



# ***Installation / Operation Instructions***

## ***Fiber Optic Contact Mapping Transmission System***

### **DXA-xC/xC-x & DXB-xC/xC-x**

*Multi-Channel Contact Closure Transceiver*

*From 2 to 16 Bi-di Contacts Closure Channels*

Part Numbers:

DXA/DXB-2C/2C-x | DXA/DXB-4C/4C-x | DXA/DXB-6C/6C-x | DXA/DXB-8C/8C-x

DXA/DXB-10C/10C-x | DXA/DXB-12C/12C-x | DXA/DXB-14C/14C-x | DXA/DXB-16C/16C-x

Meridian Technologies, Inc.

700 Elmont Road, Elmont NY 11003

Telephone: 516.285.1000 Fax: 516.285.6300

E-mail: [sales@meridian-tech.com](mailto:sales@meridian-tech.com)

Web: [www.meridian-tech.com](http://www.meridian-tech.com)

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## 1.0 Product Description

Meridian's product series DXA-xC/xC-x and DXB-xC/xC-x are fiber optic modems that transmit and receive bi-directional Contact Closures over one optical fiber using digital transmission technologies. This product series uses Meridian's standard 2-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-1002/S, SR-1600/S, and SR-2001 & SR-2000 series 19" equipment chassis.

The digital modules consist of various plug-in personality function cards or SIMs. The top card is the optical card that contains the fiber optic interface. The optical input & output connectors are located on the right side of the module. Each of the four remaining SIM locations contains four bi-directional contact closure circuits for a total of 16 (4 channels per SIM card is installed starting at the bottom of the module) depending on part number (See Appendix 1). Each of these SIM cards have a high-density 15-pin female 'D' style connector. Up to 16 bi-directional contact closures can be transmitted over one fiber (DXA-16C/16C & DXB-16C/16C).

Optional conformal coating provides an additional level of protection from environments with high humidity.

## 2.0 Installation

Series DXA-xC/xC and DXB-xC/xC units are two-slot wide cards and will occupy two slots in Meridian's standard chassis. To install in the chassis, orient the card with the Meridian logo at the top of the module and slide onto the top and bottom card guides in the chassis. Press securely on the top and bottom of the module to ensure that it is fully seated in the chassis so that the electrical connector mates with the chassis-mounted motherboard. Once installed, manually tighten the two thumbscrews located at the top and bottom of the card. Do not use tools to secure these and do not over tighten.

**Note:** A fully loaded sub-rack should have forced-air cooling to avoid excessive heat generation inside the chassis. A fan assembly tray (P/N FA-2000) with three (3) fans is available and should be installed under the 19" SR-2000/1 whenever possible.

## 3.0 Signal Format & Specifications

The DXA-xC/xC and DXB-xC/xC series products transmit and receive the following signals:

| Signal Type         | Qty  | Transmit | Receive |
|---------------------|------|----------|---------|
| Dry contact closure | 2-16 | Yes      | Yes     |

The tables below identify the specifications for the various signals that these modems transmit/receive.

| <b>Contact Closures</b> |                                  |
|-------------------------|----------------------------------|
| Input                   | Contact closure to ground        |
| Output                  | Isolated contact closure outputs |
| Output Contact Rating   | 0.3A @ 30VAC/DC                  |
| Contact bounce time     | 5msec                            |
| Connectors              | High Density DB15 Female         |

| <b>Optical Specifications</b> |                      |                      |                     |                 |                   |                            |
|-------------------------------|----------------------|----------------------|---------------------|-----------------|-------------------|----------------------------|
| Fiber Type/Size (um)          | Optical Output (dBm) | Rx Sensitivity (dBm) | Optical Budget (dB) | Wavelength (nm) | Optical connector | Optical Dynamic Range (dB) |
| Multimode (FP Laser) 62.5/125 | -3                   | -24                  | 21                  | 850/1300        | ST                | 24                         |
| Single-mode (FP Laser) 9/125  | -3                   | -24                  | 21                  | 1310/1550       | ST, FC            | 24                         |
| Single-mode (DFB Laser) 9/125 | +3                   | -24                  | 27                  | 1310/1550       | ST, FC            | 24                         |

## 4.0 Connector Pin Assignment

The table below identifies the input/output functions and associated connector pinouts for each SIM card.

