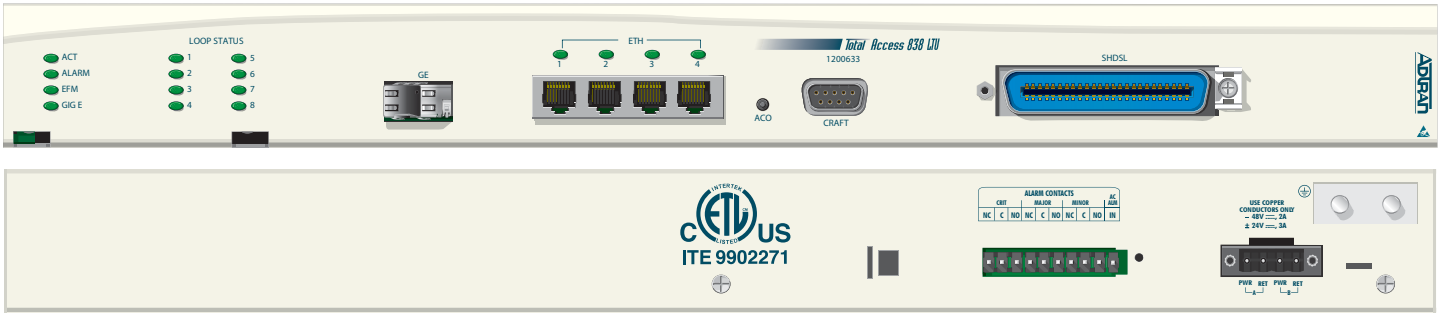
Total Access 838
SHDSL EFM LTU

jobAid

CLEI: SIM5J10B_ _
Product P/N: 1200633G7

Issue Date: August 2010
Document P/N: 61200633G7-22B



Description

The Total Access 838 SHDSL Ethernet in the First Mile (EFM) is a Metro-Ethernet Forum (MEF) compliant, EFM bonded LTU designed for cost-effective deployment of voice and data services to small and medium size businesses supporting up to eight two-wire SHDSL loops. Each copper pair provides sealing current in accordance with ITU-T G.991.2 when trained with an ADTRAN NTU. The Total Access 838 accepts SHDSL or eSHDSL and delivers 10/100Base-T Ethernet and Gigabit Ethernet for customer LAN extension. The Total Access 838 terminates the SHDSL loops in an RJ-21 connector and supports data rates from 192 kbps to 5.7 Mbps per copper pair. The Total Access 838 provides an aggregate data rate up to 45.6 Mbps over a single EFM bonding group.

Features

- MEF Compliant
- One integrated EIA-232 configuration port (DCE)
- Four integrated 10/100Base-T Ethernet ports
- One Gigabit Ethernet port
- Eight two-wire eSHDSL loops
- WAN Protocol: IEEE 802.3ah EFM bonding
- Command Line Interface (CLI)
- Front panel LEDs
- Wall mounting hardware included
- Remote Management - CLI using Virtual Terminal, Telnet by way of Management VLAN
- Sealing current in accordance with ITU-T G.991.2

NOTE

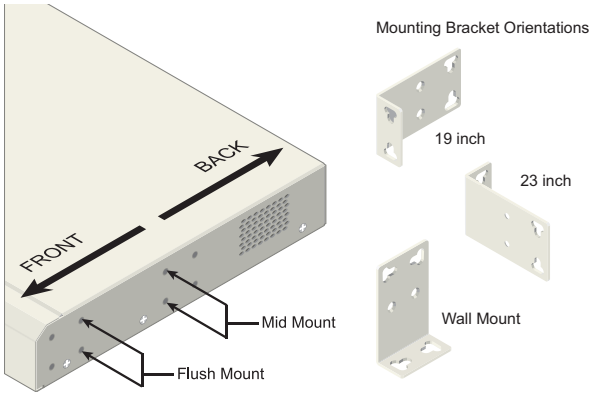
Due to compliance certification requirements, use only SFPs approved by ADTRAN. ADTRAN cannot certify system integrity with other SFPs. To ensure compatibility, refer to the documentation provided with each SFP.

Installation and Turn-up

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier and then contact ADTRAN. For more information, refer to the warranty.

The mounting options for the Total Access 838 are rackmount or wallmount. Follow the steps listed below to install the Total Access 838.

1. Attach mounting brackets to the side of the Total Access 838 in the correct orientation for either rackmount or wallmount using the two screws provided for each bracket (refer to the illustration below for the correct orientation).

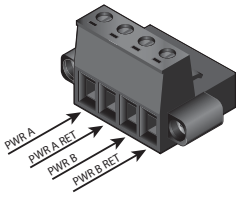


⚠ WARNING

Do not upset the stability of the equipment rack after installation is complete.

