

MMBX Applications: Examples and Definitions

The MMBX series offers a wide range of interconnect solutions for blind mate PCB and panel applications. The MMBX interface is especially designed for applications where there is misalignment between the connecting parts.

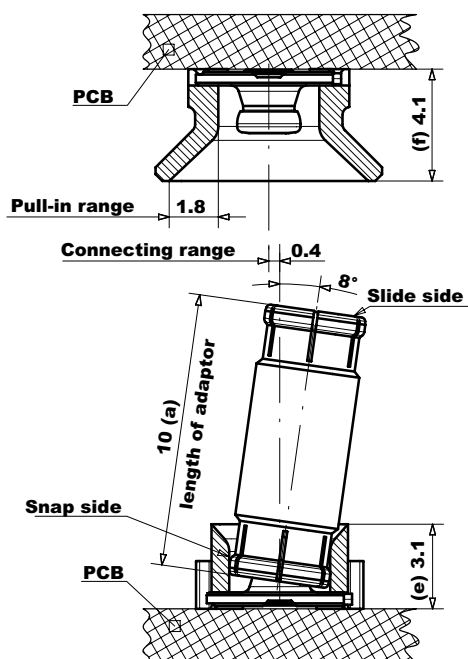
The following application examples outline its key characteristics to help with the design-in of MMBX as an interconnect solution for:

- Board to board connection
- Panel to panel connection
- Panel to board connection

1. Example for board to board connection

Connecting range

The connecting range is the maximum misalignment which allows a trouble-free connection with the counter PCB (blind mate), including maximum swiveling angle of adaptor.



Formula

Distance $x = a + b + c + (2 \cdot d)$

Adaptor length $a = x - b - c - (2 \cdot d)$

Calculation of example

Board to board distance: $x = a + b + c + (2 \cdot d) = 10 \text{ mm} + 0.6 \text{ mm} + 0.6 \text{ mm} + (2 \cdot 0.4 \text{ mm}) = 12 \text{ mm}$

Adaptor length: $a = x - b - c - (2 \cdot d) = 12 \text{ mm} - 0.6 \text{ mm} - 0.6 \text{ mm} - (2 \cdot 0.4 \text{ mm}) = 10 \text{ mm}$

Note: please always check that the height of the two board connectors is less than the minimum board to board distance (no collision between the connectors): $x_{\min} = e + f + 0.5 \text{ mm} = 3.1 \text{ mm} + 4.1 \text{ mm} + 0.5 \text{ mm} = 7.7 \text{ mm}$

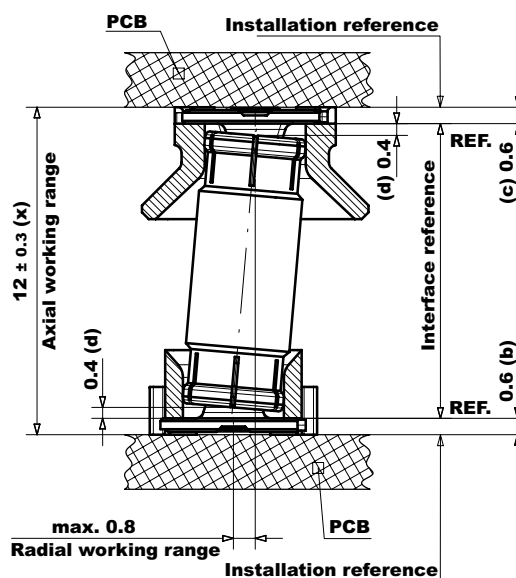
The formulas below provide a guideline to help determine; the board to board distance (x) for a combination of two connectors with a given adapter between, as well as the required adaptor length (a) for a given distance.

The parameters used in these formulas can be located on the MMBX connector outline drawings.

Please do not hesitate to contact your local HUBER+SUHNER Application Engineer for more information.

Radial and axial working range

The radial and axial working range is the maximum misalignment that allows a sufficient electrical and mechanical connection.



