

ATLAS EX 60

DIGITAL BUSINESS SYSTEM

INSTALLATION MANUAL

**KS Telecom
W. Palm Beach FL.**

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Introduction

This section describes the ATLAS EX 60 Digital Business System, a small telecommunications system that provides voice communications with a wide range of features. An overview of the system equipment is presented: followed by instructions for installing the system and station equipment and for connecting optional devices supported by the system. System specifications are grouped for a quick reference guide.

This equipment can be used with telephone company equipment that accepts pulse or DTMF dialing. The equipment has been assigned an FCC registration number under Part 68.

For direct connection to the telephone network, the equipment must be installed as described, and the FCC registration must be reported to the local telephone company.

FCC Requirements

The ATLAS EX 60 Digital Communication System is FCC-registered as a fully protected key system under Registration Number – PENDING, Ringer Equivalence 0.2a

Related Documents

For additional information regarding station feature operation, refer to the Easy reference guide included with each Digital set.

For details related to changing system database, refer to ATLAS Series 500 Programming guide.

Note:

To maximize user satisfaction and to minimize service calls, it is strongly recommended that all users be instructed in station operation and that every station user be provided with a copy of the Easy Reference Guide.

Incidence of Harm

When practical, the telephone company must inform the customer that the service may be temporarily discontinued if the equipment he is using should cause harm to the telephone network. The telephone company must attempt to inform the customer that the service is to be discontinued prior to actually terminating service. The telephone company must also provide customers with opportunity to correct the problem and must advise customers of their right to bring compliant procedures before the FCC.

System Specifications

System Capacity: Cabinet

Line Name	Basic	Max A	Max B	Max C
Trunk Lines	4	12	8	16
Stations	12	36	44	28

Power Requirements:

Input Voltage: 110 ± 10 Volt AC, 50/60 Hz, single phase, or 220 V ± 10 Volt AC by Switchable.

Environmental Conditions:

Surrounding temperature: 0-40°C
32-104°F

Surrounding humidity: 10-90 %

Cable Requirements:

Digital Phone: Station Cable, 1 pair twisted wire.

Station loop resistance = 40 ohms max.

Single-Line Telephone: Station cable, 1 pair (2 wires).

Station loop resistance = 800 ohms max.

Cable Length:

Digital Phone: See Page 24 Fig. 13

Single-Line Telephone: See Page 24 Fig.12

Communication Links:

Digital switching

Electret transmitter

Dynamic Receiver

Circuitry Control:

16-bit 8830 microprocessor

Number Dialing Requirements:

- 1) Pulse Dial
 - Speed: 10 or 20pps
 - Ratio: $60 \pm 3\%$ or $67 \pm 3\%$
 - Pause: 1800ms
- 2) DTMF
 - A) Frequency range: High Group 1209Hz, 1336Hz, 1477Hz
Low Group 697Hz, 770Hz, 852Hz, 941Hz
 - B) Frequency uncertainty: 1.5% and less
 - C) Tone Level: Low level $-10\text{dBm} \pm 2\text{dBm}$
High level $-8\text{dBm} \pm 2\text{dBm}$
- 3) Duration: 70ms
- 4) Digit Period: 70ms
- 5) Memory Dial: Last Number Redial, Save Number Redial & Speed Dial
- 6) System speed dial: 400 numbers (100-499)
- 7) Station speed dial: 9 numbers

Power Failure:

An optional backup battery can be installed for power outage prevention. Length of time usually depends on battery capacity. During most communication situations 2-12 Volt 10amp batteries in series can be used. Battery charger is built in.

General Description

This part provides an overview of the system equipment, including descriptions of cabinet, cards, and station instruments.

Note: The system's programmed database is changed using Three Programming Sections with 99 two-digit MODE numbers per section. Each MODE number represents a changeable feature or function parameter. The Section and Mode numbers are referenced throughout the descriptions in this document (e.g. PROG.1-37 = Section 1, Mode 37) to allow quick access to programming information when required for clarity. Instructions for using Mode numbers to change the database are contained in the Series 500 Programming Guide.

System Summary

The ATLAS EX 60 is a Digital Communication system that operates like a Key System or as a multifunctional PABX, depending on database programming. System operation is controlled by a 16-bit 8830 microprocessor. Digital switching uses CMOS technology to assure non-blocking operation.

The 8830 microprocessor performs all logical operations and passes control signals to other circuits in accordance with system demands. Microprocessors located in each Digital Phone in the system communicate with the system controller for operational control.

System and station feature operations and selected system functions are controlled by a stored program database. The database in default state is stored in on-board EPROM. The default database is copied to battery-protected RAM during system initialization. It supports a fully operational system. Values in the RAM-based data can be changed as needed.

The system can be configured 52 ports with 16 Trunks, 24 Digital stations and 4 Single-Line telephones. Regardless of capacity used the system remains non-blocking with consistent voice quality.

The system supports ATLAS 1-pair Digital keyphones and industry-standard single-line phones (with electronic ringers). One Digital Display phone is required for system programming. 64 Button Digital DSS consoles can be equipped to operate as a companion to Digital keyphones. Each console occupies one digital port.

The ATLAS Digital keyphones are available in LD40 (6-line by 20-character Display) and DT 36 / DB type button models. The DT 36 / DB type button is available with a 2-line by 16-character Display. All ATLAS Digital keyphones are headset compatible.

Equipment Summary

The Main equipment cabinet is modular in design. It houses the power supply and the MBU Unit. The power supply occupies the bottom portion of the cabinet; the MBU card occupies the remainder of the cabinet. The MBU Unit controls system operation, 4 Trunks, 8 Digital ports and 4 single-line ports. An Expansion card can be added which supports an additional 2 BRI, 4 TKU, 8 DSU and 8 SLU.

The power supply is a wired-in unit. The outputs are +5 Volts at 3amps, -28 Volts at 4amps and -60 Volts 1amp. Full control is available for a customer-supplied backup battery, including trickle-charge capabilities.

Note: SLP ring voltage is 45VAC (rms) and will not support Mechanical type ringers.

Trunk interface circuits support Loop-start trunk applications. Trunk lines connect to the MBU card through card-edge-mounted modular jacks.

Digital keyphones and Single-line telephones connect to the MBU through a card-edge-mounted RJ-11 or Quick.

Options available and supported by the system include:

- 1-programmable external music source interfaces
- 1-external page port interface
- 2-programmable external relay interfaces
- 2-serial port interfaces
- 1-connecting terminals and control circuit for backup batteries

Numbering Scheme

Station and Trunk Port numbers are fixed and cannot be changed. Station extension numbers are assigned in the default database but can be changed by system programming (PROG.2-70). Default station numbers are 10 – 45. One, two, three or four digit station numbers can be programmed. The system does not allow conflicts in station number assignments (i.e. station number 20 and station number 200), but does allow the same number to be assigned to more than one port, when this occurs only the lowest numbered port can be called on intercom.

Dial access codes are used at keyphones and single-line phones to access features. At keyphones, all features can be accessed by fixed feature buttons, programmable softkeys, or by dial access codes. The feature access codes are listed in Table A.

