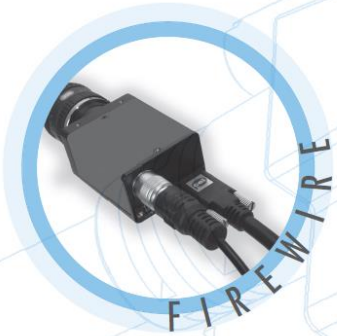


FIREWIRE

IEEE-1394 CABLES

For more information please contact:

BOCK OPTRONICS INC.
14 Steinway Blvd., Unit 7
Toronto, Ontario M9W 6M6

Tel: (416) 674-2804
sales@bockoptronics.ca
www.bockoptronics.ca

PART NUMBER REFERENCE

M V F - X - X - X - ( ) M

Select Connector Type: End "1"

1394b 9 Pin w/Thumbscrews = 1
1394b 9 Pin Friction Fit = 2
1394a 6 Pin w/Thumbscrews = 3
1394a 6 Pin Friction Fit = 4
1394a 6 Pin w/Latches = 5
1394b 9 Pin R/A *UP* = 6
1394b 9 Pin R/A *DOWN* = 7
1394b 9 Pin Exit *RIGHT* = 8
1394b 9 Pin Exit *LEFT* = 9
1394b 9 Pin Female = 10
1394b R/A *UP* w/Recessed Screws = 11
1394b R/A *DOWN* w/Recessed Screws = 12
1394b 9 Pin Exit *RIGHT* w/Screw = 13
1394b 9 Pin Exit *LEFT* w/Screw = 14
1394a 6 Pin R/A (Cable Exit Pin 1) = 15
1394a 6 Pin R/A (Cable Exit Pin 6) = 16
1394a 6 Pin Female = 17
1394a 6 Pin R/A (Cable Exit Pin 1) = 18
1394a 6 Pin R/A (Cable Exit Pin 6) = 19

Cable Type Options:

Standard Static Cable = 1
HIFLEX = 2
Extended Distance = 3
ROBOTIC = 4 *

Select Connector Type: End "2"

1394b 9 Pin w/Thumbscrews = 1
1394b 9 Pin Friction Fit = 2
1394a 6 Pin w/Thumbscrews = 3
1394a 6 Pin Friction Fit = 4
1394a 6 Pin w/Latches = 5
1394b 9 Pin R/A *UP* = 6
1394b 9 Pin R/A *DOWN* = 7
1394b 9 Pin Exit *RIGHT* = 8
1394b 9 Pin Exit *LEFT* = 9
1394b 9 Pin Female = 10
1394b R/A *UP* w/Recessed Screws = 11
1394b R/A *DOWN* w/Recessed Screws = 12
1394b 9 Pin Exit *RIGHT* w/Screw = 13
1394b 9 Pin Exit *LEFT* w/Screw = 14
1394a 6 Pin R/A (Cable Exit Pin 1) = 15
1394a 6 Pin R/A (Cable Exit Pin 6) = 16
1394a 6 Pin Female = 17
1394a 6 Pin R/A (Cable Exit Pin 1) = 18
1394a 6 Pin R/A (Cable Exit Pin 6) = 19

Option: Length in Meters

* *Cable type 1: Suitable up to 4.5M*
* *Cable type 2: Suitable up to 8M*
* *Cable type 3: Suitable for 6 - 10M*
* *Cable type 4: Is Not compatible w/Conn. Type: 5*

Physical:

Cable Color:	Black
Shell Color:	Black
Shell Construction:	Pre-molded in Polyethelene, fully shielded and over-molded in black PVC.
Cable Construction:	Meets industry S-400 and S-800 standards. All cables are fully certified.

Temp: 7-1-20

CONNECTOR TYPE OPTIONS:

