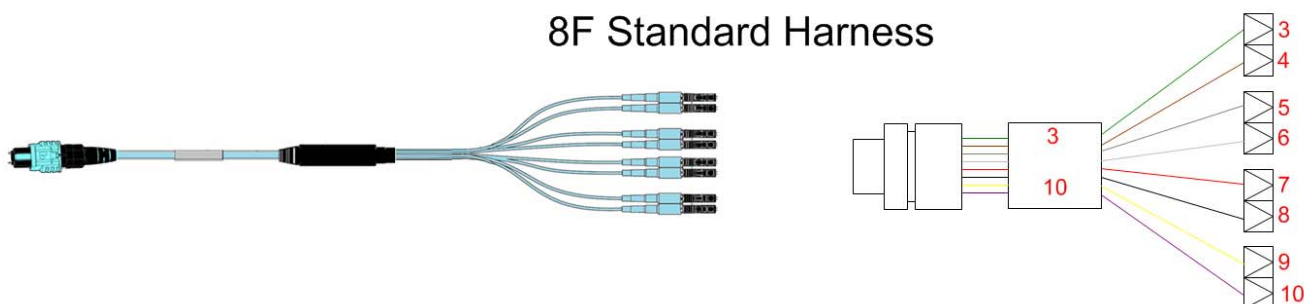


## Utilization of Harness Cable Assemblies

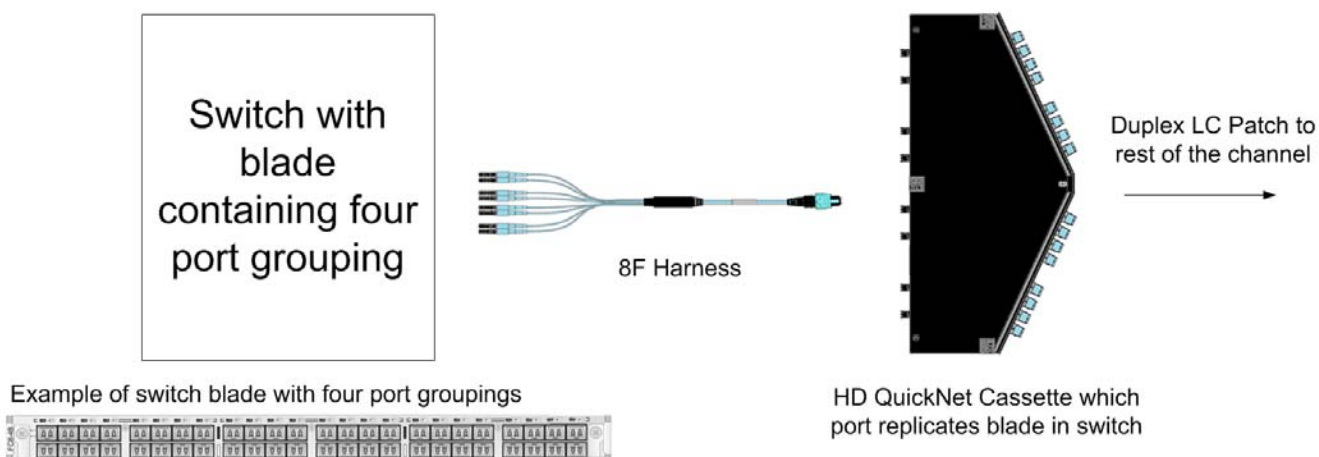
### Introduction

Networks comprised of switches, servers, and storage elements must work in unison to transport important information in the form of data traffic. Breakout harnesses are used to reduce cable management at the active elements as well as providing a means of breaking out technologies when necessary. Panduit offers several types of breakout harnesses that can be utilized in different cabling scenarios.

