

3. Connect the DC power cable to the RJ-45 circuit access tool (see Figure 28).
4. Using a DC voltmeter, verify that the DC voltage level is between 34 and 48 Vdc between any set of positive and negative (+/-) terminals at the RJ-45 circuit access tool as shown in Figure 29. Due to source current limiting at the DHU or DEU, low voltage can mean excess wire resistance, low source voltage, or excess remote current.



Warning: The DRU uses 48 Vdc power. To avoid electric shock or burns, use extreme care when working near exposed terminals or uninsulated cables. Be careful not to touch exposed terminals or to cause a short between terminals when checking voltage levels.

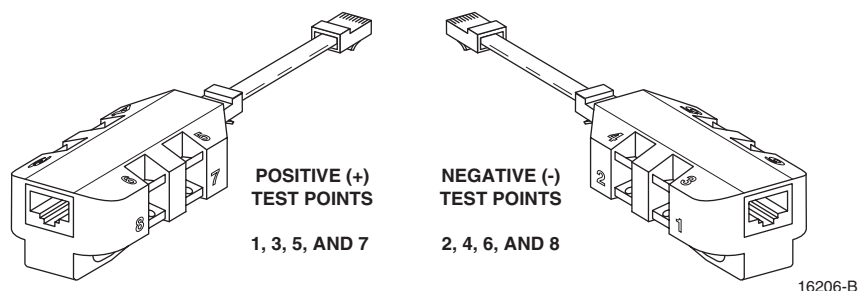


Figure 29. RJ-45 Circuit Access Tool Pin/Wire Designations

5. Disconnect RJ-45 circuit access tool from the DRU.
6. Use the DC voltmeter to check for open pin connections by checking for voltage between the +/- pairs on the RJ-45 circuit access tool (see Figure 29).
7. Disconnect the DC power cable from the RJ-45 circuit access tool.
8. Re-connect DC power cable to the DRU.

6.5 DHU or DEU Fan Replacement Procedure

It is recommended that the fans (catalog # DGVI-100000FAN) be replaced every five years. Replacement of a fan requires that the DHU or DEU be turned off for a short period of time. This will drop all existing calls, cause a temporary loss of service, and generate a major alarm. Use the following procedure to replace the cooling fans within the DHU or the DEU:

1. Before touching the DHU or DEU or handling a fan, slip on an Electro-Static Discharge (ESD) wrist strap and connect the ground wire to an earth ground source. Wear the ESD wrist strap while completing each section of the fan installation procedure.



Warning: Electronic components can be damaged by static electrical discharge. To prevent ESD damage, always wear an ESD wrist strap when working on the DHU or DEU and when handling electronic components.

2. Observe the fans (located on right side of enclosure) to determine which fan requires replacement. The faulty fan may be stopped, running at a reduced speed, or the fan bearing may be noisy.

► **Note:** Because the Mean Time Between Failures (MTBF) is the same for both fans, it may be more efficient to replace both fans at the same time.

3. Notify the NOC or alarm monitoring system operator that the system is going offline.
4. Place the DHU or DEU AC power On/Off switch (see Figure 3 or Figure 7) in the OFF position (press **O**).
5. Remove the six flat-head screws (requires TORX screwdriver with T15 bit) that secure the fan/grill assembly to the side of the enclosure as shown in Figure 30 and save for reuse.