1394b 9 Pin
w/Thumbscrews

1394b 9 Pin
Friction Fit

1394a 6 Pin
w/Thumbscrews

1394a 6 Pin
Friction Fit

1394a 6 Pin
w/Latches

1394b 9 Pin
R/A UP

1394b 9 Pin
R/A DOWN

1394b 9 Pin
Exit RIGHT
Friction Fit

1394b 9 Pin
Exit LEFT
Friction Fit

1394b 9 Pin
Female
w/Removeable Hardware

1394b R/A UP
w/Recessed Screws

1394b R/A DOWN
w/Recessed Screws

1394b 9 Pin
Exit RIGHT
w/Recessed Screw

1394b 9 Pin
Exit LEFT
w/Recessed Screw

1394a 6 Pin R/A
(Cable Exit Pin 1)
Friction Fit

1394a 6 Pin R/A
(Cable Exit Pin 6)
Friction Fit

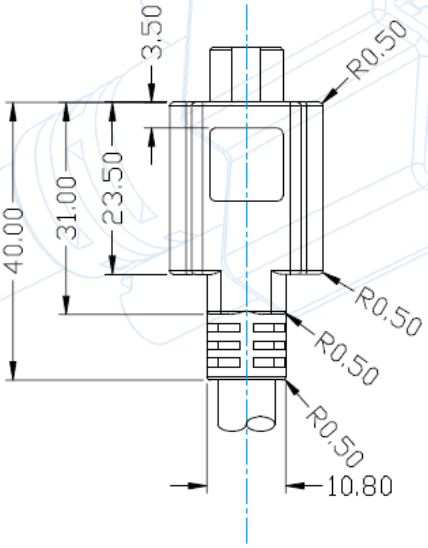
1394a 6 Pin
Female
Friction Fit

1394a 6 Pin R/A
(Cable exit Pin 1)
Friction Fit

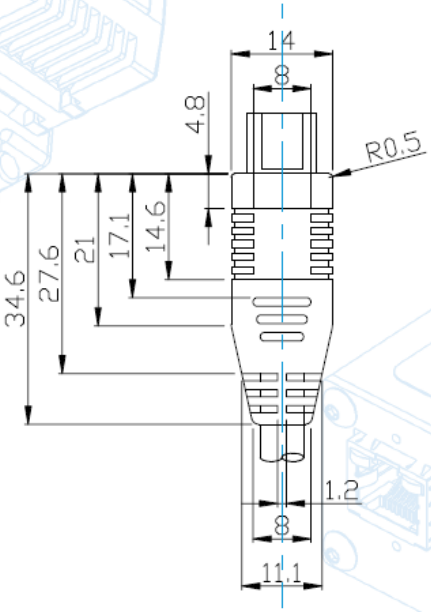
1394a 6 Pin R/A
(Cable Exit Pin 6)
Friction Fit

See page 12 & 13 for profile drawings.

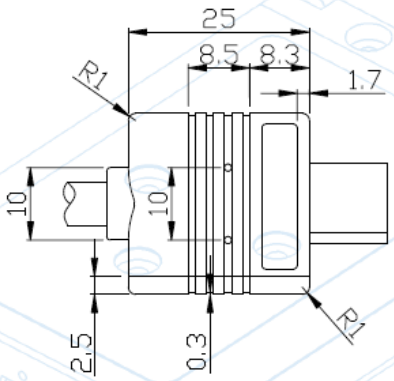
Temp: 7-1-20



PROFILE 1



PROFILE 2



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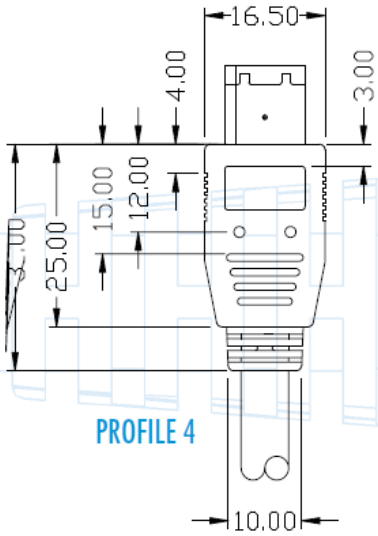

