

ALYSIUM

USB 3.1 Gen 1 アクティブ光ケーブル



by CORNING™

〒160-0023 東京都新宿区西新宿3-2-11
新宿三井ビル二号館9階

TEL: 03-5322-7191 / FAX: 03-5322-7790

E-mail : sales@chronix.co.jp

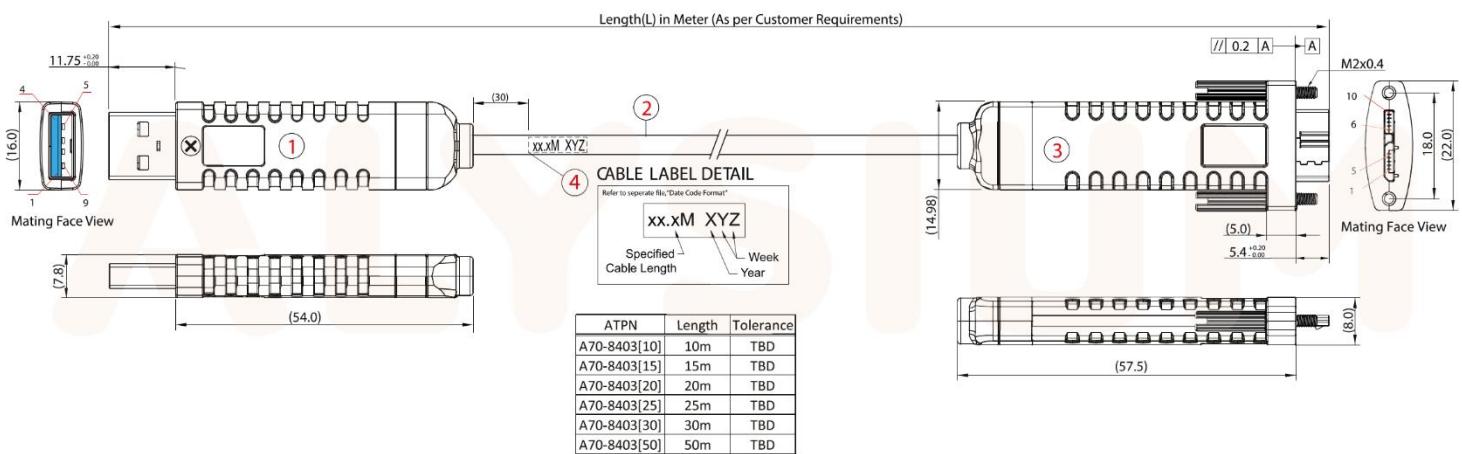
<http://www.chronix.co.jp>

クロニクス株式会社



USB 3.1 Gen 1 アクティブ光ケーブル (AOC)

型番 [長さ(m)]	製品概要
A70-8403[5]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 5m
A70-8403[10]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 10m
A70-8403[15]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 15m
A70-8403[20]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 20m
A70-8403[25]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 25m
A70-8403[30]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 30m
A70-8403[50]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 50m



BILL OF MATERIALS		WIRING DIAGRAM	OPTIONAL ACCESSORIES DETAILS
Item	Description		Sold separately as accessories.
1	USB A AOC (OD3.6 DCT)		1) Horizontal Screw Lock Bracket Part No.: USB A (DC) Bracket Kit (For further details, please contact your sales representative)
2	USB AOC cable		2) Vertical Screw Lock Bracket Part No.: USB A Vs1 (PVC) Bracket Kit (For further details, please contact your sales representative)
3	USB MicB AOC Hsl(OD3.6 DC)		Optional Accessories Part No.: USB A Vs1 (PVC) Bracket Kit
4	Cable Label		Remove M2.6x2.5
5	Heat Sealed PE Bag (TBD)		Optional Accessories Part No.: USB A Vs1 (PVC) Bracket Kit

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WIRING DIAGRAM

Note: Pin No. as per Universal Series Bus 3.1 Specification
Pin designation at A connector is from Host perspective, and
pin designation from B connector is from Device perspective

RoHS COMPLIANT

USB 3.1 Gen 1 アクティブ 光 ケーブル (AOC)

特徴と利点

- › 光ファイバケーブルにより50mまでのUSB 3.1 Gen 1 (5 Gb/s) データ転送に対応
- › ホスト側コネクタ:USBタイプAプラグ、機器側コネクタ:USBマイクロBプラグ (USB 3 Visionロックスクリュー付き)
- › 接続された機器はケーブルを通して電源供給
- › 850nmのVCSEL送信器とPINフォトダイオードの受信器
- › USB機器とPCをプラグアンドプレイで接続、ドライバやソフトウェアのインストールは不要
- › 動作温度範囲 (筐体表面): 5° C ~ 70° C
- › 優れたEMI性能を実現するオールメタルハウジング



A+
what
you expect
+ more.

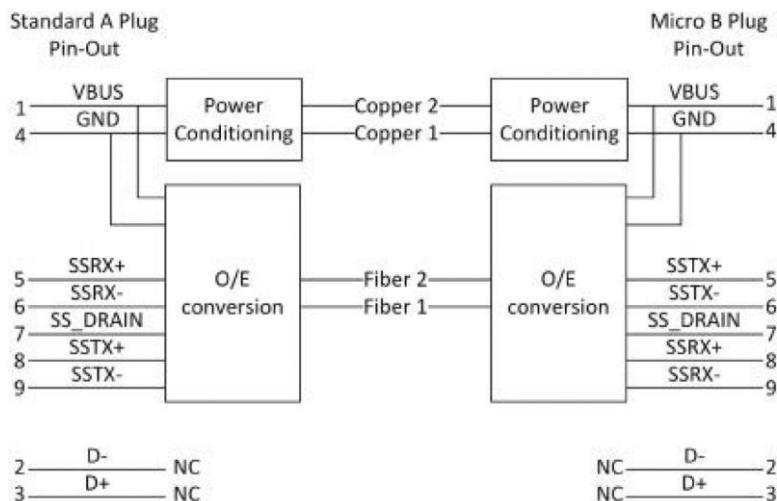
アプリケーション

- › マシンビジョン用カメラ
- › 距離の延長や繰り返しのケーブル屈曲を必要とするUSB接続環境

概要

アリジウム社のUSB3産業用アクティブオプティカル™ケーブル (AOC) は、5GbpsのUSBプロトコルで、銅線と光ファイバーの複合ケーブルを介してホストコンピュータから最大50メートルの距離を伝送します。AOCアセンブリは、USB3.1タイプAプラグを介してホストに接続し、USB3 Vision規格と互換性のあるロックネジ付きのUSB3.1マイクロBプラグを介して機器に接続します。このAOCは、5GbpsのUSB3.1 Gen1伝送のみをサポートしており、USB1.XまたはUSB2ホストや機器との下位互換性はありません。またこのAOCは、ホストポートから動作に必要な電力を引き出し、接続された機器にはケーブルの銅線を介してホストUSBポートから直接電力を供給します。