### 8-fiber Standard Harness

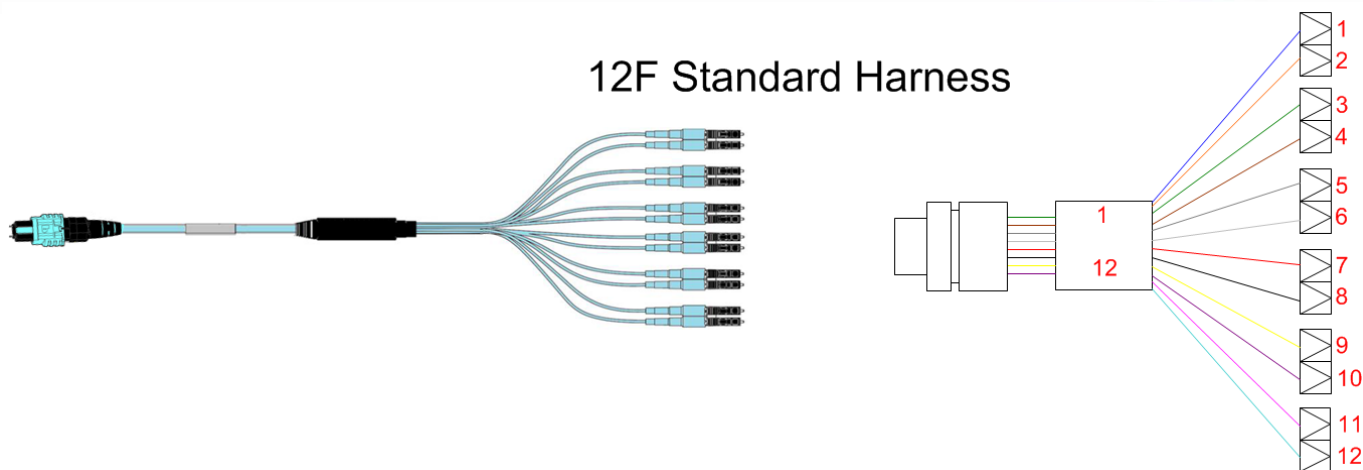


The 8F harness is wired with fibers 1, 2 and 11, 12 dark or unused. These harnesses are typically used with switch blades configured with eight fiber (4 port) groupings. Along with these switch blade types, these harnesses are recommended to be used with other base eight Panduit fiber solutions (See example below). These solutions include any of the Base 8 High Density Fiber cassettes that are constructed using the 8F harness.

