Digital VoIP
Gateways
DW-GTW-AC-E1060

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POWER
STATUS

WAN

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CONSOLE   USB/WWAN

QUICK INSTALLATION GUIDE

1   Introduction

This document provides a hardware description of the DW-GTW-AC-E1060 (hereafter referred to as *device*) and step-by-step procedures for mounting and cabling the device.

The device supports the following interfaces:

- 2 E1/T1 port interfaces.
- 4 FXS port interfaces
- 4 Gigabit Ethernet ports

2   Package content

Follow the procedure below for unpacking the carton in which the device is shipped.

- DW-GTW-AC-E1060
- Four anti-slide bumpers for desktop installation
- One FXS Lifeline cable adapter
- Two mounting brackets for 19-inch rack mounting
- One AC power cable

3   Physical Description

This section provides a physical description of the device.

3.1 Physical Dimensions and Operating Environment

The device's physical dimensions and operating environment are listed in the table below:

Table 3-1: Physical Dimensions and Operating Environment

Physical Specification	Description
Dimensions (H x W x D)	1U x 32 x 34.5 cm (12.6 x 13.6 inches)
Weight	2.5 kg (5.5 lbs.)
Environmental	Operational: 5 to 40°C (41 to 104°F) Storage: -25 to 85°C (-13 to 185°F) Humidity: 10 to 90% non-condensing
MTBF	238,834

3.2 Front Panel Description

The front panel provides the telephony port interfaces, various networking ports, reset pinhole button, and LEDs.

Table 3-2: Front Panel Description

Item #	Label	Description
1	USB/WWAN	USB port, used for various functionalities such as saving debug captures to a USB storage device.
2	Console	Port RJ-45 to RS-232 port for serial communication.
3	POWER / STATUS	LEDs indicating the status of the power and reboot/initialization.
4	PRI / Digital	Telephony port interfaces that can include two E1/T1 port interfaces (RJ-48)
5	-	Reset pinhole button for resetting the device and optionally, for restoring the device factory defaults. To restore the device to factory defaults, do the following: With a paper clip or any other similar pointed object, press and hold down the Reset pinhole button for **at least 12 seconds, but no more than 25 seconds**.
6	LAN	Four 10/100/1000Base-T (Gigabit Ethernet) LAN ports for connecting IP phones, computers, or switches. These ports support the following features: **Half- and full-duplex modes** **Auto-negotiation** **Straight or crossover cable detection**

Table 3-3: Rear Panel Description

ITEM	Label	Description
1	⏚	Protective earthing screw.
2	100-240V~4A 50-60Hz	3-Prong AC power supply entry.

3.2.1 LEDs Description

The front panel provides LEDs on the device's hardware (e.g., the available telephony interfaces). These LEDs are described in the subsequent subsections.

3.2.1.1 LAN Interface LEDs

Each LAN port provides a LED (located on its left) for indicating LAN operating status, as described in the table below.

Table 3-4: LAN LEDs Description

LED Color	LED Staus	Description
Green	On	Ethernet link established.
	Flashing	Data is being received or transmitted.
-	Off	No Ethernet link.

3.2.1.2 E1/T1 LEDs

Each trunk port provides a LED for indicating operating status, as described in the table below:

Table 3-5: E1/T1 LEDs Description

Color	State	Description
Green	On	**Trunk is synchronized (normal operation).**
Red	On	Loss due to any of the following signals: ● LOS - Loss of Signal ● LOF - Loss of Frame ● AIS - Alarm Indication Signal (the Blue Alarm) ● RAI - Remote Alarm Indication (the Yellow Alarm)
-	Off	Failure / disruption in the AC power supply or the power is currently not being supplied to the device through the AC power supply entry.

3.2.1.2   Operational Status LEDs

The STATUS LED indicates the operating status, as described in the table below.