USB 3.1 Gen 1 アクティブ光ケーブル (AOC)



配線図

注：ユニバーサルシリアルバス3.1仕様に準拠したピン配列であり
Aコネクタのピン配列はホスト側、Bコネクタからのピン配列はデバイス側

絶対最大定格

(この制限を超えた条件ではケーブルが永久的なダメージを受ける可能性があります)

Parameter	Parameter	Min	Max	Units
Vbus_max	Supply voltage	-0.50	5.5	V
Vss_max	Voltage on signal pins	-0.50	1.6	V
T_stg	Storage temperature	-40	90	°C
V_ESD	Electrostatic discharge, power and signalpins (HBM)		2	kV

環境に対する仕様

Parameter	Parameter	Min	Max	Units
Tambient	Ambient temperature (informative) ¹	5	50	°C
Tcase	Temperature of connector housing ²	5	70	°C
RH	Relative humidity (noncondensing)	5	95	%

1) Case temperature is 20°C higher than ambient temperature for a single cable running at maximum electrical load connected to a typical host. The case temperature takes precedence over ambient temperature. 2) At case temperatures above 60°C, proper safety precautions should be taken when handling the metal connector shells by hand, due to burn risks (reference IEC 60950-1).

USB 3.1 Gen 1 アクティブ光 ケーブル (AOC)

USB 3.1 AOC 電気的仕様(DC)

Parameter	Parameter	Min	Typ	Max	Units
Vbus_A	Required supply voltage (from host)	4.75	5.00	5.25	V
Vbus_A_noise	Supply voltage ripple and noise(0-10 GHz)			100	mVpp
Vbus_B	Output supply voltage (from cable to device)	4.75	5.05	5.15	V

Condition 1: no load, self-powered device

Ibus_act_noload	Active mode current consumption (powered from Host)	75	85	100	mA
Ibus_idle	Current consumption (idle mode, each end)		1	2	mA

Parameter	Parameter	Min	Typ	Max	Units
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Condition 2: USB 3.0-compliant port (900 mA current limit)

Ibus_B_std	Maximum current supplied to device	600		700	mA
Ibus_A_std	Current drawn from host port at maximum device supply current			900	mA

Condition 3: USB 3.0 charging port (≥ 1500 mA current limit)

Ibus_B_ch	Maximum current supplied to device ¹	900	950	1050	mA
Ibus_A_ch_max	Current drawn from host port at maximum device supply current		1500		mA
Ibus_A_ch_nom	Current drawn from host port at 900 mA device supply current		1300	1400	mA

USB 3.1 Gen 1 アクティブ光ケーブル (AOC)

USB 3.1 AOC 電気的仕様 (AC)

Parameter	Parameter	Min	Typ	Max	Units
DR	Bit error rate (BER < 10 ⁻¹² , USB 3.1 Gen 1 SS only)		5		Gb/s
tr	Rise time (20-80%), data output		25	35	ps
tf	Fall time (80-20%), data output		25	35	ps
Vout_diff	Differential output swing	0.8	1.0	1.2	V
DJ	Deterministic jitter (K28.5 pattern)		10	22	ps
RJ	Random jitter		0.8	1.4	ps _{rms}

ケーブル機械的仕様

Parameter	Parameter	Min	Typ	Max	Units
OD	Cable outer diameter	2.95	3.1	3.3	mm
BR _{static}	Static bend radius	20			mm
BR _{dynamic}	Dynamic bend radius	10			mm
BC	Bending cycles unsupported	10M			cycles
	Bending cycles 45 mm radius C-track ¹	9M			cycles
	Bending cycles 38 mm radius C-track ¹	9M			cycles
TC	Torsion cycles (+/-180°)	1M			cycles
TF	Tensile force (bulk cable)			120	N
	Tensile force (connector assembly)			80	N
Crush	TIA/EIA-455-41A			100	N/cm
Flame Rating	UL-1581-VW-1				

¹) Cable failure is due to jacket abrasion and not internal component failure (copper wires or optical fiber). Actual cable performance in customer application is therefore dependent on mechanical conditions within the drag chain/energy chain or other mechanical cable routing and management systems.

USB 3.1 Gen 1 アクティブ光ケーブル (AOC)

ケーブル機械的仕様

Standard	Description	SPECIFICATION	PERFORMANCE CRITERION
IEC 61000-6-2			
IEC 61000-4-4	Fast transients (capacitive clamp test)	+/- 1000 Vpk	A
IEC 61000-4-6	RF common mode conducted immunity	10V	A
IEC 61000-4-2	ESD – Contact Discharge	+/- 4 kV	B
	ESD – Air Discharge	+/- 8 kV	B
EN55032:2015	EM compatibility of multimedia equipment – emission requirements	Class B	
FCC 47 CFR Part 15	Subpart B	Class B	
ICES-003 Issue 6			
IEC 60950-1:2005	Second Edition; Am1:2009 +Am2:2013		
IEC 60825-1:2014 1	This product has been classified as a Class 1 laser product according to IEC 60825-1:2014		

1) Complies with 21 CFR 1040.10 and 1040.11 except for the deviations pursuant in Laser Notice 50, 24 June 2007

*)The product is connected between a USB host and a USB hub or between a USB hub and a USB device. No user intervention is required and the part contains no user-serviceable components. Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.

