



Installation/Operation Instructions

Fiber Optic Contact Mapping Transmission System

Part Number:

DT-xC-x Series

(Multi-Channel Contact Closure Transmitter)

DR-xC-x Series

(Multi-Channel Contact Closure Receiver)

For modules with 2 to 28 data channels

Meridian Technologies, Inc.
700 Elmont Road, Elmont NY 11003
Telephone : 516. 285. 1000 Fax: 516. 285. 6300
E-mail : sales@meridian-tech.com
Web: www.meridian-tech.com
Document Version 1
05/27/2014

Table of Contents

1.0	Product Description.....	3
2.0	Installation	3
3.0	Signal Format & Specifications.....	4
4.0	Data SIM Signal Assignment	5
4.1	External Connections Configuration	5
4.2	Status Indicators	6
5.0	Front Panel Pinout Assignment Diagram	6
6.0	Contact Mapping SIM Jumper Settings.....	8
6.1	Changing the SIM jumpers	8
7.0	Troubleshooting	9

DT/DR-xC Series
Fiber Optic Contact Closure Transmission System
Installation Instructions

1.0 Product Description

Meridian's product series DT-xC and DR-xC are fiber optic modems that provide one-way transmission of 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 output (Tx) connector is located on the left side of the module while the optical input (Rx) connector is adjacent to it on the right side of the module. Each of the four remaining SIM card locations can contain up to 7 unidirectional contact closure circuits for a total of 28 contact closures. Each of these SIM cards has a high density (15-pin) female 'DB' style connector.

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

2.0 Installation

Series DT-xC & DR-xC products are two-slot wide cards and, as such, occupy two slots in Meridian's standard chassis (SR-1000/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment 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 populated subrack 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 table below identifies the various DT-xC and DR-xC series product part numbers for both singlemode and multimode operation.

Signal Type	Qty	Transmit		Receive	
		Multimode	Singlemode	Multimode	Singlemode
Dry contact closures	7	DT-7C-1	DT-7C-3	DR-7C-1	DR-7C-3
Dry contact closures	14	DT-14C-1	DT-14C-3	DR-14C-1	DR-14C-3
Dry contact closures	21	DT-21C-1	DT-21C-3	DR-21C-1	DR-21C-3
Dry contact closures	28	DT-28C-1	DT-28C-3	DR-28C-1	DR-28C-3

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

Contact Closures	
Input	Contact closure to ground
Output	Isolated contact closure outputs
Output Contact Rating	0.3A @ 30VAC/DC
Contact bounce time	5msec

Connectors	
Contact	High Density DB15 Female
Optical	Singlemode – ST or FC Multimode – ST

Optical Specifications						
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
Singlemode (FP Laser) 9/125	-3	-24	21	1310/1550	ST, FC	24
Singlemode (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.

Pinouts (Each SIM Card)		
	DT-xC	DR-xC
Pin #	Function	Function
1	(Ch 1) Input	Ch 1 Output
2	(Ch 2) Input	
3	(Ch 3) Input	Ch 2 Output
4	(Ch 4) Input	
5	GND	GND
6	(Ch 5) Input	Ch 3 Output
7	(Ch 6) Input	
8	(Ch 7) Input	Ch 4 Output
9	N/C	
10	N/C	Ch 5 Output
11	N/C	
12	N/C	Ch 6 Output
13	N/C	
14	N/C	Ch 7 Output
15	N/C	

4.1 External Connections Configuration

Contact closure communication between the DT and DR units is done in the following manner:

Inputs 1 through 7 on each contact closure SIM card–

1. Connect each contact input between the input pins (1-4, 6-7) and ground (pin 5) for each respective contact input channel.
2. The corresponding isolated contact outputs on the receive module are available on pins 1 & 2, 3 & 4, 6 & 7, 8 & 9, 10 & 11, 12 & 13 and 14 & 15 (for channels 1 through 7 respectively).
3. Note that the input/output contacts are located on the same SIM location on the DT & DR modules. For example, if the contact inputs are connected to the bottom SIM card on the DT module, the corresponding outputs on the DR 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	Module	Function	State
Power	DT-xC & DR-xC	Indicates power to the module	OK = Green
TX Carrier	DT-xC	Presence of optical output	OK = Green
RX optical signal	DR-xC	Received optical power within budget	OK = Green
RX carrier	DR-xC	Indicates reception of carrier signal	OK = Green Error = Red

Each contact closure has an indicator light to visually indicate the status of each contact I/O. Below each contact electrical connector are 8 LEDs (1 through 8). When each contact on the transmitter (DT-xC) is closed, the corresponding light below the connector turns on. Likewise, when the corresponding output contact closes on the DR-xC, the associated LED will illuminate. Indicator #8 is not connected and has no function.