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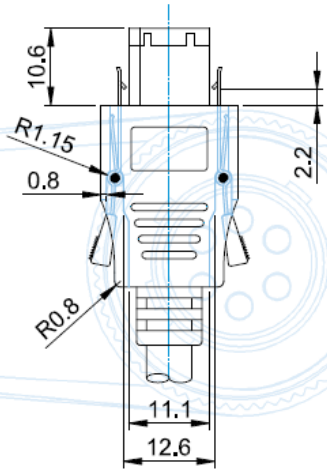
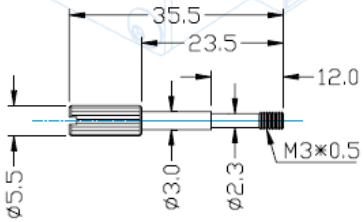
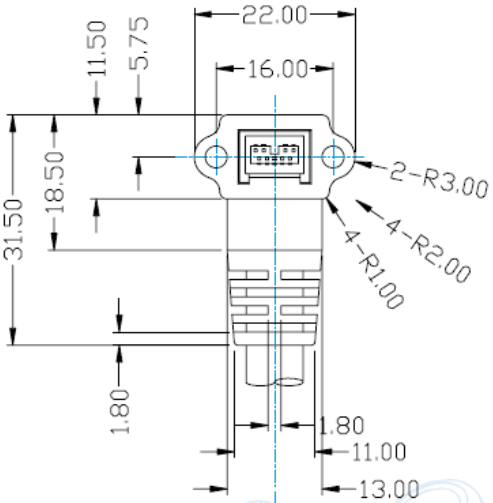
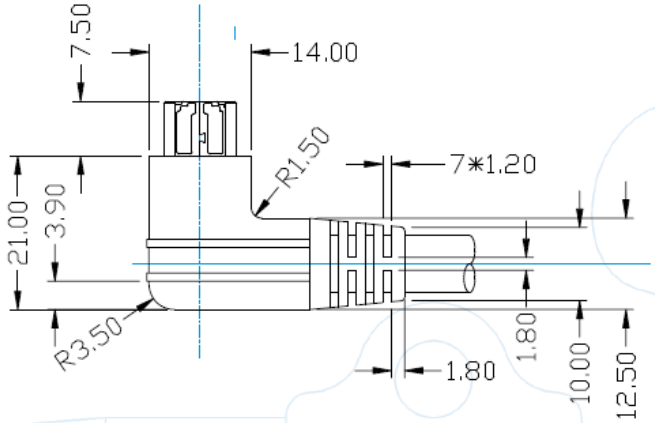