TABLE A
DIAL ACCESS CODES FOR IDLE STATION

DIAL ACCESS CODES	FEATURE
1-6999	Station Intercom Dialing
1-7*	Station Group call Pickup
1-7#	Page keyphone group
71 + Station No.	Call Forward All Calls
72 + Station No.	Call Forward Busy/No Answer
71* + Station No.	All Calls Follow Me
72* + Station No.	Busy/No Answer Follow Me
73 + Station Hunt Group No.	Ring all Stations in Group
739	Voice Mail Main Greeting
741 + HHMM	Daily Alarm
742 + HHMM	Once only Alarm
743 + Station No.	Message Wait activate
744	Message Wait respond
745	Answer Paging call
746 + 01-09	Personal Speed Dial
747	Do Not Disturb
748	SLP Conference
749 + Lock Code	Phone Lock
740 + Station No.	Message Wait clear
74#	Station Caller ID History
75 + Station No.	Hold Pickup
76 + 0-9	Call Park/Call Park Retrieve
77 + Trunk No.	Access Outside Line
78 + Station Hunt Group No.	Station Hunt Groups (1-8)
70 + Speed Dial Bin	System/Personal Speed Dial
70 00	Redial
70#	Redial
8	Trunk Hunt Group 8
9,91-98	Trunk Hunt Groups 1-8
0	Call Operator
*	System Call Pickup
# + 1-8	Page External Zone 1-8
#9	Page all internal

#0	Page all external
#*	Page all internal/external
1	Music over external page (#0 or #*)
#	Background music

ATLAS EX 60 Main Board Unit (MBU)

The Main KSU provides for many connections to external devices as well as for the stations and Trunks.

Connectors	Description
JR1	Serial Port 1 used for SMDR / PC Programming
JR2	Serial Port 2 used for Voice Mail Integration
JR4	Relay Interface 1 & 2 (Programmable)
JR5	External Page & Music Source 1 & 2 Interface
JRC1 , JRE1 , JRA1 , JRG1	Digital Stations Ports 1 – 8
JR6	Trunk 1 & 2 RJ14 Interface
JR7	Trunk 3 & 4 RJ14 Interface
JR8	Single Line Ports 9 – 10
JR9	Single Line Ports 11 – 12
J1	10-Pin Connector to Power Supply
J4 , J6 , J8 , J9	Connector for Station Expansion Card (8 port)
J2 , J4 , J6	Connector for Trunk Exp Card (4 line)
J11 , J12	Connector for 12 KHz / 16KHz Tone Detector unit (Note)

Note : without TDU Card should be plug in 10 pcs of mini Juper on J12.

Switches	Description
SW1 Dip 1	Not Used
SW1 Dip 2	Ignore RTS & CTS on COM1
SW1 Dip 3	Not Used
SW1 Dip 4	Not Used
SW1 Dip 5	“ON” = Pulse Dialing / “OFF” = DTMF Dialing
SW1 Dip 6	“ON” = 3 Digit ICM numbering / “OFF” = 2 Digit ICM numbering
SW1 Dip 7	“ON” = A-Law / “OFF” = μ -Law
SW1 Dip 8	Not Used

Switches	Description
SW2	Memory Back up Switch
SW3	System Reset Switch

LED	Description
LED1	Memory Back-up Battery "ON" Indicator
LED2	CPU Status (Steady Flash indicates normal operation)
LED3	Single Line Ports 9 – 12 Ring Busy status.
LED4	Monitoring RS232 Data communication.
LED5	Monitoring RS232 Data communication.
LED6	Monitoring RS232 Data communication.
LED7	Monitoring RS232 Data communication.

See Figure 1 Mother Board

Hardware Options

Backup Battery

The system power supply supports a backup battery package rated at 24 volts, 0.7 amperes/hour. A trickle-charge maintains the battery at 95% efficiency, applies system cutover to battery when facility power is removed, and provides system shutdown when battery power falls below a specified level.

External Music

Up to one (customer supplied) monaural music sources can be connected at the optional equipment terminal (JR5) located on the left side of the KSU. The connected music is available to the system only if programmed using system Programming (PROG. 3-37 and 2-75) the impedance of the music source must be 32ohms with power at approximately 100 milliwatts.

Note: An internal music source is available and is selected through system programming by default.

Note: In some circumstances there may be broadcast restrictions associated with the external music source. Check with the sources original distributor and/or the radio station for copyright and broadcast restrictions concerning background music and music-on-hold.

External Paging

The system supports a customer supplied amplifier for paging access to a single paging zone. The amplifier can be connected at the optional equipment terminal (JR5) located on the left side of the KSU. Access is provided for 8 paging zones. The output for zones 1-7 must be connected through station ports and must be assigned by system programming (PROG.3-35).

External Relays

The system supports 2 external relays for multiple functions such as station, trunk, loud-bell, Paging, Music, and Door strike control. The customer supplied optional equipment can be connected at the optional equipment terminals (JR4) located on the left side of the KSU. The contacts can be programmed (PROG.3-40 and 3-41) for normally "open" or "closed" depending on customer needs.

Caller I.D.

The system supports Caller I.D. offering Name or Number display. The caller I.D feature is programmed in the system database (PROG.1-05, 2-26 and 2-73). Caller I.D. number is reported to SMDR print-out (see Figure 4).

Voice Mail.

The system can be equipped with an optional 4 port Voice Mail Card mounted over the main MBU board. The Voice Mail connects internally to the Communications Bus via ribbon cable connected to J10 located in the lower left corner of the main MBU and the integration cable to COM2 (JR2) located on the right side of the main MBU. See Figure 1.

For programming the Voice Mail uses software ports 21-24 when configured 8 x 16 x 4 and software ports 37-40 when configured 8 x 32 x 4.

