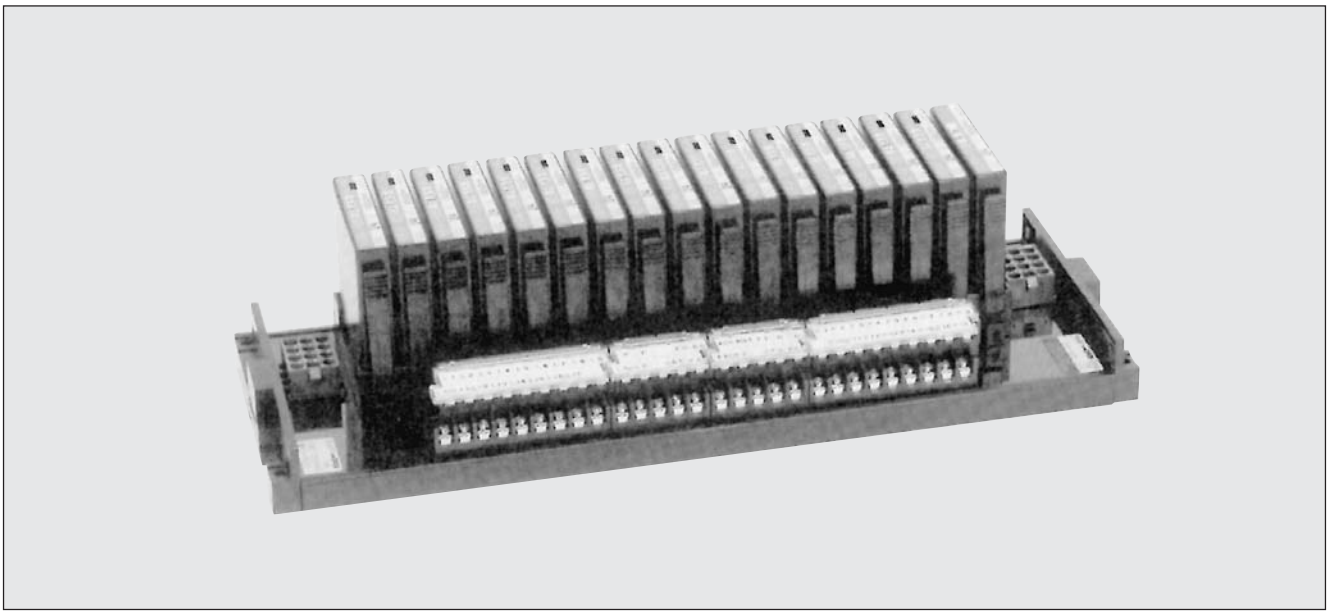
Solid State Annunciator

KFA-600



■ Features

- A compact and space saving simplified alarm system.
- A variety of alarm systems: 64 types available according to the combination of power supply voltage and sequence patterns.
- Solid state annunciator KFA-600 consists of a chassis unit (KFA-64□), an alarm unit (KFA-65□□□), and a common unit (KFA-66□□).
- Two chassis units available: 8 point for KFA-64A and 16 point for KFA-64B. KFA-64A can mount 8 alarm units and 1 common unit, and KFA-64B can mount 16 alarm units and 1 common unit.
- When the number of alarm units cannot be mounted in one chassis unit, just increase the number of chassis units. Since there is no need to mount an additional common unit to the second chassis unit, 9 and 17 alarm units can be mounted in KFA-64A and KFA-64B, respectively.
  100 alarm units can be connected per 1 common unit.
- For multiple chassis units, besides the crossover wiring method by screw terminal blocks between operating input/output terminals, connectors CN18 and CN19 on the chassis units can also be crossed over by an optional wire harness.
- 11 sequence patterns are available in the alarm unit.
  Except for KFA-65F□A7, different sequence patterns can be mixed within the same chassis.
  Slide switch mounted on the alarm unit is switchable to either N.O. or N.C. contact fault inputs.
- Sequences with a first-out function cannot be grouped within the same chassis unit. Alarm units with or without first-out functions can be mixed.
- Two common units are available. KFA-66B□ is designed specifically for alarm unit KFA-65F□A7, while KFA-66A□ can be used for all other alarm units.
- Designed with a low power consumption of approx. 0.2W at 24V DC for both the alarm unit and common unit.

■ Model Designation

Chassis Unit

KFA - 64 [B] [ ]

Model name
A : 8 points
B : 16 points
With/without lamp test*
L : With
No symbol: Without

*If there is a lamp test function, the function can not be used inoperational tests.

Alarm Unit

KFA - 65 [F] - [9] - [A5] [ ]

Model name
With/without first-out **F** : with, **C** : without
Operating voltage **6** : 24V DC, **7** : 48V DC, **8** : 100/110V DC, **9** : 125V DC
Sequence No. **A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11**
With/without lamp test* **L** : With, **No symbol**: Without

Common Unit

KFA - 66 [A] [9]

Model name
Flicker type **A** : Sequences available for No. A1-A6 and No. A8-A11. **B** : Sequence only for No. A7
Operating voltage **6** : 24V DC, **7** : 48V DC, **8** : 100/110V DC, **9** : 125V DC