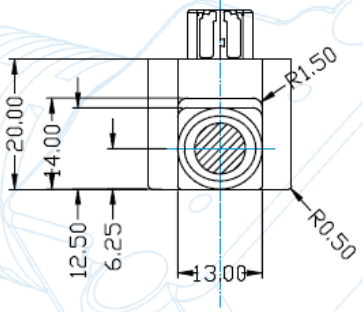
PROFILE 5





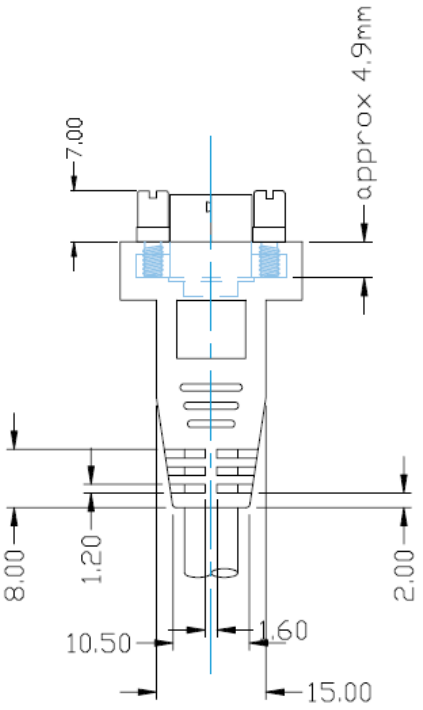


PROFILE 8 & 9

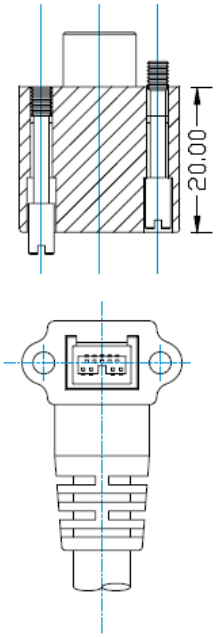


PROFILE 6 & 7

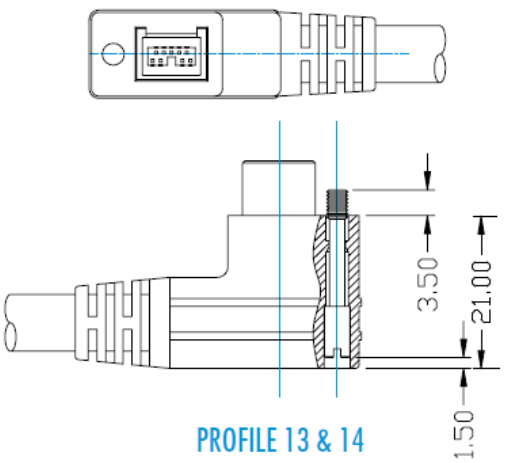
Temp: 7-1-20



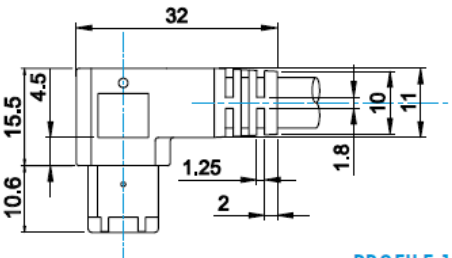
PROFILE 10



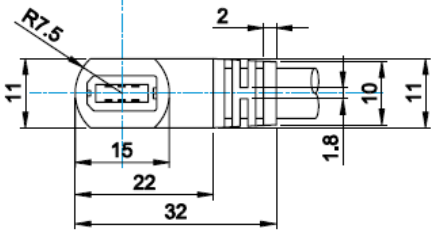
PROFILE 11 & 12

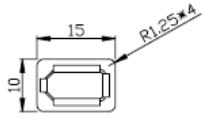


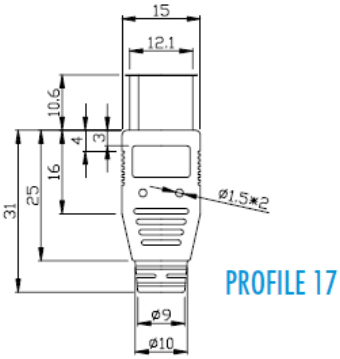
PROFILE 13 & 14



PROFILE 15 & 16

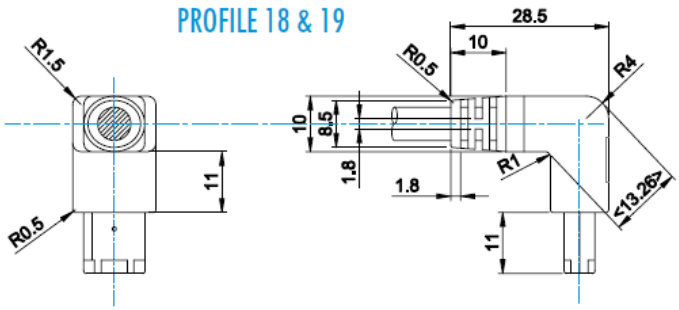






PROFILE 17

PROFILE 18 & 19



Temp: 7-1-20

COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive,
Ste100 Woodridge, IL 60517

MVF Type #: 1

W977072903
Rev. A, 7/29/2008, 8/8/19

SPEC No.:	(19/0.1TA*1PR+2EAM)*2+ 19/0.16TA*2C+MAB 90% IEEE-1394b						
Customer		Customer NO.		8Code:	43120116	Sample NO:	W97072903
UL File NO.	E101344	UL Style:	UL 20279	Date:	7/29/08	Spec NO.	UD4V61RU11714FT7-H--
CSA File NO.	0	CSA Style:	0	Edition:	thirdly Edition	Operation NO:	0

Structure			Structure A	Structure B
Conductors	Structure AWG	AWG	26# (19/38)	22# (19/34)
	Material	--	Tinned Copper	Tinned Copper
	O.D.	mm	0.49 Ref	0.785 Ref
Insulation	Material	--	FOAM-PE	SR-PVC
	Diameter	mm	1.45±0.09	1.20±0.07
	Average Thickness	mm	0.480 Ref	0.208 Ref
	Color	--	AS Color Code	AS Color Code
Twist	Direction	--	Right (S)	--
	Diameter	mm	2.90	--
Shielding 1	Material	--	Free-edge-al-foil/mylar	--
	Conductive Side	--	Inside	--
	Overlap Rate	%	25 Ref	--
Drain wire	Structure AWG	AWG	26# (19/38) *2PCS	--
	Material	--	Tinned Copper	--
Layer	Direction	--	Right (S)	
	Pitch	mm	80 Ref	
	Diameter	mm	5 Ref	
Shielding 3	Material	--	Free-edge-al-foil/mylar	
	Conductive Side	--	Outside	
	Overlap Rate	%	25	
Shielding 4	Shield	--	Braid	
	Material	--	Tinned Copper	
	Coverage Rate	%	95MIN	
Jacket	Material	--	PU	
	Diameter	mm	7.1 ± 0.19	
	Average Thickness	mm	0.78 Ref	
	Extrusion	--	Little Solid	
	Externals	--	Plane	
	Color	--	U209 (BLACK)	

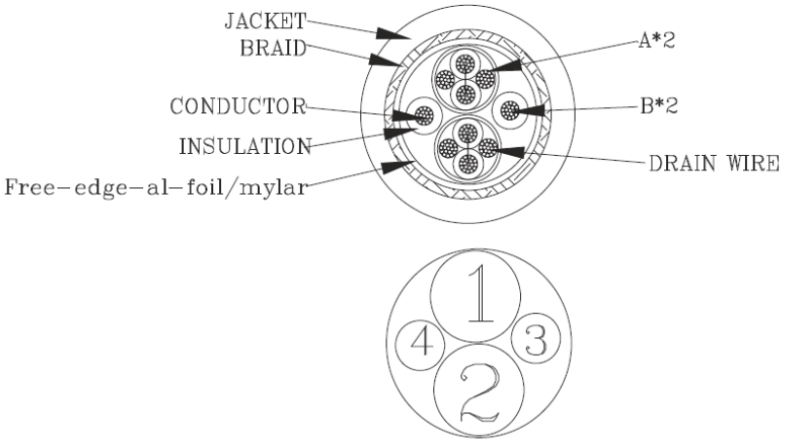
COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive,
Ste100 Woodridge, IL 60517