Variables

x = Board to board distance

a = adaptor length

b = interface reference connector

c = interface reference connector

d = gap for adaptor movement

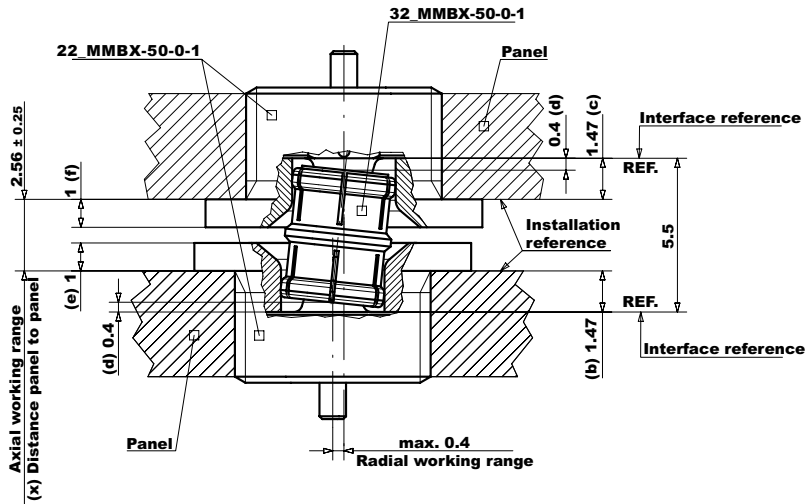
e = height connector

f = height connector

2. Example for panel to panel connection

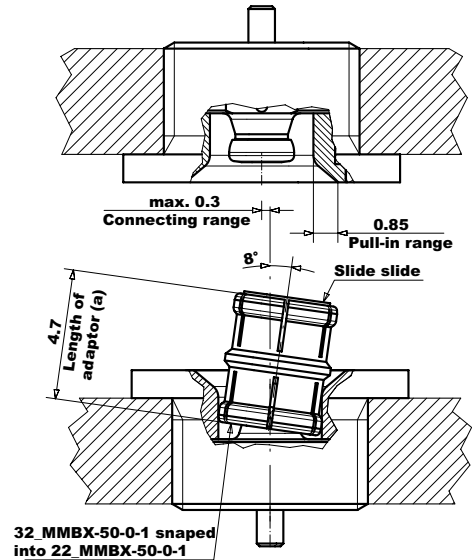
Radial and axial working range

The radial and axial working range is the maximum misalignment that allows a sufficient electrical and mechanical connection.



Connecting range

The connecting range is the maximum misalignment that allows a trouble-free connection with the counter PCB (blind mate) including maximum swiveling angle of adaptor.



Calculation of example

Important: for panel connectors the interface reference (b, c) needs to be subtracted.

$$\text{Panel to panel distance: } x = a - b - c + (2 \cdot d) = 4.7\text{mm} - 1.47\text{mm} - 1.47\text{mm} + (2 \cdot 0.4\text{mm}) = 2.56\text{mm}$$

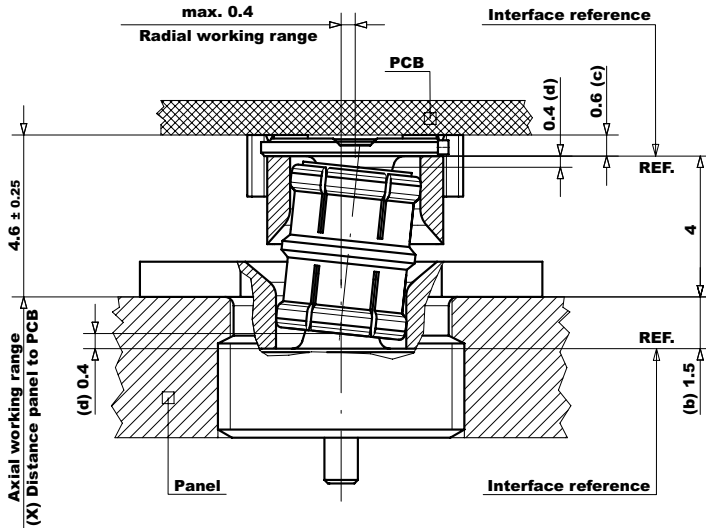
$$\text{Adaptor length: } a = x + b + c - (2 \cdot d) = 2.56\text{mm} + 1.47\text{mm} + 1.47\text{mm} - (2 \cdot 0.4\text{mm}) = 4.7\text{mm}$$

Note: please always check that the height of the two connectors is less than the minimum panel to panel distance (no collision between the connectors): $x_{\min} = e + f + 0.2 \text{ mm} = 1 \text{ mm} + 1 \text{ mm} + 0.2 \text{ mm} = 2.2 \text{ mm}$

3. Example for panel to board connection

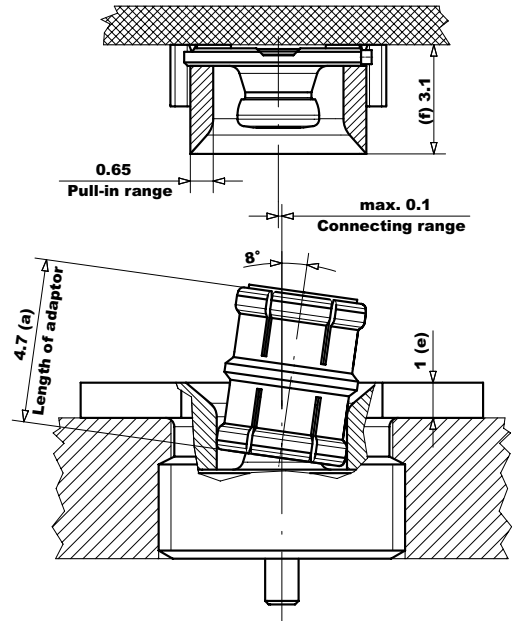
Radial and axial working range

The radial and axial working range is the maximum misalignment that allows a sufficient electrical and mechanical connection.



Connecting range

The connecting range is the maximum misalignment that allows a trouble-free connection with the counter PCB (blind mate) including maximum swiveling angle of adaptor.



Calculation of example

Important: for panel connectors the interface reference (b) needs to be subtracted.

Panel to board distance: $x = a - b + c + (2 \cdot d) = 4.7\text{mm} - 1.5\text{mm} + 0.6\text{mm} + (2 \cdot 0.4\text{mm}) = 4.6\text{mm}$
 Adaptor length: $a = x + b - c - (2 \cdot d) = 4.6\text{mm} + 1.5\text{mm} - 0.6\text{mm} - (2 \cdot 0.4\text{mm}) = 4.7\text{mm}$

Note: please always check that the height of the two connectors is less than the minimum board to panel distance (no collision between the connectors): $x_{\min} = e + f + 0.2\text{ mm} = 1\text{ mm} + 3.1\text{ mm} + 0.2\text{ mm} = 4.3\text{ mm}$

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