オーダー・インフォメーション

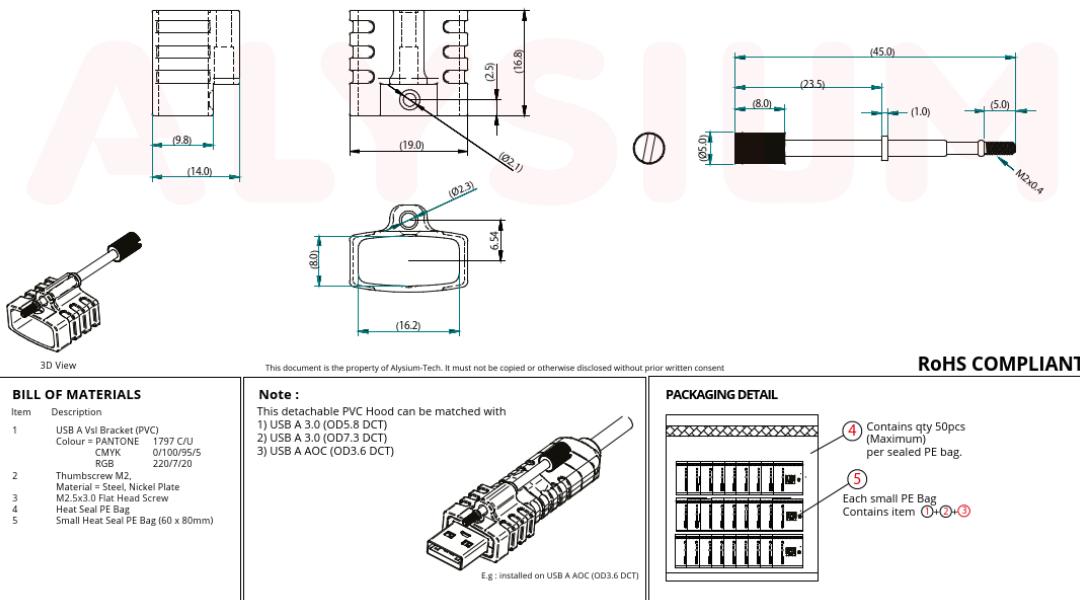
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A70-8403[50]	USB 3.1 Active Optical Cable, A plug to Micro-B Hsl plug, 50m

USB 3.1 Gen 1 アクティブ光ケーブル (AOC) - アクセサリー

› USB A 垂直スクリューロック・フード

型番: USB A Vsl PVC Brkt Kit

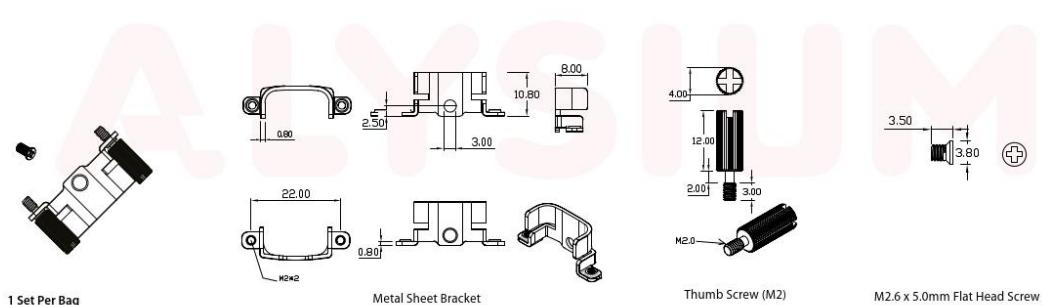
DRAWING REF: **USB A Vsl PVC Brkt Kit**
 DRAWING REF: USB A Vsl (PVC) Bracket Kit
 (Chua 180327) Refresh Specification



› USB A 水平スクリューロック・フード

型番: USB A (DC) Bracket Kit

DRAWING REF: **USB A (DC) Bracket Kit**
 DRAWING REF: USB A Die Cast Bracket Kit
 00 (WON 170907) Initial Issue



A+ USB A Bracket Accessories

Metal Sheet Bracket 1pc
 Thumb Screw (M2) 2pc
 M2.6 x 5.0mm Flat Head Screw 1pc

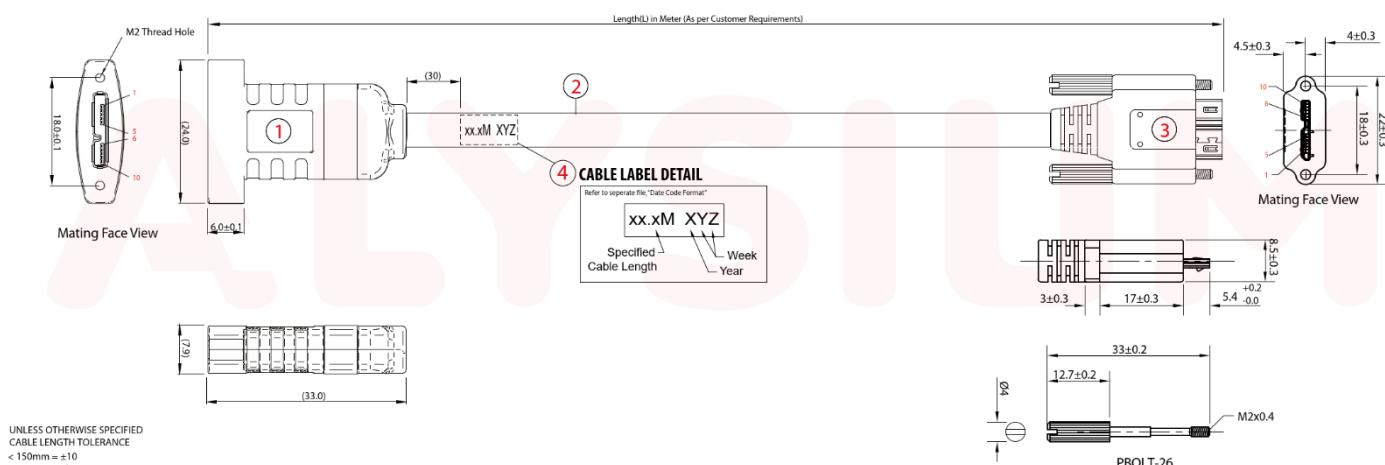
各種変換ケーブル

Lアングル、USB3タイプA/タイプB/タイプC

オーダー・インフォメーション

型番 [長さ(m)]	製品概要
A74-7231[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl
A74-8788[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl 90D A1
A74-3775[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl 90D A32
A74-5959[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl 90D A34
A74-8431[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl 90D A14
A74-9245[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl 90D A3
A74-7367[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB MicB 3.0 sl 90D A12
A74-6546[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB B 3.0
A74-7349[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB C sl (OD6.2)
A74-8013[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB C (OD6.2)
A74-3170[0.3]	USB MicB 3.0 F Panel Mount (DC) // A86-4730(T) // USB A 3.0

