LED Annuciator Lights

FA(W)-20/30 Series



Features

- TFLED lamps provide a wider lighting area.
- Five lighting colors are available: milky white, red, green, orange, and yellow.
- Various lighting methods: full window/one color, split window/two colors, full window/alternate colors.
- Can be designed with or without frames.
- FA30 and FAW30 are made with aluminum lattice structures that are very strong for supporting indicators.
- Along with full voltage models, separate type adapters are available to provide access to various power sources.
- LED units can be easily replaced from the front surface.
- RoHS directive compliant.



- When used in a circuit with induced or leakage current, the LED may unintentionally light. To prevent this malfunction, install a resistor parallel to the indicator terminal.
- Use a separate adapter for the full voltage type (24V DC) when rated voltage is 100V DC or 200V AC.
- See page 2-40 for the possible number of annuciator lights that can be produced.
- Unless otherwise mentioned, all dimensions are indicated in "mm" in this book.





※1 Mark "W" only when a frame is desired.

%2	(unit: mm)
Code	Pitch Size
20FD	20 × 20mm
30FD	30 × 30mm
30FD	30 × 60mm

ЖЗ	
Code	Lighting Method
Α	Full window/one color
В	Split window/two colors (30H only)
с	Full window/alternate colors Red combined with another color (20F and 30H only)

Note: Use an adapter (model $E\Box$ -8) when using other than the specified

Lighting Color Coding Example

%4 Code Lighting Color W Milky white* R Red G Green 0 Orange γ Yellow

⁶ Milky white is the similar color to that of incandescent lamps.





voltages.

Specifications

Madal	Poted Voltoge	Rated Current		
Model	naleu voltage	Lighting Method A	Lighting Mehtod B	Lighting Method C
FA20FD/FAW20FD		15mA	_	15/15mA
FA30FD/FAW30FD	24V DC ±10%	17mA	—	_
FA30HD/FAW30HD		34mA	17+17mA	34+34mA

Item	FA20FD/FAW20FD	FA30FD/FAW30FD	FA30HD/FAW30HD	
Inculation Posistance	100M Ω or more between live parts and ground (unit - unit) measured by 500V DC megohmmeter.			
$100M\Omega$ or more between live parts and ground (unit - display box) measured by 500V D				
Withstand Valtage	2000V AC for 1	minute between live parts and ground	(unit - unit)	
withstand voltage	2000V AC for 1	minute between live parts and ground	(unit - display box).	
Heat Resistance	For 2	hours at $-40 \pm 3^{\circ}$ C and 2 hours at 70 =	⊧3°C	
Humidity Resistance		For 48 hours at 40 $\pm 2^{\circ}$ C and 95% RH		
Vibration Pasiatanaa	3-dimensiona	al vibration for 1 hour with a sweep time	e of 1 minute	
VIDIATION RESISTANCE	(amplitude: 1.5mm, frequency: 10/50Hz)			
Shock Resistance	3-dimensional shock of 500m/s ² to 6 surfaces, 5 times			
Operating Environment	Temperature: -10 ~ 40°C, Humidity: 45 ~ 85% RH (No freezing or condensation)			
Reverse Voltage	400V			
Lighting Color	Milky white (w), Red (R), Green (G), Orange (O), Yellow (Y)			
Panel Thickness	FA: 1~ 6mm/FAW: 1 ~ 10mm	1 ~ 6	mm	
Wiring	Connector wiring (0.3mm ²)*	M3.5×10 mounting screv	vs (torque:1 ∼ 1.3N·m)	
Applicable Standards	JIS C 8151 Industrial use indicators			
* Applicable Connectors	Housing:	PI011-04F (SUMIKO TEC)		
	Receptacle: 702062	-2M (SUMIKO TEC)	prostore must be ordered constately	
	Chimping 1001. F-1-702		mectors must be ordered separately.	

