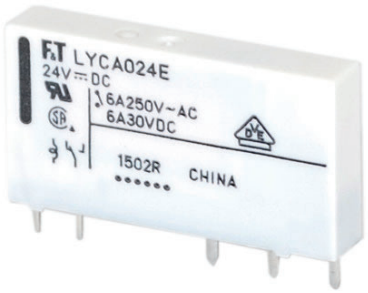
POWER RELAY
1 POLE - 6A SLIM TYPE (Medium Load Control)

FTR-LY Series

RoHS Compliant

■ FEATURES

- Slim 5.0 mm (w) x 28.0mm (l) x 15.0mm (h) (straight type)
  15.0mm(w) x 28.0mm (l) x 5.0mm (h) (right angle type)
- 1 Form C and 1 Form A, straight and right angle type available
- Mounting space: 140mm^2 (straight type), weight: 5.0g
- High insulation in small package
  Insulation distance (between coil and contacts): 8mm (creepage/clearance)
  Dielectric strength: 4,000VAC, surge strength: 6,000V
- Conforms to UL61010-1, UL61010-2-201, IEC/EN61010-1,
  IEC/EN61010-2-201 (max. 277VAC)
- UL hazardous locations (ANSI/ISA12.12.01) compliant type is available
  (straight type)
- Socket type available
- Plastic sealed type RTIII
- RoHS compliant



■ APPLICATIONS

PLC, I/O modules, timers, heater control, air conditioners, wind power generation control etc.

■ PART NUMBERS

[Example] FTR-LY (a) A (b) A (c) 005 (d) E (e) - SK (f)

(a)	Relay type	FTR-LY series
(b)	Contact configuration	A : 1a (1 Form A) C : 1c (1 Form C) P : 1a (1 form A) (Right angle type) R : 1c (1 Form C) (Right angle type)
(c)	Coil type	A : Standard (170mW)
(d)	Coil rated voltage	005 : 5....60VDC Please refer to coil rating table
(e)	Contact material	E : AgNi Y : $AgSnO_2$ V : $AgSnO_2$ + Au plating
(f)	Special type	Nil : PCB mounting type SK : Socket mounting type (only contact configuration A and C) HZ : UL hazardous locations compliant type* (applicable for (b) A, C)

Actual marking does not carry the type name: “FTR” and “SK”. E.g.: Ordering code: FTR-LYAA005Y-SK Actual marking: LYAA005Y

* UL hazardous locations compliant carries ◢ mark.

■ SPECIFICATIONS

Item			Specifications		Remarks/Conditions
			FTR-LY(C,R)A( )(Y,E,V)	FTR-LY(A,P)A( )(Y,E,V)	
Contact Data	Configuration		1c (1 Form C, SPDT)	1a (1 Form A, SPST-NO)	
	Construction		Single		
	Material		Y: $AgSnO_2$, E: AgNi, V: $AgSnO_2$ + Au plating		
	Resistance		Y, E: Max. 100 mΩ V: Max. 30 mΩ		Initial at 1A, 6VDC
	Contact rating		6A, 250VAC / 24VDC (resistive)		Resistive
	Max. carrying current		6A		
	Max. switching voltage		250VAC		
	Max. switching power		1,500VA / 144W		
	Min. switching load *1		Y, E: 100mA, 5VDC V: 10mA, 5VDC		Reference
Coil	Rated power		170 to 217 mW		At 20°C
	Operate power		74 to 95 mW		At 20°C
	Operating temperature range		-40°C to +85°C		No frost
Time	Operate		Max. 8ms (no diode, without bounce)		At nominal voltage
	Release		Max. 4ms (no diode, without bounce)		At nominal voltage
Life	Mechanical		Min. 10 x 10^6 operations		
	Electrical (resistive)		Min. 50 x 10^3 operations (N.O.) Min. 30 x 10^3 operations (N.C.)		At 6A, 250VAC/24VDC resistive
Insulation	Insulation resistance		Min. 1,000MΩ		Initial at 500VDC
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) 1min.,10mA detection current		
		Coil to contacts	4,000VAC (50/60Hz) 1min.,10mA detection current		
	Surge strength	Coil to contacts	6,000V / 1.2 x 50μs standard wave		
	Clearance / creepage		Min. 8mm / Min. 8mm		
	EN61810-1, VDE0435	Voltage	250V		
		Pollution degree	3		
		Material group	IIIa		
		Category	C / 250V		
Others	Vibration resistance	Misoperation	10 to 55 to 10Hz single amplitude 0.5mm		Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm		Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation	Min. 50m/s^2 (11±1ms)	Min. 100m/s^2 (11±1ms)	Coil ON/OFF, 3 axis, total 36 operations
		Endurance	Min. 1,000m/s^2 (6±1ms)		Coil OFF, 3 axis, total 18 operations
	Dimensions / Weight		Straight type: 5.0 × 28.0 × 15.0mm / Approx. 5.0g Right angle type: 15.0 × 28.0 × 5.0mm / Approx. 5.0g		
	Sealing		Plastic sealed RT III		