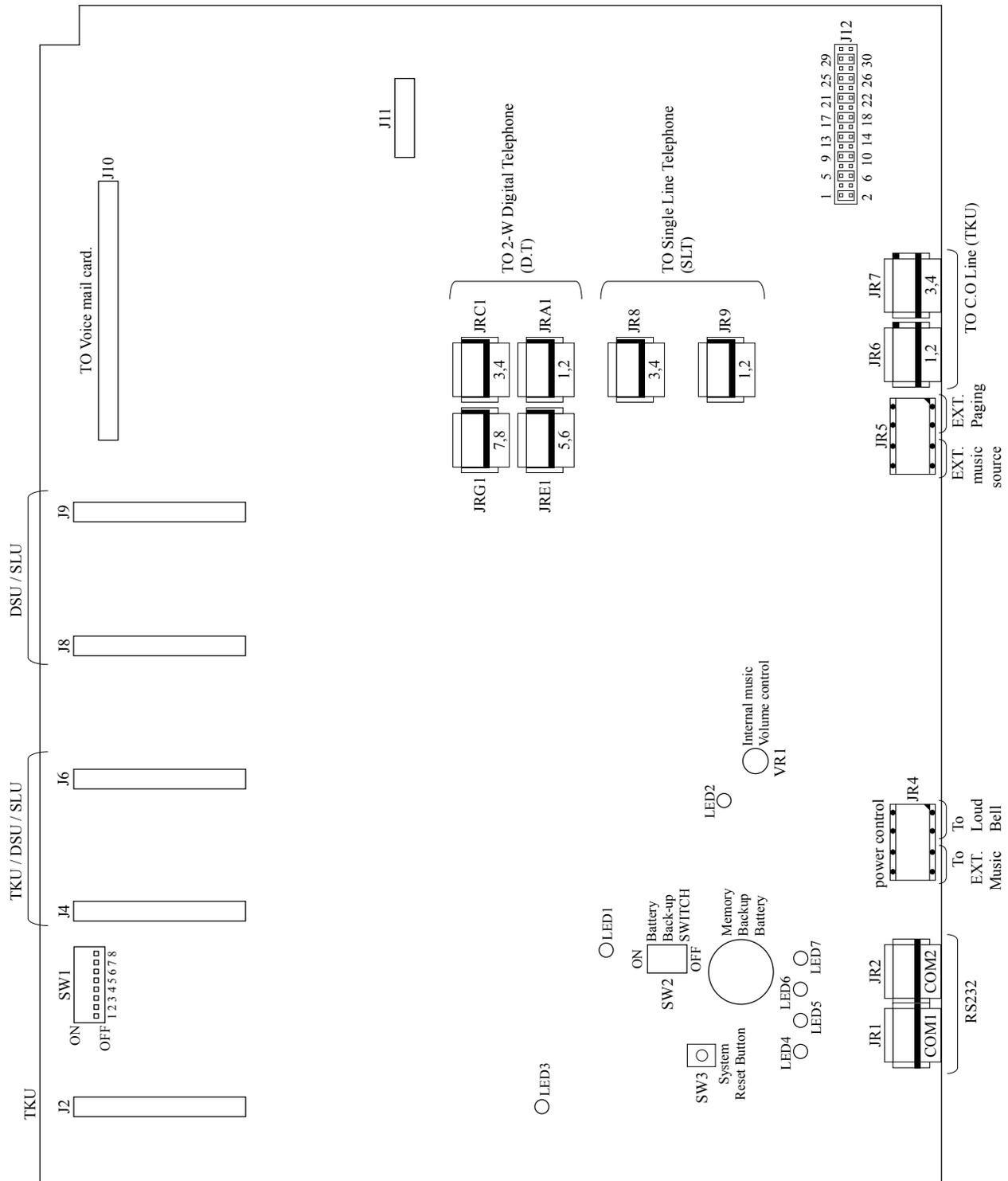


Figure 1 : MBU Card

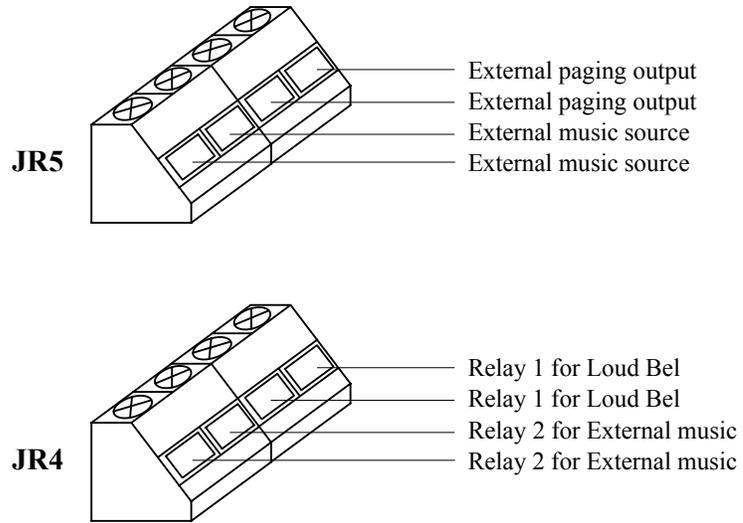


Figure 2 : Optional Equipment terminal PIN Functions

Serial Ports

The system supports 2 serial ports COM1 and COM2, COM1 is used for PC programming and SMDR (see Figure.3) and COM2 accessible only from the inside is used for Voice mail integration. They are card-edge-mounted modular jacks located on the bottom side of the cabinet. They are labeled JR1 and JR2. The distance between the data device and the common equipment can be up to 100 feet in a quiet electrical environment. Shielded cable may be required for some runs. For longer distances, a customer supplied serial extender may be used to relay the data communications between the common equipment and the data devices.

Baud rate = 2400bps; data bits = 8; stop bits = 1; parity = none.

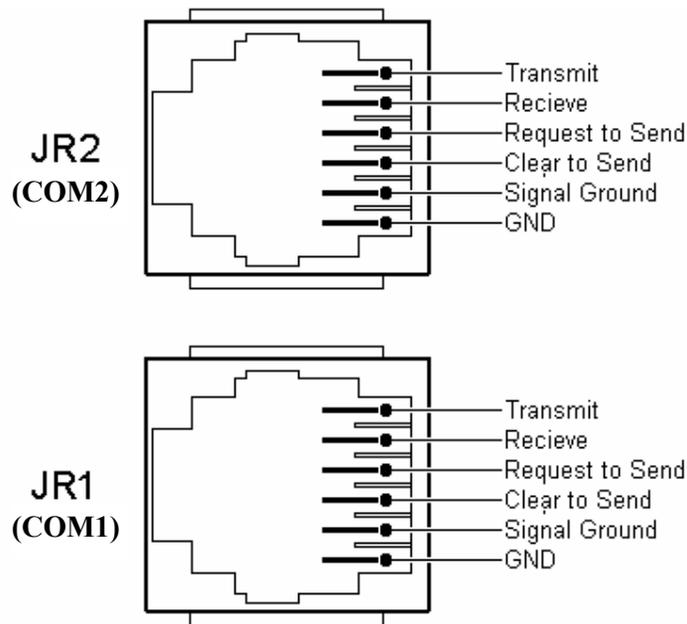


Figure 3 : Serial Port Jack Pin Functions

SMDR Printout

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ST TK TELEPHONE NO. TRF ACC.NO. DATE START DURATION RING

10 05 5156310          113                04/01 09:15 00:01:05
16 04 15618400636      04/01 09:18 00:04:56
**** 08 *****                04/01 09:37                00:12
26 01 # 5615156300      04/01 10:02 00:14:30 00:06
**** 02 # 5615156301      04/01 10:03                00:54
12 09 1305551212          254                04/01 10:18 00:04:18
17    <STATION ALARM>                04/01 13:00
    