Operating Voltage and Model				With/without First-out	Sequence No.	ISA Indication	Common Unit
24V DC	48V DC	100/110V DC	125 V DC				
KFA-65C6A1	KFA-65C7A1	KFA-65C8A1	KFA-65C9A1	Without	A1	A-4	KFA-66A
KFA-65F6A1	KFA-65F7A1	KFA-65F8A1	KFA-65F9A1	With		F2A-4	
KFA-65C6A2	KFA-65C7A2	KFA-65C8A2	KFA-65C9A2	Without	A2	A	
KFA-65F6A2	KFA-65F7A2	KFA-65F8A2	KFA-65F9A2	With		F2A	
KFA-65C6A3	KFA-65C7A3	KFA-65C8A3	KFA-65C9A3	Without	A3	M	
KFA-65F6A3	KFA-65F7A3	KFA-65F8A3	KFA-65F9A3	With		F2M	
KFA-65C6A4	KFA-65C7A4	KFA-65C8A4	KFA-65C9A4	Without	A4	A-1-2	
KFA-65F6A4	KFA-65F7A4	KFA-65F8A4	KFA-65F9A4	With		F2A-1-2	
KFA-65C6A5	KFA-65C7A5	KFA-65C8A5	KFA-65C9A5	Without	A5	M-1-2	
KFA-65F6A5	KFA-65F7A5	KFA-65F8A5	KFA-65F9A5	With		F2M-1-2	
KFA-65F6A6	KFA-65F7A6	KFA-65F8A6	KFA-65F9A6	With	A6	—	
KFA-65F6A7	KFA-65F7A7	KFA-65F8A7	KFA-65F9A7	With	A7	—	KFA-66B
KFA-65C6A8	KFA-65C7A8	KFA-65C8A8	KFA-65C9A8	Without	A8	—	KFA-66A
KFA-65C6A9	KFA-65C7A9	KFA-65C8A9	KFA-65C9A9	Without	A9	—	
KFA-65C6A10	KFA-65C7A10	KFA-65C8A10	KFA-65C9A10	Without	A10	—	
KFA-65C6A11	KFA-65C7A11	KFA-65C8A11	KFA-65C9A11	Without	A11	—	

Wire Harness

The chassis unit has connectors CN18 and CN19 for wiring to other chassis units. Use the wire harnesses to extend the system.

WH - 6 [A] - [03]

Model name
Wire type **A** : for wiring between chassis units, **B** : for external wiring of connectors
- External wiring of connector means operational output circuit by using CN18 or CN19.

Length of lead wire **03** : 0.3m (standard · KIV 1.25mm²) in the case of Type A Wire, **2** : 2m (standard · KIV 1.25mm²) in the case of Type B Wire

Dummy Unit

KFA - 65D

Model name

Connector Cover (for CN18 & CN19)

CV - 1

Model name

■ Specifications

KFA-600 System

Operating Voltage		24V DC	48V DC	100/110V DC	125V DC
Allowable Range		±20% of rated operational voltage			+15%/–20%
Operating Environment		Temperature: –10~+60°C, Humidity: RH 45% ~ 95% (No freezing or condensation)			
Storage Temperature		–20~+70°C (No freezing or condensation)			
Vibration Resistance		JIS C 0911*			
Shock Resistance		JIS C 0912 (apply 3-dimensional shock of 10G, 3 times)			
Noise Resistance	**Impulse**	Pulse duration 1μs, 2000V, 0 - p (common mode) Pulse duration 1μs, 800V, 0 - p (normal mode)			
	SWC	Crest value 6μs, 2500V, 0 - p,1.25MHz ANSI/IEEE C37·90a			

* Double amplitude 1.5mm vibration range 10~55Hz.
No damages in all parts after applying 3-dimensional vibration for 1 hour with sweep time of 1 minute.

Chassis Unit KFA-64

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-65

Model		**KFA-65□6□**	**KFA-65□7□**	**KFA-65□8□**	**KFA-65□9□**
Power Consumption (excluding lamp)		0.2W max.	0.4W max.	0.8W max.	1.0W max.
Fault Input	**Contact**	N.O./N.C. contact selectable by slide switch (Solid state input is available)			
	Voltage	24V DC	48V DC	100V/110V DC	125V DC
	Resistance	8KΩ	19KΩ	61KΩ	67KΩ
Operating Input	**Response time**	20ms			
	Contact input	N.O.			
	Input voltage	5V±1V			
Operating Time	**Input resistance**	20KΩ±10%			
	BS	100ms			
	ACK	200ms			
	RST	400ms			
	FT	80ms			
Alarm Output (lamp)		250mA (open collector)			

Common Unit KFA-66

Model		**KFA-66A6** **KFA-66B6**	**KFA-66A7** **KFA-66B7**	**KFA-66A8** **KFA-66B8**	**KFA-66A9** **KFA-66B9**
Power Consumption (excluding audible output)		0.2W max.	0.4W max.	0.8W max.	1.0W max.
Audible Output (buzzer)		250mA (open collector)			
Lamp	**Fast**	0.5 sec ±15% (0.25 sec ±15%)*			
Flicker Cycle	**Slow**	1.0 sec ±15% (0.5 sec ±15%)*			
Number of Alarm Units Connected		100 units max.			

* The values in ( ) are available for KFA-66B in the flicker cycle.

■ Materials

Terminal Block		P.B.T resin	(black)	
Terminal Screw		Carbon steel	(nickel plated)	M3×10
Terminal Block	**Cover**	Polycarbonate resin	(transparent)	
	Name Plate	Paper	(white)	
End Clamp		Modified PPO resin	(black)	UL94V-1
Insulating Support		Modified PPO resin	(black)	UL94V-1
Guide		Polycarbonate resin	(black)	
Printed Circuit Board		Glass epoxy resin		thickness 1.6 mm
Alarm/Common Unit Case		Polycarbonate resin	(black)	