Table 3-6: STATUS LEDs Description

LED Color	LED State	Description
Green	On	The device is operational and in Standalone mode (not in High-Availability mode).
Green	Flashing	Initial rebooting stage.
Red	On	Boot failure.
	Off	Advanced rebooting stage.

1.1.1.2   Power LEDs

The POWER LED indicates the operating status, as described in the table below.

Table 3-7: POWER LEDs Description

LED Color	LED State	Description
Green	On	Power is received by the device.
-	Off	No power received by the device.

4   Mounting the Device

The device can be mounted in one of the following ways:
- Placed on a desktop
- Installed in a standard 19-inch rack

> **Warning:** Do not place any equipment directly on top of the device or adjacent to its sides (at least 13-cm separation). In addition, if you are mounting the device in a 19-inch rack, ensure that at least a 3U separation is maintained between the device and other mounted devices or equipment.

4.1 Desktop Mounting

The device can be placed on a desktop when its four anti-slide bumpers (supplied) are attached to the underside of the device.
To attach the anti-slide rubber bumpers to the device:

1. Flip the device over so that its underside faces up.
2. Locate the four anti-slide grooves on the underside - one in each corner.
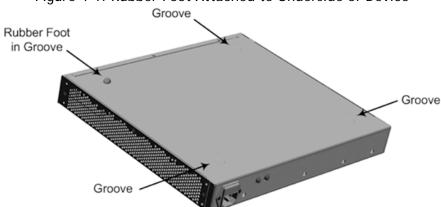3. Peel off the adhesive, anti-slide rubber feet and stick one in each anti-slide groove.

Figure 4-1: Rubber Foot Attached to Underside of Device

4. Flip the device over again so that it rests on the rubber feet and place it in the required position on a desktop.

4.2 19-Inch Rack Mounting

The device can be installed in a standard 19-inch rack by implementing one of the following mounting methods:

- Placing it on a pre-installed shelf in a 19-inch rack
- Attaching it directly to the rack's frame using the device's mounting brackets (supplied) that need to be attached to the chassis

Rack Mount Safety Instructions
When installing the chassis in a rack, implement the following safety instructions:

· **Elevated Operating Ambient Temperature:** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment with maximum ambient temperature (Tma) of 40°C (104°F).

· **Reduced Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation on the equipment is not compromised.

· **Mechanical Loading:** Mounting of the equipment in the rack

should be such that a hazardous condition is not achieved due to uneven mechanical loading.

· **Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

· **Reliable Earthing:** Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

4.2.1   Using a Pre-installed Rack Shelf

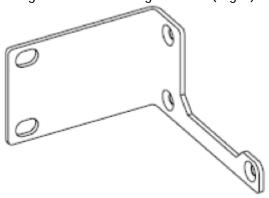The procedure below describes how to place the device on a pre-installed shelf in a 19-inch rack.
To mount the device on a pre-installed shelf in the rack:

1.   Before installing it in the rack, ensure that you have a pre-installed rack shelf on which the device can be placed.
2.   Place the device on the pre-installed shelf in the rack.

4.2.2   Using Mounting Brackets

The procedure below describes how to mount the device in a 19-inch rack. Rack mounting involves placing the device on a pre-installed rack shelf and then attaching the device's mounting brackets (to the device and rack frame). The purpose of the mounting brackets is to secure the device to the rack.
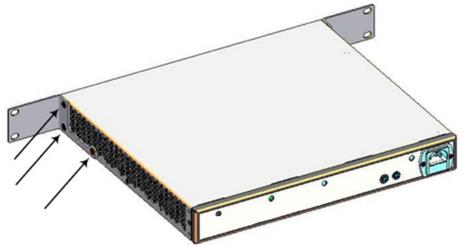
Figure 4-2: Mounting Bracket (Right)

Note: 19-inch rack mounting using mounting brackets is a customer ordered feature.