```

COLUMN	CONTENT	EXPLANATION
1	ST	STATION NUMBER
2	TK	TRUNK NUMBER
3	TELEPHONE NO.	TELEPHONE NUMBER CALLED. *REPRESENTS AN INCOMING CALL. STATION ALRMS ARE ALSO NOTED HERE.
4	TRF	ENTRY DENOTES A TRANSFERRED CALL
5	ACC.NO.	OPTIONAL CALLER DIALED ACCOUNT CODE
6	DATE	DATE OF THE CALL RECORD- MM:DD
7	START	TIME OF DAY CALL STARTED- HH:MM
8	DURATION	LENGTH OF CALL- HH:MM:SS
9	RING	RINGING TIME FOR INCOMING CALLS- MM:SS

Explanation of Example Entries:

1. On 04/01 at 09:15 AM Station 10 seized trunk 5 and made an outside call to 5156310. The call lasted for 1 minute and 5 seconds. Before being transferred.
2. On 04/01 at 09:18 AM Station 16 seized trunk 4 and made an outside call to 15618400636. The call lasted for 4 minutes and 56 seconds.
3. At 09:37 AM an incoming call rang and was not answered. There was no Caller ID.
4. An incoming call rang on trunk 1 for 6 seconds from 5615156300 was answered by station 26. The call lasted 14 minutes and 30 seconds.
5. An incoming call rang on trunk 2 for 54 seconds from 5615156301 and went unanswered.
6. An outgoing call to 1305551212 on trunk 9 by station 12 lasted 4 minutes and 18 seconds during which time the station user entered an Account code 254.
7. At 1:00 PM a station alarm rang at Station 17.

Figure 4: SMDR Call Records and Explanations

Installation Procedures

This part contains the procedures for installing the ATLAS EX 60 Digital Business System. Precautions for personnel and equipment safety and installation prerequisites are provided before detailed instructions for installing the equipment cabinet, connecting ground, installing and wiring station cross-connect blocks, connecting Trunk lines, and installing station equipment.

Precautions

The following paragraphs explain the precautions to be observed for handling, installing, and working with system equipment and components.

Handling Static-Sensitive Devices

WARNING: The system contains static-sensitive components. Personnel who are required to handle Printed Board Assemblies (PBA's), components, or wiring must have knowledge of proper handling techniques.

The human body can easily accumulate a high voltage charge of static electricity. Precautions must be taken to prevent this charge from damaging static-sensitive components. The following are standard handling precautions for static sensitive devices:

Touch the cabinet to dissipate any stored charge immediately before removing, inserting, or otherwise handling a PBA.

Hold the PBA by its edges and avoid touching component pins or connectors.

Cover work surfaces with conductive material connected to earth ground. A ground clip connected to a static-protective shipping bag provides an adequately protective work surface.

Use flexible ground straps to continuously discharge static electricity.

Store PBA's in static-protective shipping bags.

Installing Station Wiring

DANGER: TO REDUCE RISK OF ELECTRICAL SHOCK AND PERSONAL INJURY, USE CARE WHEN INSTALLING STATION WIRING.

Observe the following precautions when installing station wiring:

Never install telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet environments.

Never touch un-insulated telephone wire or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

Connecting Power Cords

WARNING: Do not attach power supply cords to building surfaces.

The basic system is furnished with a detachable power supply cord that is configured for connecting to a branch circuit receptacle equipped with a third wire ground. The cord should be dressed for appearance and safety, but never attached to the building surface.

Site Requirements

The selection of a suitable location is essential when installing the key service unit (KSU). The area should be clean, dry, static-free, temperature controlled, and accessible only to authorized personnel.

When selecting a site, give careful consideration to the following:

Ample space must be allowed to mount the cabinet and MDF (Main Distribution Frame) and to allow for removal of the KSU cover to access assemblies and cards within the cabinet.

A well-ventilated and well-lighted area with a temperature range of 32-100° F (0-40° C) and 10%-90% relative non-condensing humidity. The area must not be exposed to direct sunlight, heat or dust. Optimal temperature range is 40-70° F.