*1: Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage*1 (VDC)	Must Release Voltage*1 (VDC)	Rated Power (mW)
005	5	147	3.3	0.25	170
006	6	211	4.0	0.3	170
009	9	476	5.9	0.45	170
012	12	847	7.9	0.6	170
018	18	1,910	11.9	0.9	170
024	24	3,390	15.9	1.2	170
048	48	10,600	31.7	2.4	217
060	60	20,570	39.6	3.0	175

* : Specified operate values are valid for pulse wave voltage

Note 1: All values given in the coil table(s) are valid at 20°C ambient temperature, at zero contact current, without pre-energizing and are specified at pulse wave voltage.

Note 2: When applying a higher than rated coil voltage, please refer to the “coil temperature rise” and “operating range” reference graphs, for the effects on the relay operating behavior.

■ SAFETY STANDARDS

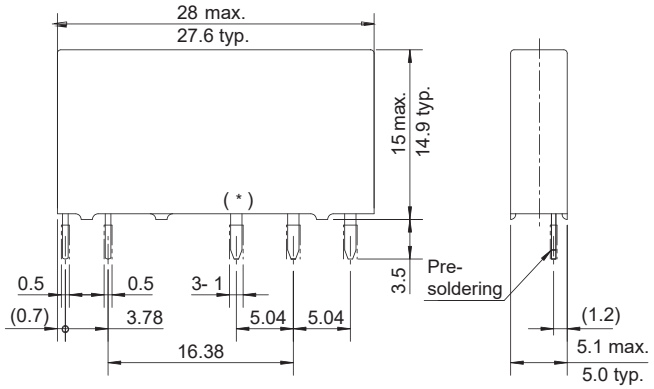
Type	Compliance	Contact Rating
UL	Flammability: UL 94-V-0 (plastics)	
	UL 508 File No. E63614 ANSI/ISA 12.12.01 (Applicable for straight type-HZ) File No. E225300	6A, 277VAC (resistive) 6A, 30VDC (resistive) 1/10 hp, 277VAC/125VAC 1/8hp, 277VAC/125VAC Pilot duty: D300, C300, R300, B300
CSA	C22.2 No. 14 File No. LR 40304	
VDE	IEC/EN61810-1	6A, 250VAC (cosφ=1), 6A, 30VDC (0ms) 3 (1.5) A, 250VAC
	EN 60730-1 Clause 12.2, 13.2, 20.1, 20.2, 20.3, 17.5, 17.7, 17.8	
	EN 60335-1 Clause 15.3, 16.3, 29.1, 29.2, 29.3	

Also conform to UL61010-1, UL61010-2-201, IEC/EN61010-1, IEC/EN61010-2-201 (277VAC)

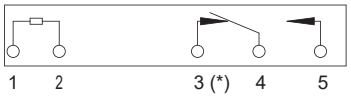
■ DIMENSIONS

Straight type

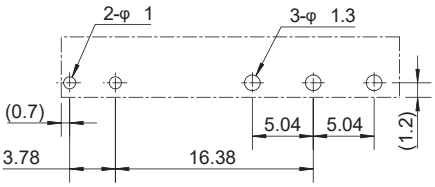
Dimensions



Schematics
(BOTTOM VIEW)