Materials

Lens	Acrylic resin	(transparent)	UL94HB
Legend Plate	Acrylic board	(milky white)	1.5 mm (20F·moulded), 2mm (30F/H)
Filter	Acrylic board	(transparent, red, green, orange, yellow)	1.5 mm (20F·moulded), 1mm (30F), 2mm (30H)
Case	Polycarbonate resin	(black)	UL94V-0
Bezel	20F: ABS resin 30F, H: aluminum	(black) (black)	UL94HB *No frames for FA models
Metal Box	Polished steel		only FAW20F models
Rail	Aluminum	(black alumite)	only 30FD / 30HD models
Wedge	Noryl resin (20F), AB	S resin (30F/H)	
Reflector	PBT resin		
Terminal Screw	Carbon steel	(zinc plated with chrome treatment)	M3.5×10 *Use connector wiring for FA(W)20 FD models
Mounting Clamp	Polished steel	(zinc plated with chrome treatment)	
Mounting Screws	Carbon steel	(zinc plated with chrome treatment)	M3.5×40

Weight Conversion

Model	Weight (g)	
FA20FD	$10 \times H \times W$	
FAW20FD	(10 × H × W) + 50	
FA30FD	$(36 \times H \times W) - (4 \times H) + (4 \times W)$	
FAW30FD	$(36 \times H \times W) + (10 \times H) + (10 \times W)$	
FA30HD	$(58 \times H \times W) - (4 \times H) + (8 \times W)$	
FAW30HD	$(58 \times H \times W) + (10 \times H) + (20 \times W)$	

1	Accessories	FA20F	FAW20F	FA30	FAW30
	 Mounting Clamp 	Mounting Spring	CA-3	CA-2 or	CA-1
	 Short Bar 			Mounting Spring	
	Horizontal	_	_	J-30A	J-30A
	Vertical	—		J-30C	J-30C

H : No. of Vertical Windows

W : No. of Horizontal Windows



FA20FD



Panel Cut and External Dimensions



Calculating Panel Cut Dimensions (unit: mm, $^{+0.3}_{-0}$) A = $20 \times No.$ of windows (vertical) -1.6 $B = 20 \times No.$ of windows (horizontal) - 1.6

Calculating External Dimensions (unit: mm)

C = 20 × No. of windows (vertical)

D = 20 × No. of windows (horizontal)

Dimension Tables

Vertical Windows

Windows	Panel Cut A ^{+0.3}	External C
1	18.4	20
2	38.4	40
3	58.4	60
4	78.4	80
5	98.4	100
6	118.4	120
7	138.4	140
8	158.4	160
9	178.4	180
10	198.4	200

Horizontal Windows

Windows	Panel Cut B ^{+0.3}	External D	Windows	Panel Cut B ^{+0.3}	External D
1	18.4	20	11	218.4	220
2	38.4	40	12	238.4	240
3	58.4	60	13	258.4	260
4	78.4	80	14	278.4	280
5	98.4	100	15	298.4	300
6	118.4	120	16	318.4	320
7	138.4	140	17	338.4	340
8	158.4	160	18	358.4	360
9	178.4	180	19	378.4	380
10	198.4	200	20	398.4	400

• 1 high × 1 wide for Model FA20FD is equivalent to Model FU20FD. (See page 1-40). · Appropriate Connectors-

- Housing : P I 011 - 04F (SUMIKO TEC)
- Receptacle : 702062 - 2M (SUMIKO TEC)

Crimping Tool : F - 1 - 702062 (SUMIKO TEC)

• The above connectors must be ordered separately. Wire harnesses for FA(W)20FD is optional. (See page 1-43).

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LED Unit Circuit Diagram



*Connector wiring

FAW20FD



Panel Cut and External Dimensions



Calculating Panel Cut Dimensions (unit: mm, common dif. ±0.5) $A = 20 \times No.$ of windows (vertical) +3 $B = 20 \times No.$ of windows (horizontal) +3

Calculating External Dimensions (unit: mm)

 $C = 20 \times No.$ of windows (vertical) + 11

 $D = 20 \times No.$ of windows (horizontal) + 11

Dimension Tables

Vertical Windows

Windows	Panel Cut A±0.5	External C
1	23	31
2	43	51
3	63	71
4	83	91
5	103	111
6	123	131
7	143	151
8	163	171
9	183	191
10	203	211

· Applicable Connectors -

Housing : P I 011 - 04F (SUMIKO TEC) Receptacle

: 702062 - 2M (SUMIKO TEC)

Crimping Tool : F - 1 - 702062 (SUMIKO TEC)

• The above connectors must be ordered separately. Wire harnesses for FA(W)20FD is optional. (See page 1-43).