A dedicated 110/220 Volt AC, 15 Amp, 50/60 Hz, single phase, 3 wire, and parallel blade with ground power outlet should be located within 2 metres of the KSU. Additional outlets for music source, paging amplifier, etc. as needed. The AC receptacles must be third-wire grounding type. The third-wire ground must be connected to an approved earth ground through the single-point grounding circuit at the power distribution panel.

Avoid areas that produce radio frequency interference (RFI) or electro-magnetic interference (EMI). (E.g. electric welding equipment, radio frequency transmitters, magnets, refrigerators, copy machines, microwave ovens, etc.)

Locate the KSU and stations so as to minimize cable length. All station cables must be 1-pair twisted-pair cable and must be home run. The Digital Keyphone may be wired differently.

Cabling lengths must not exceed the following:

Digital phone: using 24 gauge – 1000 feet depending upon wiring configuration.

Single-Line Telephones: using 24 gauge – 5000 feet.

The Trunk lines connect to the system through modular jacks located on the left side of the KSU. Central Office terminations should be within 6 feet of the cabinet/main distribution frame.

Make sure there is a good earth ground utilizing #12 AWG or larger standard, copper wire within (8 metres) of the KSU. A metallic COLD water pipe usually provides a reliable ground path. Carefully check that the pipe does not contain insulated joints that could isolate the ground. (The pipe must be metallic from the point of ground to the connection to the water main outside the building).

Warning: To avoid equipment damage, do not attempt to connect or operate the equipment before proper ground has been installed.

Power Surge Protector Ground

Power surge protectors must be grounded either to the approved earth ground or an equally adequate but separate grounding system. Install ground wires of the size specified by the manufacturer between the line protector devices and the earth ground connection. Be sure to connect the ground wire at a point closer to true earth ground than the AC distribution panel single-point ground wire and the chassis ground wire connections. Secure the attaching clamp.

Telephone Line Power Surge Protection

System equipment must be protected against power surges on all externally connected telephone lines. This includes protecting lines coming into the building from the telephone company, lines going out of the building to off-premises stations located in an adjacent building, and lines going into the adjacent building that houses the off-premises stations.

Unpacking and Inspecting

The following paragraphs provide directions for unpacking and inspecting the system components.

WARNING: *The system equipment contains static sensitive components. Personnel who are required to handle components or wiring must have knowledge of proper handling techniques and must have the necessary safeguard equipment for protecting static-sensitive devices. Refer to PRECAUTIONS.*

All equipment is packaged in corrugated cardboard containers. All equipment options are packaged separately in individual cartons. Each telephone is packaged separately in an individual carton. However, an outer slip or larger container may be used to group quantities of telephones.

Check all items received against the packing slip. Examine cartons for visual signs of damage. If cartons appear to be damaged, make a note of such damage on the packing slip and on the carrier way bill, if available.

Open the carton containing the system equipment. Remove the packaging material from the carton. Remove the cabinet and lay it face-up on a level work surface. Remove all packaging material. Check the exterior cabinet. Make a note of any damages.

Observing electronics equipment handling precautions, remove each piece of equipment from its shipping container. As each item is unpacked, place it on a level work surface. Remove packaging material and inspect the equipment for physical damage. Make a note of any damages.

Report all damages noted to your supplier.

Main Cabinet (KSU) Installation