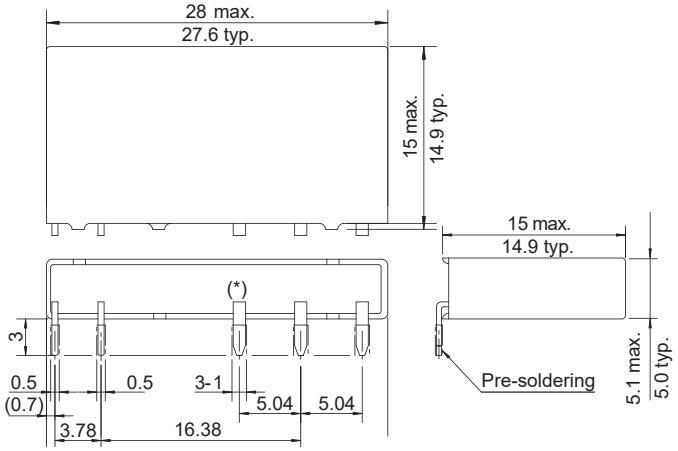
PCB Layout
(BOTTOM VIEW)



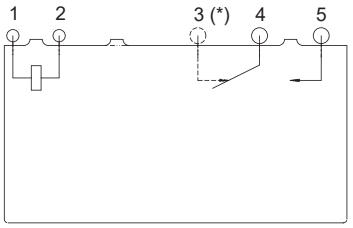
Tolerance: ±0.1

Right angle type

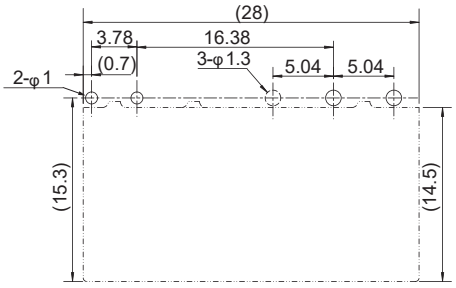
Dimensions



Schematics
(BOTTOM VIEW)



PCB Layout
(BOTTOM VIEW)



Tolerance: ±0.1

The terminal marked (*) is not applicable for 1 form A type.
Dimensions of the terminals do not include thickness of pre-soldering.

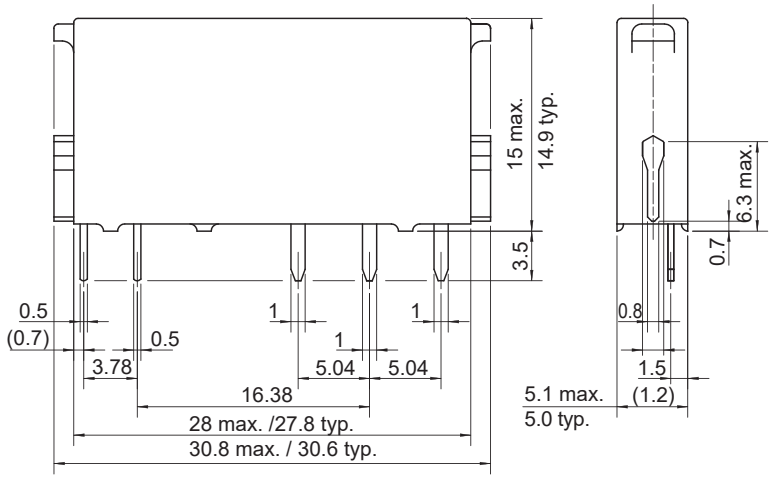
( ) : Reference value
Unit: mm

Note: Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.
Note: Dimensions of the terminals do not include thickness of pre-solder.
Note: This datasheet provides only + tolerance for outer dimensions.
Please ask for specification in case you need other tolerances.