TX Contact Mapping LED Status Indicators			RX Contact Mapping LED Status Indicators
Pin #	DT-xC	LED #	DR-xC
1	Ch1 INPUT PRESENT	1	Ch1 OUTPUT PRESENT
2	Ch2 INPUT PRESENT	2	Ch2 OUTPUT PRESENT
3	Ch3 INPUT PRESENT	3	Ch3 OUTPUT PRESENT
4	Ch4 INPUT PRESENT	4	Ch4 OUTPUT PRESENT
5	Ch5 INPUT PRESENT	5	Ch5 OUTPUT PRESENT
6	Ch6 INPUT PRESENT	6	Ch6 OUTPUT PRESENT
7	Ch7 INPUT PRESENT	7	Ch7 OUTPUT PRESENT
8	NA	8	NA

5.0 Front Panel Layout Diagrams

Front panel layout and pinout diagrams are shown in figure 5.1. Only one contact closure connector is shown for the DT/DR-7C modules. Each SIM for additional contact closures has the same pinouts as shown on the figure 5.2

DT-7C-X PINOUT DIAGRAM

OPTICAL PORT

STATUS INDICATORS

1. POWER (GREEN)
2. NA

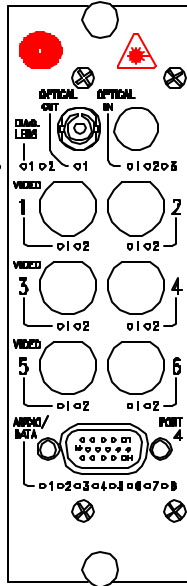
STATUS INDICATORS

1. TX CARRIER (GREEN)/ERROR (RED)

DATA INPUT (PORT 4)

HD-15 FEMALE

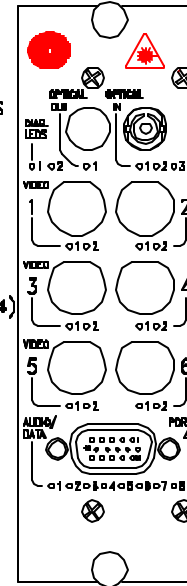
1. (CH.1) INPUT
2. (CH.2) INPUT
3. (CH.3) INPUT
4. (CH.4) INPUT
5. GROUND
6. (CH.5) INPUT
7. (CH.6) INPUT
8. (CH.7) INPUT
9. NA
10. NA
11. NA
12. NA
13. NA
14. NA
15. NA



STATUS INDICATORS (PORT 4)

1. (CH.1) INPUT PRESENT
2. (CH.2) INPUT PRESENT
3. (CH.3) INPUT PRESENT
4. (CH.4) INPUT PRESENT
5. (CH.5) INPUT PRESENT
6. (CH.6) INPUT PRESENT
7. (CH.7) INPUT PRESENT
8. NA

DR-7C-X PINOUT DIAGRAM



STATUS INDICATORS

1. POWER (GREEN)
2. NA

DATA OUTPUT (PORT 4)

HD-15 FEMALE

1. (CH.1) OUTPUT
2. (CH.1) OUTPUT
3. (CH.2) OUTPUT
4. (CH.2) OUTPUT
5. GROUND
6. (CH.3) OUTPUT
7. (CH.3) OUTPUT
8. (CH.4) OUTPUT
9. (CH.4) OUTPUT
10. (CH.5) OUTPUT
11. (CH.5) OUTPUT
12. (CH.6) OUTPUT
13. (CH.6) OUTPUT
14. (CH.7) OUTPUT
15. (CH.7) OUTPUT

OPTICAL PORT

STATUS INDICATORS

1. RX OPTICAL SIGNAL (GREEN)/ABSENT (RED)
2. NA
3. RX CARRIER (GREEN)/ERROR (RED)

STATUS INDICATORS (PORT 4)

1. (CH.1) OUTPUT PRESENT
2. (CH.2) OUTPUT PRESENT
3. (CH.3) OUTPUT PRESENT
4. (CH.4) OUTPUT PRESENT
5. (CH.5) OUTPUT PRESENT
6. (CH.6) OUTPUT PRESENT
7. (CH.7) OUTPUT PRESENT
8. NA