When mounting the KSU, care should be taken to mount the equipment so that all cables and AC cords are neatly arranged. The KSU should not be mounted directly of masonry, concrete, or other wall surfaces subject to moisture or condensation. (Use plywood backup board when mounting on these types of surfaces). Locate the four mounting hardware screws as shown by FIGURE 6. The recommended screw size for attaching the cabinet wall mounting brackets on a 20 mm (3/4 inch) plywood backboard is 6 mm x 38 mm (# 8 x 1.5 inch) pan-head screws. The slots for hanging the cabinet are located on the back of the cabinet. The power switch and power cable should be at the lower left of the cabinet. Once the mounting plate is attached to the wall or prepared backboard, simply hang the unit on the wall.

Immediately after mounting the KSU, the system must be properly grounded. The AC line cord (green conductor) is not always a reliable earth ground, it should not be used as the required ground. There is a ground port beside the cabinet for ground wiring. Refer to Figure 5.

The AC connection to the power supply requires a parallel blade with a ground receptacle. A three to two wire isolation adapter should not be used. To ensure proper system operation, a good earth ground should be provided. In most cases, this can be provided by a metallic cold water pipe. Earth ground should be provided using 16 AWG or larger with a surge protector to provide clean unfiltered power and to protect against high voltage. The cleaner the power, the longer the system will last.

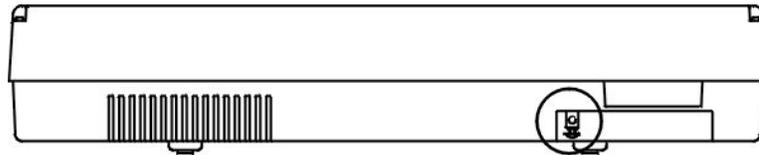


Figure 5 : GROUNGING POST

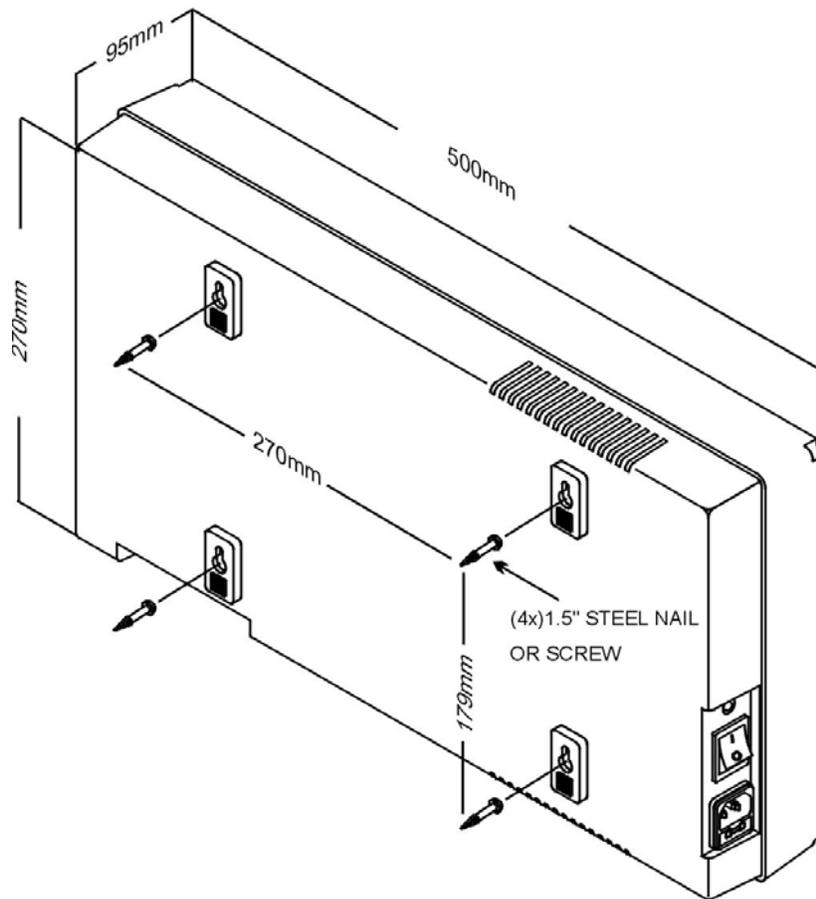


Figure 6 : HOW TO WALL MOUNTING

Installation of Cards

WARNING!! TURN OFF THE POWER BEFORE INSERT OR REMOVE CARDS!!

To insert a card:

Push lightly until the male connectors surely into the female receptacles on MB. Once the pins and receptacle are connected correctly, push on both ends simultaneously to insure good connection.

To remove a card:

Remove the card by pulling up the both ends of it simultaneously.

Trunk Connections

All trunk connections are made on the left side of the cabinet. (See Figure 1) Two lines are connected through each modular jack. Refer to Figure 7 for modular jack or Quick Connector pin functions. Install a modular line cord between each trunk terminating modular wall jack and the corresponding jack on the side of the cabinet.

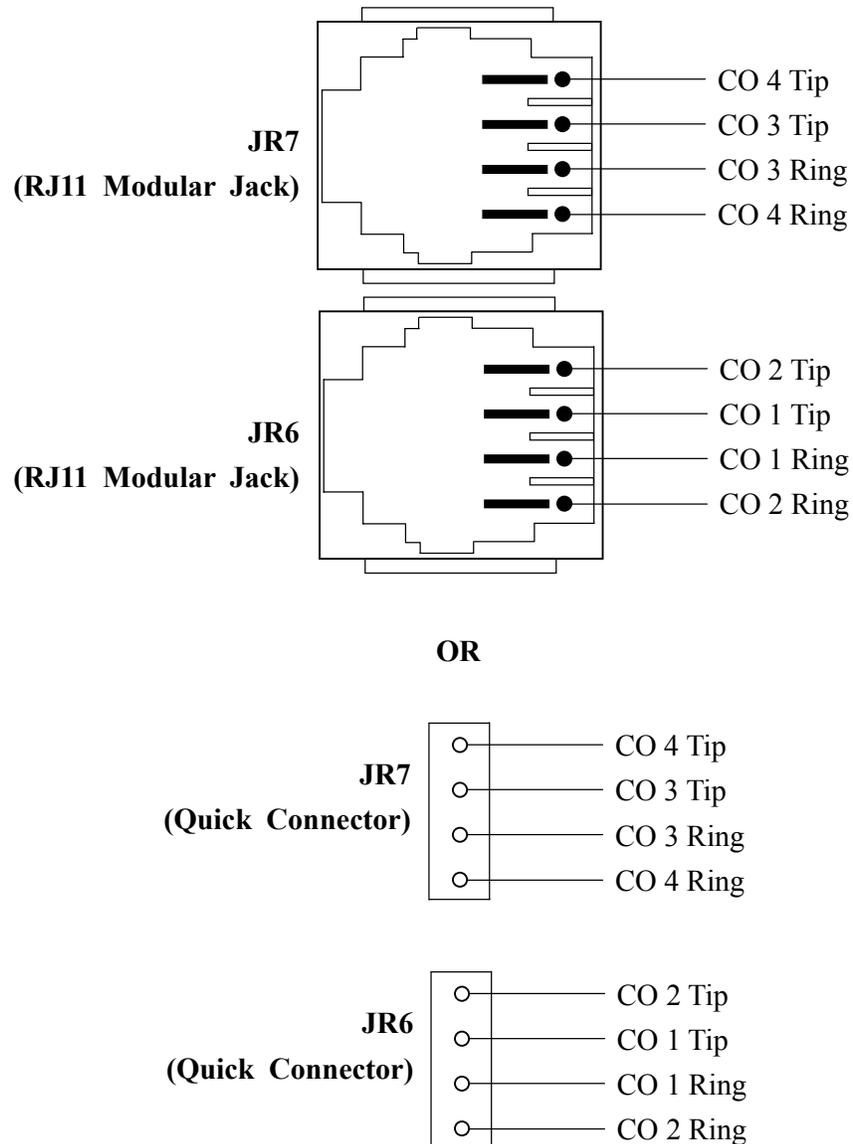


Figure 7 : Typical Trunk Connecting Jack Pin Functions

How to Use the Quick Connector

Insert the necessary wires into the guiding holes on the top of the connector. The PVC covering wires can be seen as they reach the bottom of the guiding holes. Press the quick connector from both sides, then the wires will be clipped and stripped by the blades inside. Try to pull the wires out to make sure that they are fixed and attached. Please refer to FIGURE 8.

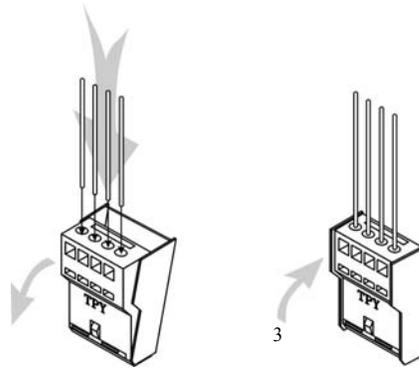
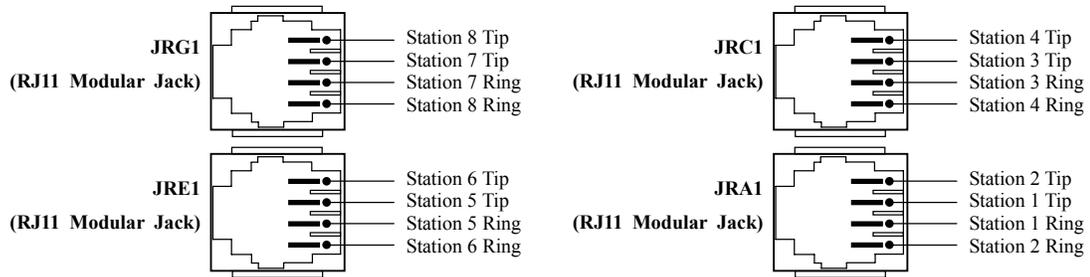


Figure 8 : QUICK CONNECTOR



OR

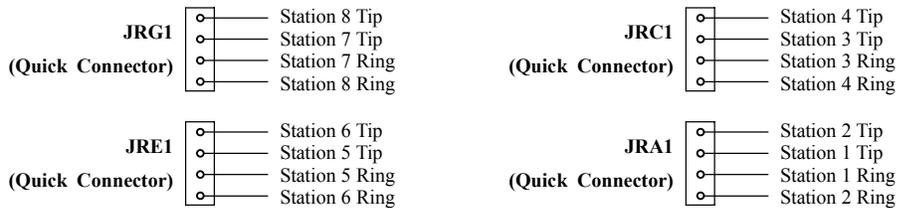


Figure 9 : Typical Station Connecting Jack Pin Functions

Single-line Phone Wiring

Each quick connector supports either one Keyphone or one single-line phone. Single-line phones can use a cable length of up to 1500m (5000 feet) using 24 gauge cable. As to connect a single-line phone, only to connect the two pins, TIP and RING. Please refer to Figure 9.

Keyphone Wiring

All stations are lines run to common 66 type connection blocks. Keyphones require 1 pair industry standard twisted cable. The maximum cable length is 300m (1000 feet) when using 24 gauge wire. Please refer to Figure 9.

CAUTION !!!

- *Never* install telephone wiring during lightning storm.
- *Never* install telephone jacks in wet locations unless the jack is specifically designed for *wet* locations.
- *Never* touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use **CAUTION** when installing or modifying telephone line.
- ***Some guidelines for running station cable:***
- **AVOID** cable runs parallel to fluorescent light fixtures or AC lines not in conduit. If these obstacles are unavoidable. Run the cable across them at right angles.