DRAWING REF: **A74-7231**
 DRAWING REF: USB 3.0 Industrial Assembly
 REVISION: 00 (Chua 180622)
 01 (Chua 180710) Initial Issue



UNLESS OTHERWISE SPECIFIED
 CABLE LENGTH TOLERANCE
 < 150mm = ±10
 ≥ 150mm and < 250mm = ±15
 ≥ 250mm and < 500mm = ±20
 ≥ 500mm and < 1000mm = ±30
 ≥ 1000mm and < 5000mm = ±50
 5000mm and above = ±100

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BILL OF MATERIALS	WIRING DIAGRAM	PACKAGING DETAIL
<p>ITEM Description</p> <p>1 USB MicB 3.0 F Panel Mount (DC)</p> <p>2 A86-4730(T)</p> <p>3 UL7225 25TP#(26x2C)+STP#28+2C#22 [OD=6.2mm]</p> <p>4 USB MicB 3.0 sl 10 pin Moulded Plug with Screw Locking <BLK></p> <p>5 Cable Label</p> <p>6 Heat Sealed PE Bag</p> <p>(Note : Item 1+2 is A74-7773)</p>	<p>WIRING DIAGRAM</p>	<p>PACKAGING DETAIL</p>

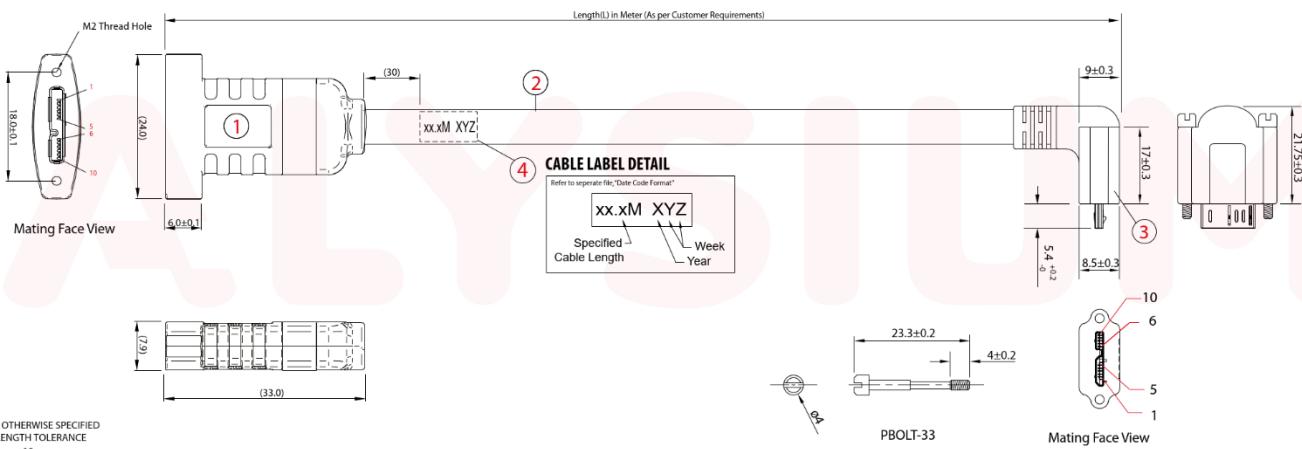
各種変換ケーブル

A74-8788

DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (Chua 180322)
01 (Chua 180710)

Initial Issue



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BILL OF MATERIALS	WIRING DIAGRAM	PACKAGING DETAIL
<p>Item Description</p> <p>1 USB MicB 3.0 F Panel Mount (DC)</p> <p>2 A86-4730(T) UL2725 2STP(#26x2C)+STP#28+2C#22 [OD=6.2mm]</p> <p>3 USB MicB 3.0 sl 90D A1</p> <p>4 10 pin Moulded Plug with Screw Locking <BLK></p> <p>5 Heat Sealed PE Bag</p> <p>(Note : Item 1+2 is A74-7773)</p>		

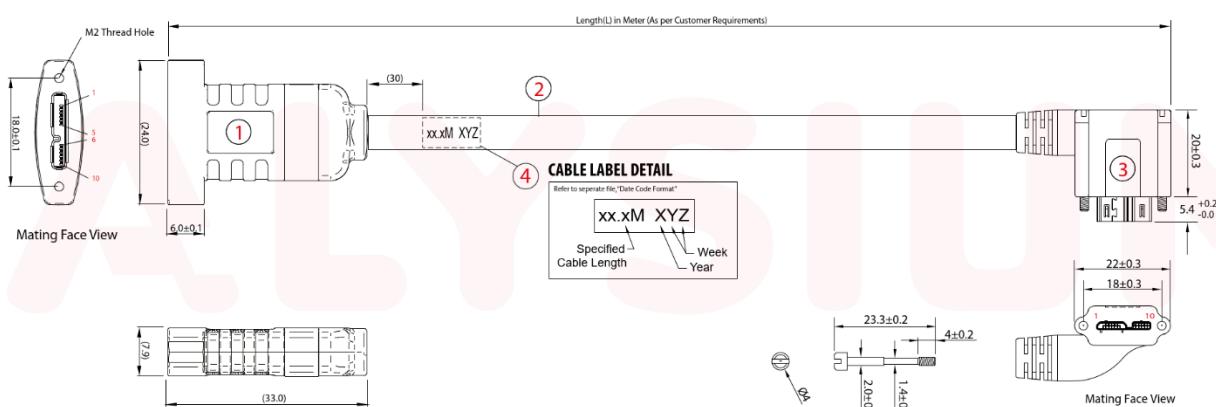
RoHS COMPLIANT

A74-3775

DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (Chua 180622)
01 (Chua 180710)