| <b>Pinouts (Each SIM Card)</b> |                 |              |                 |
|--------------------------------|-----------------|--------------|-----------------|
| <b>Pin #</b>                   | <b>Function</b> | <b>Pin #</b> | <b>Function</b> |
| 1 & 5 (Gnd)                    | (Ch 1) Input    | 9            | (Ch 2) Output   |
| 2 & 5 (Gnd)                    | (Ch 2) Input    | 10           | (Ch 3) Output   |
| 3 & 5(Gnd)                     | (Ch 3) Input    | 11           | (Ch 3) Output   |
| 4 & 5(Gnd)                     | (Ch 4) Input    | 12           | (Ch 4) Output   |
| 5                              | Gnd             | 13           | (Ch 4) Output   |
| 6                              | (Ch 1) Output   | 14           | N/A             |
| 7                              | (Ch 1) Output   | 15           | N/A             |
| 8                              | (Ch 2) Output   |              |                 |

## 4.1 External Connections Configuration

Contact closure communication between the DXA and DXB units for channels 1 through 4 on each contact closure SIM card is done in the following manner:

1. Connect (close) each Contact input between the input pins (1-4) and the ground (pin 5) for each respective contact input channel.
2. The corresponding isolated contact outputs on the receive module are available on pins 6 & 7, 8 & 9, 10 & 11, 12 & 13 (for channels 1, 2, 3, 4, respectively).
3. Note that the input/output contacts are located on the same SIM location on the DXA & DXB modules. For example, if the contact inputs are connected to the bottom SIM card on the DXA module, the corresponding outputs on the DXB modules are located on the SIM card in the same bottom location.

## 4.2 Module Transmission Status Indicators

Each module has various LEDs to indicate the input/output status of the optical and transmission carrier signals. These are identified below:

| Indicator         | Function                              | State                     |
|-------------------|---------------------------------------|---------------------------|
| Power             | Indicates power to the module         | OK = Green                |
| TX Carrier        | Presence of optical output            | OK = Green                |
| RX optical signal | Received optical power within budget  | OK = Green                |
| RX carrier        | Indicates reception of carrier signal | OK = Green<br>Error = Red |

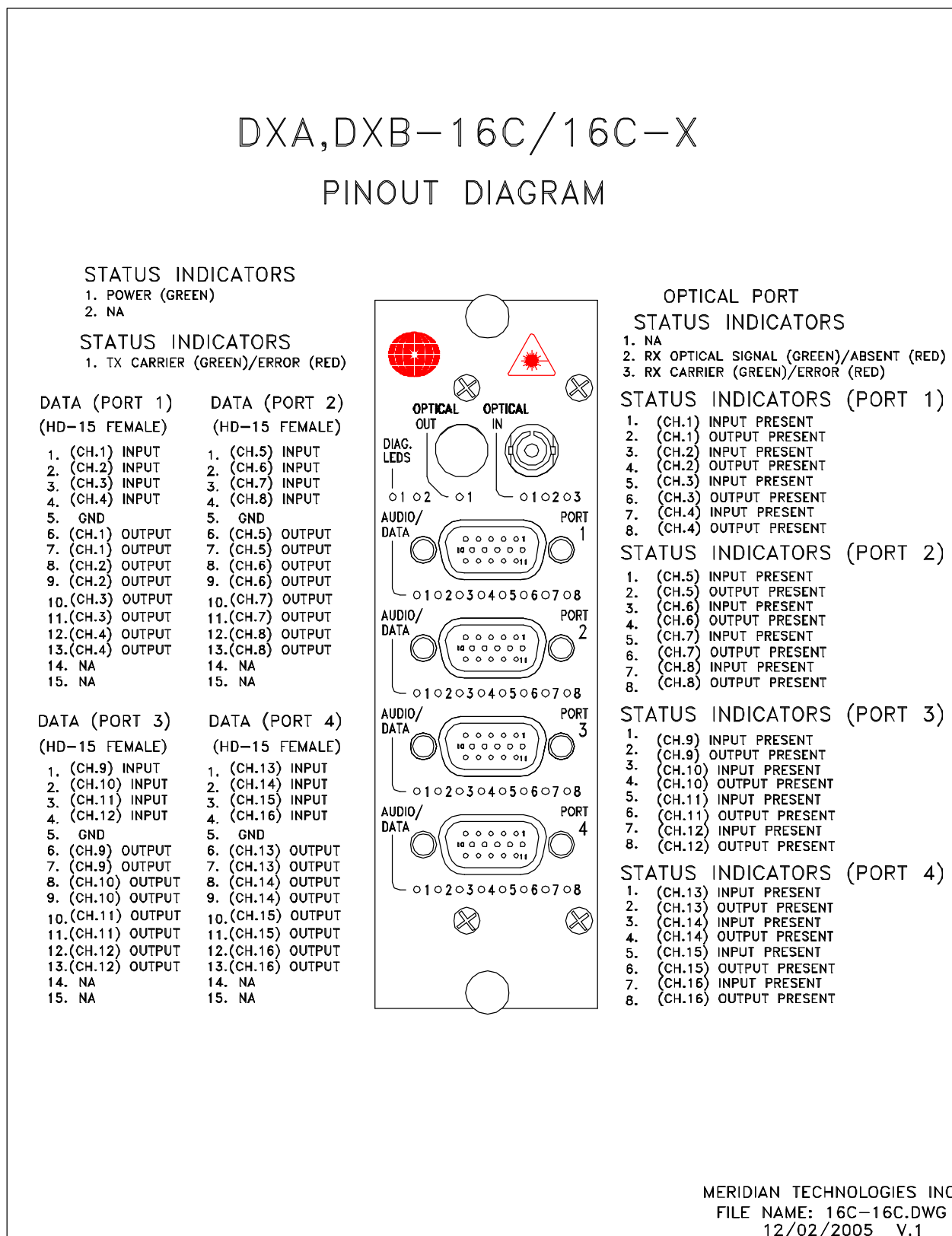
Each contact closure input/output has indicator lights to visually show the status of each contact. Below each contact electrical connector are 8 small LEDs (1 through 8). The table below shows the contact input/output state and the corresponding LED state.