Figure 5.1
DT/DR-7C-x Front Panel Layout Diagram

DT-28C-X PINOUT DIAGRAM

OPTICAL PORT

STATUS INDICATORS

- POWER (GREEN)
- NA

STATUS INDICATORS

- TX CARRIER (GREEN)/ERROR (RED)

DATA INPUT (PORT 1)

HD-15 FEMALE

1. (CH.1) INPUT
2. (CH.2) INPUT
3. (CH.3) INPUT
4. (CH.4) INPUT
5. GND
6. (CH.5) INPUT
7. (CH.6) INPUT
8. (CH.7) INPUT
9. NA
10. NA
11. NA
12. NA
13. NA
14. NA
15. NA

DATA INPUT (PORT 2)

HD-15 FEMALE

1. (CH.8) INPUT
2. (CH.9) INPUT
3. (CH.10) INPUT
4. (CH.11) INPUT
5. GND
6. (CH.12) INPUT
7. (CH.13) INPUT
8. (CH.14) INPUT
9. NA
10. NA
11. NA
12. NA
13. NA
14. NA
15. NA

DATA INPUT (PORT 3)

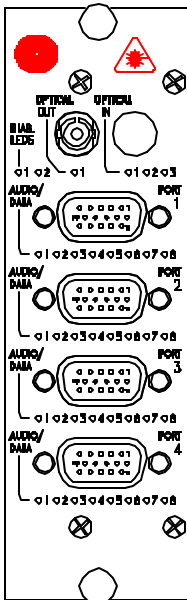
HD-15 FEMALE

1. (CH.15) INPUT
2. (CH.16) INPUT
3. (CH.17) INPUT
4. (CH.18) INPUT
5. GND
6. (CH.19) INPUT
7. (CH.20) INPUT
8. (CH.21) INPUT
9. NA
10. NA
11. NA
12. NA
13. NA
14. NA
15. NA

DATA INPUT (PORT 3)

HD-15 FEMALE

1. (CH.22) INPUT
2. (CH.23) INPUT
3. (CH.24) INPUT
4. (CH.25) INPUT
5. GND
6. (CH.26) INPUT
7. (CH.27) INPUT
8. (CH.28) INPUT
9. NA
10. NA
11. NA
12. NA
13. NA
14. NA
15. NA



STATUS INDICATORS (PORT 1)

1. (CH.1) INPUT PRESENT
2. (CH.2) INPUT PRESENT
3. (CH.3) INPUT PRESENT
4. (CH.4) INPUT PRESENT
5. (CH.5) INPUT PRESENT
6. (CH.6) INPUT PRESENT
7. (CH.7) INPUT PRESENT
8. NA

STATUS INDICATORS (PORT 2)

1. (CH.8) INPUT PRESENT
2. (CH.9) INPUT PRESENT
3. (CH.10) INPUT PRESENT
4. (CH.11) INPUT PRESENT
5. (CH.12) INPUT PRESENT
6. (CH.13) INPUT PRESENT
7. (CH.14) INPUT PRESENT
8. NA

STATUS INDICATORS (PORT 3)

1. (CH.15) INPUT PRESENT
2. (CH.16) INPUT PRESENT
3. (CH.17) INPUT PRESENT
4. (CH.18) INPUT PRESENT
5. (CH.19) INPUT PRESENT
6. (CH.20) INPUT PRESENT
7. (CH.21) INPUT PRESENT
8. NA

STATUS INDICATORS (PORT 4)

1. (CH.22) INPUT PRESENT
2. (CH.23) INPUT PRESENT
3. (CH.24) INPUT PRESENT
4. (CH.25) INPUT PRESENT
5. (CH.26) INPUT PRESENT
6. (CH.27) INPUT PRESENT
7. (CH.28) INPUT PRESENT
8. NA

DATA OUTPUT (PORT 1)

HD-15 FEMALE

1. (CH.1) OUTPUT
2. (CH.1) OUTPUT
3. (CH.2) OUTPUT
4. (CH.2) OUTPUT
5. GND
6. (CH.3) OUTPUT
7. (CH.3) OUTPUT
8. (CH.4) OUTPUT
9. (CH.4) OUTPUT
10. (CH.5) OUTPUT
11. (CH.5) OUTPUT
12. (CH.6) OUTPUT
13. (CH.6) OUTPUT
14. (CH.7) OUTPUT
15. (CH.7) OUTPUT

