

# General Specification

## FA-M3 Fiber-optic Cables

**FA-M3**

GS 34M06C92-01E

### ■ General

The KM6□ fiber-optic cable is used for connecting Fiber-optic FA-bus Modules (F3LR01), Fiber-optic FA-bus Type 2 Modules (F3LR02) and Fiber-optic FA link H Modules (F3LP12). Several models are available for different applications.

### ■ Model and Specifications

#### Fiber-optic Cords for Connections inside Panel (with bonding and polishing treatment on optical connector)

Model	Suffix Code	Style Code	Option Code	Description	Max. Transmission Loss (dB)	Applicable Module
KM60	-S06	—	—	Cord for system expansion inside panel enclosure; 0.6 m	2.60	F3LR01
	-001	—	—	Cord for system expansion inside panel enclosure; 1.0 m	2.60	F3LR02
	-003	—	—	Cord for system expansion inside panel enclosure; 3.0 m	2.60	F3LP12

#### Fiber-optic Cables for Indoor Use with Tension Members (with bonding and polishing treatment on optical connector)

Model	Suffix Code	Style Code	Option Code	Description	Max. Transmission Loss (dB)	Applicable Module
KM61	-010	—	—	Cable for indoor system expansion; 10 m	1.10	F3LR01
	-100	—	—	Cable for indoor system expansion; 100 m, a pulling eye on one end	1.10	F3LR02 F3LP12

Note: For information on pulling eyes, see the last page of this general specifications sheet.

Note: The KM62 cable may be used in wet environments (but not in submerged environments).

#### Fiber-optic Cables for Indoor Use with Tension Members (with crimping and cutting treatment on optical connector)

Model	Suffix Code	Style Code	Option Code	Description	Max. Transmission Loss (dB)	Applicable Module
KM65	-001	—	—	Cable for indoor system expansion; 1 m	2.00	F3LR01 F3LR02 F3LP12
	-003	—	—	Cable for indoor system expansion; 3 m	2.00	
	-005	—	—	Cable for indoor system expansion; 5 m	2.00	
	-010	—	—	Cable for indoor system expansion; 10 m	2.00	
	-020	—	—	Cable for indoor system expansion; 20 m	2.00	

Note: The KM62 cable may be used in wet environments (but not submerged environments).

Note: KM65 cables are not supplied with pulling eyes. If pulling eye is required, use the KM61 or KM62 cables.

For information on the Discontinued Cables, refer to GS 34M06C92-99E.

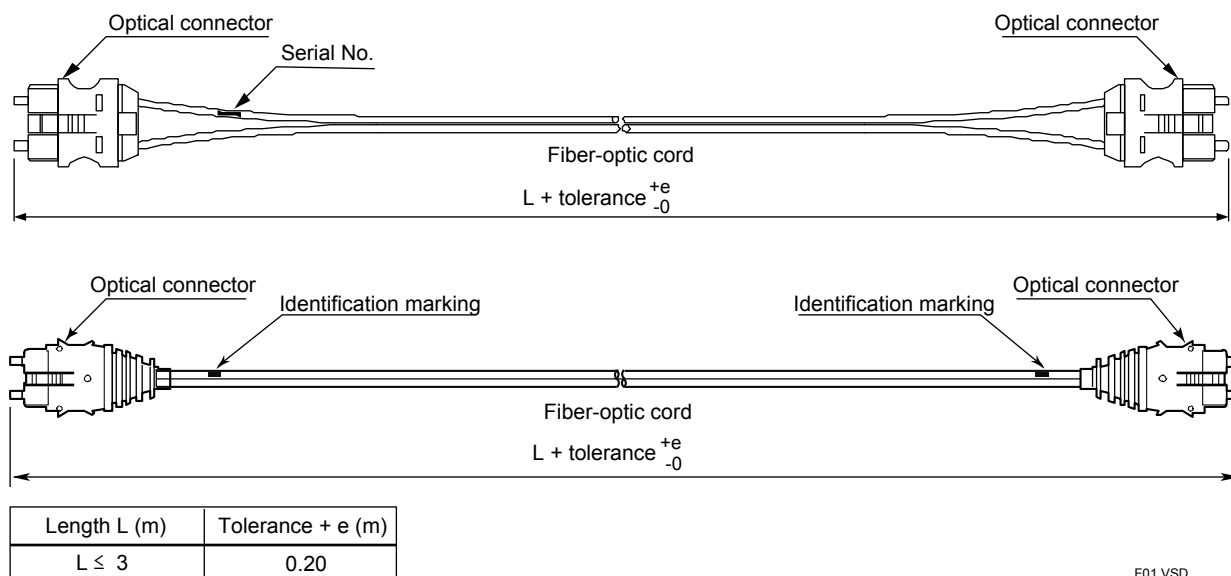
**Fiber-optic Cables for Outdoor Use with Tension Members  
(with bonding and polishing treatment on optical connector)**