Initial Issue



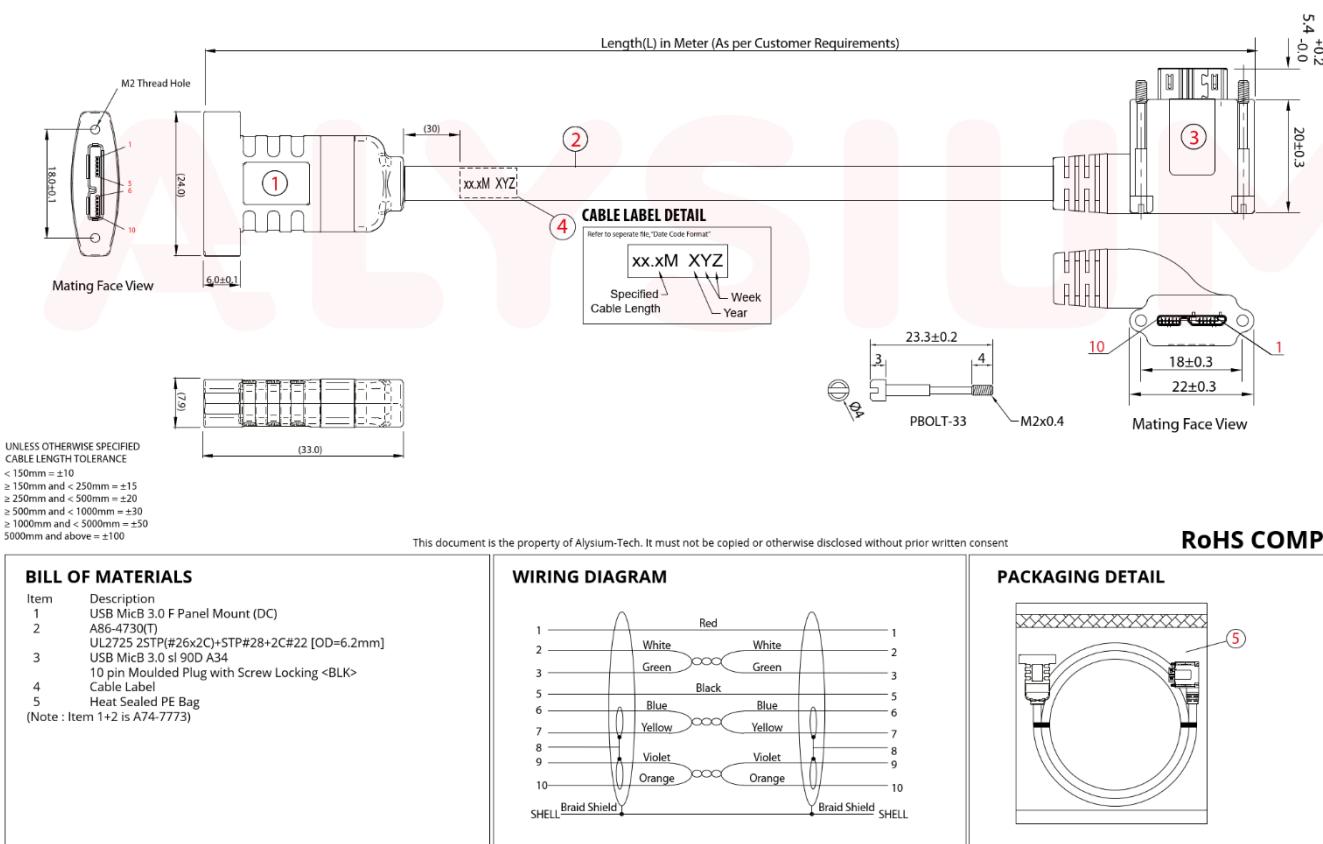
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<p>Item Description</p> <p>1 USB MicB 3.0 F Panel Mount (DC)</p> <p>2 A86-4730(T) UL2725 2STP(#26x2C)+STP#28+2C#22 [OD=6.2mm]</p> <p>3 USB MicB 3.0 sl 90D A32</p> <p>4 10 pin Moulded Plug with Screw Locking <BLK></p> <p>5 Heat Sealed PE Bag</p> <p>(Note : Item 1+2 is A74-7773)</p>		