MVF Type #: 1

W977072903
Rev. A, 7/29/2008, 8/8/19

SPEC No.:	(19/0.1TA*1PR+2EAM)*2+ 19/0.16TA*2C+MAB 90% IEEE-1394b						
Customer		Customer NO.		8Code:	43120116	Sample NO:	W97072903
UL File NO.	E101344	UL Style:	UL 20279	Date:	7/29/08	Spec NO.	UD4V61RU11714FT7-H--
CSA File NO.	0	CSA Style:	0	Edition:	thirdly Edition	Operation NO:	0
Structure		Structure A				Structure B	

MINIMUM BEND RADIUS: 10X O.D.



COLOR CODE
1.RED*GREEN
2.ORANGE*BLUE
3.WHITE(P579)
4.BLACK(P570)

COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive,
Ste100 Woodridge, IL 60517

MVF Type #: 1

W977072903
Rev. A, 7/29/2008, 8/8/19

SPEC No.:	(19/0.1TA*1PR+2EAM)*2+ 19/0.16TA*2C+MAB 90% IEEE-1394b						
Customer		Customer NO.		8Code:	43120116	Sample NO:	W97072903
UL File NO.	E101344	UL Style:	UL 20279	Date:	7/29/08	Spec NO.	UD4V61RU11714FT7-H--
CSA File NO.	0	CSA Style:	0	Edition:	thirdly Edition	Operation NO:	0

Electric Characters

1.Voltage rating: 30V
2.Temperature rating: 80℃
3.Spark test : AC- 500V / 0.15 sec MIN.
4. Dielectric strength: AC- 750V/1sec MIN.
5.Insulation resistance : FOAM-PE,:DC-500V 100 MΩ/KM MIN. at 20℃
SR-PVC:DC-500V 10 MΩ/KM MIN. at 20℃
6.Conductor resistance : 26AWG-148Ω/KM MAX. at 20℃

Transmission Characters :

1.Attenuation:

Frequency (MHz)	400	800	1000
Attenuation (MAX) dB/2.0M	2.9	4.6	5.5

2.Impedance : 110±6Ω (Differential) TDR at 1 & 2.5ns
33±6Ω (Common mode)
3.Signal Pairs Propagation delay: ≦5.05ns/M MAX.
4.RiseTime ≦100ps
5.Intr-pair Skew ≦160ps
6.CrosstaIk ≦3%

Physical Characters

1.Flame test of cable:
1.1 :Cable Flame Test
2.Tensile strength test(before aging) :
2.1 Sheath : ＞ 1.05kg/mm2
2.2 Insulation: ＞2.11kg/mm2 (SR-PVC)

3.Tensile strength test(after aging) :
3.1 Sheath: ＞70%
3.2 Insulation :＞70% (SR-PVC)
4.Elongation(before aging) :
4.1 Sheath: ＞100%
4.2 Insulation: ＞100% (SR-PVC)

5.Elongation(after aging) :
5.1 Sheath : ＞65%
5.2 Insulation : ＞70%(SR-PVC)

6.Requirements for green environment protection : Accord with RoHS

Approval	Frend	Auditor	Joan	Producer	xiaojin

COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive,
Ste100 Woodridge, IL 60517

MVF Type #: 2

W977072903
Rev. A, 7/29/2008, 8/8/19

SPEC No.:	(19/0.1TA*1PR+2EAM)*2+ 19/0.16TA*2C+MAB 90% IEEE-1394b						
Customer		Customer NO.		8Code:	43120116	Sample NO:	W97072903
UL File NO.	E101344	UL Style:	UL 20279	Date:	7/29/08	Spec NO.	UD4V61RU11714FT7-H--
CSA File NO.	0	CSA Style:	0	Edition:	thirdly Edition	Operation NO:	0