Model	Suffix Code	Style Code	Option Code	Description	Max. Transmission Loss (dB)	Applicable Module
KM62	-100	—	—	Cable for outdoor system expansion;100 m, a pulling eye on one end	1.10	F3LR01 (Max.200 m)
	-200	—	—	Cable for outdoor system expansion;200 m, a pulling eye on one end	1.96	F3LR02 (Max.200 m) F3LP12 (Max.1000m)
KM69	-010	—	—	Cable for outdoor system expansion;10 m, flame-retardant cable(equivalent of VW-1)	1.10	F3LR01 F3LR02

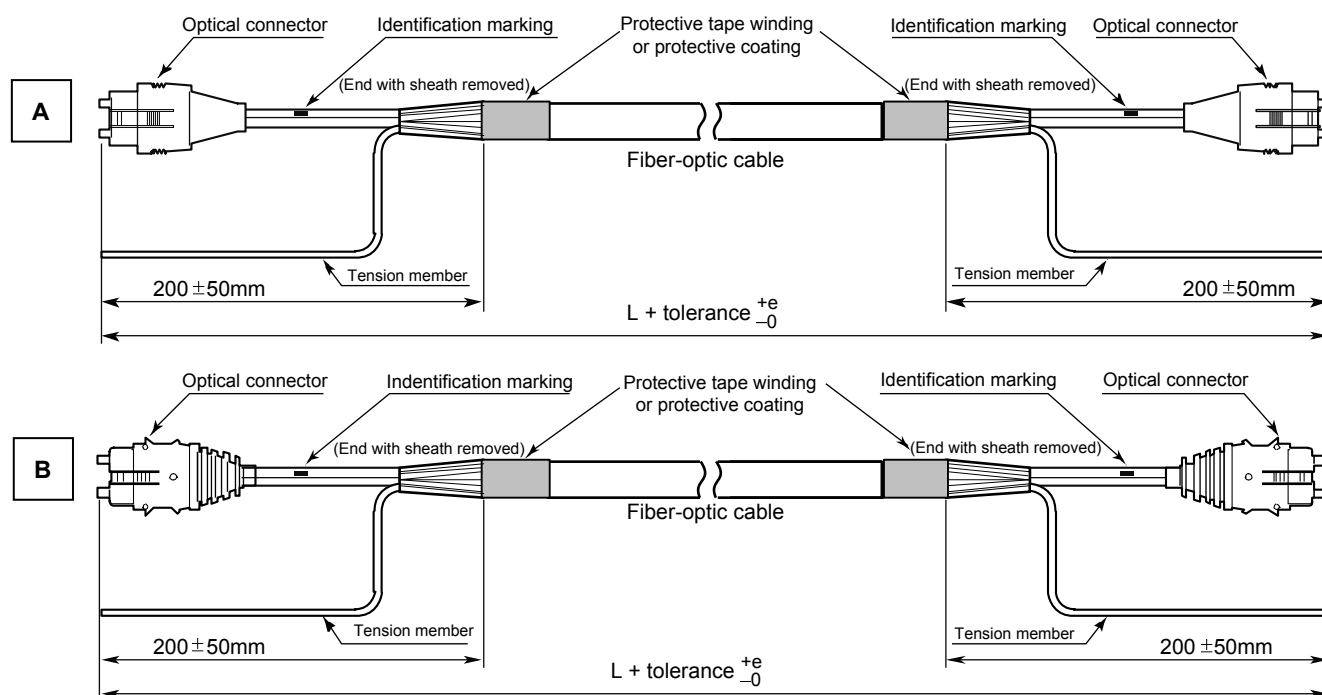
Note: For information on pulling eyes, see the last page of this general specifications sheet.

**CAUTION**

- With fiber-optic FA-bus Type 2 modules (F3LR02) if the cable length exceeds 200 m, please contact to YHQ. Using KM62 cables beyond 200 m will result in incorrect operation.
- For information on laying fiber-optic cables, see text under "CAUTION" on the last page of this document.
- KM6□ cables cannot be used in submerged environments. Contact Yokogawa's sales office for alternative solutions.
- KM69 is used for wiring which is required flame-resistance.

**External Dimensions**
**KM60**


Note: Fiber-optic cord (KM60) is available in two types with optical connectors of different looks but customers cannot specify the connector type when placing an order.

