DATA SHEET

Contents

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Optical USB Extension Cable

- Point-to-point fibre cables -

Description

Opticis optical extension cables link the USB signal up to 150feet (45 meters) without any repeater. They provide the simplest way to link the USB device far from the host. Owing to the advanced VCSEL and PD, USB protocol could be maintained over such a long-distance connection with cost effective. Opticis provides two models according to cable types, one of which is all pure fiber cable (M2-1xx) and the other of which is hybrid cable of fiber and copper wire to supply DC power from the controller along the cable (M2-2xx).

The all fiber cables are supplied with A plug-in to A receptacle (M2-100) as a basic model and as an option supplied with A plug-in to B plug-in (M2-110). The excellence of the cable is to give perfect galvanic electrical isolation of USB devices from the USB controller. In addition, the hybrid fiber cable jacketed with electrical wires together in a cable gives convenient extension such applications where power supply is not available adjacent at the end of devices to be supplied to a USB device and Opticis downstream module. The model named as M2-210 supplies DC power, running through copper wire in the hybrid cables, from the host end to the downstream module as well as to USB devices.

Features

- Extend the USB signal up to 150feet (45 meters)
- No software to install: Easy to use; plug and play.
- Compatible with USB 1.1 (12Mbps, 1.5Mbps)
- Cables are light-weight, almost zero EMI/RFI emissions, no spark hazard and data secure
- Wide variety models: DC power supply along cable to Rx module and Integral hub for multiple ports to be designed in by customer's inquiry

Applications

- PC link of peripherals in factory & office
- USB camera interfaces for surveillance system
- USB interface of automatic motion controls
- PC interface of digital audio systems

 Mar. 31, 2010

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	Tstg	- 30	+ 70	°C
Supply Voltage	VCC	- 0.3	+ 6.0	V
Input Voltage	Vin	- 0.3	VCC	V
Storage Humidity	RHsh	0	80	%

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Units
Ambient Operating Temperature	TA	0		+50	°C
Power Supply Rejection (Note1)	PSR		50		mVpp
Supply Voltage	VCC	+4.5	+5	+5.5	V
Full Speed Mode Data Rate	FS		12		Mbps
Low Speed Mode Data Rate	LS		1.5		Mbps

Note Tested with a 50mVp-p sinusoidal signal in the frequency range from 500Hz to 500 MHz on the VCC supply with the recommended power supply filter in place. Typically less than a 0.25 dB change in sensitivity is experienced.

Power Adapter

1) M2-100 / 10S

Parameter	Symbol	Min.	Typical	Max.	Units
Power Input	Vccp	100	110	120	V
Power output	Vcc	4.5	5	5.5	V
Supply Current	ITcc	-	-	600	mA

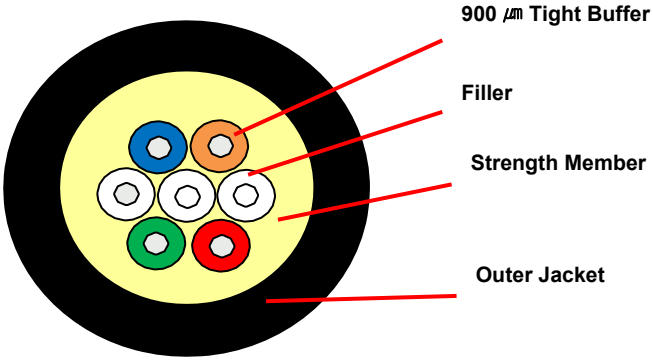
2) M2-210 / 21S

Parameter	Symbol	Min.	Typical	Max.	Units
Power Input	Vccp	100	110	120	V
Power output	Vcc	8	9	11	V
Supply Current	ITcc	-	-	600	mA

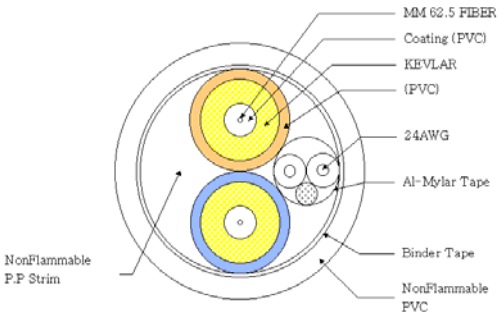
Specification of Fibres

Parameter	M2-100/110 / 10S	M2-210 / 21S
Fiber type	MMF 62.5um/ 4 fibres	Hybrid Cable / 2 fibres + 2 power cables
Out Diameter	¢5.7mm	¢6.8mm
Use	Indoor & Outdoor	Indoor & Outdoor
Flame	Retardant	Retardant
Jacketing	PVC	PVC