Structure			Structure A	Structure B
Conductors	Structure AWG	AWG	26# (19/38)	22# (19/34)
	Material	--	Tinned Copper	Tinned Copper
	O.D.	mm	0.49 Ref	0.785 Ref
Insulation	Material	--	FOAM-PE	SR-PVC
	Diameter	mm	1.45±0.09	1.20±0.07
	Average Thickness	mm	0.480 Ref	0.208 Ref
	Color	--	AS Color Code	AS Color Code
Twist	Direction	--	Right (S)	--
	Diameter	mm	2.90	--
Shielding 1	Material	--	Free-edge-al-foil/mylar	--
	Conductive Side	--	Inside	--
	Overlap Rate	%	25 Ref	--
Drain wire	Structure AWG	AWG	26# (19/38) *2PCS	--
	Material	--	Tinned Copper	--
Layer	Direction	--	Right (S)	
	Pitch	mm	80 Ref	
	Diameter	mm	5 Ref	
Shielding 3	Material	--	Free-edge-al-foil/mylar	
	Conductive Side	--	Outside	
	Overlap Rate	%	25	
Shielding 4	Shield	--	Braid	
	Material	--	Tinned Copper	
	Coverage Rate	%	95MIN	
Jacket	Material	--	PU	
	Diameter	mm	7.1 ± 0.19	
	Average Thickness	mm	0.78 Ref	
	Extrusion	--	Little Solid	
	Externals	--	Plane	
	Color	--	U209 (BLACK)	

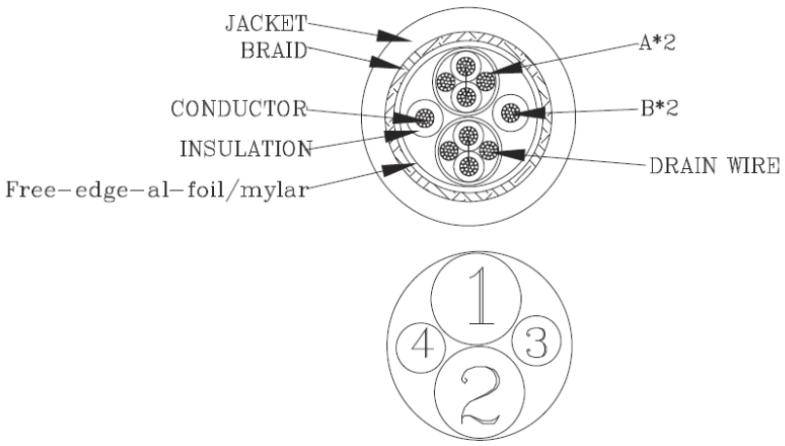
COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive,
Ste100 Woodridge, IL 60517

MVF Type #: 2

W977072903
Rev. A, 7/29/2008, 8/8/19

SPEC No.:	(19/0.1TA*1PR+2EAM)*2+ 19/0.16TA*2C+MAB 90% IEEE-1394b						
Customer		Customer NO.		8Code:	43120116	Sample NO:	W97072903
UL File NO.	E101344	UL Style:	UL 20279	Date:	7/29/08	Spec NO.	UD4V61RU11714FT7-H--
CSA File NO.	0	CSA Style:	0	Edition:	thirdly Edition	Operation NO:	0
Structure		Structure A				Structure B	

MINIMUM BEND RADIUS: 10X O.D.



COLOR CODE
1.RED*GREEN
2.ORANGE*BLUE
3.WHITE(P579)
4.BLACK(P570)

COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive,
Ste100 Woodridge, IL 60517

MVF Type #: 2

W977072903
Rev. A, 7/29/2008, 8/8/19

SPEC No.:	(19/0.1TA*1PR+2EAM)*2+ 19/0.16TA*2C+MAB 90% IEEE-1394b						
Customer		Customer NO.		8Code:	43120116	Sample NO:	W97072903
UL File NO.	E101344	UL Style:	UL 20279	Date:	7/29/08	Spec NO.	UD4V61RU11714FT7-H--
CSA File NO.	0	CSA Style:	0	Edition:	thirdly Edition	Operation NO:	0

Electric Characters

1.Voltage rating: 30V
2.Temperature rating: 80℃
3.Spark test : AC- 500V / 0.15 sec MIN.
4. Dielectric strength: AC- 750V/1sec MIN.
5.Insulation resistance : FOAM-PE,:DC-500V 100 MΩ/KM MIN. at 20℃
SR-PVC:DC-500V 10 MΩ/KM MIN. at 20℃
6.Conductor resistance : 26AWG-148Ω/KM MAX. at 20℃

Transmission Characters :

1.Attenuation:

Frequency (MHz)	400	800	1000
Attenuation (MAX) dB/2.0M	2.9	4.6	5.5

2.Impedance : 110±6Ω (Differential) TDR at 1 & 2.5ns
33±6Ω (Common mode)
3.Signal Pairs Propagation delay: ≦5.05ns/M MAX.
4.RiseTime ≦100ps
5.Intr-pair Skew ≦160ps
6.CrossTalk ≦3%