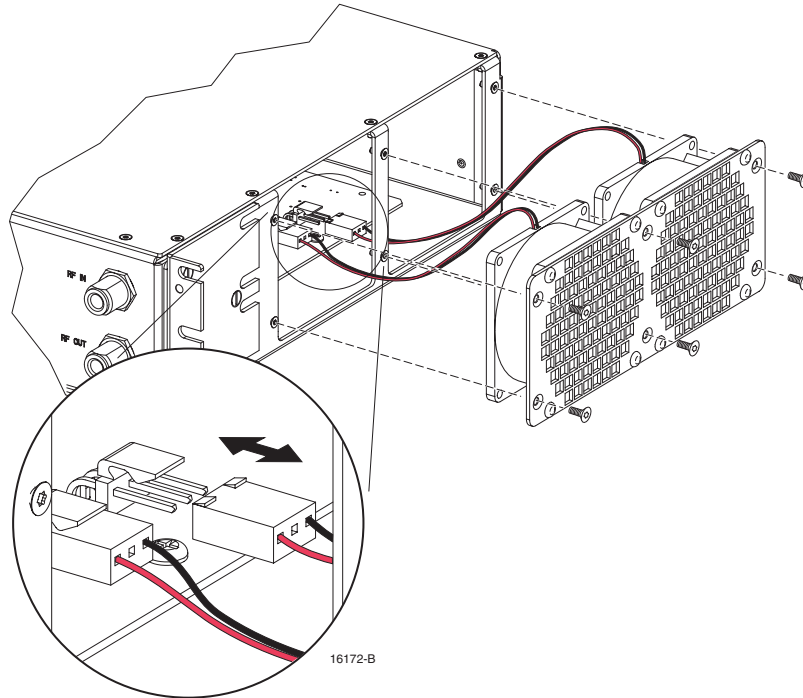


Figure 30. Fan/Grill Assembly Removal

6. Carefully withdraw the fan/grill assembly from the enclosure until the wiring harness is exposed and the connectors are accessible.
7. Lift the small latch on each wiring harness connector (see Figure 30) and carefully unplug each connector from the circuit board connector.
8. Remove the four plastic rivets that secure the faulty fan to the grill by pushing outward on rivet center post until the rivet can be withdrawn from the grill as shown in Figure 31.
9. Remove the faulty fan(s) from the grill and then locate the replacement fan(s).
10. Use the rivets removed in step 8 to secure the replacement fan to the grill. Orient the fan so the wiring harness is on the top and the arrow on the fan housing faces into the enclosure.
11. Connect the two wiring harness connectors to the circuit board connectors.
12. Secure the fan/grill assembly to the side of the enclosure (see Figure 30) using the six flat-head screws removed in step 5.

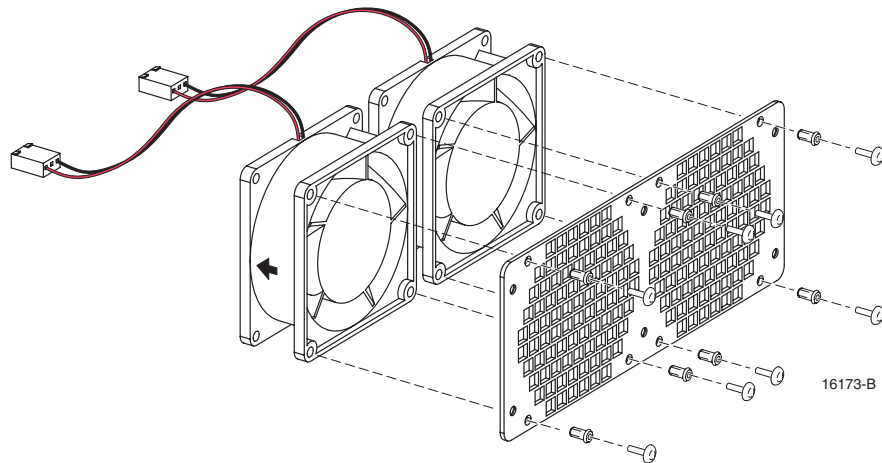


Figure 31. Removing Fan From Grill

13. Place the DHU or DEU AC power On/Off switch in the ON position (press **I**).
14. Verify that the fans run properly following power up.
15. Notify the NOC or alarm monitoring system operator that the system is going back online.

6.6 DHU or DEU Modular Optical Transceiver Replacement Procedure

The modular optical transceiver should be replaced when testing indicates that the transceiver has failed. Use the following procedure to replace an optical transceiver in a DHU or DEU:



Danger: *This equipment uses a Class 1 Laser according to FDA/CDRH rules. Laser radiation can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical transceiver of any digital unit or exposure to laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating transceiver or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the transceiver or connector.*

1. Put on the IR filtering safety glasses.
2. Slip on an Electro-Static Discharge (ESD) wrist strap and connect the ground wire to an earth ground source such as the grounding stud on the DHU or DEU front panel. Wear the ESD wrist strap while completing the optical transceiver replacement procedure.



Warning: *Electronic components can be damaged by static electrical discharge. To prevent ESD damage, always wear an ESD wrist strap when handling electronic components.*

3. Place the PORT ON/OFF switch for the optical transceiver being replaced in the **OFF** position (press **0**).

- **Note:** The HOST PORT on the DEU does not have an On/Off switch and can only be disabled by placing the DEU AC power On/Off switch in the OFF position (press **0**). Turning off the power to the DEU will create an alarm condition. If the DEU must be turned off, inform the NOC or alarm monitoring system operator that an alarm will be reported.
- 4. Disconnect the optical fiber connectors from the optical transceiver and place a dust cap over each connector.
- 5. Release the optical transceiver from the transceiver socket by pulling outward on the release lever (if type A) or release tab (if type B) as shown in Figure 32.