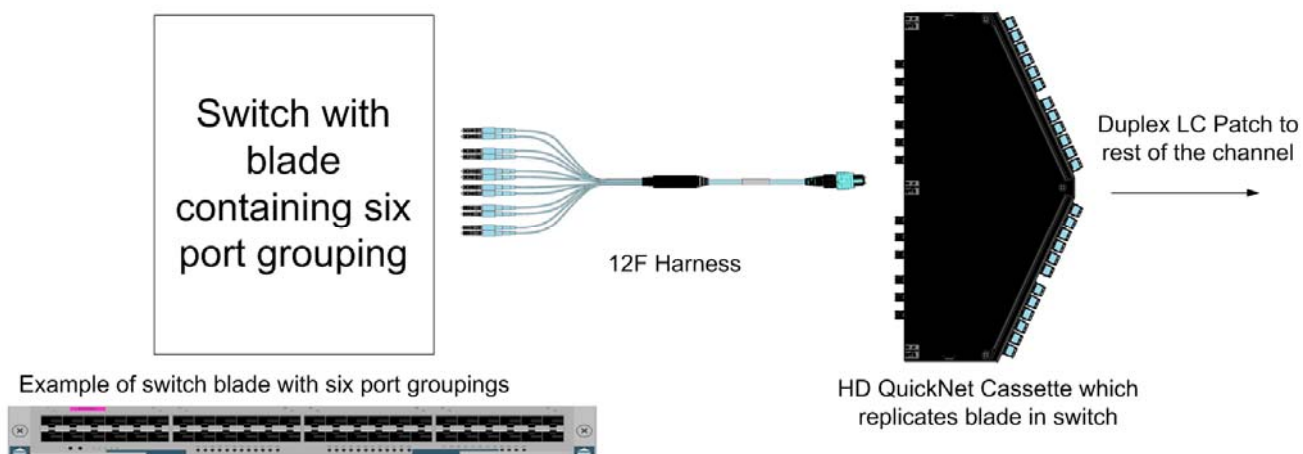


12-fiber Standard Harness

12F Standard Harness

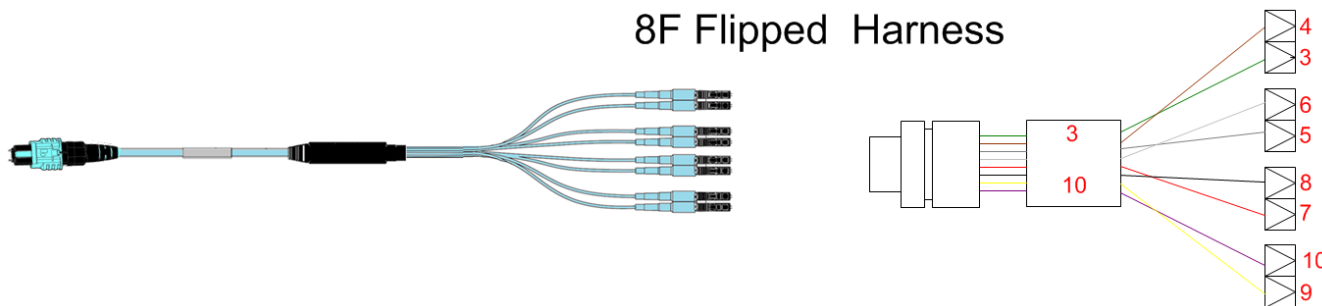


The 12F harness is wired with fibers grouped in or 1, 2; 3, 4; etc. These harnesses are typically used with switch blades configured with twelve fiber (6 port) groupings. Along with these switch blade types, these harnesses are recommended to be used with all other MPO base twelve cassettes and assemblies.

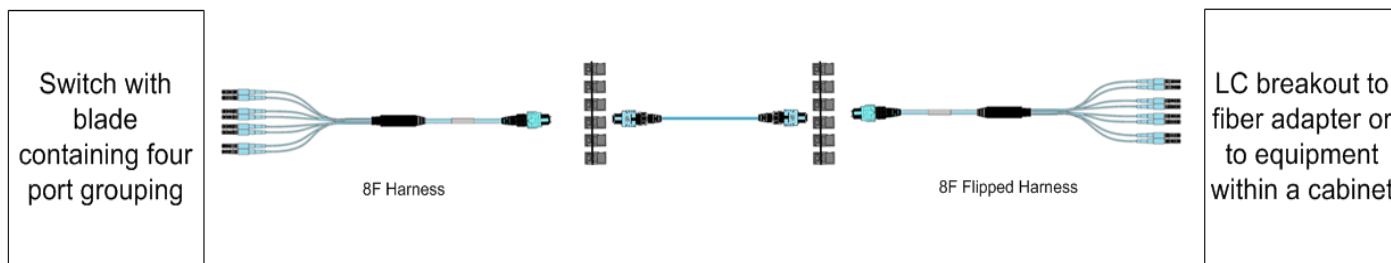


8-fiber Flipped Harness

8F Flipped Harness



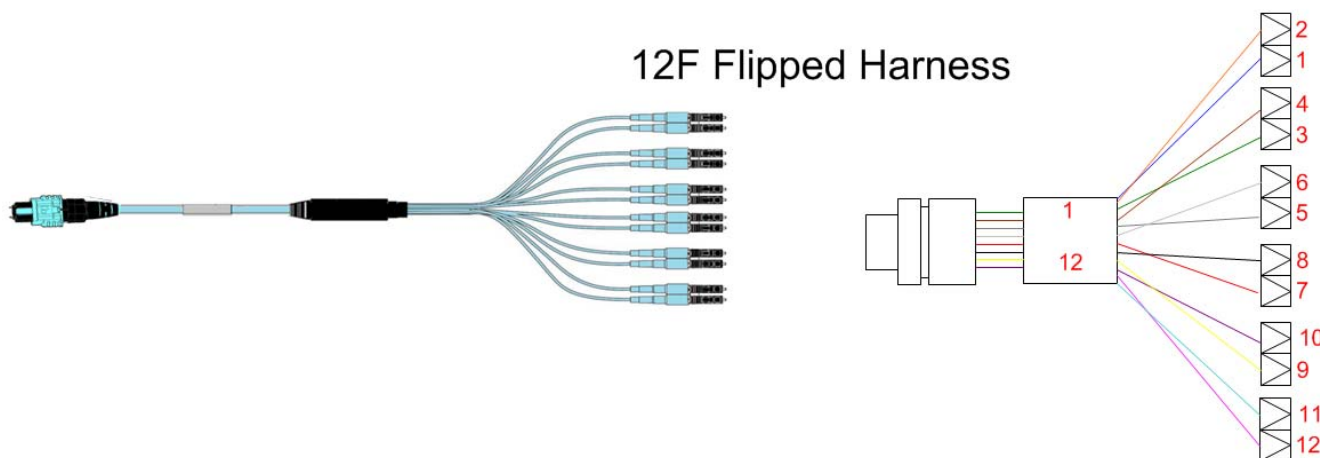
The 8F flipped harness is wired with LC duplex fibers 1, 2 and 11, 12 dark or unused and the other fiber pairs transposed (4, 3; 6, 5; 7, 8, 10, 9). These harnesses are used in an 8F link when the TX and RX needs to be flipped and flipping a duplex LC patch cord is not an option or in a harness to harness scenario as shown below.



