA	A fast flashing signal terminal This is an input from the common unit to the alarm unit and makes the alarm lamp flashing
11	LT	A lamp test terminal The switch connected to this terminal is used for checking whether lamp is burnt out or not The operating voltage is impressed to it through indicator light. Select a switch which covers all current capacity of the all lamps in the system
15	BC	Buzzer control terminal At fault input, buzzer signal is input from the alarm unit to the common unit
17	FO	First-out terminal This connects to FO terminal between the chassis units to be grouped when grouping the first-out sequence
19	RST	Reset terminal for alarm lamp This connects the reset switch for alarm lamp. (Not available for the sequence Nos. A1, A2, and A4)
21	ACK	Acknowledge (check terminal) This connects the switch for sequence confirmation (Not available for the sequence Nos. A1, A2, and A3)
23	BS	Buzzer stop terminal This connects the switch for audible silence
• N.O. contact switches shall be used for the switches connected to the above-mentioned terminals 19, 21, and 23. Voltage of approx. 10V shall be applied to these contacts and the input impedance shall be approx. 20kΩ • Connection shall be made between the N (–) pole of the operating voltage and an each terminal of the switch		
25	N	N (–) pole for the rated operating voltage All current returns to the N (–) pole of the power supply through this terminal
27	F	Fault input terminal Fault contact shall be connected between this terminal and N (–) pole of the rated operating voltage Select whether N.O. (normal open) or N.C. (normal close) of the fault contact with the slide switch on the top of the alarm unit

Notes:

1. N.O. contact switches shall be used for the switches connected to the above mentioned terminals 11, 19, 21 and 23. Voltage of approx. 10V shall be applied to these contacts and the input impedance shall be approx. 20KΩ. Connection shall be made between the N (–) pole of the rated operating voltage and an each terminal of the switch.

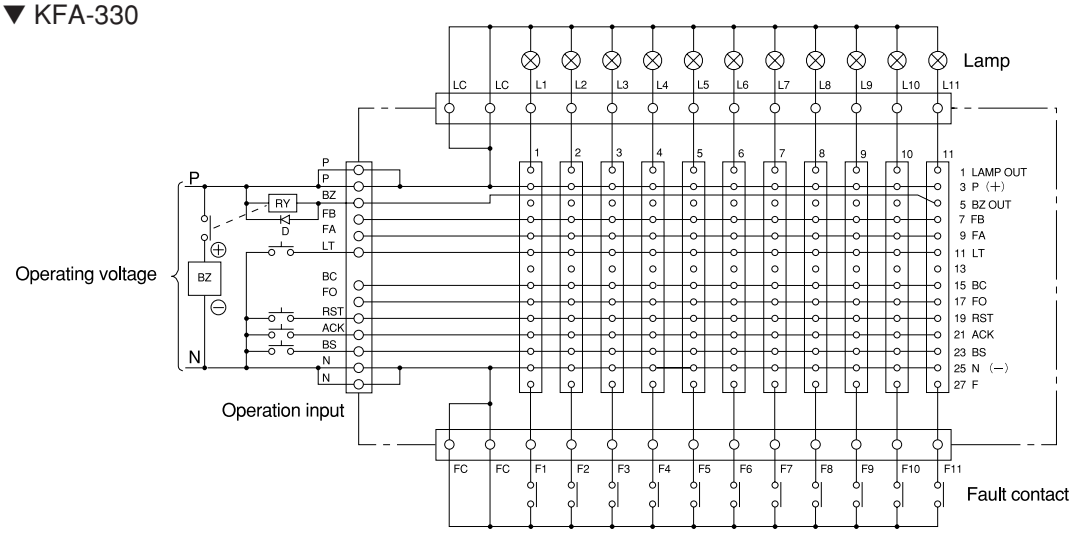
■ Input/Output Terminal Nos. of Chassis Unit

Refer to the connection diagram of chassis unit.