| Contact (Input/output) – LED Relationship |         |         |         |         |         |         |         |         |
|-------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                           | LED # 1 | LED # 2 | LED # 3 | LED # 4 | LED # 5 | LED # 6 | LED # 7 | LED # 8 |
| Input # 1                                 | X       |         |         |         |         |         |         |         |
| Output # 1                                |         | X       |         |         |         |         |         |         |
| Input # 2                                 |         |         | X       |         |         |         |         |         |
| Output # 2                                |         |         |         | X       |         |         |         |         |
| Input # 3                                 |         |         |         |         | X       |         |         |         |
| Output # 3                                |         |         |         |         |         | X       |         |         |
| Input # 4                                 |         |         |         |         |         |         | X       |         |
| Output # 4                                |         |         |         |         |         |         |         | X       |

(X indicates a closed contact input and corresponding ‘ON’ LED)

## 5.0 Front Panel Pinout Assignment Diagram

Figures 5.1 below show the front panel layout, connector location and pinout assignment the module.



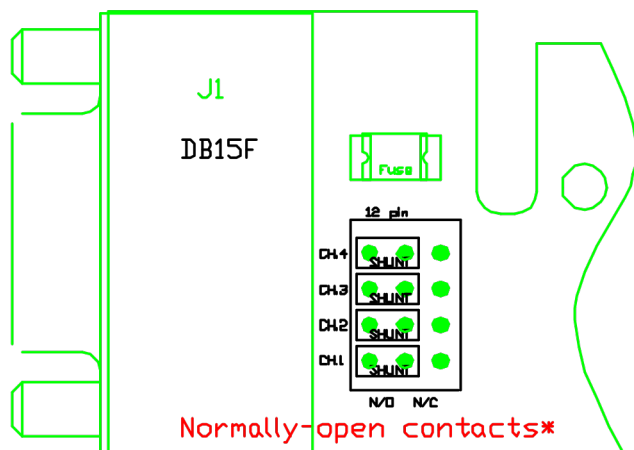
## 6.0 Contact Mapping SIM Jumper Settings

The Contact Closure SIM has 4 jumpers on it (located directly behind the DB15 connector), one for each channel. These jumpers are used to set the input/output Contact Mapping settings for Normally-Open or Normally-Close contacts.

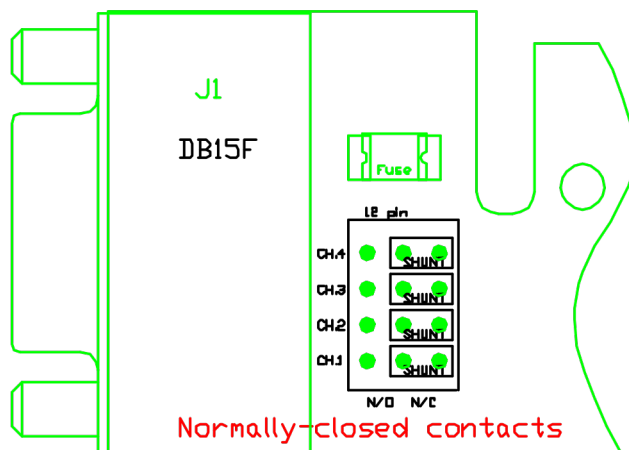
The default setting is Normally-Open.