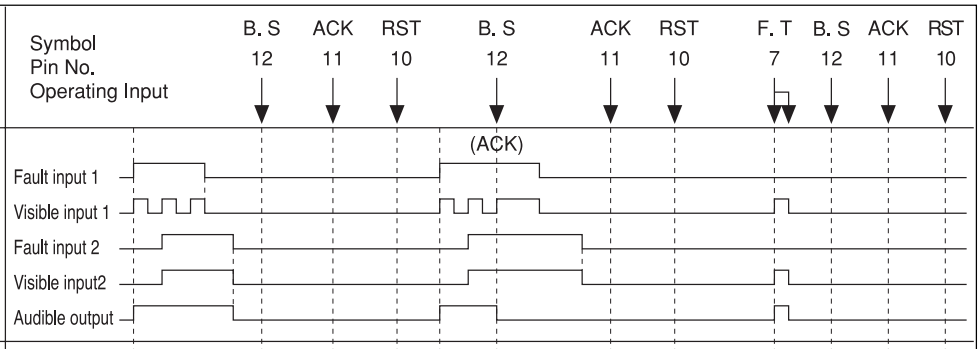
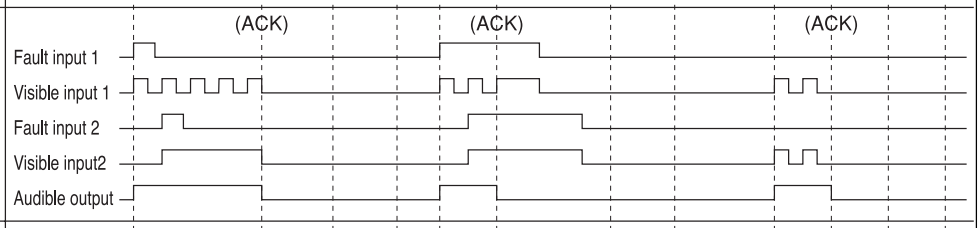
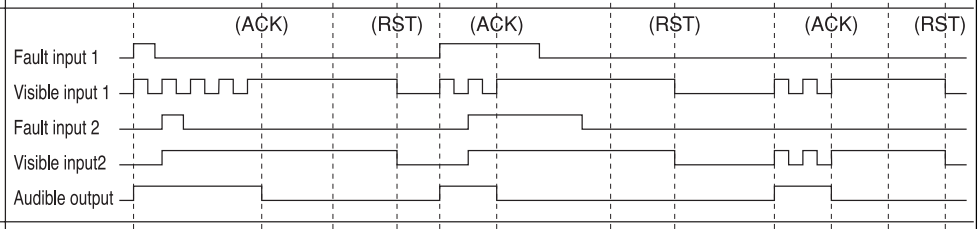
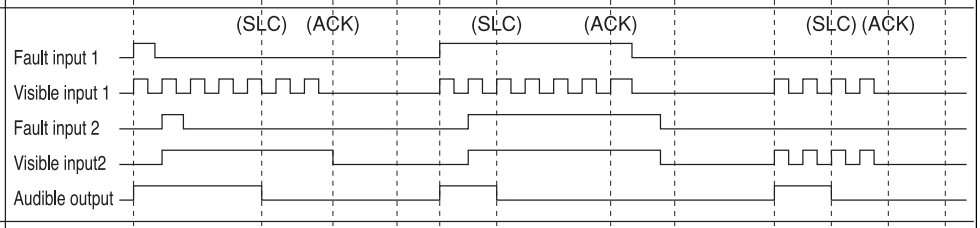
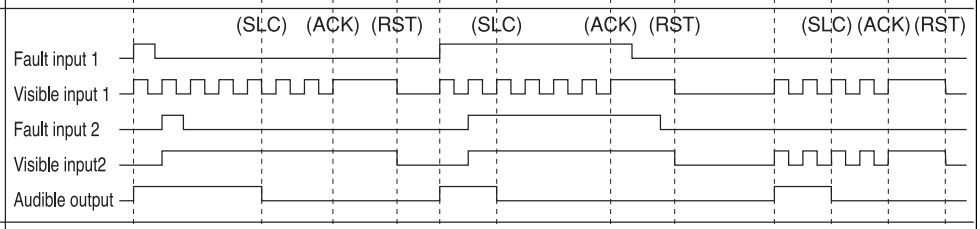
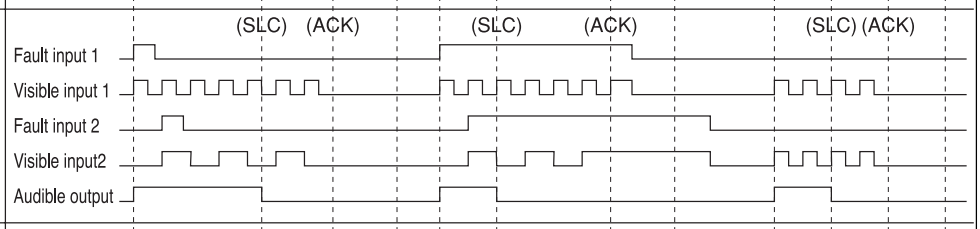
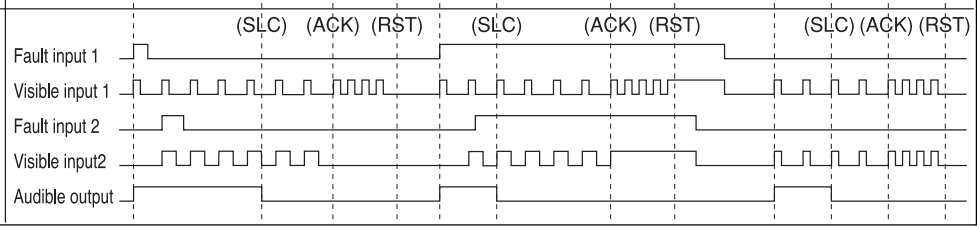
■ Weight

Chassis unit	:	700g
Alarm unit	:	45g
Common unit	:	44g
Wire harness	:	
WH-6A-03		71g
WH-6B-2		300g
Dummy unit	:	7g
Connector cover	:	8g

■ Sequence Pattern

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	—	

Notes:

1.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.

2.When the first-out function is used between chassis units, make connection to the operational input/output terminals instead of connectors CN18 and CN19.