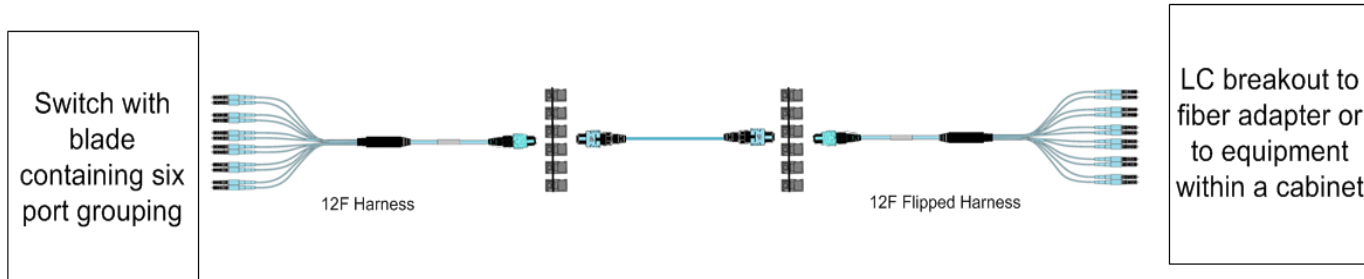
Example of switch blade with four port groupings



12-fiber Flipped Harness



The 12F harness is wired with the LC duplex fibers transposed or 2, 1; 4, 3; etc. These harnesses are typically used in a Method A Array cabling scheme when the TX and RX needs to be flipped and flipping a duplex LC patch cord is not an option or in a harness to harness scenario as shown below.