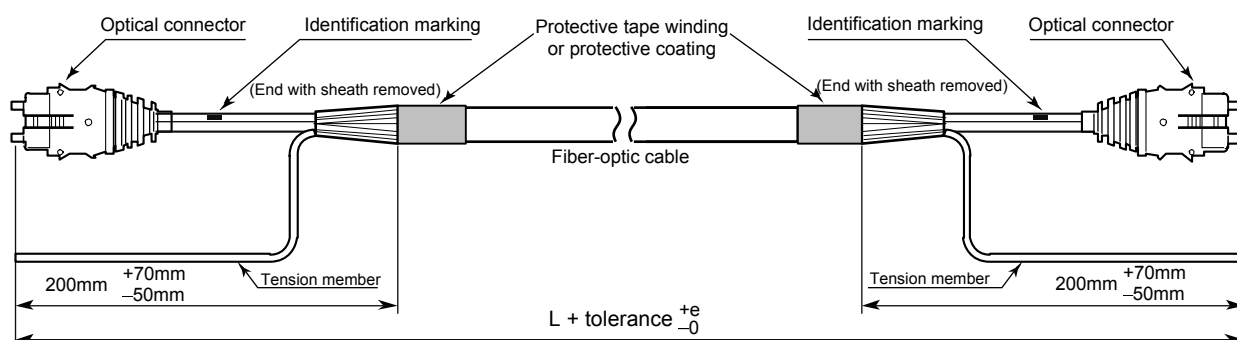
**KM61, KM62, KM69**

Cable Length L (m)	Tolerance +e (m)
$10 < L \leq 30$	0.50
$30 < L$	$L \times 0.03$ (3%)

F02.VSD

Note: Fiber-optic cable (KM61,KM62) is available in two types of "A" and "B" with optical connectors of different shapes, but customers cannot specify the connector type when placing an order.

Fiber-optic cable (KM69) : B type shape is supplied.

**KM65**

Cable Length L (m)	Tolerance +e (m)
$L \leq 5$	0.20
$5 < L \leq 15$	0.30
$15 < L \leq 30$	0.50

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## ■ Fiber-optic Cable Core Specifications

Yokogawa Cable Model Number	KM60	KM60,KM61,KM62,KM65,KM69
Fiber-optic Cable Model No. (Size)	DK-HPF200/230	2×CCV-HC-20/07
Fiber-optic Cable type	SI type※1	SI type※1
Vendor	SWCC Showa Cable Systems	Sumitomo Electric
Core diameter	200±5μm	
Clad diameter	230± <sub>10</sub> <sup>0</sup> μm	
Transmission loss	7.0dB/km Max. (λ=0.85μm, Ta=25°C)	7dB/km Max. (λ=0.81μm, Ta=25°C)

※1 : Step-index optical fiber

## ■ Fiber-optic Connector Specifications

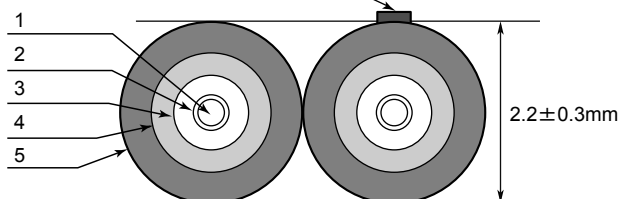
Yokogawa Cable Model Number	KM60	KM65	KM60,KM61 KM62,KM69
Optical connectors Model No.	KF-07	CF-2011 CF-2071	CF-2001H CF-2071H
Vendor	SWCC Showa Cable Systems	Sumitomo Electric Industries	
Specifications	Bi-directional, lever lock bonding, polished	Bi-directional, lever lock, crimping, cut	Bi-directional, lever lock, bonding, polished

## ■ Cross-sectional Drawing

### KM60

ex. Sumitomo Electric Industries

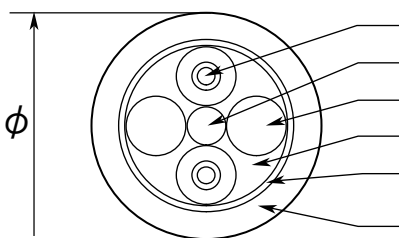
Identification mark or Serial No.