The figures below illustrate these jumpers and how they are configured:

Jumper Setting For Contact Closure BI-DI



\* Factory settings



Contact Mapping jumper settings  
for Normally-Open contacts  
Input/Output  
**\*Factory Settings**

Contact Mapping jumper settings  
for Normally-Closed contacts  
Input/Output

## 6.1 Changing the SIM jumpers

The jumpers to change the data from Normally-Open to Normally-Closed format can be easily changed as follows:

1. Lay the module on its side with the front panel facing to the left.
2. If there is a side cover on the module, remove the screws in each of the 4 corners of the side cover and carefully remove the cover.
3. The Contact Closure (C) card is located on the bottom of the module in port 3.
4. Refer to the above drawing to locate the 4 jumpers that are located near the DB-15 connector.
5. Using a small tool, carefully remove the jumper and place it on the appropriate pins to properly select the data format (see table above)
6. Carefully replace the side cover and secure with the screws.
7. Repeat this process for the other module. The jumper selection needs to be the same for both the DXA and DXB units.

## 7.0 Troubleshooting

Below is a listing of several problems that may arise during the installation & operation of the modules. If you are having difficulty installing or operating the modules please refer to this list below.

**Problem:** *Module does not fit in chassis slots*

**Action:** Check module orientation. Meridian “Globe” must be oriented on the top left hand side of the module. Make sure the card guides in the chassis are aligned with the extrusion on the module.

**Problem:** *Card power LED does not light when power to the module/subrack is applied or power indicator turns on and off*

**Action:** Check power supply to ensure that it is plugged in and turned on. If flashing continues, move module to another chassis or location in the same chassis, if available.

**Problem:** *No Contact Closure transmission*

**Action:** Check the individual contact closure channel input status indicator lights # 1, 3, 5, 7 to ensure that the lights toggle on and off as the contact is closed and opened. These lights are located below the corresponding DB15. Also check the corresponding contact closure output lights (# 2, 4, 6, 8) on the other module to see if the corresponding lights are activated when the corresponding input contact is closed. If not, please check the data input/output and fiber connections.

If the problem still persists after reviewing the above items, please contact Meridian technical support (516-285-1000).

## 7.0 Appendix 1 – Applicable Product Part Number Variations

| Transmitter   | Receiver      | # BI-DI Channels | # Fibers & Type | Wavelength  |
|---------------|---------------|------------------|-----------------|-------------|
| DXA-2C/2C-2   | DXB-2C/2C-2   | 2                | 1 (MM)          | 1310/850nm  |
| DXA-2C/2C-5   | DXB-2C/2C-5   | 2                | 1 (SM)          | 1310/1550nm |
| DXA-4C/4C-2   | DXB-4C/4C-2   | 4                | 1 (MM)          | 1310/850nm  |
| DXA-4C/4C-5   | DXB-4C/4C-5   | 4                | 1 (SM)          | 1310/1550nm |
| DXA-6C/6C-2   | DXB-6C/6C-2   | 6                | 1 (MM)          | 1310/850nm  |
| DXA-6C/6C-5   | DXB-6C/6C-5   | 6                | 1 (SM)          | 1310/1550nm |
| DXA-8C/8C-2   | DXB-8C/8C-2   | 8                | 1 (MM)          | 1310/850nm  |
| DXA-8C/8C-5   | DXB-8C/8C-5   | 8                | 1 (SM)          | 1310/1550nm |
| DXA-10C/10C-2 | DXB-10C/10C-2 | 10               | 1 (MM)          | 1310/850nm  |
| DXA-10C/10C-5 | DXB-10C/10C-5 | 10               | 1 (SM)          | 1310/1550nm |
| DXA-12C/12C-2 | DXB-12C/12C-2 | 12               | 1 (MM)          | 1310/850nm  |
| DXA-12C/12C-5 | DXB-12C/12C-5 | 12               | 1 (SM)          | 1310/1550nm |
| DXA-14C/14C-2 | DXB-14C/14C-2 | 14               | 1 (MM)          | 1310/850nm  |
| DXA-14C/14C-5 | DXB-14C/14C-5 | 14               | 1 (SM)          | 1310/1550nm |
| DXA-16C/16C-2 | DXB-16C/16C-2 | 16               | 1 (MM)          | 1310/850nm  |
| DXA-16C/16C-5 | DXB-16C/16C-5 | 16               | 1 (SM)          | 1310/1550nm |



Meridian Technologies, Inc

700 Elmont Road, Elmont, NY 11003, USA Tel: 516-285-1000 Fax: 516-285-6300

[support@meridian-tech.com](mailto:support@meridian-tech.com)

[www.meridian-tech.com](http://www.meridian-tech.com)