To mount the device in a 19-inch rack using mounting brackets:

1. Attach the two mounting brackets (supplied) to each side of the device's chassis, using the supplied screws, as shown in the figure below:

Figure 4-3: Attaching the Mounting Brackets

2. Place the device on a pre-installed shelf in the rack.
3. Attach the ends of the mounting brackets (that you installed in Step 1) to the vertical track of the rack's frame, using standard 19-inch rack bolts (not supplied).

5   Cabling the Device

This chapter describes the cabling of the device.

5.1   Grounding and Surge Protection

The device must be connected to earth (grounded) using an equipment-earthing conductor.

Protective Earthing

The equipment is classified as Class I EN60950 and UL60950 and must be earthed at all times.
For Finland: "Laite on liltettava suojamaadoituskoskettimilla varustettuun pistorasiaan."
For Norway: "Apparatet rna tilkoples jordet stikkontakt."
For Sweden: "Apparaten skall anslutas till jordat uttag."

Grounding and Power Surge Protection

·	The device must be installed only in telecommunication sites / centers in compliance with ETS 300-253 requirements "Earthing and Bonding of Telecommunication Equipment in Telecommunication Centers".

·	Prior to installation, earth loop impedance test must be performed by a certified electrician to ensure grounding suitability at the power outlet intended to feed the unit. It is essential that the impedance will be kept below 0.5 ohms!

·	Proper grounding is crucial to ensure the effectiveness of the lightning protection, connect the device permanently to ground (as described in the procedure below). The device's grounding screw must be connected to the equipotential grounding bus bar located in the Telecommunication rack or installation site, using a wire of 6 mm2 surface wire. If the device is installed in a rack with other equipment, the rack must be connected to the equipotential grounding bus bar of the Telecommunication room, using a stranded cable with surface area of 25 mm2. The length of this cable must be as short as possible (no longer than 3 meters).

·	Failing to install primary surge protectors and failing to comply with the grounding instructions or any other installation instructions, may cause permanent damage to the device.

·	As most of the installation is the responsibility of the customer, Denwa Corp can assume responsibility for damage only if the customer can establish that the device does not comply with the standards specified above (and the device is within the hardware warranty period).

·	The device complies with protection levels as required by EN 55024/EN 300386. Higher levels of surges may cause damage to the device.

To ground the device:

1. Connect an electrically earthed strap of 16 AWG wire (minimum) to the chassis' grounding screw (located on the rear panel), using the supplied washer and fasten the wire securely using a 6-32 UNC screw.

Figure 5-1: Grounding the Device

2. Connect the other end of the strap to a protective earthing. This should be in accordance with the regulations enforced in the country of installation.

5.2   ISDN E1/T1 Interfaces

This section describes how to cable the PRI interfaces.

5.2.1   Connecting to ISDN PRI (E1/T1) Trunks

The procedure below describes the cabling of the device's E1/T1 (PRI) trunk interfaces.

> **Warning:**
> ·   To protect against electrical shock and fire, use a 26 AWG min wire to connect T1 or E1 ports to the PSTN.
> ·   To comply with EMC rules and regulations, use shielded twisted pair (STP) cables for E1 interfaces on DW-GTW-AC-E1060.

> **Note:** PRI interfaces are a customer-ordered item.

Cable specifications:

- **Cable:** STP cable of 26 AWG min.
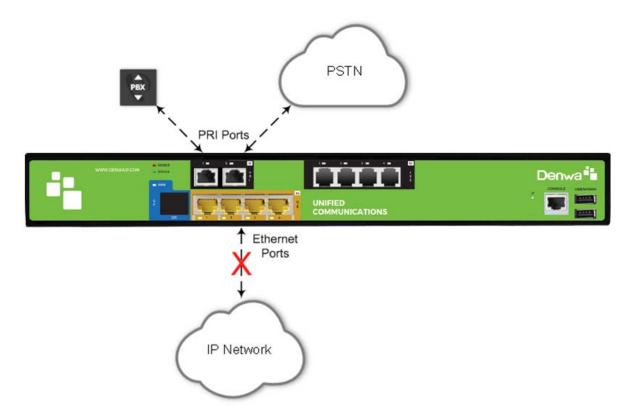- **Connector Type:** RJ-48c
- **Connector Pinouts:**