Symbol	Function
LC	Alarm lamp power supply terminal This is a power terminal for the alarm lamp and is connected to the P (+) pole of the operating voltage The P (+) power of the alarm lamp is supplied from this terminal
L1~L11	Output terminal of the lamp on each alarm unit This is connected to the collector of the output transistors on the alarm unit When the alarm lamp lights, this terminal voltage becomes approx. 0V
FC	Fault input common terminal This is connected to the N (–) pole of the operating voltage
F1~F11	Fault input terminal Fault contact shall be connected to this terminal and the N (–) pole of FC When the fault contact is opened, the operating voltage is applied (Approx. 7.5V for KFA-330)

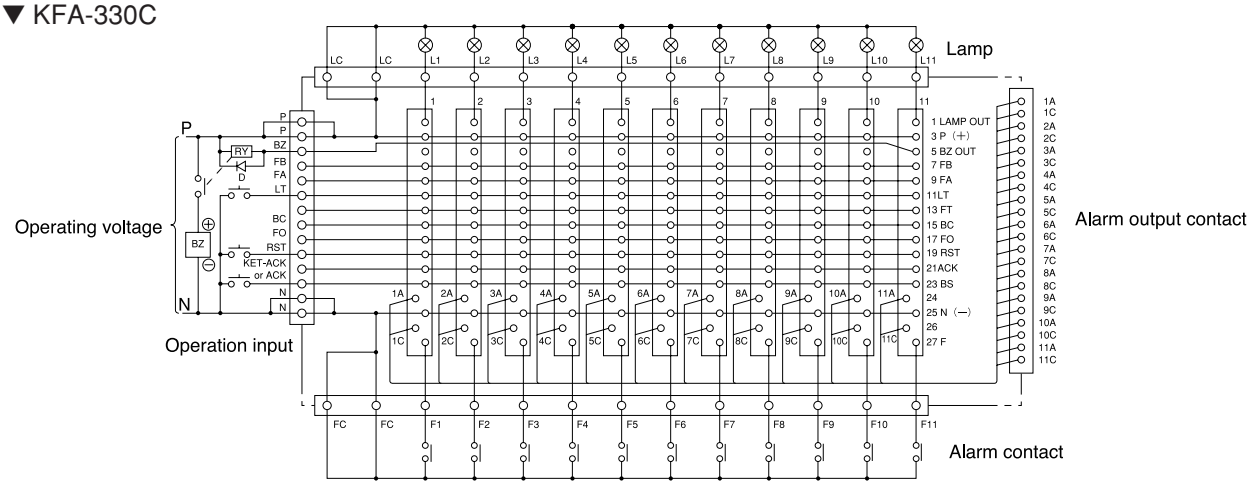
■ Connection Diagram of Chassis Unit

▼ KFA-330



- The connections inside the chassis unit are indicated by (— - — - —).
- Other operation switches, buzzers, relays, lamps, etc., are not included in this unit.

▼ KFA-330C



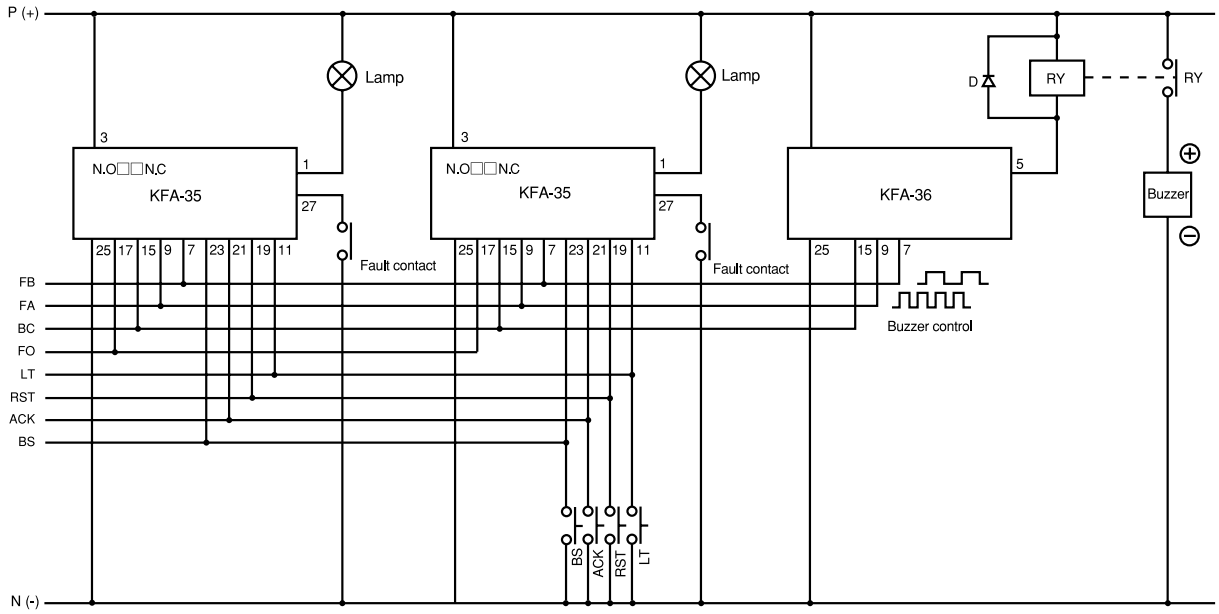
- The connections inside the chassis unit are indicated by (— - — - —).
- Other operation switches, buzzers, relays, lamps, etc., are not included in this unit.