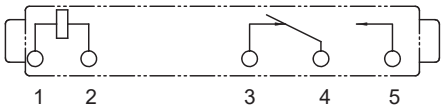
■ DIMENSIONS

Socket type

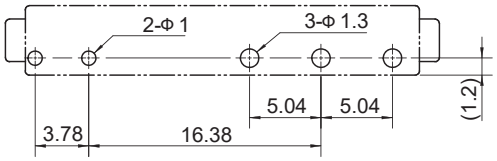
Dimensions



Schematics
(BOTTOM VIEW)



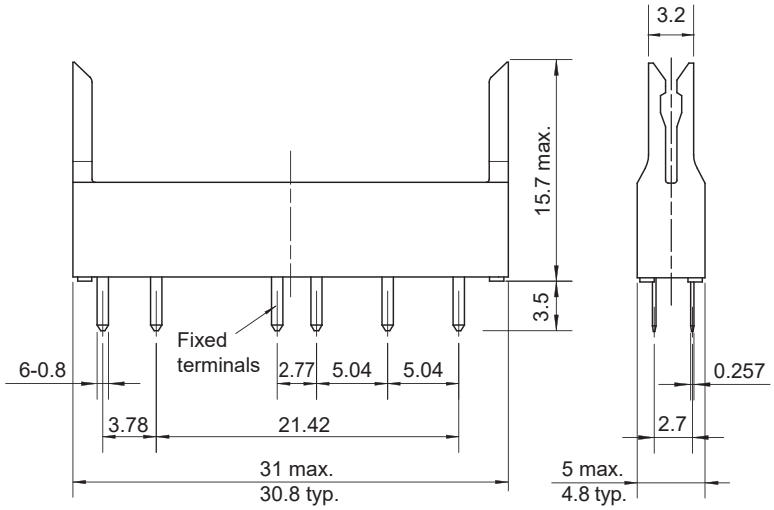
PCB Layout
(BOTTOM VIEW)



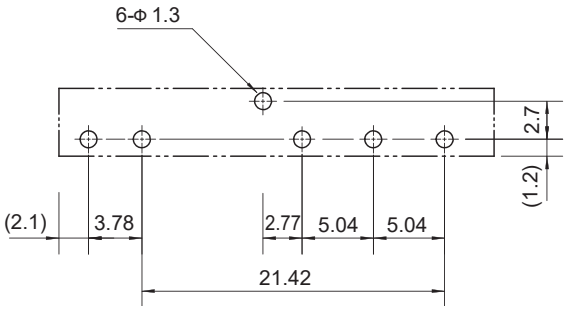
Tolerance: ±0.1

Socket (JM-6N)

Dimensions



PCB layout
(BOTTOM VIEW)



Tolerance: ±0.1

Dimensions of the terminals of JM-6N do not include thickness of pre-soldering.

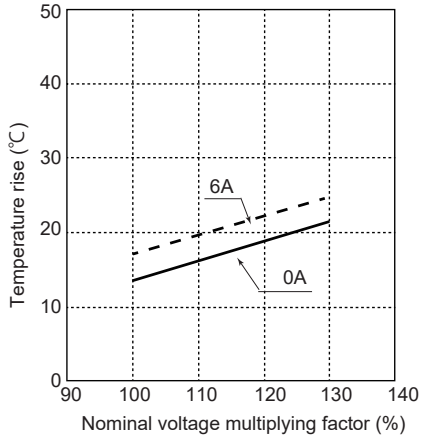
( ): Reference value
Unit: mm

Note: Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.
Note: Dimensions of the terminals do not include thickness of pre-solder.
Note: This datasheet provides only + tolerance for outer dimensions.
Please ask for specification in case you need other tolerances.