- **DO NOT** run station cables inside electrical conduit already occupied by AC power cable.
- **DO NOT** run station cables near equipment with electric motors or past strong magnetic fields. (copy machines, heavy motors, welding equipment, etc)
- **DO NOT** place station cables where they can be stepped on, or rolled over by office chairs or desks.

Installing the Keyphones

1. Unpack and inspect each Keyphone for damage. Along with Keyphone, the box should contain a 1.8m (5.9 feet) line cord, a coiled handset cord and a handset.
2. With the **KSU** AC power on, check for the correct voltage (24-Volts) across the black and yellow terminals on each modular jack assembly.
3. Install the Keyphones by plugging the 1.8m (5.9 feet) base cord into the back of the Keyphone and also into the modular jack assembly in the wall.

Wall Mount a Keyphone

The base plate is mounted by attaching two screws to the base of the unit. Once secured, drive a #8 pan-head screw (or proper hardware for the wall) into the center of each mounting hole marking. The head of the screw should protrude approximately 6 to 12 mm (0.2 to 0.4 inch).

Mount the Keyphone on the wall. Adjust the screws if necessary to ensure that the Keyphone is securely mounted, and adjust the handset clip. For a clear demonstration, please refer to FIGURES 10 & 11.

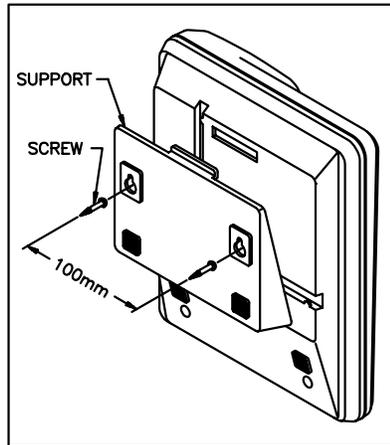


Figure 10 : WALL MOUNT THE KEYPHONE

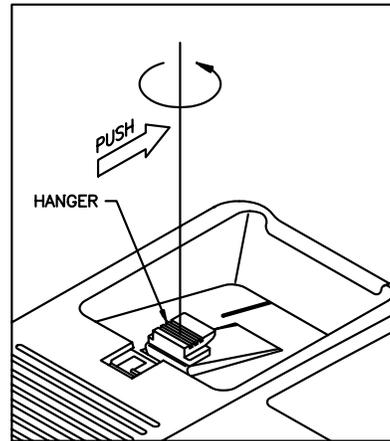


Figure 11 : ADJUST THE CLIP

DSS Installation

The DSS unit requires a digital phone port just as the digital phone does. Observe Dipswitch settings on bottom of DSS.

The DSS is always installed in the next highest physical digital phone port from the phone that will work with it. (E.g. Digital phone port11 / DSS must be port 12)

It is possible to install more than one DSS with one digital phone. (E.g. If Digital phone is port 23 / DSS (1) must be port 24, DSS (2) must be port 25)

Single Line Telephone Cable Length



Figure 12: Single Line Telephone cable length

Digital Phone Cable Length



Figure 13: Digital Phone cable length

BATU UNIT

The BATU Unit provides the capability to connect external batteries to the system to provide for complete system operation in the event of local power failure. Attach batteries (24 VDC) to the BATU Unit at the appropriate terminals. (See Figure 19) The system applies a trickle charge to the battery when it is not in use.

Keep the battery(s) dry and clean. Avoid damp wet areas or areas where the battery may be easily damaged. Wires should run from the battery(s) to the terminals on the BATU Unit. When connecting to the BATU, pay particular attention to matching the positive and negative connections. Improper connection will damage the power supply. When operating from the battery, the system will automatically cut off the power supply from the battery when the voltage gets too low, so that the battery can be recharged.

CAUTION!!!! To reduce the risk of fire or injury please note the following:

Do not dispose of the battery(s) in a fire. The cell may explode. Check with local codes for special disposal instructions.

Do not open or mutilate the battery(s). Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.

Exercise care in handling the battery(s) in order not to short the battery with conducting materials such as rings, bracelets and keys. The battery may overheat and cause burns.

Observe proper polarity orientation between the battery(s) and BATU Unit.

Do not mix battery(s) of different sizes or from different manufacturers in this product.

The length of time system operation is maintained under battery power depends on battery capacity. Typical system support for the 24 Volt battery(s) is approximately one hour.

TKU (Trunk Unit)

The system provides 3 slots for trunk interface card. Each TKU contains 4 analogue trunk interface circuits for loop-start applications. It supports both DTMF and Pulse dialing. The female receptacles on the back of TKU are provided for TDU card.

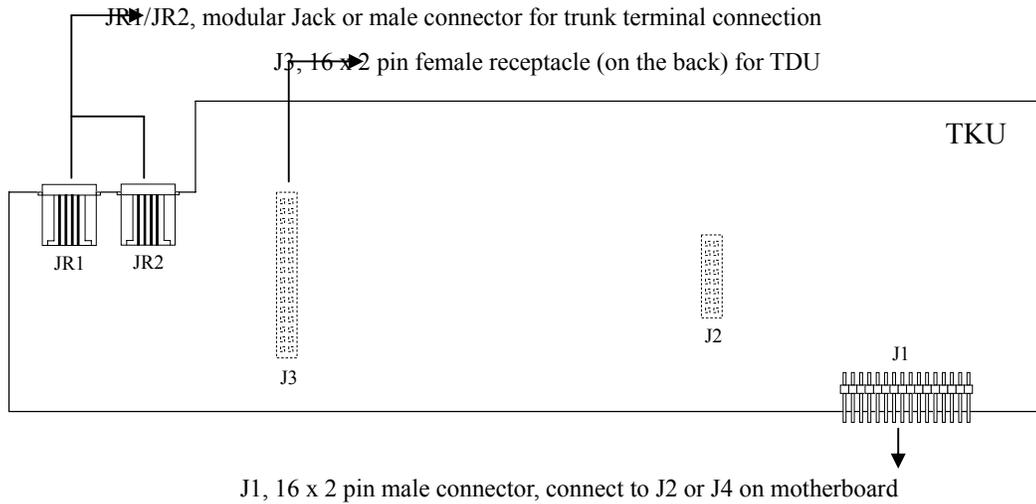


Figure 14 : TKU

The male connector on TKU should be plugged with jumpers as the Figure below if the TDU is not installed.

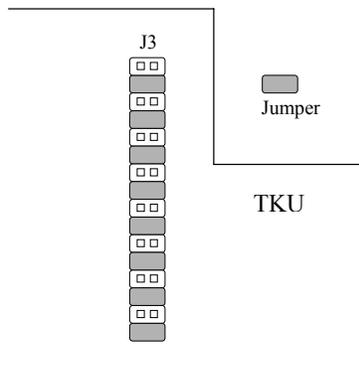