RoHS COMPLIANT

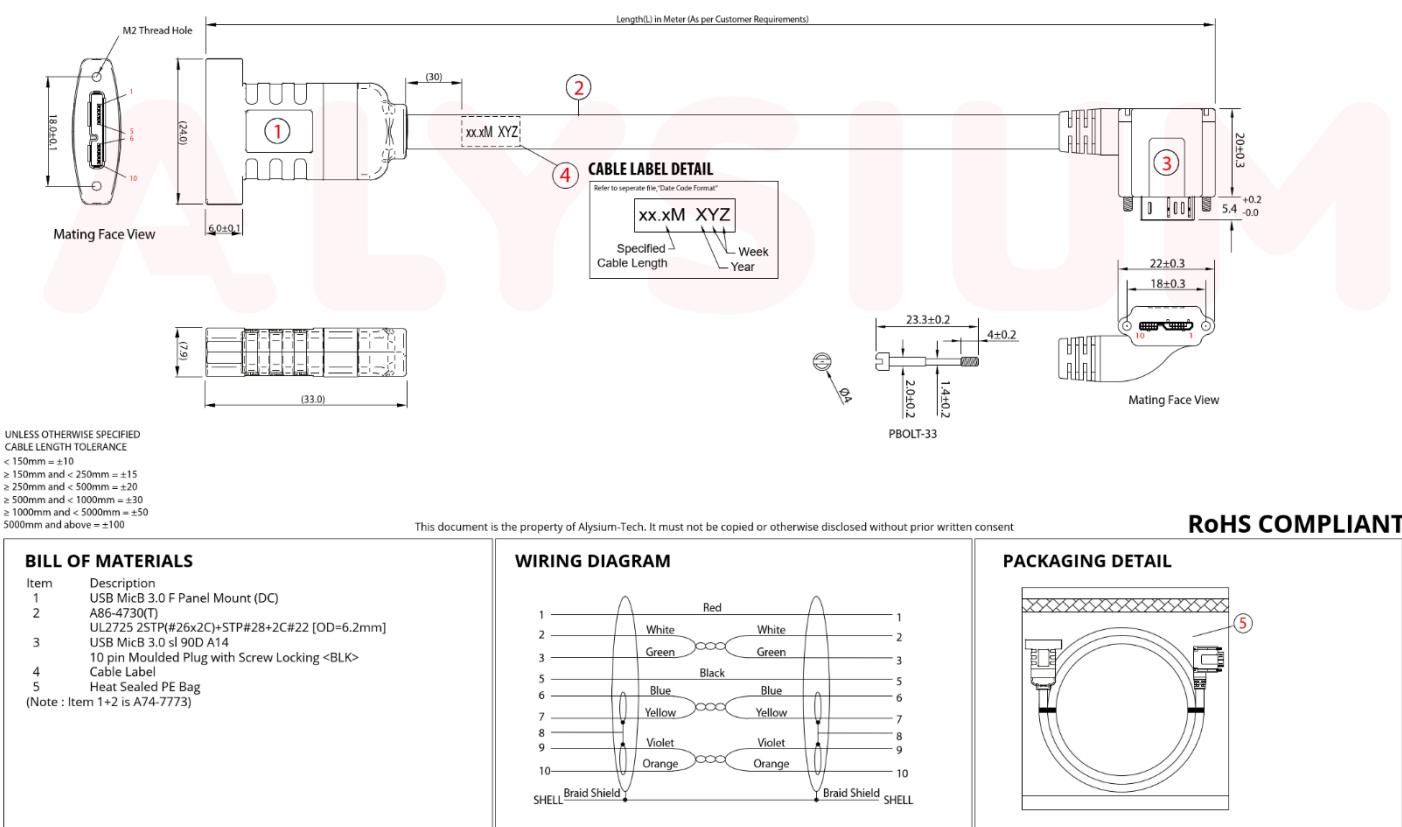
各種変換ケーブル

DRAWING REF: A74-5959
 DRAWING REF: USB 3.0 Industrial Assembly
 REVISION: 00 (Chua 180622)
 01 (Chua 180710) Initial Issue



RoHS COMPLIANT

DRAWING REF: A74-8431
 DRAWING REF: USB 3.0 Industrial Assembly
 REVISION: 00 (Chua 180622)
 01 (Chua 180710) Initial Issue



RoHS COMPLIANT

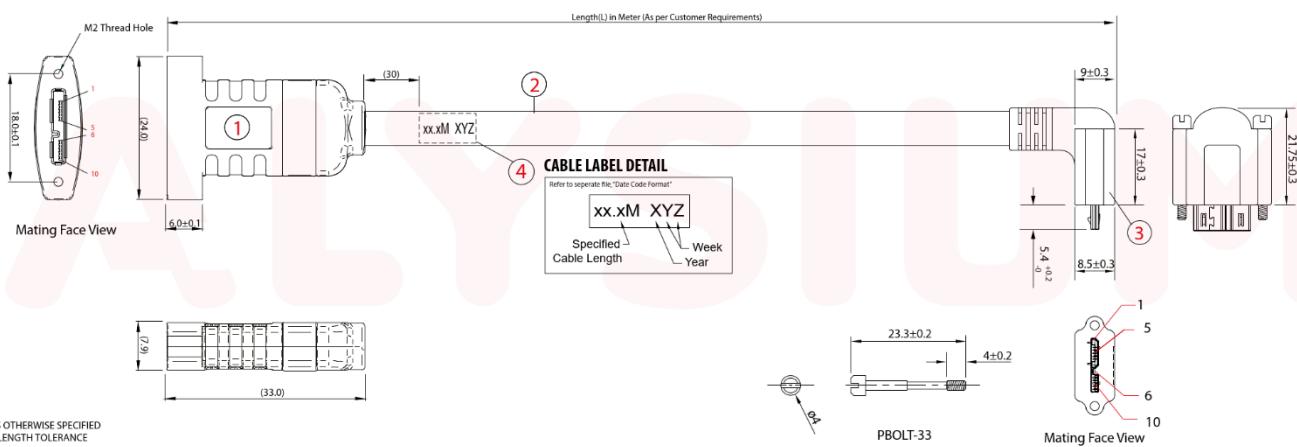
各種変換ケーブル

A74-9245

DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (Chua 1806022)
01 (Chua 180710)

Initial Issue



UNLESS OTHERWISE SPECIFIED
CABLE LENGTH TOLERANCE
< 150mm = ±10
≥ 150mm and < 250mm = ±15
≥ 250mm and < 500mm = ±20
≥ 500mm and < 1000mm = ±30
≥ 1000mm and < 5000mm = ±50
5000mm and above = ±100

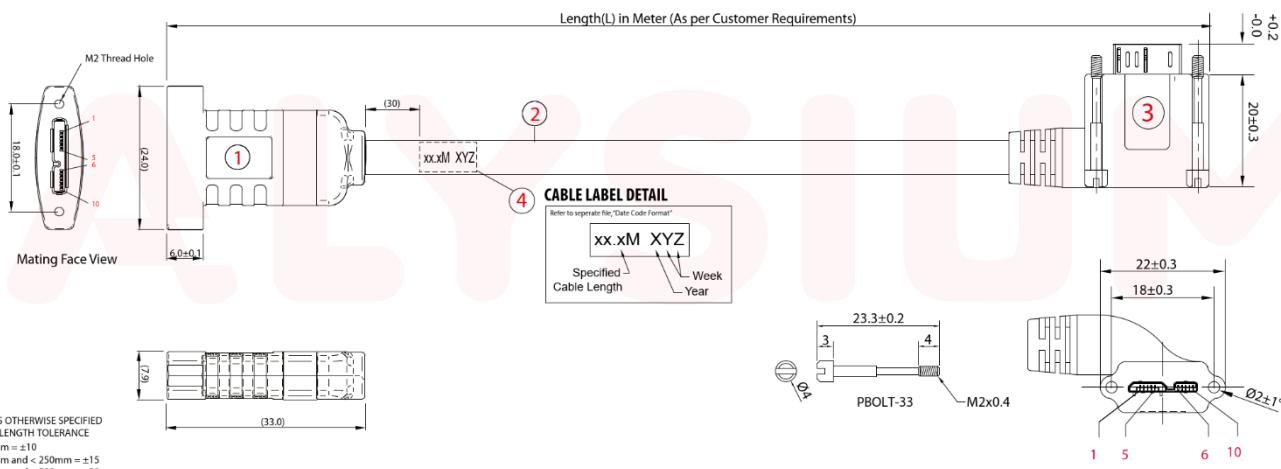
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RoHS COMPLIANT