■ Sequence Pattern

Without first-out sequence

( ) - Description by ISA Standards

Sequence No.	Model KFA-65	Description by ISA Standards	Symbol / CN1～17 Pin No. / Operating input	B. S 12	ACK 11	RST 10	B. S 12	ACK 11	RST 10	F. T 7	B. S 12	ACK 11	RST 10
A1	C□A1	A-4	Fault input 1	(ACK)			(ACK)						
			Indicator output 1										
			Fault input 2										
			Indicator output 2										
			Buzzer output										
A2	C□A2	A	Fault input 1	(ACK)			(ACK)			(ACK)			
			Indicator output 1										
			Fault input 2										
			Indicator output 2										
			Buzzer output										
A3	C□A3	M	Fault input 1	(ACK)		(RST)	(ACK)		(RST)	(ACK)			(RST)
			Indicator output 1										
			Fault input 2										
			Indicator output 2										
			Buzzer output										
A4	C□A4	A-1-2	Fault input 1	(SLC)	(ACK)		(SLC)	(ACK)		(SLC)	(ACK)		
			Indicator output 1										
			Fault input 2										
			Indicator output 2										
			Buzzer output										
A5	C□A5	M-1-2	Fault input 1	(SLC)	(ACK)	(RST)	(SLC)	(ACK)	(RST)	(SLC)	(ACK)	(RST)	
			Indicator output 1										
			Fault input 2										
			Indicator output 2										
			Buzzer output										

Notes:

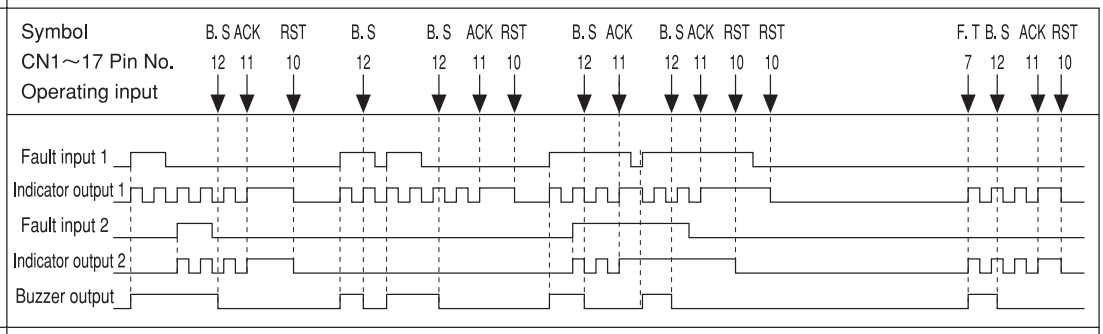
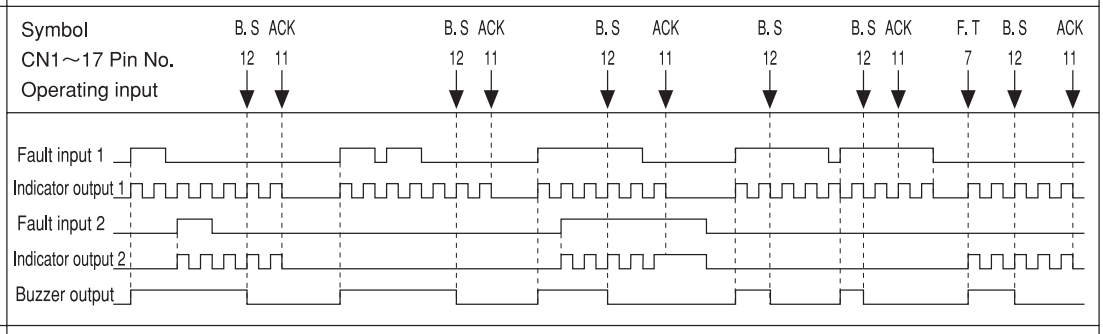
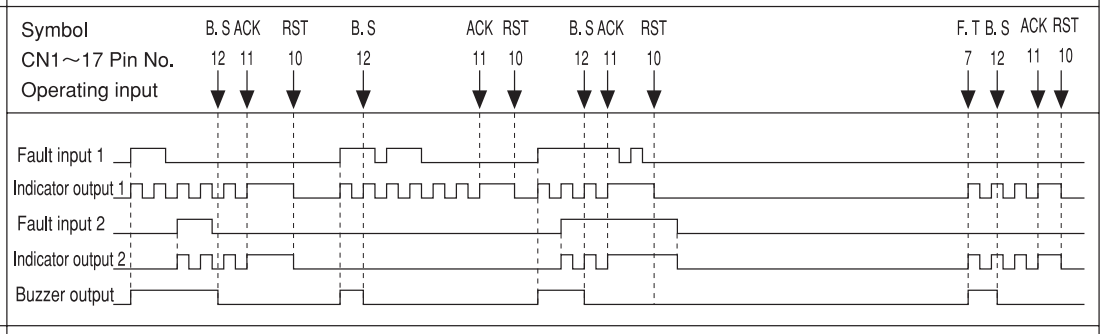
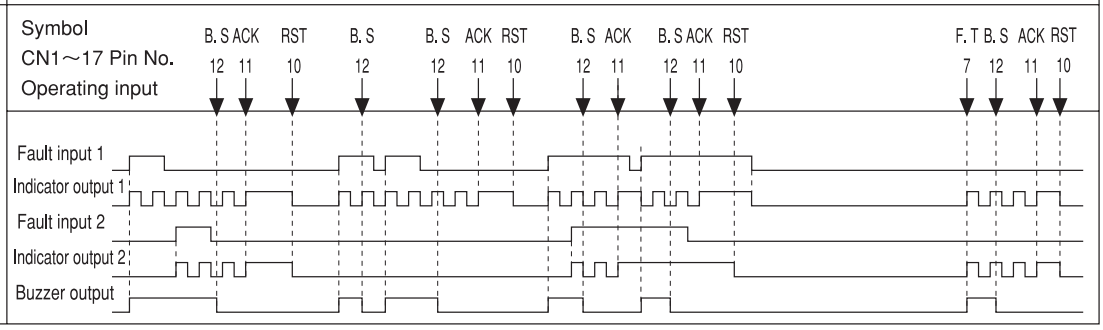
1. Always turn off the power when connecting/disconnecting the alarm unit and common unit, and when wiring the chassis unit.
2. In order to maintain reliability, the power supply, operational input/output, and other circuits shall be wired as far away as possible from the power cable. Twisted-pair wiring is recommended for the operation input terminal when this condition cannot be met.
3. Consideration should be given to the capacity of the contact when using operational switches.
4. When the operational switch is not used, the terminal connection shall be opened.
5. The first-out sequence is a function that distinguishes the first fault input from any subsequent fault inputs. After steady-on, the initial input is treated as the first fault input.
6. When the first-out sequence is not used between chassis units, connection shall be made with the operational output terminals instead of connectors CN18 and CN19.