DATA OUTPUT (PORT 2)

HD-15 FEMALE

1. (CH.8) OUTPUT
2. (CH.8) OUTPUT
3. (CH.9) OUTPUT
4. (CH.9) OUTPUT
5. GND
6. (CH.10) OUTPUT
7. (CH.10) OUTPUT
8. (CH.11) OUTPUT
9. (CH.11) OUTPUT
10. (CH.12) OUTPUT
11. (CH.12) OUTPUT
12. (CH.13) OUTPUT
13. (CH.13) OUTPUT
14. (CH.14) OUTPUT
15. (CH.14) OUTPUT

STATUS INDICATORS

1. POWER (GREEN)
2. NA

STATUS INDICATORS

1. NA

DATA OUTPUT (PORT 3)

HD-15 FEMALE

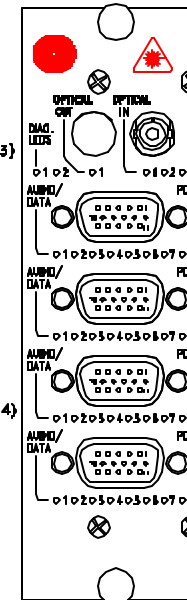
1. (CH.15) OUTPUT
2. (CH.15) OUTPUT
3. (CH.16) OUTPUT
4. (CH.16) OUTPUT
5. GND
6. (CH.17) OUTPUT
7. (CH.17) OUTPUT
8. (CH.18) OUTPUT
9. (CH.18) OUTPUT
10. (CH.19) OUTPUT
11. (CH.19) OUTPUT
12. (CH.20) OUTPUT
13. (CH.20) OUTPUT
14. (CH.21) OUTPUT
15. (CH.21) OUTPUT

DATA OUTPUT (PORT 4)

HD-15 FEMALE

1. (CH.22) OUTPUT
2. (CH.22) OUTPUT
3. (CH.23) OUTPUT
4. (CH.23) OUTPUT
5. GND
6. (CH.24) OUTPUT
7. (CH.24) OUTPUT
8. (CH.25) OUTPUT
9. (CH.25) OUTPUT
10. (CH.26) OUTPUT
11. (CH.26) OUTPUT
12. (CH.27) OUTPUT
13. (CH.27) OUTPUT
14. (CH.28) OUTPUT
15. (CH.28) OUTPUT

DR-28C-X PINOUT DIAGRAM



OPTICAL PORT

STATUS INDICATORS

1. OPTICAL SIGNAL (GREEN)/ABSENT (RED)
2. NA
3. RX CARRIER (GREEN)/ERROR (RED)

STATUS INDICATORS (PORT 1)

1. (CH.1) OUTPUT PRESENT
2. (CH.2) OUTPUT PRESENT
3. (CH.3) OUTPUT PRESENT
4. (CH.4) OUTPUT PRESENT
5. (CH.5) OUTPUT PRESENT
6. (CH.6) OUTPUT PRESENT
7. (CH.7) OUTPUT PRESENT
8. NA

STATUS INDICATORS (PORT 2)

1. (CH.8) OUTPUT PRESENT
2. (CH.9) OUTPUT PRESENT
3. (CH.10) OUTPUT PRESENT
4. (CH.11) OUTPUT PRESENT
5. (CH.12) OUTPUT PRESENT
6. (CH.13) OUTPUT PRESENT
7. (CH.14) OUTPUT PRESENT
8. NA

STATUS INDICATORS (PORT 3)

1. (CH.15) OUTPUT PRESENT
2. (CH.16) OUTPUT PRESENT
3. (CH.17) OUTPUT PRESENT
4. (CH.18) OUTPUT PRESENT
5. (CH.19) OUTPUT PRESENT
6. (CH.20) OUTPUT PRESENT
7. (CH.21) OUTPUT PRESENT
8. NA

STATUS INDICATORS (PORT 4)

