

Barco service bulletin

Serial Number: 1301
Date: 11/11/2016
Product: E2, S3-4K, and EX
Priority code*: D

- A. "Must" modification, Barco will provide the necessary components to perform this modification at no charge.
- B. Improves the reliability of the product.
- C. Improves the general working conditions of the product.
- D. For information only.

1. EVENT MASTER LINK-CABLE SOLUTIONS FOR E2, S3-4K, AND EX

1.1 General

Phenomenon

Event Master (EM) products such as E2 and S3-4K have supported linking since the 1.5 software release. Because the units tended to be adjacent to each other in racks, almost all use cases until now have been met by the supplied 1-m CXP copper cables that ship with these units.

With the upcoming EX expansion box release, however, use cases are expanding to include distance requirements for linking that cannot be met with the 1-meter, copper-only solutions. This document provides information on Barco and third party solutions that can be used to address longer distances between units.

Solution

Copper, fiber, and rugged CXP cable solutions are available from Barco and several third-party manufacturers in lengths exceeding 1 meter.

Scope

This phenomenon and solution affects all linking between E2 series, S3-4K series, and EX processors in which the distance separating the processors is greater than 1 meter.

1.2 Link-cable solutions

Copper solutions

Barco provides 1-m copper CXP cables with the E2 and S3-4K processors. (No cables are shipped with E2 Jr., S3-4K Jr., or EX processors.)



Image 1-1
Copper CXP cable



With the exception of the 1-m R9004750 CXP cable that ships with every E2 and S3-4K, Barco stocks limited quantities of the remaining items. Lead times from Molex vary from 9 to 16 weeks for these items. It is recommended that end users make their remote connection plans well in advance of their show needs.

Barco does not guarantee the availability of any of these items and encourages end users to procure them directly from the manufacturers, if desired.

Barco has also qualified 3-m and 5-m copper cables that can be used for slightly longer distances. The table below shows the Barco kit number and the underlying qualified manufacturer part numbers for all three copper solutions. The end user is free to obtain these copper cables from other distribution channels if that is to the end user's advantage.

Length	Barco Kit p/n	Underlying Manufacturer Number
1 m	R9004750	Molex 111025-1201
3 m	Not available	Molex 111025-1203
5 m	R9004762	Molex 111025-1205

All Barco cable kits contain one cable. Please be sure to order the correct number of kits for the desired linking application.

Product to Product Expansion	Number of cables required
E2 to E2	4
E2 to S3-4K	2
S3-4K to S3-4K	2
E2 (or S3-4K) to EX	1 per EX chassis



Please note that, due to the large minimum order quantity from Molex, Barco does not carry the 3-m cable.

Beyond 5 meters copper is not a viable solution for the EM links.

Fiber solutions

Barco has qualified a 30-m and 100-m fiber solution using industry standard CXP to MTP fiber transceiver modules. This solution allows the greatest flexibility for end users who wish to build custom length solutions as well.

Although Barco has qualified 30-m and 100-m fiber solutions, we tested up to 260 meters of MTP and found that OM3/OM4 standards should apply to these solutions. Fiber can differ in performance from one brand to another. Users should conduct their own testing to verify signal integrity prior to deploying these solutions for their applications.



MTP cables can have varying amounts of fiber. The EM links require a 24-fiber, MTP terminated, OM3 cable with type A polarity.

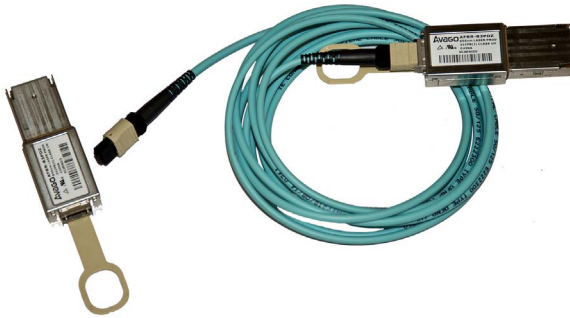


Image 1-2
CXP transceiver and fiber cable

The chart below shows the Barco numbers to order for transceivers and fiber cables as well as the underlying qualified manufacturer numbers. The end user is free to obtain these fiber transceivers and cables from other distribution channels, if that is to the end user's advantage.

To link two E2 units together with fiber cables, for example, requires eight transceivers and four MTP terminated fiber cables of the desired length.

Item	Barco Kit p/n	Underlying Manufacturer Number
Transceiver	R9004752	Finisar FTLD10CE1C or Broadcom – Avago AFBR-83PDZ
30-m fiber	R9004753	Molex 106284-1030
100-m fiber	R9004754	Molex 106284-1100



The Barco transceiver kit contains two transceivers. Note also that two manufacturers—Finisar and Broadcom – Avago Technologies—have been qualified to supply this item.



The Molex 106284 OM3 cable can be ordered directly from Molex in any length desired up to 100 m, in 5-m increments, which might be advantageous for fixed installations.

The minimum short-term bend radius for the Molex OM3 cable is 89 mm; the minimum long-term bend radius is 57 mm.

The 30-m/100-m fiber kits contain just one fiber cable of the specified length. The diameter of the cable is 5.4 mm.

Rugged fiber solutions

Barco recognizes that the industry standard fiber options described above may not be rugged enough for rental and staging applications. To that end, there is a solution tailored to use Neutrik's opticalCON MTP ruggedized cabling.