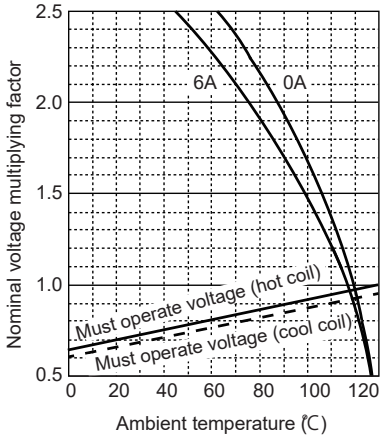
■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)

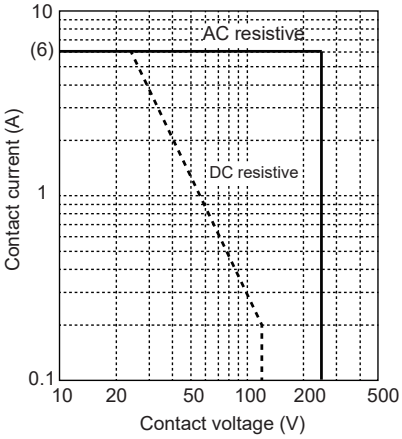
Coil Temperature rise



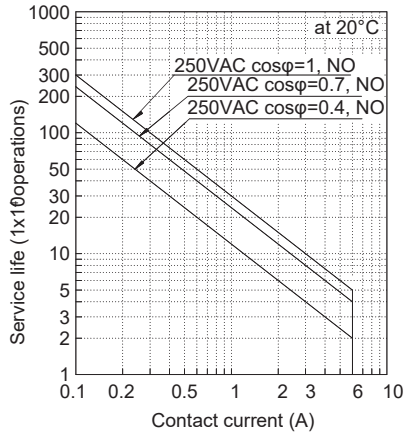
Operating range



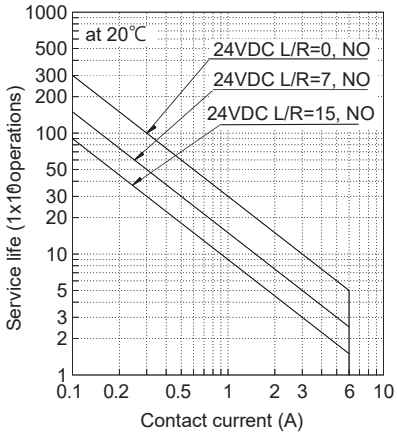
Maximum switching power



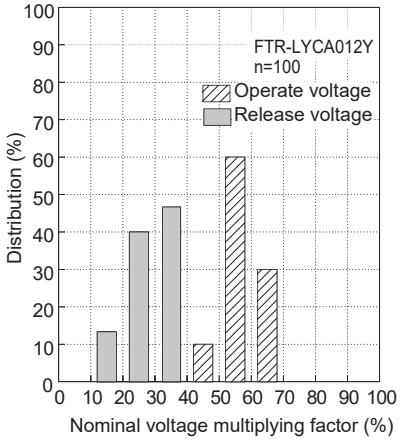
Life curve



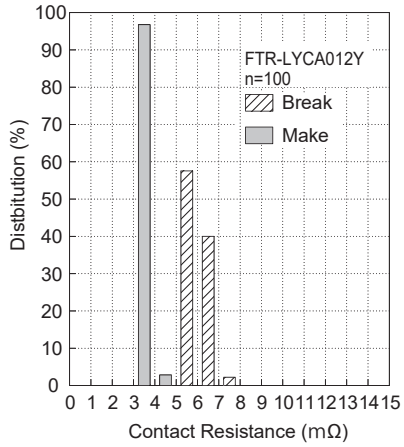
Life curve



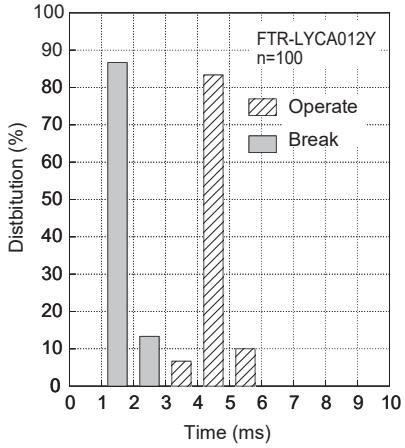
Distribution of operate/release voltage



Distribution of contact resistance



Distribution of operate/release time



■ PART NUMBER LIST

Part Number	Contact Configuration	Terminal	Coil type	Contact Material	Special Type	Note
FTR-LYAA( )Y	1a (1 Form A)	Straight	Standard (170 to 217mW)	$AgSnO_2$	PCB mounting	-
FTR-LYAA( )E				AgNi		
FTR-LYAA( )V				$AgSnO_2$+Au plating		
FTR-LYCA( )Y	1c (1 Form C)			$AgSnO_2$		
FTR-LYCA( )E				AgNi		
FTR-LYCA( )V				$AgSnO_2$+Au plating		
FTR-LYPA( )Y	1a (1 Form A)	Right angle	Standard (170 to 217mW)	$AgSnO_2$	PCB mounting	-
FTR-LYPA( )E				AgNi		
FTR-LYPA( )V				$AgSnO_2$+Au plating		
FTR-LYRA( )Y	1c (1 Form C)			$AgSnO_2$		
FTR-LYRA( )E				AgNi		
FTR-LYRA( )V				$AgSnO_2$+Au plating		
FTR-LYAA( )Y-SK	1a (1 Form A)	Straight	Standard (170 to 217mW)	$AgSnO_2$	Socket mounting	Socket part number JM-6N (To be discontiuned)
FTR-LYAA( )E-SK				AgNi		
FTR-LYAA( )V-SK				$AgSnO_2$+Au plating		
FTR-LYCA( )Y-SK	1c (1 Form C)			$AgSnO_2$		
FTR-LYCA( )E-SK				AgNi		
FTR-LYCA( )V-SK				$AgSnO_2$+Au plating		
FTR-LYAA( )Y-HZ	1a (1 Form A)	Straight	Standard (170 to 217mW)	$AgSnO_2$	PCB mounting	-
FTR-LYAA( )E-HZ				AgNi		
FTR-LYAA( )V-HZ				$AgSnO_2$+Au plating		
FTR-LYCA( )Y-HZ	1c (1 Form C)			$AgSnO_2$		
FTR-LYCA( )E-HZ				AgNi		
FTR-LYCA( )V-HZ				$AgSnO_2$+Au plating		

CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