LED Unit Circuit Diagram



Horizontal Windows

Windows	Panel Cut B±0.5	External D	Windows	Panel Cut B±0.5	External D
1	23	31	11	223	231
2	43	51	12	243	251
3	63	71	13	263	271
4	83	91	14	283	291
5	103	111	15	303	311
6	123	131	16	323	331
7	143	151	17	343	351
8	163	171	18	363	371
9	183	191	19	383	391
10	203	211	20	403	411

FA30FD







Calculating Panel Cut Dimensions (unit: mm, $^{+0.5}_{-0}$)A = 30 × No. of windows (vertical) - 2.5B = 30 × No. of windows (horizontal) - 2.5



LED Unit Circuit Diagram



Calculating External Dimensions (unit: mm)

 $C = 30 \times No.$ of windows (vertical)

 $D = 30 \times No.$ of windows (horizontal)

Dimension Tables

Vertical Windows

Windows	Panel Cut A ^{+0.5}	External C
1	27.5	30
2	57.5	60
3	87.5	90
4	117.5	120
5	147.5	150
6	177.5	180
7	207.5	210
8	237.5	240
9	267.5	270
10	297.5	300
11	327.7	330
12	357.7	360
13	387.7	390
14	417.8	420
15	447.8	450

Horizontal Windows

Windows	Panel Cut B ^{+0.5}	External D	Windows	Panel Cut B ₋₀ ^{+0.5}	External D
1	27.5	30	11	327.7	330
2	57.5	60	12	357.7	360
3	87.5	90	13	387.7	390
4	117.5	120	14	417.8	420
5	147.5	150	15	447.8	450
6	177.5	180	16	477.8	480
7	207.5	210	17	507.8	510
8	237.5	240	18	537.9	540
9	267.5	270	19	567.9	570
10	297.5	300	20	597.9	600

• 1 high \times 1 wide for Model FA30FD is equivalent to Model FU30FD. (See page 1-40).



FAW30FD



Panel Cut and External Dimensions



Calculating Panel Cut Dimensions (unit: mm, $^{+0.5}_{-0}$) A = 30 × No. of windows (vertical) + 12 B = 30 × No. of windows (horizontal) + 12

P (+) terminal N (-) terminal ₽ (38.5)CA-1 1~6 Panel thickness Mounting clamp Legend plate size 25 × 25mm : Legend plate thickness : 2mm Lighting area : 25 × 25mm Engraving space 23 × 23mm :

LED Unit Circuit Diagram



Calculating External Dimensions (unit: mm)

 $C = 30 \times No.$ of windows (vertical) + 20

 $D=30\times$ No. of windows (horizontal) + 20

Dimension Tables

Vertical Windows

Windows	Panel Cut A ⁺¹ ₋₀	External C
1	42	50
2	72	80
3	102	110
4	132	140
5	162	170
6	192	200
7	222	230
8	252	260
9	282	290
10	312	320
11	342	350
12	372	380
13	402	410
14	432	440
15	462	470

Horizontal Windows

Windows Lighting	Panel Cut B ⁺¹ ₋₀	External D	Windows Lighting	Panel Cut B ^{+0.5}	External D
1	42	50	11	342	350
2	72	80	12	372	380
3	102	110	13	402	410
4	132	140	14	432	440
5	162	170	15	462	470
6	192	200	16	492	500
7	222	230	17	522	530
8	252	260	18	552	560
9	282	290	19	582	590
10	312	320	20	612	620



FA30HD



Panel Cut and External Dimensions



Calculating Panel Cut Dimensions (unit: mm, +0.5)