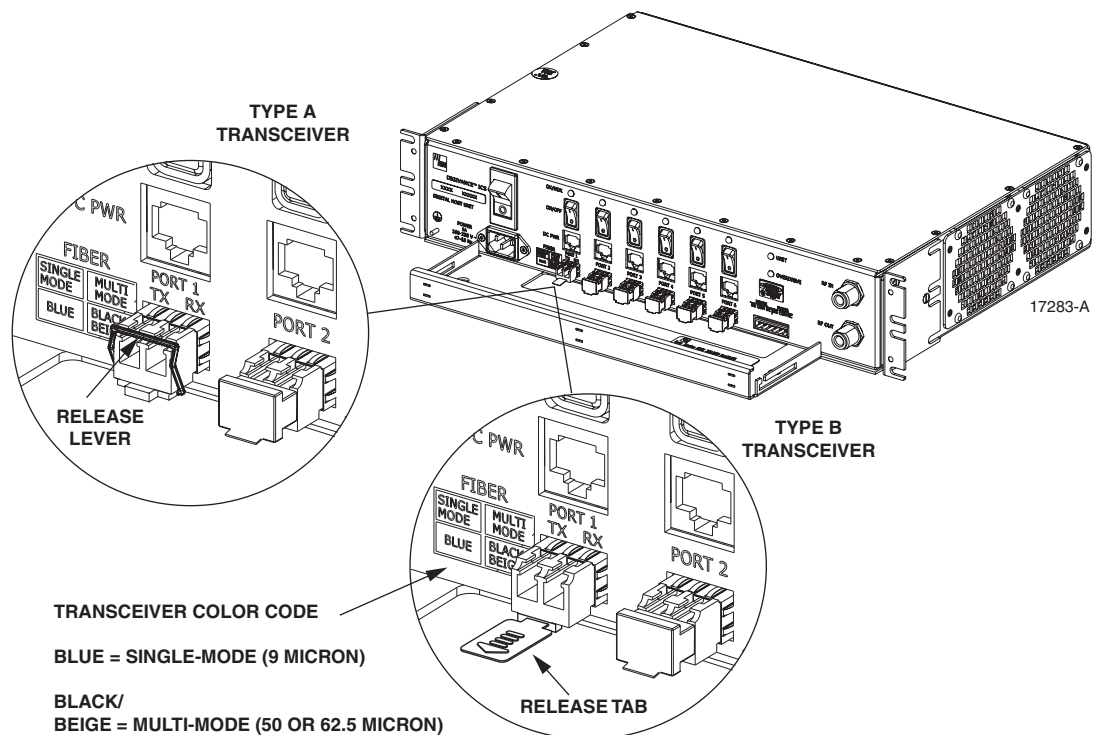


Figure 32. DHU or DEU Optical Transceiver Removal

- 6. Remove the optical transceiver from the transceiver socket.
- 7. For replacement, select an optical transceiver that corresponds to the type of fiber (single- or multi-mode) used in the installation. The color of the transceiver corresponds to the transceiver fiber type (see Figure 32).
- 8. Remove the optical transceiver from the anti-static packaging and orient for installation as shown in Figure 33.
- **Note:** Two types of optical transceivers, type A and type B, are available. Both types provide the same functionality. On the type A optical transceiver, the release lever (see Figure 33) must be closed for installation.