2. Secure the Total Access 838 to the rack or wall.
   - For Rackmount: Secure the Total Access 838 to the equipment rack with the appropriate screws.
   - For Wallmount: Prepare the mounting surface by attaching a board (typically plywood, 3/4" to 1" thick) to the wall studs using appropriate lag bolts. Secure the Total Access 838 to the plywood using two 3/32" to 1/8" wood screws at least 1" in length.
3. Connect the frame ground from the chassis ground lug on the upper right rear panel of the Total Access 838 to the equipment rack grounding screw or other appropriate grounding connection.

4. Make power connections to the Total Access 838.
   a. Determine which fuse pairs are to supply power to the Total Access 838.
   b. Remove the fuses from the **A** and **B** slots for the pair.
   c. Connect **RET A**, **PWR A**, **RET B**, and **PWR B** to the power connector. **PWR** refers to respective –48 VDC or ±24 VDC power sources; **RET** refers to respective returns.



NOTE

- A readily accessible disconnect device, such as a rackmount fuse and alarm panel that is suitably approved and rated, should be incorporated into the fixed wiring.
- Connect to a reliably grounded –48 VDC or ±24 VDC source that is electrically isolated from the AC source.
- The branch circuit overcurrent protection should be a slow-blow fuse or circuit breaker.

⚠ WARNING

Installing fuses in the fuse and alarm panel at this stage will provide power to the Total Access 838. There will be power to pins and connectors on the rear panel and inside the Total Access 838. Exercise caution to avoid electrical shock.

5. Apply power and check voltages.
   a. Install appropriate fuses in the slots of the fuse and alarm panel that serves the Total Access 838.
   b. Using a voltmeter, verify that the operating voltage is within the specifications for A or B power feeds. For more information, refer to Specifications.
6. Remove the protective cover from the alarm wire wrap terminals.
7. Connect the **AC ALM** (AC alarm), **CRIT** (critical), **MAJOR**, and **MINOR** alarm leads from the alarm panel to the Common (**C**), Normally Open (**NO**), and Normally Closed (**NC**) wire-wrap terminals on the Total Access 838 rear panel as required.

NOTE

The AC alarm input functions as follows. All voltages described below are measured with respect to the return (**RET**) input to the Total Access 838.

- When power is negative (e.g. –48V), the alarm is triggered when the voltage on the AC alarm pin is at least 5V above the potential on the **PWR** input. For example, if the voltage on the **PWR** input is –54V, then the alarm will trigger if the voltage on the AC alarm pin is between –49V and 0V with respect to **RET**.
- When power is positive (e.g. 24V), the alarm is triggered when the voltage on the AC alarm pin is at least 5V above the **RET** input. For example, if the voltage on the **PWR** input is +24V, then the alarm will trigger if the voltage on the AC alarm pin is between 5V and 24V with respect to **RET**.

Connect and Login to System

Connect to the front panel RS-232, DB-9 connector labeled **CRAFT** to log on and provision the Total Access 838 by way of VT100 terminal or VT100 terminal emulation software such as HyperTerminal or ProComm Plus.

Craft port defaults are as follows:

- Data Rate: Auto (Available data rate range 9600-115200)
- Asynchronous Data Format: 8-data bits, no parity, 1-stop bit, and no flow control

Press ENTER to activate the CLI.

NOTE

The default username and password are "ADMIN" and "PASSWORD" in all capital letters.

Front Panel Pushbutton

Label	Function
ACO	The front panel ACO (Alarm CutOff) switch disables the alarm indications.

Front Panel LEDs

Label	Status		Indication
ACT	○	Off	Power off
	●	Green	Normal operation
	●/●	Green/Yellow Alternating	Normal operation and console open
	●	Yellow	Software update in progress
	●/●	Yellow/Red Alternating	Self-test failed and console open
	●	Red	Self-test failed (not bootable) or device malfunctioned
ALARM	●	Green	No critical, major, or minor alarms on when In Service
	●	Red	Active major or minor alarm
	✶	Red Flashing	Active critical alarm
EFM	●	Green	All In Service EFM groups are operating normally
	●	Yellow	At least one EFM group is in test
	●	Red	At least one In Service EFM group is in a failed state
	✶	Red Flashing	At least one In Service EFM link is in a failed state
ETH 1–4	○	Off	No Ethernet link present
	●	Green	10/100Base-T Ethernet link is up
	✶	Yellow Flashing	Active receive or transmit Ethernet activity