■ System Connection Diagram

▼ KFA-330

The diagram shows the basic connection of the alarm unit (KFA-35□A6) and the common unit (KFA-36B).
The terminal No. 7 does not have to be connected in other sequences (No. 1~5) because it is not used.

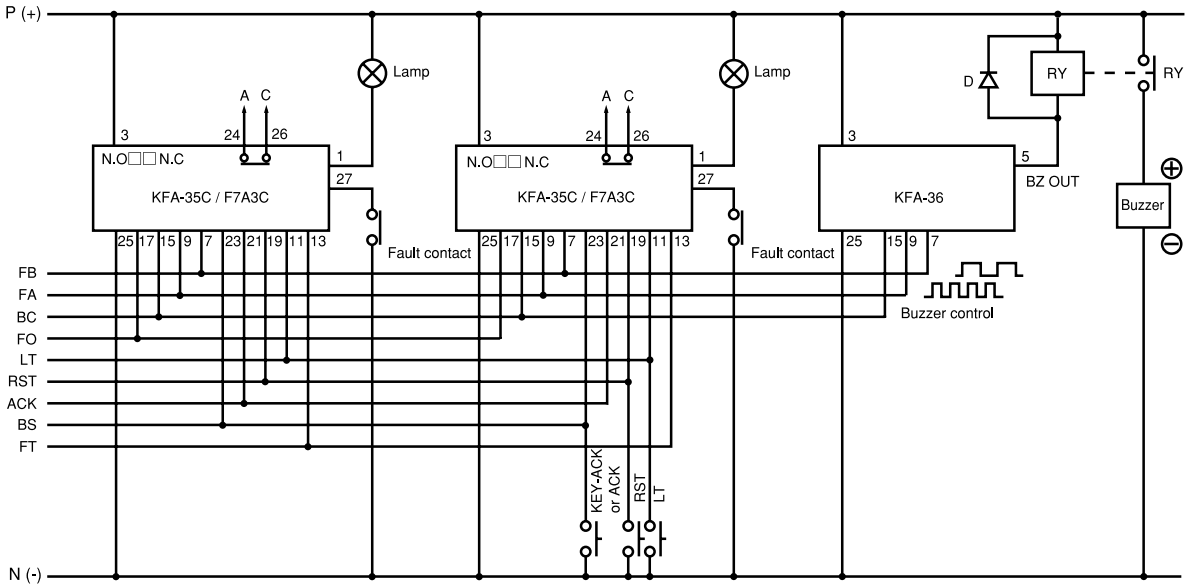
- The terminal No. 17 is a first-out terminal. When grouping first-out, FO terminals between chassis units shall be connected.
- The terminal No. 19 does not have to be connected because it is not used in the sequence No.1, 2, or 4.



▼ KFA-330C

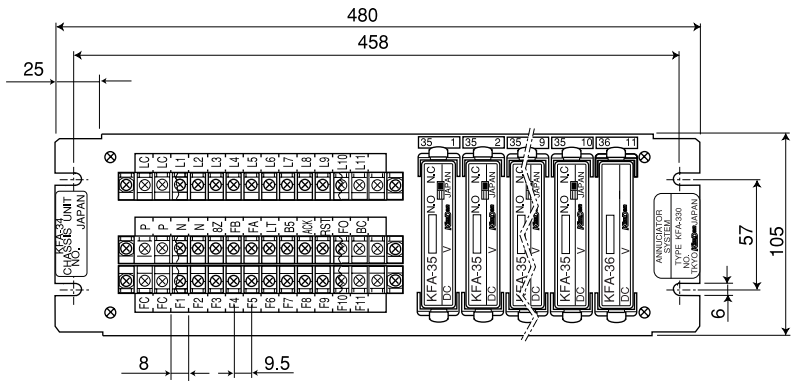
The diagram shows the basic connection of the alarm unit (KFA-35F□□□C) and the common unit (KFA-36□C).