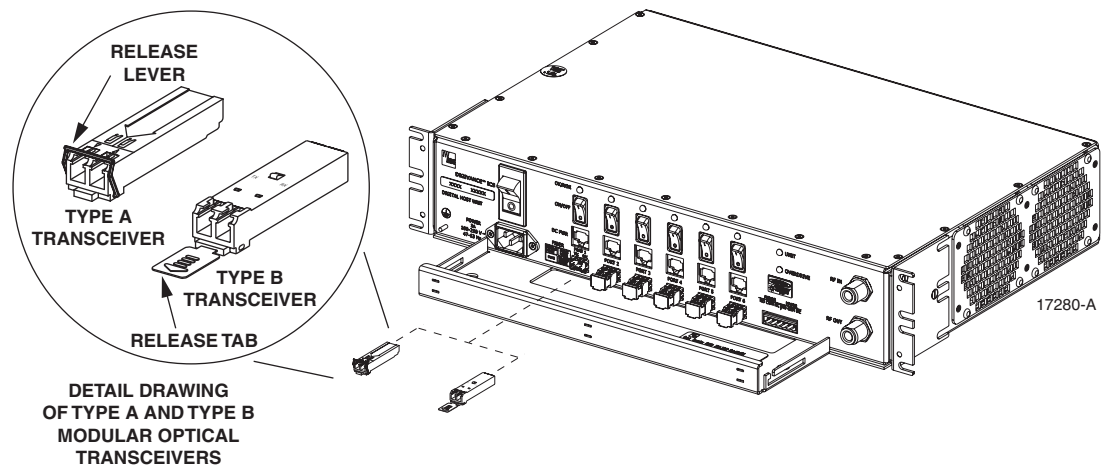


Figure 33. DHU or DEU Optical Transceiver Installation

9. Insert the optical transceiver into the socket until it locks into place.
10. Clean the optical fiber connectors and reconnect to the optical transceiver.
11. Place the PORT ON/OFF switch for the optical transceiver that was replaced in the **ON** position (press **I**).
- ▶ **Note:** If the DEU was turned off to replace the HOST PORT optical transceiver, place the DEU AC power On/Off switch in the ON position (press **I**) and inform the NOC or alarm monitoring system operator that the alarm has been cleared.
12. Verify that the DHU or DEU optical port LED indicators shown normal optical port operation (refer to Table 7 or 8).

6.7 DRU Modular Optical Transceiver Replacement Procedure

The modular optical transceiver should be replaced when testing indicates that the transceiver has failed. Use the following procedure to replace an optical transceiver in a DRU:



Danger: This equipment uses a Class 1 Laser according to FDA/CDRH rules. Laser radiation can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical transceiver of any digital unit or exposure to laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating transceiver or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the transceiver or connector.

1. Put on the IR filtering safety glasses.
2. Slip on an Electro-Static Discharge (ESD) wrist strap and connect the ground wire to an earth ground source. Wear the ESD wrist strap while completing the optical transceiver replacement procedure.



Warning: Electronic components can be damaged by static electrical discharge. To prevent ESD damage, always wear an ESD wrist strap when handling electronic components.

3. Disconnect the DC power cable connector from the RJ-45 power jack on the DRU front panel.
- **Note:** Disconnecting the power from the DRU will create an alarm condition. Inform the NOC or alarm monitoring system operator that the alarm will be reported.
4. Disconnect the optical fiber connectors from the optical transceiver and place a dust cap over each connector.
5. Release the optical transceiver from the transceiver socket by pulling outward on the release lever (if type A) or release tab (if type B) as shown in Figure 34.