GENERAL INFORMATION

1. **ROHS Compliance**
   - All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

2. **Recommended lead free solder condition**
   - Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
   - Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

Flow Solder Condition:

Pre-Heating:	Maximum 120˚C within 90 sec.
Soldering:	Dip within 5 sec. at 255°C±5°C solder bath

Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron:	30-60W
Temperature:	Maximum 340-360˚C
Duration:	Maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. **Moisture Sensitivity**
   - Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

4. **Tin Whiskers**
   - Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in-house test.

Contact

Japan
FCL COMPONENTS LIMITED
Shinagawa Seaside Park Tower
12-4, Higashi-shinagawa 4-chome,
Tokyo 140 0002, Japan
Tel: +81-3-3450-1682
Email: fcl-contact@cs.fcl-components.com

North and South America
FCL COMPONENTS AMERICA, INC.
2055 Gateway Place Suite 480,
San Jose, CA 95110 USA
Tel: +1-408-745-4900
Email: contact@fcl-components.us

Europe
FCL COMPONENTS EUROPE B.V.
Diamantlaan 25
2132 WV Hoofddorp, Netherlands
Tel: +31-23-556-0910
Email: info@fcl-components.eu

Asia Pacific
FCL COMPONENTS ASIA PTE LTD.
51 Changi Business Park Central 2, #06-07
The Signature Singapore 486066
Tel: +65-6375-8560
Email: fcal@fcl-components.com

China
FCL COMPONENTS (SHANGHAI) CO.,LTD.
Unit 1105, Central Park - Jing An,
No.329 Heng Feng Road, Shanghai
200070, China
Tel: +86-21-3253 0998
Email: fcsh@fcl-components.com

Hong Kong
FCL COMPONENTS HONG KONG CO., LIMITED
Unit 2313, Seapower Tower, Concordia
Plaza, No.1 Science Museum Road,
TST, Kowloon, Hong Kong
Tel: +852-2881-8495
Email: fcal@fcl-components.com

Web: www.fcl-components.com/en/

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