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 ACK (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.

■ Sequence Pattern

Without first-out sequence

Sequence No.	Model KFA-65	
A 8	C□A8	
A9	C□A9	
A10	C□A10	
A11	C□A11	

Sequence No and sequence contents:

A8: Repetitive fault operation added. Fault input causes the indicator output to flicker and a buzzer to sound.
When the fault input is reset after the buzzer is stopped by BS and before RST and is input again (repetitive fault), the annunciator enters the initial state (lamp flickering and buzzer sounding).
Indicator output is reset by RST.

A9: Repetitive fault operation added. Fault input causes the indicator output to flicker and a buzzer to sound.
When the fault is input again (repetitive fault) after the buzzer is stopped by BS and before ACK, the annunciator enters the initial state (lamp flickering, buzzer sounding).

A10: Fault output is interlocked by fault input. The flicker is stopped by ACK after BS, and indicator output continues even if the fault input is reset.
The indicator output is reset by RST.
However, when RST is input while fault input is continuing after ACK, the lamp is automatically reset and the RST memory is also cleared.
Each state of a sequence is not changed by whether or not there is a fault input (repetitive fault).

A11: Repetitive fault operation added. Fault input causes the indicator output to flicker and a buzzer to sound.
When the fault is input again (repetitive fault) the annunciator enters the initial state (lamp flickering, buzzer sounding).
Indicator output is reset by RST.
However, when RST is input while fault input is continuing after ACK, the lamp is automatically reset and the RST mempory is also cleared.

■ Input/Output Terminal Nos. of Alarm Units and Common Units

Terminal No.	Symbol	Function
1	LAMP OUT	An alarm lamp output terminal The terminal drives indicator lamps by open collector output
2	P	P (+) pole for rated operating voltage
3	BZ OUT	Buzzer output terminal The terminal drives audible output by open collector
4	FB	A slow flashing signal terminal This is an input from the common unit to the alarm unit and makes the alarm lamp flashing
5	FA	A fast flashing signal terminal This is an input from the common unit to the alarm unit and makes the alarm lamp flashing
7	FT	A function test (operation test) terminal This connects the switch for confirming the sequence operation
8	BC	Buzzer control terminal At alarm input, buzzer signal is input from the alarm module to the common unit
9	FO	First-out terminal This connects to FO terminal between the chassis units to be grouped when grouping the first-out sequence
10	RST	Reset terminal for alarm lamp This connects the reset switch for alarm lamp (Not available for sequence Nos. A1, A2, A4, A6 and A9)
11	ACK	Acknowledge (check terminal) This connects the switch for sequence confirmation (Not available for the sequence Nos. A1, A2 and A3)
12	BS	Buzzer stop terminal This connects the switch for audible silence
13	N	N (–) pole for rated operating voltage All current returns to the N (–) pole of the power supply through this terminal
14	F	Fault input terminal The 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 7, 10, 11 and 12. Voltage of approx. 5V 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.

＊When lamp test (LT) is provided, the terminal number becomes No. 7.

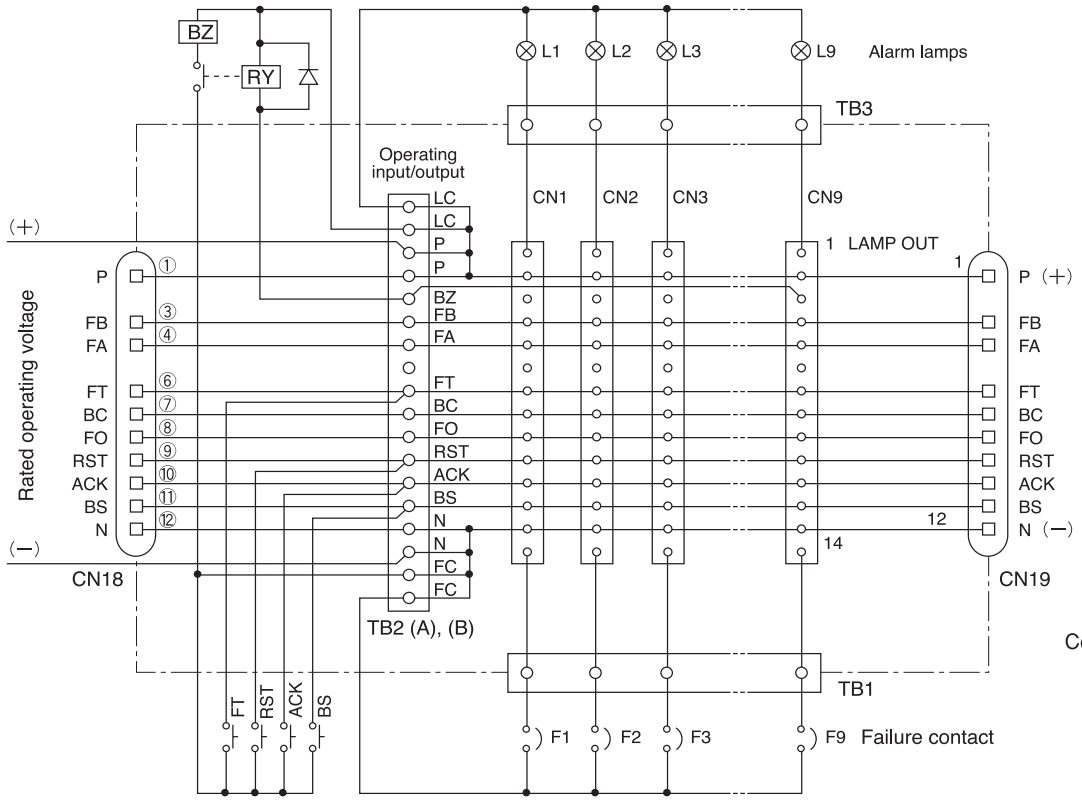
■ Chassis Unit Input/Output Terminal Nos.