Physical Characters

1.Flame test of cable:
1.1 :Cable Flame Test
2.Tensile strength test(before aging) :
2.1 Sheath : ＞ 1.05kg/mm2
2.2 Insulation: ＞2.11kg/mm2 (SR-PVC)

3.Tensile strength test(after aging) :
3.1 Sheath: ＞70%
3.2 Insulation :＞70% (SR-PVC)
4.Elongation(before aging) :
4.1 Sheath: ＞100%
4.2 Insulation: ＞100% (SR-PVC)

5.Elongation(after aging) :
5.1 Sheath : ＞65%
5.2 Insulation : ＞70%(SR-PVC)

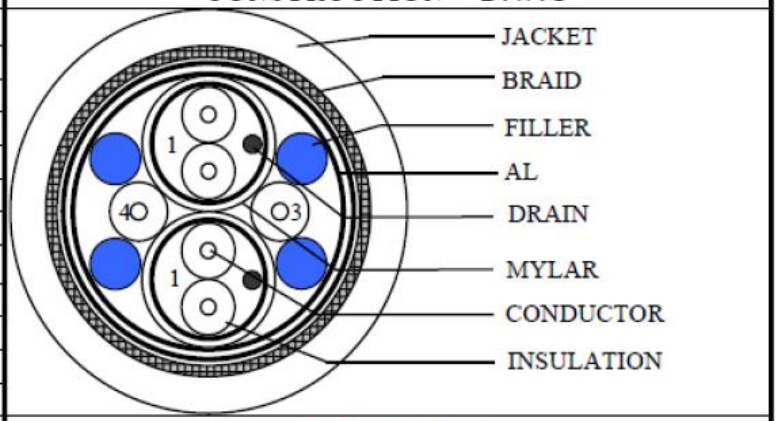
6.Requirements for green environment protection : Accord with RoHS

Approval	Frend	Auditor	Joan	Producer	xiaojin

MVF-Cable Type #: 3

SPECIFICATION:		(1P*24AWG+DAM)*2C+2C*22AWG+MAB / UL20276	
ITEM		SPECIFICATION	
CONDUCTOR	AWG	24AWG	22AWG
	MATERIAL	TINNED COPPER	TINNED COPPER
	COND.SIZE	7/0.20±0.008MM	19/0.16±0.008MM
INSULATION	MIN.AVG.THICK	0.45MM	0.23MM
	MATERIAL	FM-PE+SKIN	SR-PVC
	O . D	1.60±0.05MM	1.30±0.05MM
	N O.	1P*2	2C
DRAIN	AWG	24AWG	/
	MATERIAL	TINNED COPPER	/
	SIZE	7/0.20±0.008MM	/
Face Inside AL.Mylar	COVERAGE	100%	/
	OVERLAP	25% MIN	/
Hot Melt MYLAR	COVERAGE	100%	/
	OVERLAP	25%MIN	/
MYLAR	COVERAGE	100%	
	OVERLAP	25%MIN	
Face Outside AL.Mylar	COVERAGE	100%	
	OVERLAP	25%MIN	
BRAID COPPER	MATERIAL	TINNED COPPER	
	SIZE	24*11/0.08MM (COVERAGE：85%MIN)	
JACKET	MIN.AVG.THICK	0.30MM	
	MATERIAL	80℃-PVC	
	COLOUR	BLACK	
	O . D	7.10±0.20MM	

CONSTRUCTION D.W.G



COLOUR CODE:

(1P*24#+DAM)*2C: 1. Red*Green
2. Orange*Blue

2C*22#: 3.White 4.Black

MINIMUM BEND RADIUS: 10X O.D.

ELECTRICAL CHARACTERISTICS

1. Rating : TEMP 80℃ : VOLTAGE 30V
2. Conductor Resistance: AT 20℃ MAX
   22AWG:55Ω/km, 24AWG: 93Ω/km
3. Insulation Resistance: 10MΩ/km min at 20℃
4. Dielectric Strength: AC 500V/1minute
5. Impedance: 110±6Ω
6. Cable Delay (max): 160ps /10m
7. Attenuation: at 400MHz 2.9dB/10m
   at 800MHz 4.6dB/10m
   at 1000MHz 5.5dB/10m

*These data are limited to raw cable.