Neutrik does not provide a 24-fiber opticalCON MTP solution. Their largest solution is a 12-fiber solution. Providing a ruggedized solution with Neutrik's opticalCON MTP ruggedized cabling requires twice as many ruggedized optical fiber cables for a given application as would be needed with the non-ruggedized options discussed above.

The rugged fiber solution uses a third-party adaptor box provided by Major Custom Cable (MCC). Their contact information is:

Major Custom Cable
 Attn: Jake Seyer
 281 Lotus Drive
 Jackson, MO 63755 USA
www.majorcustomcable.com
jseyer@majorcustomcable.com

MCC can provide a 1U adaptor box that can patch four of the 24-fiber MTP cables from an EM product that has the fiber transceivers installed to eight of the ruggedized 12-fiber opticalCON cables.

To link two E2 units together with non-ruggedized fibers requires eight transceivers and four MTP terminated fiber cables of the desired length. To link two E2s together with ruggedized fiber requires:

- Eight transceivers
- Eight short 24-fiber MTP cables (long enough to patch from each E2 to the MCC adapter panel)
- Eight opticalCON MTP 12F OM3 ruggedized cables in the length desired
- Two MCC adaptor boxes

Per Neutrik, MCC is the only certified partner for terminating their opticalCON MTP 12 fiber solution.

The table below gives MCC part numbers and descriptions to order directly from them. End users can select appropriate lengths of patch and ruggedized cables to meet their needs, provided that the total length does not exceed 300 meters of fiber cable.



End users should avoid cable solutions that are too long. The total length of fiber—including the ruggedized cable and the two shorter patch cables that connect directly to the processors—from one processor to the next should not exceed 300 meters.

MCC p/n	Description
C277862	Barco CXP opticalCON MTP adapter panel 8 × 4
NKO12M-A-0=30M	OpticalCON MTP/MTP OM3 12F Field Cable
Z231044-2M	MTP24F/MTP24F OM3 24F Micro PLN AQ



Image 1-3
 Ruggedized fiber cable and patch cable

As an example, image 1-4 shows how to link two E2 units with this ruggedized solution.

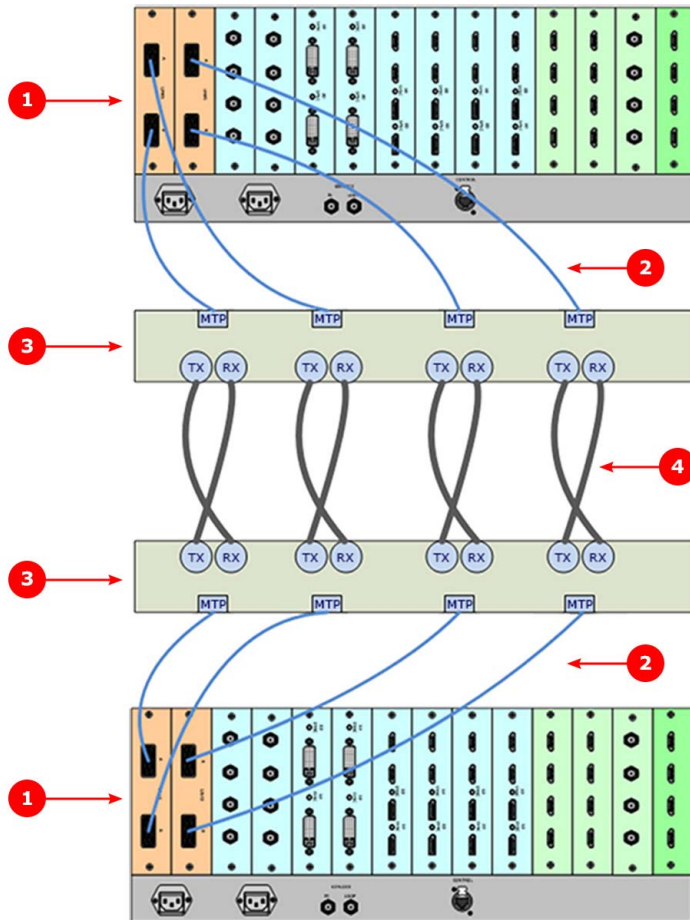


Image 1-4
Sample ruggedized solution

- 1 E2 with CXP fiber transceiver modules installed
- 2 Four MTP 24-fiber patch cables
- 3 MCC Barco CXP opticalCON MTP adapter box, 8 × 4
- 4 Eight opticalCON MTP 12-fiber ruggedized cables

The front and rear panels of the MCC adapter box are shown in image 1-5.



The MCC adaptor box splits each MTP from an EM product into two opticalCON ports, labeled TX and RX. The end user needs to keep each TX and RX pair of cables together and connected in such a way that each OpticalCON is plugged to a TX on one end and an RX on the other end of the same pair.



Image 1-5
MCC adapter box—front and rear panels

Active optical solutions

An intermediate solution known as “active optical” may be appropriate for some end users.



Barco has not tested or certified any active optical solution for use with EM products. This information is provided to offer a complete picture of available industry solutions that an end user may wish to pursue.

An active optical connection comprises two fiber transceivers with the cable pre-attached. It may offer some cost savings especially at lengths less than 50 meters, because the manufacturer can bin and use optical components that were not sufficient for the full specifications of a standalone transceiver but that work fine at the shorter lengths.

Several companies make active optical connections, and they can be found online. Be sure that you are ordering a CXP 12x bidirectional solution, and please be sure to test before arriving at a show site or installation with an active optical cable. Because Barco has not qualified any active optical solutions, Barco cannot offer any support on these options.