BILL OF MATERIALS		WIRING DIAGRAM	PACKAGING DETAIL
Item	Description		

DRAWING REF: A74-7367
DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (Chua 180322)
01 (Chua 180710)



UNLESS OTHERWISE SPECIFIED
CABLE LENGTH TOLERANCE
< 150mm = ±10
≥ 150mm and < 250mm = ±15
≥ 250mm and < 500mm = ±20
≥ 500mm and < 1000mm = ±30
≥ 1000mm and < 5000mm = ±50
5000mm and above = ±100

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RoHS COMPLIANT

BILL OF MATERIALS		WIRING DIAGRAM	PACKAGING DETAIL
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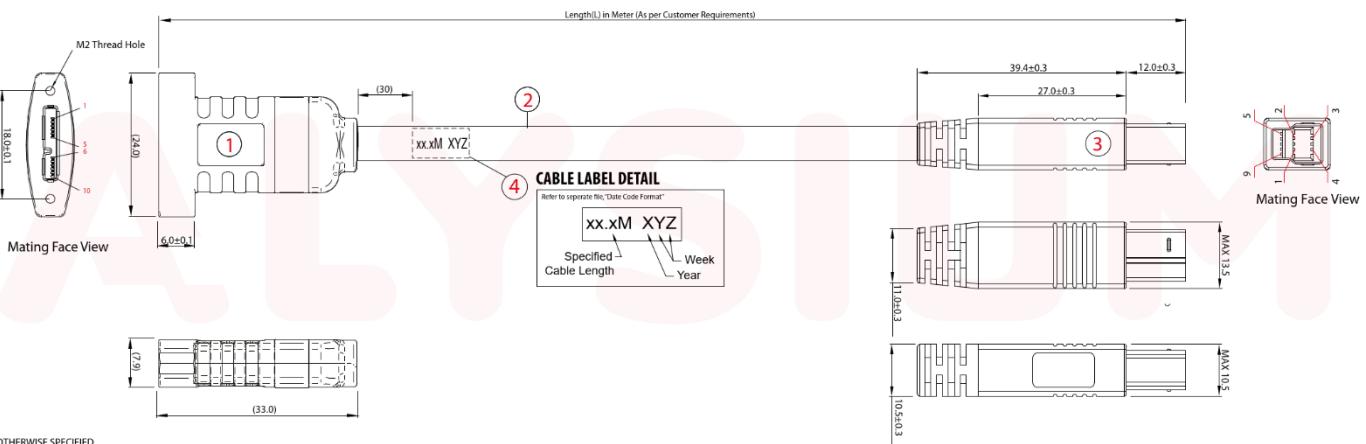
各種変換ケーブル

DRAWING REF: A74-6546

DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (Chua 180622)
01 (Chua 180710)

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RoHS COMPLIANT

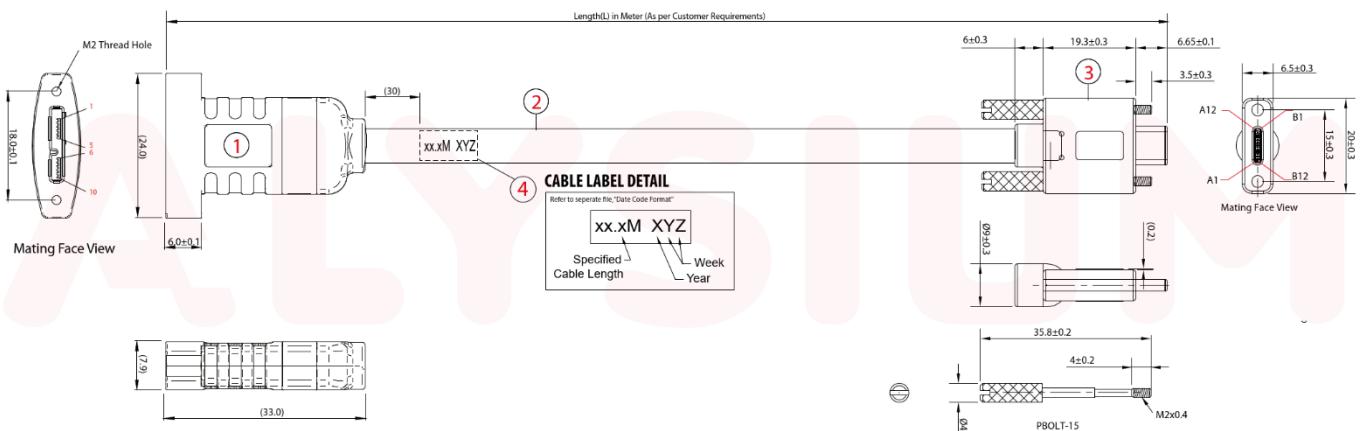
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<p>Item Description 1 USB MicB 3.0 F Panel Mount (DC) 2 A86-4730(T) UL2725 2STP#(26x2C)+STP#28+2C#22 [OD=6.2mm] 3 USB B 3.0 (W10.5) Moulded <BLK> 4 Cable Label 5 Heat Sealed PE Bag (Note : Item 1+2 is A74-7773)</p>	<p>USB MicB 3.0 Female</p> <table border="1"> <tr><td>1</td><td>Red</td><td>1</td></tr> <tr><td>2</td><td>White</td><td>2</td></tr> <tr><td>3</td><td>Green</td><td>3</td></tr> <tr><td>5</td><td>Black</td><td>4</td></tr> <tr><td>6</td><td>Blue</td><td>5</td></tr> <tr><td>7</td><td>Yellow</td><td>6</td></tr> <tr><td>8</td><td>Violet</td><td>7</td></tr> <tr><td>9</td><td>Orange</td><td>8</td></tr> <tr><td>10</td><td>Braid Shield</td><td>SHELL</td></tr> </table>	1	Red	1	2	White	2	3	Green	3	5	Black	4	6	Blue	5	7	Yellow	6	8	Violet	7	9	Orange	8	10	Braid Shield	SHELL	
1	Red	1																											
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7	Yellow	6																											
8	Violet	7																											
9	Orange	8																											
10	Braid Shield	SHELL																											