1	Core (quartz glass)
2	Clad (fluorinated acrylate resin)
3	Cover (fluorine-based resin)
4	Reinforcer (aromatic high tensile fiber)
5	Outer cover (heat-resistant PVC black)

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### KM61, KM62, KM65, KM69



1	Fiber-optic single-core cord
2	Tension member (plastic-covered steel wire)
3	Lacing (plastic lacing)
4	Inclusion (plastic yarn or fiber)
5	Holding tape (plastic fiber)
6	Heat-resistant PVC sheath (KM61, KM65), LAP sheath (KM62), LAP sheath [metal tape+flame retardant PE] (KM69)

Model	Manufacturer Item code	External Dimensions( φ )
KM61 KM65	2-C-V	φ 8.4mm ±1.0
KM62	2-C-LAP	φ 10.0mm ±1.0
KM69	SF2-C-LAP	φ 10.5mm ±1.0

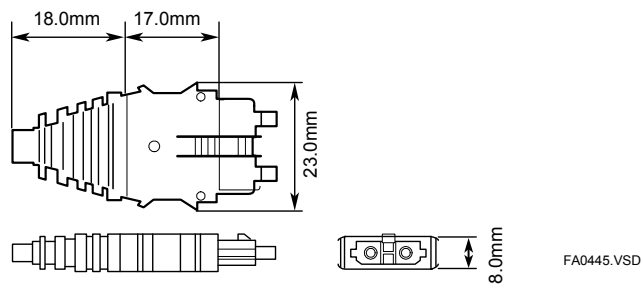
Note: Near their fiber-optic connector where the sheath is removed, these cables have the same cross-section as KM60 cables.

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## ■ Connector External Dimensions

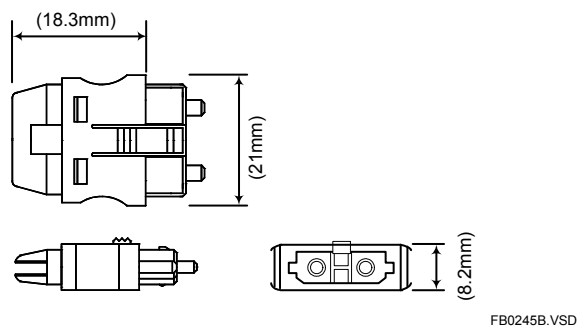
### CF-2071H and CF-2071

For use with cables KM60, KM61, KM62, KM65, and KM69

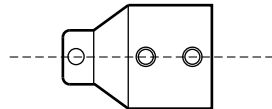
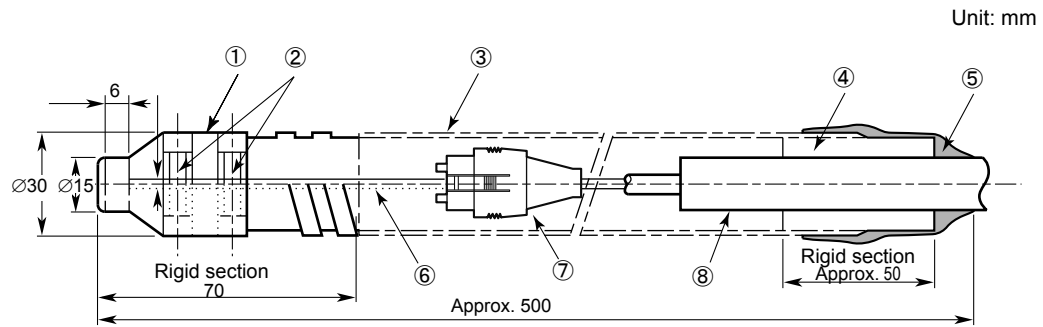


### KF-07

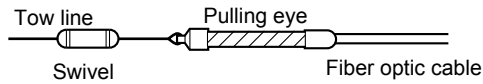
For use with cable KM60



## Fiber-optic Lead-in Cable Laying Pulling-eye Assembly Diagram



When performing lead-in work, connect the pulling eye to the tow line through a swivel which is attached to the head of the pulling eye as shown in the figure below.



No.	Components	Qty.
①	Pulling eye	1
②	Stopper screw (M6)	4
③	Flexible pipe	1
④	Terminal spacer	1
⑤	Vinyl tape	—
⑥	Tension member	—
⑦	Optical connector	—
⑧	Fiber-optic cable	—

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Unlike general cabling work, laying fiber-optic cables (KM61, KM62, KM65 and KM69) requires professional knowledge and skills. We recommend that you engage a subcontractor specializing in laying fiber-optic cables.

### CAUTION:

- Before laying cables, a user should check the cables (immediately after delivery) to ensure it is not defective.
- Fiber-optic cables (KM61, KM62, KM65, KM69) are made-to-order products. Hence, replacement of a defective cable may require days as follows.  
KM65: 1 week; KM61, KM62: 1 month; KM69: 2 months
- The provided warranty does not cover failures resulting from improper laying of cables.