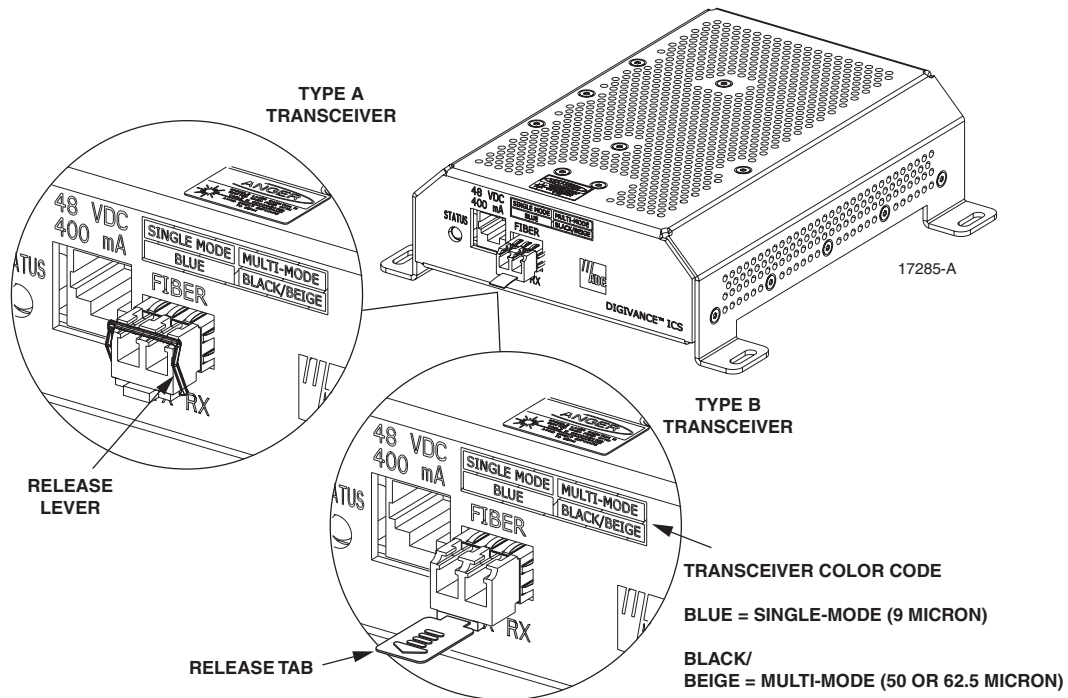


Figure 34. DRU Optical Transceiver Removal

6. Remove the optical transceiver from the transceiver socket.
7. For replacement, select an optical transceiver that corresponds to the type of fiber (single- or multi-mode) used in the installation. The color of the transceiver corresponds to the fiber type (see Figure 34).
8. Remove the optical transceiver from the anti-static packaging and orient for installation as shown in Figure 35.
- **Note:** Two types of optical transceivers, type A and type B, are available. Both types provide the same functionality. On the type A optical transceiver, the release lever (see Figure 34) must be closed for installation.

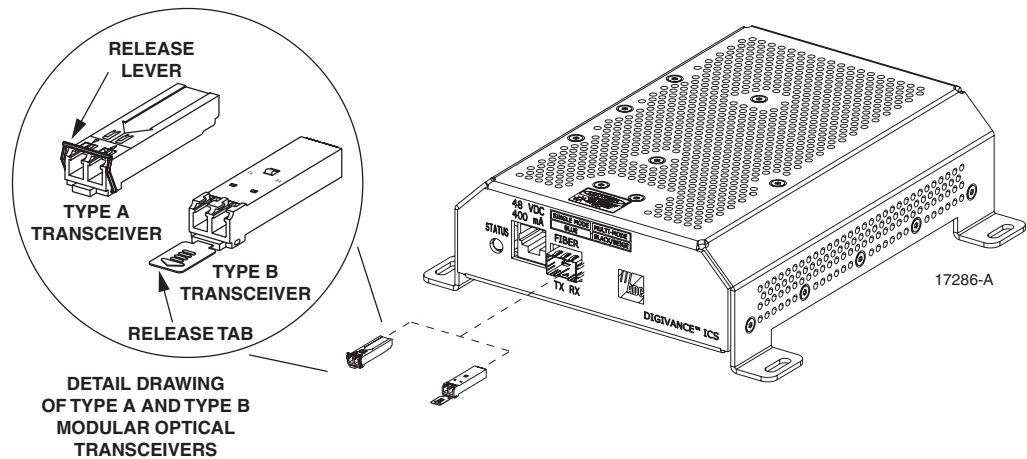


Figure 35. DRU Optical Transceiver Installation

9. Insert the optical transceiver into the socket until it locks into place.
10. Clean the optical fiber connectors and reconnect to the optical transceiver.
11. Reconnect the DC power cable plug to the RJ-45 jack on the DRU front panel and inform the NOC or alarm monitoring system operator that the alarm has been cleared.
12. Verify that the DRU LED indicator shows normal operation (refer to Table 9).

7 GENERAL INFORMATION

7.1 Warranty/Software

The Product and Software warranty policy and warranty period for all ADC products is published in ADC's Warranty/Software Handbook. Contact the Technical Assistance Center at 1-800-366-3891, extension 73475 (in U.S.A. or Canada) or 952-917-3475 (outside U.S.A. and Canada) for warranty or software information or for a copy of the Warranty/Software Handbook.

7.2 Software Service Agreement

ADC software service agreements for some ADC Products are available at a nominal fee. Contact the Technical Assistance Center at 1-800-366-3891, extension 73475 (in U.S.A. or Canada) or 952-917-3475 (outside U.S.A. and Canada) for software service agreement information.

7.3 Repair/Exchange Policy

All repairs of ADC Products must be done by ADC or an authorized representative. Any attempt to repair or modify ADC Products without authorization from ADC voids the warranty.

If a malfunction cannot be resolved by the normal troubleshooting procedures, contact the Technical Assistance Center at 1-800-366-3891, extension 73475 (in U.S.A. or Canada) or 952-917-3475 (outside U.S.A. and Canada). A telephone consultation can sometimes resolve a problem without the need to repair or replace the ADC Product.