Figure 5-14: RJ-48c Connector Pinouts for E1/T1


```
1 2 3 4 5 6 7 8      1 = Rx RING      3, 6, 7, 8
                     2 = Rx TIP       Not Connected
                     4 = Tx RING
                     5 = Tx TIP       Body = Shield
```

To connect the E1/T1 trunk interface:

1. Connect the E1/T1 trunk cable to the device's E1/T1 port.
2. Connect the other end of the trunk cable to your PBX/PSTN switch.

Figure 5-15: Cabling E1/T1 Ports

Notes:
· It does not matter which PRI port connects to which Tel entity (i.e., PBX or PSTN).
· To enable PSTN Fallback upon IP network connectivity issues, use

the TrunkLifeLineType parameter (PSTN Fallback upon power outage is done by default).

5.3   Connecting to a Computer for Serial Communication

The device provides an RS-232 serial interface port on its front panel for serial communication with a PC.
· **Port Type:** RJ-45
· **Cable:** RJ-45 to DB-9

To connect the device's serial interface to a computer:
a.   Connect the RJ-45 cable connector to the device's serial port, labeled **CONSOLE**.
b.   Connect the other end of the cable to the COM1 or COM2 RS-232 communication port on your PC.

Figure 5-19: Cabling Serial Interface (RJ-45)

5.4   Powering up the Device

The device receives power from a standard alternating current (AC) electrical outlet. The connection is made using the supplied AC power cord.

Table 5-3: Power Specifications

Physical Specification	Value
Input Voltage	Single universal AC power supply 100 to 240V
AC Input Frequency	50 to 60 Hz
AC Input Current	1.5 A
Max. Power Consumption	Gateway (without OSN): 60W*

Warnings:
·   The device must be connected to a socket-outlet providing a protective earthing connection.
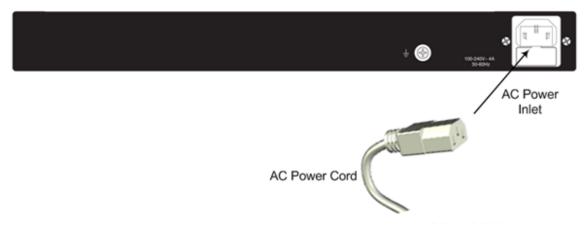·   Use only the AC power cord that is supplied with the device.

To connect the device to the power supply:
1. Connect the line socket of the AC power cord (supplied) to the device's AC power socket (labeled **100-240V ~ 4A 50-60Hz**), located on the rear panel.

Figure 5-21: Connecting to the Power Supply

2. Connect the plug at the other end of the AC power cord to a standard electrical outlet.

Once you have cabled and powered-up the device, the POWER LED on the front panel lights up green.

6 Maintenance – Replacing the Power Fuse

The device contains a fuse that protects the device from excessive current. The fuse is located on the rear panel, below the power socket. To replace the fuse, use only one of the following fuses described in the table below:

Table 6-1: Allowed Fuses for the Device

Manufacturer	Manufacturer Part Number
BEL	5ET2.5-R
CONQUER	UDL 2.50
LITTEFUSE	021302.5MXP

Caution
For continuous protection, replace only with the same fuse type and rating fuse.

To replace the fuse:

1. Unplug the power cord from the electrical outlet.
2. Using a small flathead screwdriver, gently pries open the fuse cavity as illustrated in the figure below:

Figure 6-1: Opening the Fuse Cavity

3. Carefully remove the fuse from the fuse cavity.

Figure 6-2: Removed Power Fuse

4. Insert the new fuse securely into the fuse cavity until you hear a click sound.
5. Reconnect the power cord and verify that the **Power** LED is lit green.