Optical Cables for M2-100 / 10S



Hybrid Optical Cables for M2-210 / 21S

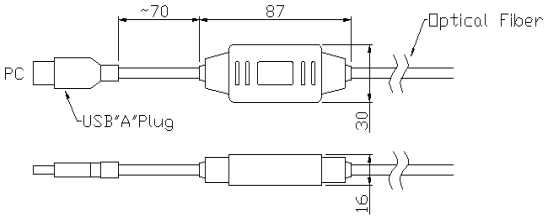


Drawing

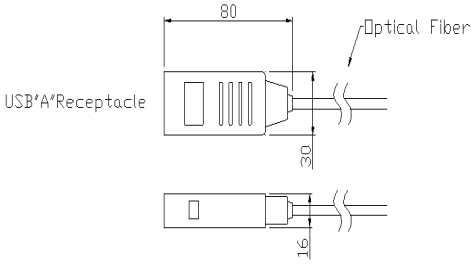
Dimension [mm]

Model name: M2-100 / 10S (A-Ā)

Upstream

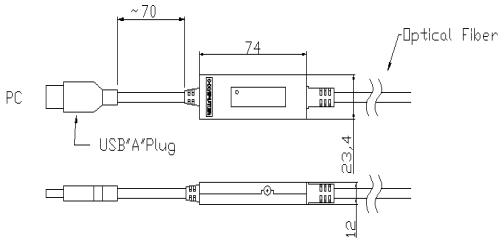


Downstream

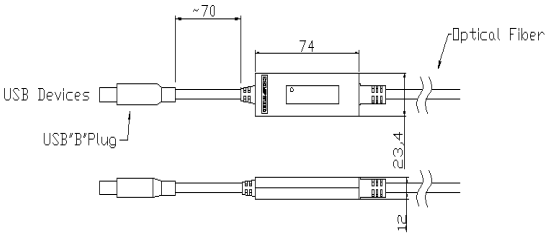


Model name: M2-210 / 21S (A-B)

Upstream



Downstream



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Reliability Test & Analysis Methodology

1. Test

Heading	Test	Conditions	Duration	Sample Size	Failure	Remarks
Operating Test	Long Term Operating Test (See Note)	* To = 70˚C	168HR	n =11	0	**Note** : Read/Write action with USB memory stick
	Operating at each Temperature (See Note)	* -10~60 ˚C (Interval:10 ˚C)	30 Min (Each Temperature)	n=11	0	
Storage Test	High Temperature	* T_S = 85 ˚C	96 HR	n=11	0	1. Ts : Storage Temperature 2. To: Operating Temperature 3. RH : Relative Humidity
	High Humidity High Temperature	* T_S : 60 ˚C * RH : 90%	96 HR	n=11	0	

2. Analysis

1) Failure base: USB 1.1 std.
2) Final qualification date: The 4st quarter of 2007

EMC Test

1. EMI: Processing in FCC class B and CE standards

2. EMS: Met CE standards

1) EMI

STANDARDS		RESULTS
EN 55 022/98 AND FCC PART 15 SUBPART B	CE (Conducted Emission) RE (Radiated Emission)	Met Class B / PASS
EN 61000-3-2	Harmonics	Met / PASS
EN 61000-3-3	Flickers	Met / PASS

2) EMS (Current Status)

STANDARDS		RESULTS
EN 61 000-4-2:1995	Electrostatic Discharge Immunity (Air: 8 KV, Contact: 4 KV)	Met Criterion A / PASS

Ordering Information

Model Name: M2-XYZ-xx

X=1: use optical cable and plug DC power adapter in the downstream module.

X=2: use hybrid Fiber cable and run DC power from the host end to the downstream module.

Y=0: A plug-in in the upstream module to A receptacle in the downstream module

Y=1: A plug-in to B plug-in

Z=0: Window/Mac

Z=S: Solaris SUN

ZZ: the length of fiber cable in meter being available every 10 meters. For instance, 10 for 10 meters (32.8feet) and 30 for 30 meters (97.6feet)

Caution
Multiple Optical USB Extension Module connected in a row to a USB device may result in the device not working properly, user should verify that adding cables or devices do not affect the operation of the USB devices. Also note that only one hub can be connected with Optical USB Extension Module and more extension cable or repeater connect will make encounter improper work.