PHYSICAL PROPERTIES OF JACKET

1. Tensile Strength: Unaged: 1500PSI min Aged: 70% min
2. Elongation: Unaged: 100% min Aged: 65%
3. Heat shock test: NO CRACKING
4. Cold bend test: NO CRACKING
5. Deformation test: MAX 50%

COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive, Ste100
Woodridge, IL 60517

E0919, Updated 8/8/19

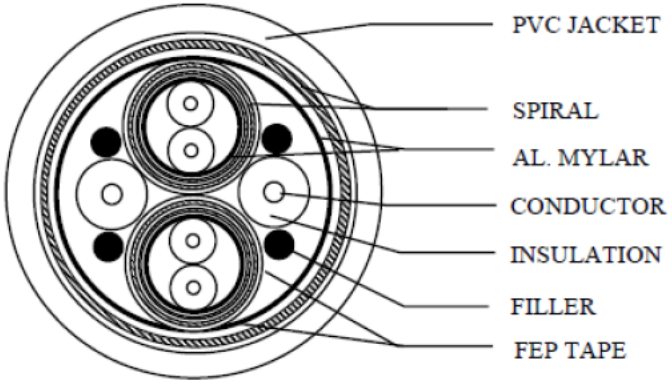
APPROVED		CUSTOMER	
CHECKED		REV	A / 0
DRAWING	*chen*	DATE	2017/8/31

MVF-Cable Type #: 4

SPECIFICATION: (1P*26AWG+AL+S+S+ FEP TAPE)*2+2C*22AWG +AL+S+ FEP TAPE

ITEM		SPECIFICATION	
CONDUCTOR	AWG	26AWG	22AWG
	MATERIAL	BARE COPPER	TINNED COPPER
	COND.SIZE	19/0.10± 0.008 ㎜	44/0.10± 0.01 ㎜
INSULATION	MIN.AVG.THICK	0.35 ㎜	0.35 ㎜
	MATERIAL	FM-PE+SKIN	HD-PE
	O . D	1.30± 0.05 ㎜	1.60 ± 0.05 ㎜
	N O.	/	/
Face outside AL.MYLAR	COVERAGE	100%	/
	OVERLAP	25% MIN	/
SPIRAL COPPER	MATERIAL	TINNED COPPER	/
	SIZE	84±2/0.10± 0.008 ㎜	/
SPIRAL COPPER	MATERIAL	TINNED COPPER	/
	SIZE	94±2/0.10± 0.008 ㎜	/
FEP TAPE	COVERAGE	100%	/
	OVERLAP	25% MIN	/
	N O.	1P*2	2C
Face outside AL.MYLAR	COVERAGE	100%	
	OVERLAP	25% MIN	
SPIRAL COPPER	MATERIAL	TINNED COPPER	
	SIZE	154±3/0.10± 0.008 ㎜	
FEP TAPE	COVERAGE	100%	
	OVERLAP	25% MIN	
JACKET	MIN.AVG.THICK	0.38 ㎜	
	MATERIAL	MATT CL2 PVC	
	COLOUR	PURPLE	
	O . D	8.30 ± 0.20 ㎜	

CONSTRUCTION D.W.G



COLOUR CODE:

2P: 1P: RED * GREEN 2P: BLUE * ORANGE

2C: 1. WHITE 2.BLACK

MINIMUM BEND RADIUS: 10X O.D.

ELECTRICAL CHARACTERISTICS

1.Rating : TEMP 80℃ : VOLTAGE 30V
2. Conductor Resistance: AT 20℃ MAX
22AWG: 55Ω/km; 26AWG:148.96Ω/km;
3.Impedance: 110±6Ω
4. Crosstalk: ≦-26dB(1~75MHz)
5. Cable Delay:5.05ns/m
6.Skew: ≦400ps/4.5m
7. Attenuation: 100MHz＜2.3dB
200MHz＜3.2dB 400MHz＜5.8Db/4.5m
8. Insulation Resistance: 100MΩ-km min at 20℃ dc 500V.(EIA-364-21)
9. Dielectric Strength: AC 500V/1minute no breakdown. (EIA-364-20)

PHYSICAL PROPERTIES OF JACKET

1.Tensile Strength: Unaged: 1500PSI min Aged: 70% min
2. Elongation: Unaged: 100% min Aged: 65%
3. Heat shock test: NO CRACKING
4. Cold bend test: NO CRACKING
5. Deformation test: MAX 50%
6. Flame test: PASS VW-1

COMPONENTS EXPRESS, INC.
10330 Argonne Woods Drive, Ste100
Woodridge, IL 60517

96452282001 (E1005),

Updated 8/8/19

APPROVED		CUSTOMER	
CHECKED		REV	A
DRAWING	*CWJ*	DATE	16/10/18

CC-EW-206A