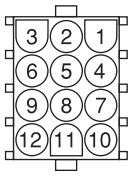
Refer to the chassis unit connection diagram.

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~L17	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~F17	Fault input terminal The 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

■ Chassis Unit Connection Diagram

This diagram shows the connection diagram for 8 points.





CN18／CN19
Connector pin numbers

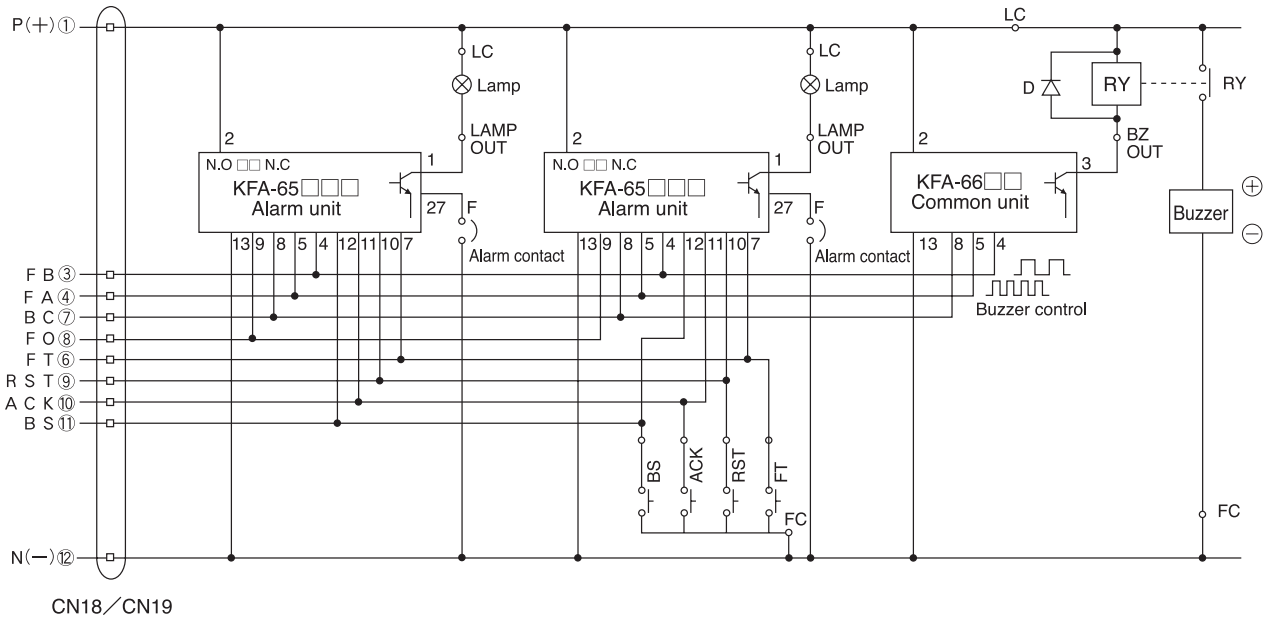
①	P (+)
②	
③	FB
④	FA
⑤	
⑥	FT
⑦	BC
⑧	FO
⑨	RST
⑩	ACK
⑪	BS
⑫	N (–)

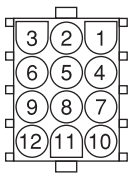
CN18／CN19
Connector pin assignment

1. The connections inside the chassis unit are indicated by the dashed line. Other operation switches, buzzers, relays, and alarm lamps, etc. are not included in this unit.
2. Insert the common unit (KFA-66) into CN9.
3. The alarm unit (KFA-65) can be inserted into CN9 in addition to CN1~CN8.
4. Connections L9 and F9 are not required when the common unit is inserted into CN9.
5. Connectors CN18 and CN19 include all of the crossover wires necessary for chassis unit expansion.
6. The allowable current of the power supply line P (+)/N (–) is 10A.
   Connection with CN18 and CN19 shall be made at not less than 10A. When more than 10A, connection shall be limited to 10A and proportional to the input/output terminals.

■ System Connection Diagram

The diagram shows the basic connection of the alarm unit (KFA-65) and the common unit (KFA-66).