- The terminal No. 17 is a first-out terminal. When grouping first out, FO terminals between chassis units shall be connected.
- The smallest group of first-out is structured per chassis unit. Subgrouping in the chassis unit is not possible. However, the number of grouped units can be adjusted according to the selection of the unit.
- A and C of the alarm module are alarm output contacts.

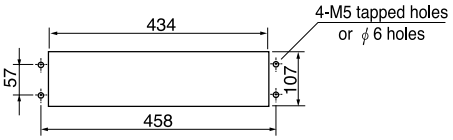


■ Dimensions

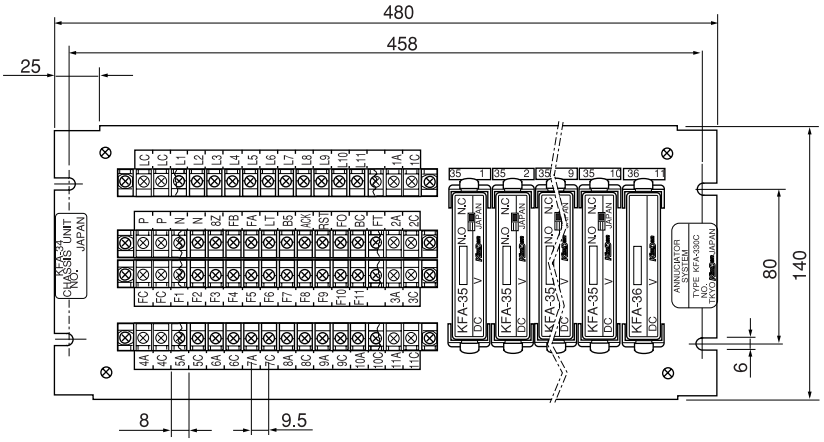
▼ KFA-330 complete with Chassis unit, Alarm unit and Common unit



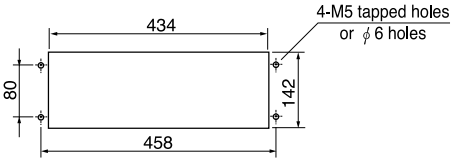
Panel Cut Dimensions

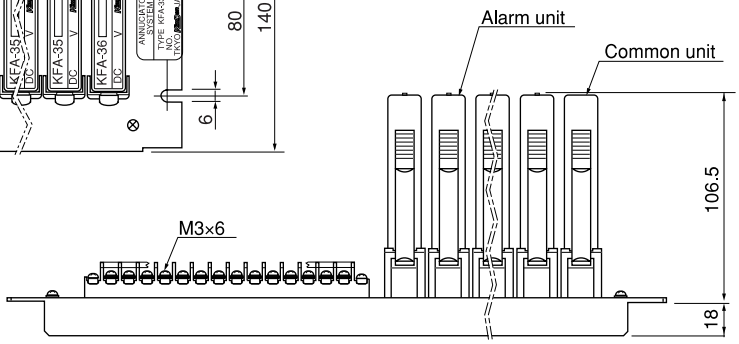


▼ KFA-330C complete with Chassis unit, Alarm unit and Common unit

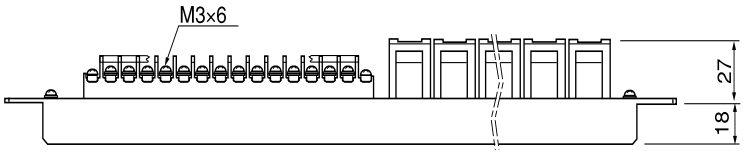


Panel Cut Dimensions

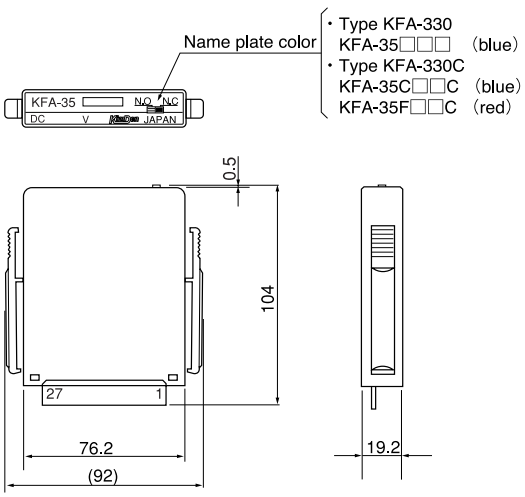




▼ KFA-34, KFA-34C Chassis Unit



▼ KFA-35 Alarm Unit



▼ KFA-36 Common Unit