DRAWING REF: A74-7349

DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (Chua 180622)

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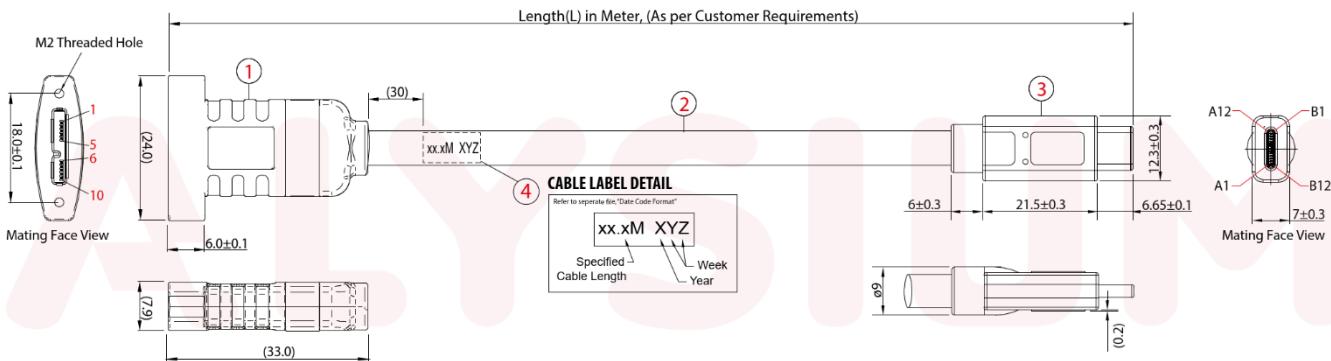
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1	RED(MVbus)	A4																																	
7	YELLOW MicB SSRX+	A9																																	
6	BLUE MicB SSB-	A2																																	
8	DRAIN(GND)	A3																																	
5	BLACK(GND)	A1																																	
9	PURPLE MicB SSTX+	B1																																	
10	ORANGE MicB SSTX+	B12																																	
	Shell	B10																																	
	Shell	B11																																	

各種変換ケーブル

A74-8013

DRAWING REF: USB 3.0 Industrial Assembly

REVISION: 00 (KH 190228) Initial Issue



UNLESS OTHERWISE SPECIFIED
CABLE LENGTH TOLERANCE
< 150mm = ±10
≥ 150mm and < 250mm = ±15
≥ 250mm and < 500mm = ±20
≥ 500mm and < 1000mm = ±30
≥ 1000mm and < 5000mm = ±50
5000mm and above = ±100

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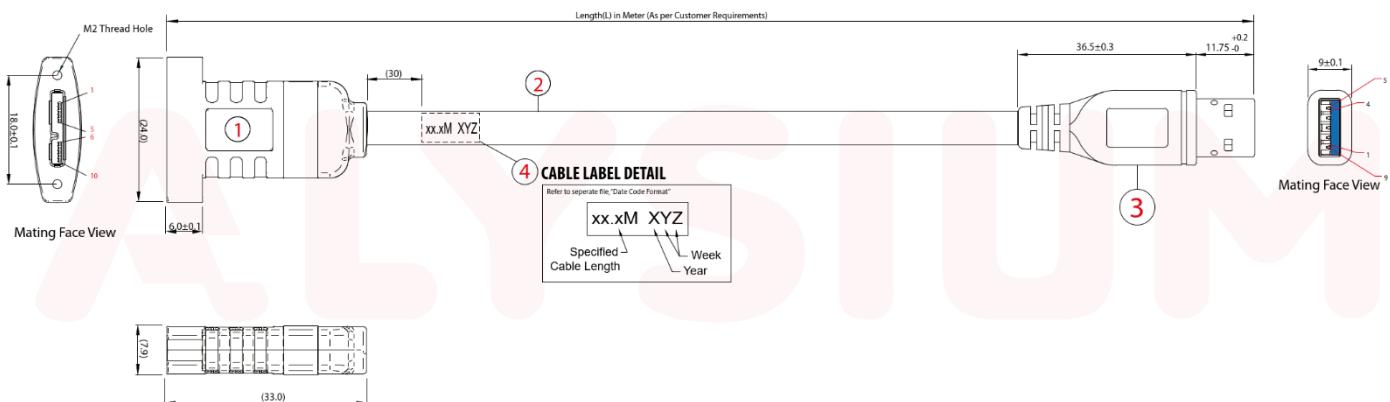
RoHS COMPLIANT

BILL OF MATERIALS		WIRING DIAGRAM	PACKAGING DETAIL
Item	Description		

DRAWING REF: A74-3170

DRAWING REF: USB 3.0 Industrial Assy

REVISION: 00 (Chua 181220) Initial Issue



UNLESS OTHERWISE SPECIFIED
ASSY LENGTH TOLERANCE
< 150mm = ±10
≥ 150mm and < 250mm = ±15
≥ 250mm and < 500mm = ±20
≥ 500mm and < 1000mm = ±30
≥ 1000mm and < 5000mm = ±50
5000mm and above = ±100

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RoHS COMPLIANT

BILL OF MATERIALS		WIRING DIAGRAM	PACKAGING DETAIL
Item	Description		