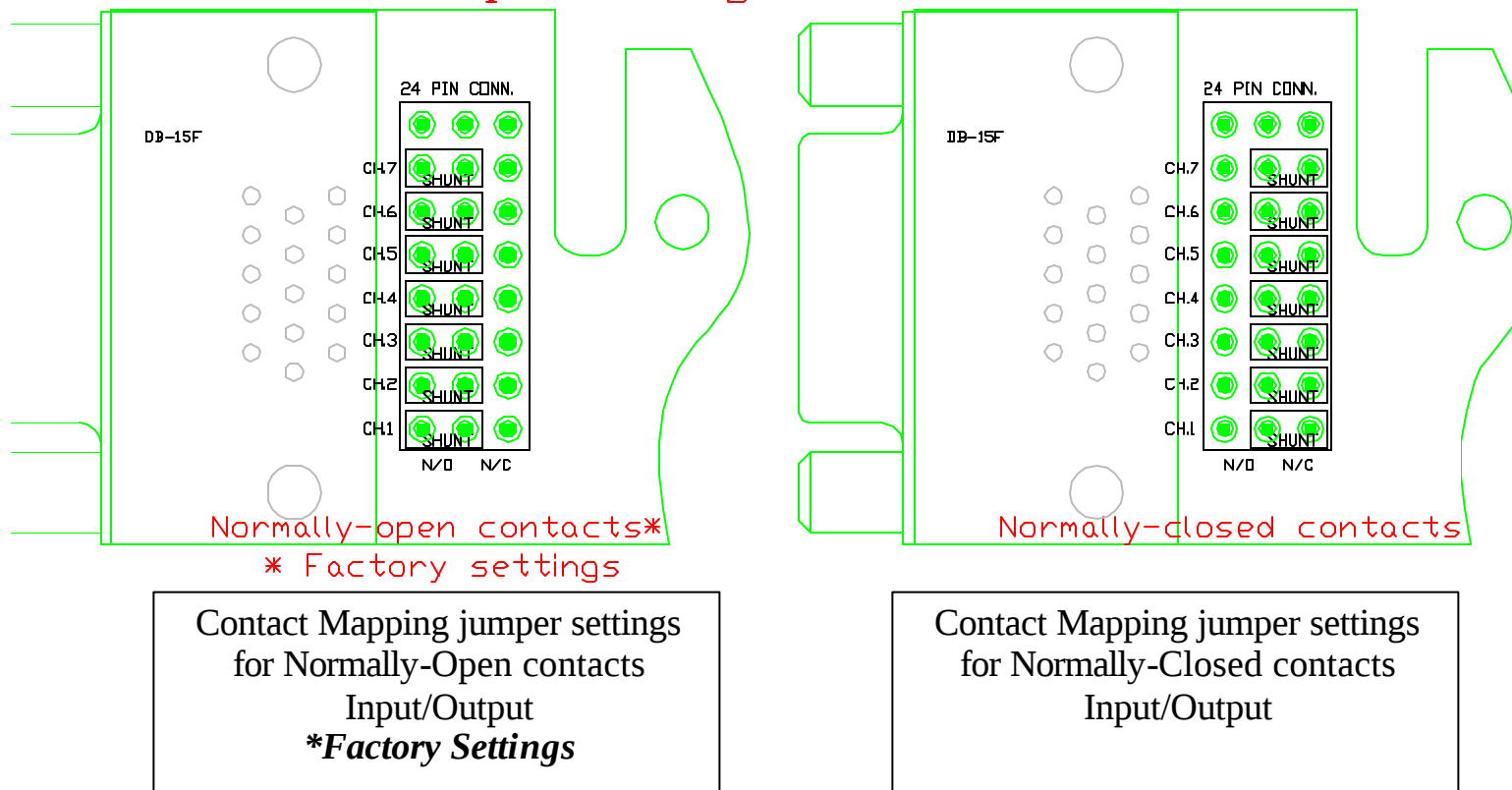
1. (CH.22) OUTPUT PRESENT
2. (CH.23) OUTPUT PRESENT
3. (CH.24) OUTPUT PRESENT
4. (CH.25) OUTPUT PRESENT
5. (CH.26) OUTPUT PRESENT
6. (CH.27) OUTPUT PRESENT
7. (CH.28) OUTPUT PRESENT
8. NA

Figure 5.2
DT/DR-28C-x Front Panel Layout Diagram

6.0 Contact Mapping SIM Jumper Settings

The Contact Closure RX SIM has 7 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 C.C. RX



6.1 Changing the SIM jumpers

The jumpers to change the RX CC 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 4.
4. Refer to the above drawing to locate the 7 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 port SIM. The jumper selection needs to be the same for all SIMs.

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 through 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 through 7) on the receiver 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).

Notes:



Meridian Technologies, Inc.
700 Elmont Road, Elmont NY 11003
Telephone: 516-285-1000 Fax: 516-285-6300
E-mail: support@meridian-tech.com
Web: www.meridian-tech.com
Document Version 1
05/27/2014