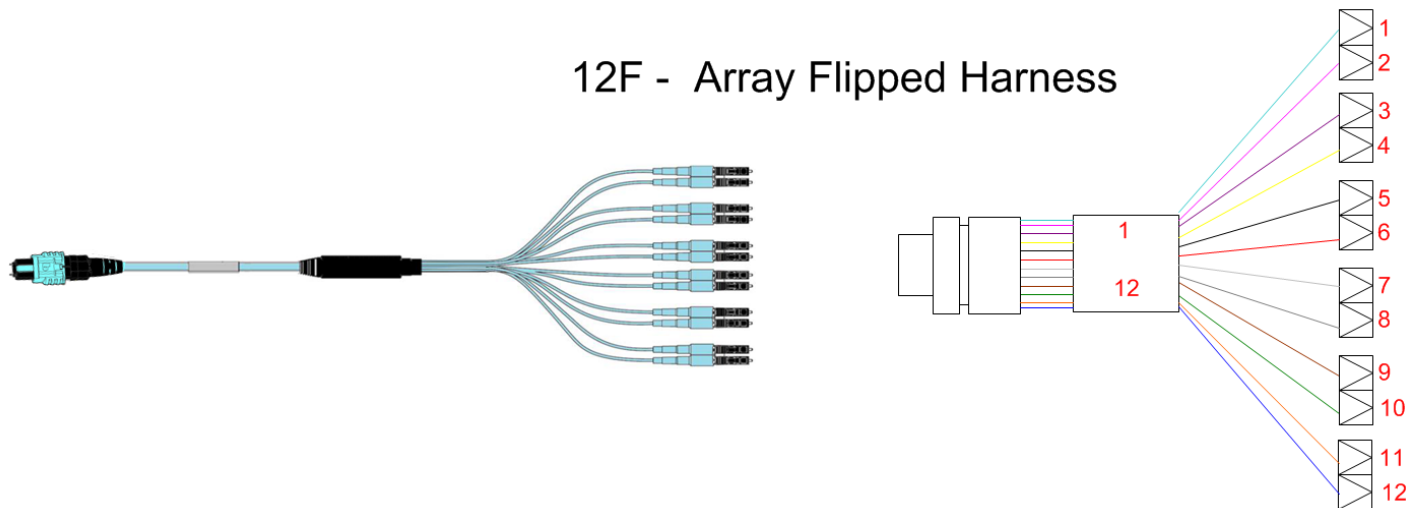


Example of switch blade with six port groupings

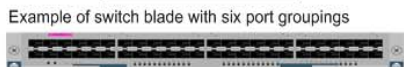
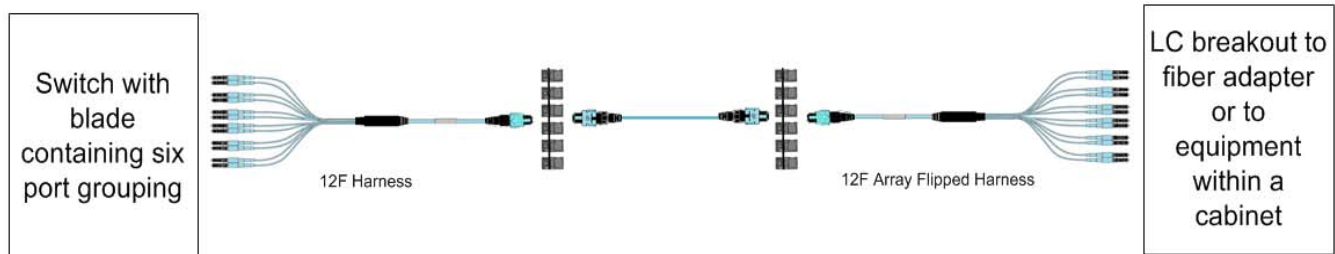


12-fiber Array Flipped Harness

12F - Array Flipped Harness

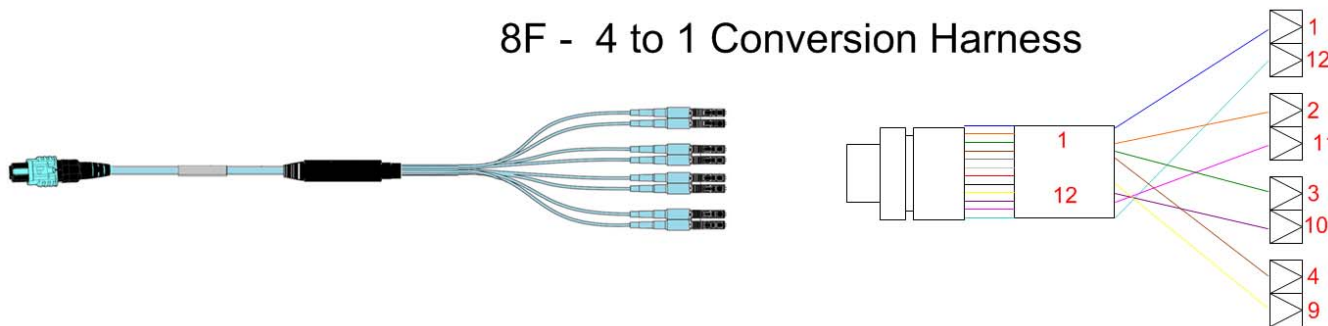


The 12F array flipped harness is wired with the LC duplex fibers flipped in the array. Fibers 11, 12 are now wired on leg 1; fibers 9, 10 are wired in leg 2, etc. These harnesses are typically used in a Method B Array cabling scheme when entire array needs to be flipped in order to line up the TX and RX on the opposite end of the cabling scheme.



8-fiber 4 to 1 Conversion Harness

8F - 4 to 1 Conversion Harness



The 8F 4 to 1 conversion harness is wired with the LC duplex matched with the individual transmit and receive signals delivered by any SR4 type transceiver. In the SR4 transceiver, fibers 1-4 are TX fibers and 9-12 are RX fibers. In the harness, fibers 1, 12; 2, 11; 3, 10 and 4, 9 are matched to provide proper TX, RX alignment at the duplex LC level. These harnesses are typically used in a cabling scheme where the SR4 based array transceiver technology is broken down into a duplex LC based technology.