 $A = 30 \times No.$ windows (vertical) -2.5

 $B = 30 \times No.$ of windows (horizontal) -2.5

Calculating External Dimensions (unit: mm)

 $C = 30 \times No.$ of windows (vertical)

 $D = 60 \times No.$ of windows (horizontal)

Dimension Tables

Vertical Windows

*im*Den

Windows	Panel Cut A ^{+0.5}	External C
1	27.5	30
2	57.5	60
3	87.5	90
4	117.5	120
5	147.5	150
6	177.5	180
7	207.5	210
8	237.5	240
9	267.5	270
10	297.5	300

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nonzoniai	VVIIIUUVVS

Windows	Panel Cut B +0.5	External D
1	57.5	60
2	117.5	120
3	177.5	180
4	237.5	240
5	297.5	300
6	357.7	360
7	417.8	420
8	477.8	480
9	537.9	540
10	597.9	600

- 1 high \times 1 wide for Model FA30HD is equivalent to Model FU30FD. (See page 1-40).

LED Unit Circuit Diagram



FAW30HD



Panel Cut and External Dimensions



Calculating Panel Cut Dimensions (unit: mm, $^{+1}_{-0}$) A = 30 × No. of windows (vertical) + 12 B = 60 × No. of windows (horizontal) + 12

Calculating External Dimensions (unit: mm)

 $C = 30 \times No.$ of windows (vertical) + 20

 $D = 60 \times No.$ of windows (horizontal) + 20

Dimension Tables

Vertical Windows

Windows	Panel Cut A ⁺¹ ₋₀	External C
1	42	50
2	72	80
3	102	110
4	132	140
5	162	170
6	192	200
7	222	230
8	252	260
9	282	290
10	312	320

Horizontal Windows

Winodws	Panel Cut B <u></u> t₁	External D
1	72	80
2	132	140
3	192	200
4	252	260
5	312	320
6	372	380
7	432	440
8	492	500
9	552	560
10	612	620

LED Unit Circuit Diagram



KimD

Removing the LED Unit

- The LED unit consists of a lens, legend plate, filter and the LED unit itself.
- To remove lens, insert the tip of a flat-head screwdriver (2~3mm width) into the side space of the case and gently rotate. The lens will pop out. A removal tool (model KX-20) for this operation is offered as an option.
- Use the removing tool (KX-7 or KX-7W) to remove the legend plate, filter and LED unit.
- When Mounting

To mount FA(W)20F, place the unit perpendicularly against the case with the connector pins facing up and pushed in all the way.

To mount FA(W)30F/H, place the unit perpendicularly against the case with the white leg section in the upper left corner, and push in all the way.

• Next, insert the legend plate with the textured surface facing down, and then click the lens hook into the groove inside the case.





Mounting to the Panel

• FA20	Insert the unit from the front side. The unit will be automati- cally fixed in position by the screw plate placed on the side.
• FAW20	Insert the unit from the front side. From the back, attach the mounting clamp (CA-3) hook to the square hole of the frame board, and screw tightly.
• FA30	Insert the unit from the front side with terminal section "P" facing up. Then from the back, attach the mounting clamp (CA-2) hook to the rail spacing between the cases, and screw tightly.
• FAW30	Insert the unit from the front side with terminal section "P"

facing up. Then from the back, attach the mounting clamp (CA-1) claw to the spacing of the frame, and screw tightly. Place the mounting clamps evenly around the integrated indicator. Fasten with the recommended torque 0.4~0.5N·m.





Wiring

• For FA(W)30F/H, secure the application terminal with a terminal screw (M3.5 × 10) in accordance with the polarity indications.

Recommended torque: 1.0~1.3N·m. Connector wiring for FA(W)20

Applicable Connector

Housing	:	PI 011-04F (SUMIKO TEC)
Receptacle	:	702062-2M (SUMIKO TEC)
Crimping Tool	:	F-1-702062 (SUMIKO TEC)

The harness is available as an optional part for model FA(W)20F. (Refor to page 1-43)