If, during a telephone consultation, ADC determines the ADC Product needs repair, ADC will authorize the return of the affected Product for repair and provide a Return Material Authorization number and complete shipping instructions. If time is critical, ADC can arrange to ship the replacement Product immediately. In all cases, the defective Product must be carefully packed and returned to ADC.

7.4 Repair Charges

If the defect and the necessary repairs are covered by the warranty, and the applicable warranty period has not expired, the Buyer's only payment obligation is to pay the shipping cost to return the defective Product. ADC will repair or replace the Product at no charge and pay the return shipping charges.

Otherwise, ADC will charge a percentage of the current Customer Product price for the repair or NTF (No Trouble Found). If an advance replacement is requested, the full price of a new unit will be charged initially. Upon receipt of the defective Product, ADC will credit Buyer with 20 percent of full price charged for any Product to be Out-of-Warranty. Products must be returned within (30) days to be eligible for any advance replacement credit. If repairs necessitate a visit by an ADC representative, ADC will charge the current price of a field visit plus round trip transportation charges from Minneapolis to the Buyer's site.

7.5 Replacement/Spare Products

Replacement parts, including, but not limited to, button caps and lenses, lamps, fuses, and patch cords, are available from ADC on a special order basis. Contact the Technical Assistance Center at 1-800-366-3891, extension 73475 (in U.S.A. or Canada) or 952-917-3475 (outside U.S.A. and Canada) for additional information.

Spare products and accessories can be purchased from ADC. Contact Sales Administration at 1-800-366-3891, extension 73000 (in U.S.A. or Canada) or 952-938-8080 (outside U.S.A. and Canada) for a price quote and to place your order.

7.6 Returned Material

Contact the ADC Product Return Department at 1-800-366-3891, extension 73748 (in U.S.A. or Canada) or 952-917-3748 (outside U.S.A. and Canada) to obtain a Return Material Authorization number prior to returning an ADC Product.

All returned Products must have a Return Material Authorization (RMA) number clearly marked on the outside of the package. The Return Material Authorization number is valid for 90 days from authorization.

7.7 Customer Information and Assistance

PHONE: _____

EUROPE

Sales Administration: +32-2-712-65 00

Technical Assistance: +32-2-712-65 42

EUROPEAN TOLL FREE NUMBERS

Germany: 0180 2232923

UK: 0800 960236

Spain: 900 983291

France: 0800 914032

U.S.A. OR CANADA

Sales: 1-800-366-3891 Extension 73000

Technical Assistance: 1-800-366-3891 Extension 73475

ASIA/PACIFIC

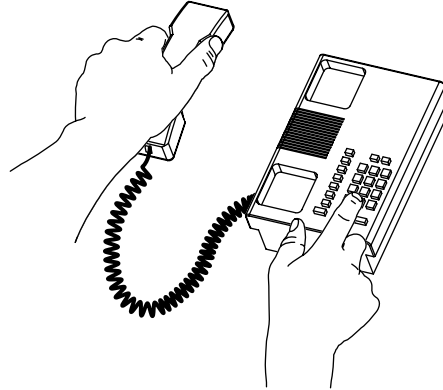
Sales Administration: +65-6294-9948

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ELSEWHERE

Sales Administration: +1-952-938-8080

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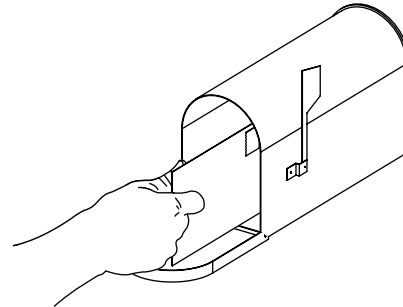


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100 BEACH ROAD, #18-01, SHAW TOWERS.
SINGAPORE 189702.

ADC EUROPEAN CUSTOMER SERVICE, INC
BELGICASTRAAT 2,
1930 ZAVENTEM, BELGIUM

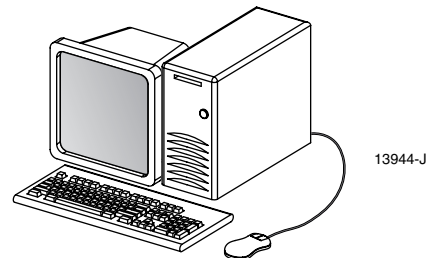


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