CN18／CN19
Connector pin numbers

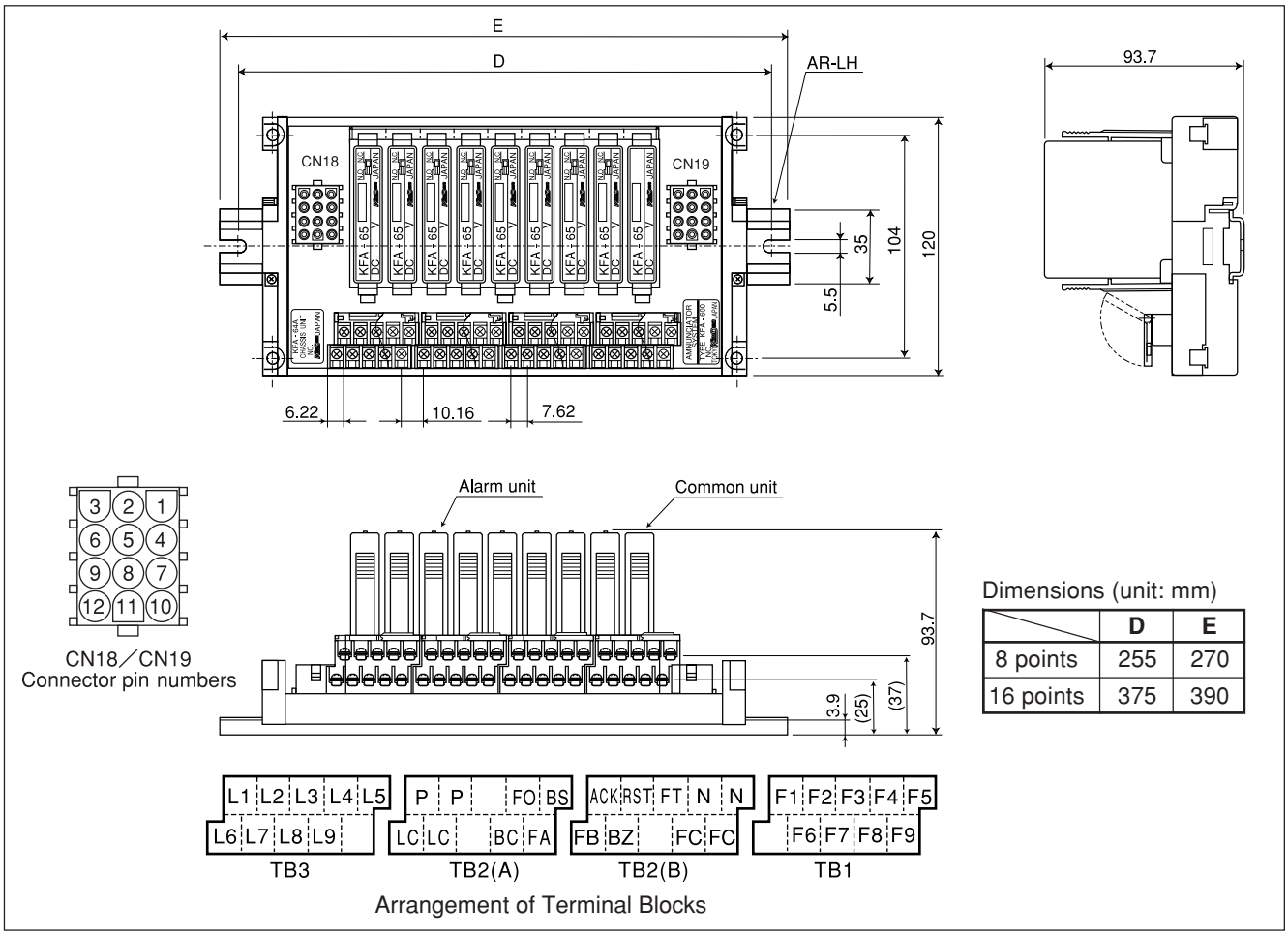
①	P (+)
②	
③	FB
④	FA
⑤	
⑥	FT
⑦	BC
⑧	FO
⑨	RST
⑩	ACK
⑪	BS
⑫	N (−)

CN18／CN19
Connector pin assignment

1. The input or output terminal number on each unit shows the pin number of the connectors.
2. N.O./N.C. switches of the alarm unit are used to select either N.O. contact or N.C. contact of the fault input.
3. P (+) and N (–) show the polarity of the rated operating voltage.
4. RY shows relay and makes the buzzer sound through this contact.
5. The first-out terminals, terminal No. 9 on the alarm units, are interconnected to the FO (pin No. 8) of CN18 or CN19 connector. The connection of the correspondent FO (pin No. 8) makes first-out group.
6. Terminal No. 11 of the alarm unit does not connect with ACK switch because it is not used in the sequence Nos. A1, A2 and A3.
7. Terminal No. 10 of the alarm unit does not connect with RST switch because it is not used in the sequence Nos. A1, A2, A4, A6 and A9.

■ Dimensions

This drawing shows the system for 8 points. KFA-600 complete with alarm unit, common unit and chassis unit with rail.



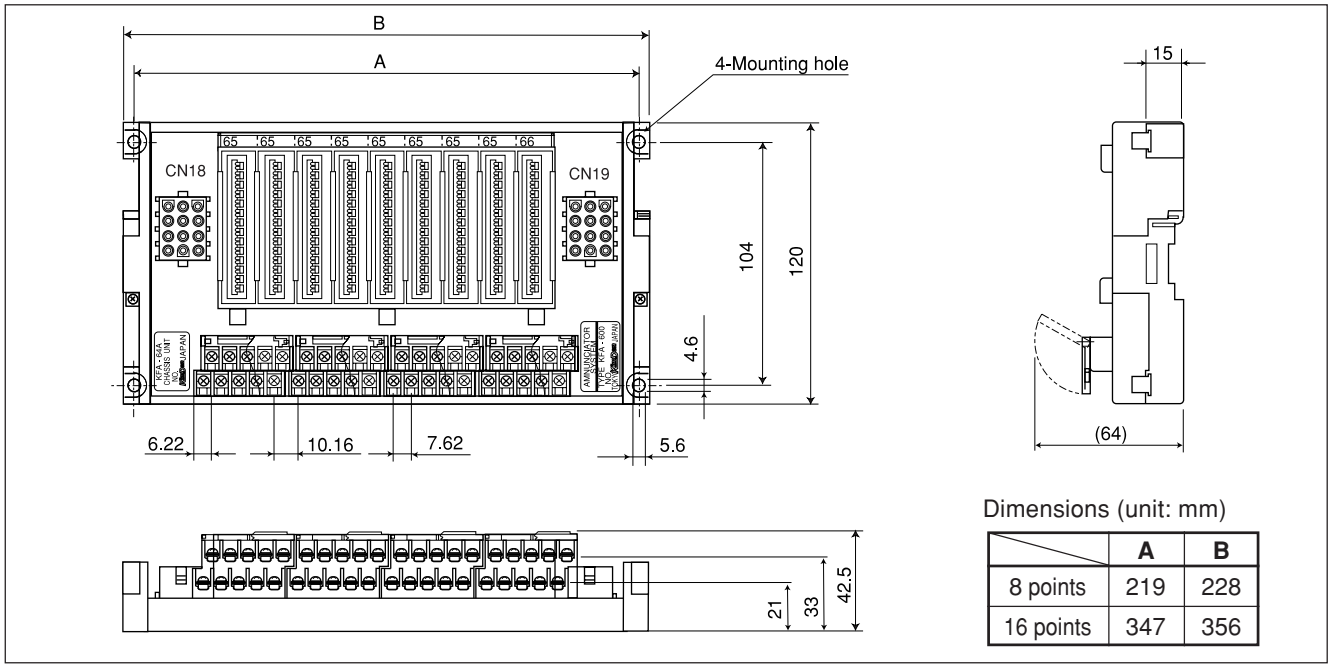
Dimensions (unit: mm)

	D	E
8 points	255	270
16 points	375	390

Arrangement of Terminal Blocks

■ External Diagram of Chassis Unit

This drawing shows the chassis unit for 8 points.