Label	Status		Indication
GIG E	○	Off	No SFP present
	●	Green	Approved SFP present and link is up
	●	Yellow	Non-approved SFP present and link is up
	●	Red	SFP present and link is down
LOOP STATUS 1–8	○	Off	SHDSL loop is disabled
	●	Green	SHDSL loop is trained up and EFM group is established
	✷	Green Flashing (slow)	SHDSL loop is currently training
	✷	Green Flashing (fast)	SHDSL loop is acquiring EFM synchronization
	●	Yellow	SHDSL loop is inhibited due to: 1. Local loopback initiated 2. Detection of remote loopback 3. Loop has been removed from efm-link due to excessive code violations
	●	Red	SHDSL loop is not trained up
	✷	Red Flashing	SHDSL loop is in the hand-shake process

Craft Port Pinout

The table below lists the pinout for the craft port.

Pin	Name	Description
1	–	No Connection (NC)
2	RD	Receive Data (Output)
3	TD	Transmit Data (Input)
4	DTR	Data Terminal Ready
5	SG	Signal Ground
6	–	NC
7	–	NC
8	–	NC
9	–	NC

10/100Base-T Ethernet Port Pinout

The table below lists the pinout for the 10/100Base-T Ethernet port.

Pin	Name	Description
1	TX1	Transmit Positive
2	TX2	Transmit Negative
3	RX1	Receive Positive
4	–	NC
5	–	NC
6	RX2	Receive Negative
7	–	NC
8	–	NC

RJ-21 SHDSL Port Pinout

The table below lists the pinout for the RJ-21 SHDSL port.

Pin	Port	Description	Pin	Port	Description
1	1	Ring	26	1	Tip
2	2	Ring	27	2	Tip
3	3	Ring	28	3	Tip
4	4	Ring	29	4	Tip
5	5	Ring	30	5	Tip
6	6	Ring	31	6	Tip
7	7	Ring	32	7	Tip
8	8	Ring	33	8	Tip

Deployment Guidelines

The table below lists the maximum rate of the SHDSL port for the associated line distance.

Rate (kbps)	Length (ft)*
5696	2800
4096	3600
3088	5100
2304	6300
1544	7900
1024	9800
768	11000
384	14800
192	19800

* 26 AWG wire size minimum

Resources

The following table outlines the maximum available resources for configuring the logical interfaces. Error messages occur once resources are exhausted.

Resource	Maximum
EVCs	64
EVC Maps	64
Policers	64
EFM Groups	4

SPECIFICATIONS

Specifications for the Total Access 838 SHDSL EFM are as follows:

- Electrical
  - Input Voltage rating(s):
    - –48 VDC (Operating range of –42.5 VDC to –56.5 VDC)
    - ± 24 VDC (Operating range of ± 20 VDC to ± 28.25 VDC)
    - A or B Power Feed
  - Input Current Rating(s):
    - 2.0 amps (–48 VDC)
    - 3.0 amps (±24 VDC)
  - Maximum Current Draw:
    - 370 mA (–48 VDC)
    - 740 mA (±24 VDC)
  - Maximum Power: 18 watts
- Environmental
  - Operational Temperature Range: –40°C to +65°C
  - Operating Altitude Range: –197 feet (–60 meters) to 13000 feet (4000 meters)
    - From –197 feet (–60 meters) to 6000 feet (1800 meters) the operating temperature is derated by 1.6°C/1000 feet.
    - From 6000 feet (1800 meters) to 13000 feet (4000 meters) the operating temperature is derated by 1.4°C/ 1000 feet.
  - Storage Temperature Range: –40°C to +85°C
  - Relative Humidity: up to 95%, noncondensing
- Physical
  - Height: 1.72 inches
  - Width: 19.0 inches
  - Depth: 11.97 inches
  - Weight: 6 lbs
- Connectors
  - SHDSL Port: RJ-21, 135 ohms
  - 10/100Base-T Ethernet: RJ-45
  - Gigabit Ethernet: Small Form-factor Pluggable (SFP)
  - Craft Port: DB-9 female
- Diagnostics and Test
  - Self-diagnosis

SAFETY AND REGULATORY COMPLIANCE

Refer to the *Total Access 838 SHDSL EFM LTU Safety and Regulatory Compliance Notice* (P/N 61200633G7-17) for detailed safety and regulatory information.

Warranty: ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found online at www.adtran.com/warranty.

CAUTION!
SUBJECT TO ELECTROSTATIC DAMAGE OR DECREASE IN RELIABILITY.
HANDLING PRECAUTIONS REQUIRED.

ADTRAN CUSTOMER CARE:
From within the U.S. 1.800.726.8663
From outside the U.S. +1 256.963.8716
PRICING AND AVAILABILITY 1.800.827.0807

61200633G7-22B