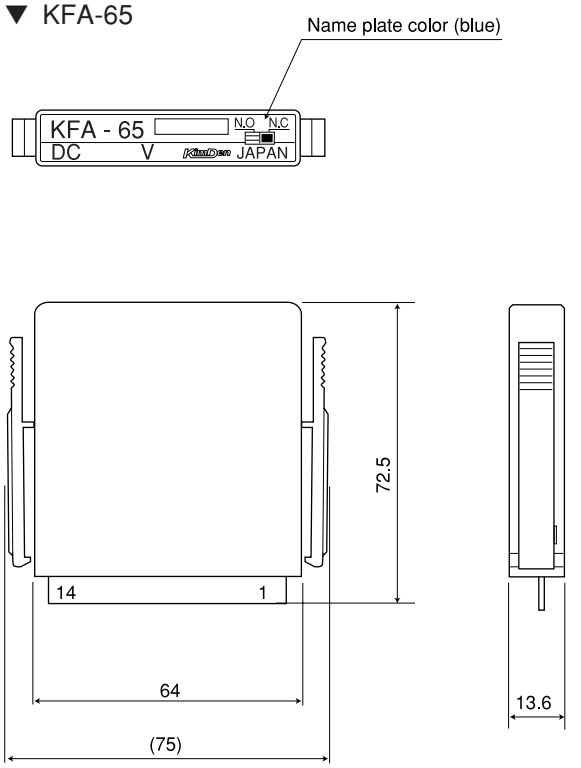


Dimensions (unit: mm)

	A	B
8 points	219	228
16 points	347	356

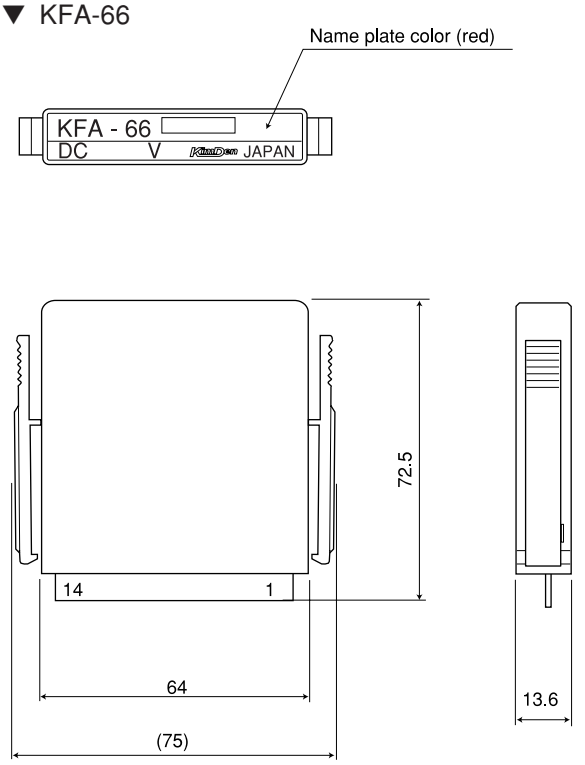
■ Alarm Unit

▼ KFA-65



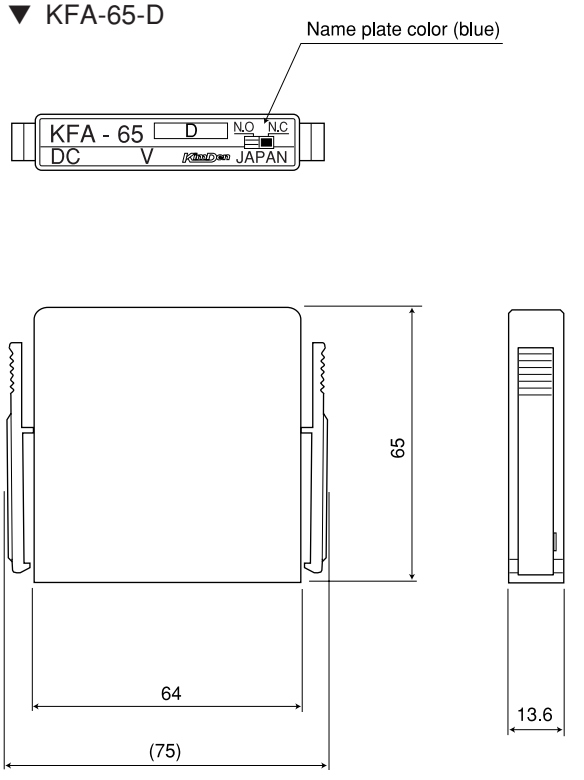
■ Common Unit

▼ KFA-66



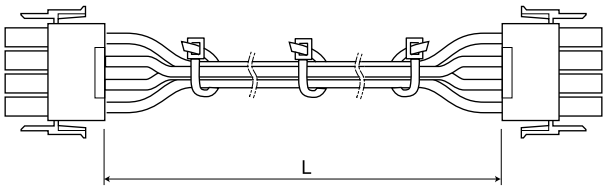
■ Dummy Unit

▼ KFA-65-D



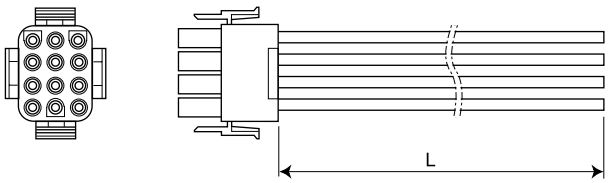
■ Wire Harness

▼ WH-6A-03



Connector: AMP 350735-1 (12P)
Wire: KIV 1.25mm² L=0.3 (m)

▼ WH-6B-2



Connector: AMP 350735-1 (12P)
Wire: KIV 1.25mm² L=2 (m)