Figure 15 : JUMPERS ON TKU

TDU (Tone Detection Unit)

The TDU which adheres on TKU is used to detect 12 / 16 KHz signal sent from the Central Office. Each TDU serves 4 trunk lines.

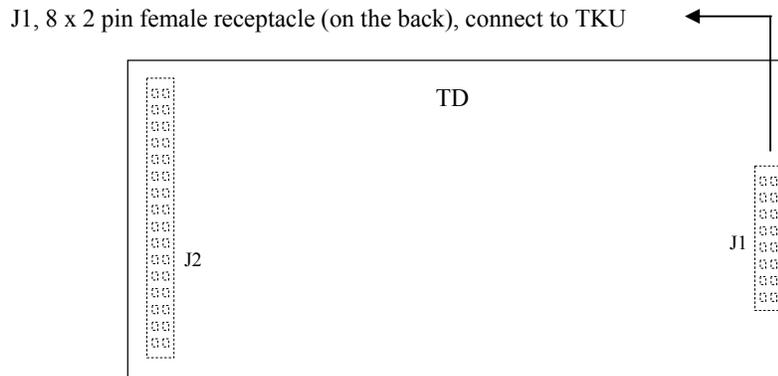


Figure 16 : TDU

IU (ISDN Interface Unit)

The IU provides 2 BRI interface circuits for voice calls. Each BRI has two B plus a D channels; in another word, each IU supports 4 trunk lines. The users who own ISDN BRI can access some special features such as, **CLIP** (Calling Line Identification Presentation) / **CLIR** (Calling Line Identification Restriction), **COLP** (COnnected Line identification Presentation) / **COLR** (COnnected Line identification Restriction), **MSN** (Multiple Subscribed Number), **DDI** (Direct Dial Inward), charging supply service,...,etc. However, some features are restricted from being used in some areas. Please contact your local Central Office for detailed information.

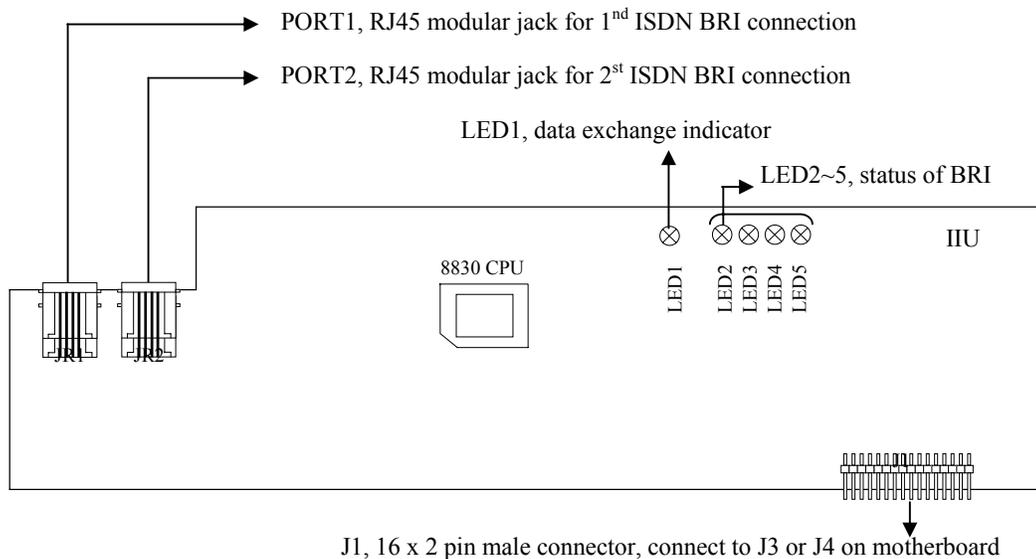


Figure 17 : IU

DSU (Digital Station Unit)

The system provides 4 slots for DSU / SLU interface card. Each DSU provides 8 keyphone interface circuits for proprietary keyphone connections. The interface card transmits and receives digital signals to the keyphones. A current limiting circuit protects against accidental shorts among the connectors during the telephone installation.

SLU (Single-Line phone Unit)

The SLU provides 8 single-line phone interface circuits.

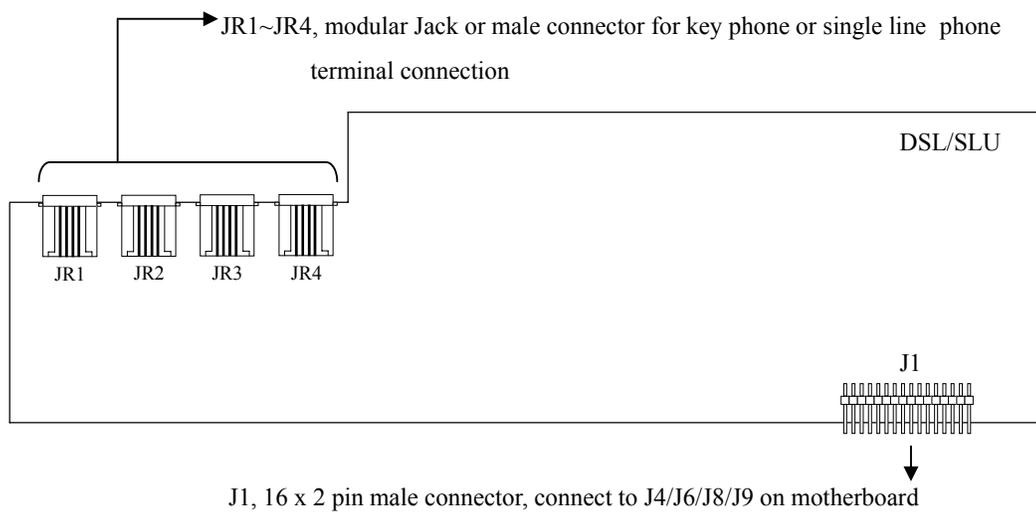


Figure 18 : DSU/SLU

ATLAS EX 60 System Power Supply

ATLAS EX 60 PSU

The ATLAS EX 60 psu Unit is located on the Cabinet and provides all system voltages. All voltages are fused on the ATLAS EX 60 psu.

LED	FUSE	VOLTAGE	DESCRIPTION
2	F2	-28.0 VDC	Key phone and SLP operating Voltage
5	F4	+5.0 VDC	Processor Voltage
3	F3	-70.0 VDC	SLP Ring Supply
4	F5	-24.0 VDC	External Battery Fuse
□	F1	-24.0 VDC	Battery Output Fuse
1	—	—	AC input

Backup Battery

The system power supply supports a backup battery package rated at 24 volts, 0.7amperes/hour. A trickle-charge maintains the battery at 95% efficiency, applies system cutover to battery when facility power is removed, and provides system shutdown when battery power falls below a specified level.

Attach batteries (24VDC) to the appropriate terminals. See Figure 19.

Keep the battery(s) dry and clean. Avoid damp wet areas or areas where the battery may be easily damaged. Wires should run from the battery(s) to the terminals on the ATLAS EX 60 PSU (pay particular attention to matching the positive connections).

Improper connection will damage the power supply. When operating from the battery, the system will automatically cut off the power supply from the battery when the voltage gets too low, so that the battery can be recharged.

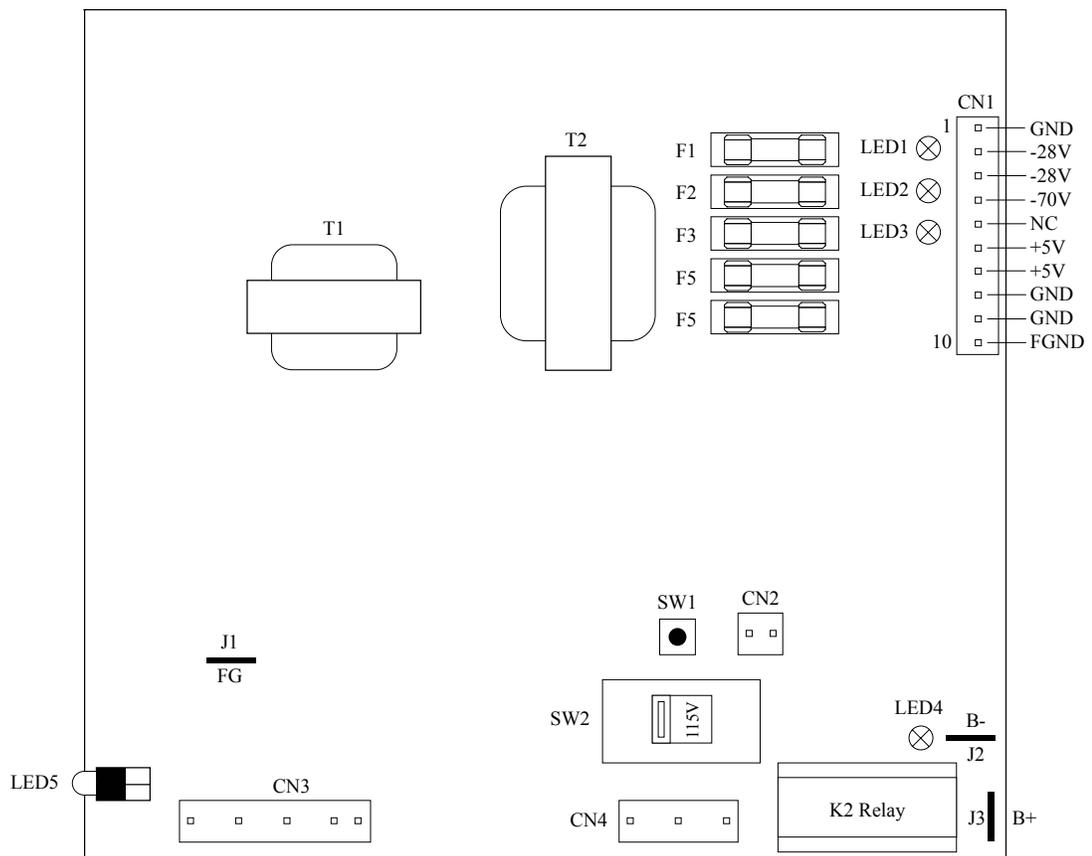


Figure 19 : ATLAS EX 60 System power supply

Switches/Connections

SW1	External Battery system boot switch
CN2	AC output on Transfermer
CN3	AC input
CN1	DC power cable**
CN4	AC input on Transfermer
J2 , J3	External Battery Connections
J1	Ground
SW2	AC Power switch interface (115 VAC or 230 VAC)

****Warning** – This cable is polarity sensitive and MUST NOT be REVERSED!!

CAUTION!!! To reduce the risk of or injury please note the following:

Do not dispose of the battery (s) in a fire. The cell may explode. Check with local codes for special disposal instructions.

Do not open or mutilate the battery(s). Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.

Exercise care in handling the battery(s) in order not to short the battery with conducting materials such as rings, bracelets and keys. The battery may overheat and cause burns.

Observe proper polarity orientation between the battery(s) and ATLAS EX 60 PSU.

Do not mix battery(s) of different sizes or from different manufacturers in this product.

The length of time system operation is maintained under battery power depends on battery capacity. Typical system support for the 24 Volt battery(s) is approximately one hour.

MEMORY BACKUP SWITCH

- ◆ The memory backup switch (SW2) is located on the bottom left side of the MBU Card (See Figure 1.)

Turning this switch ON will insure that the KSU will retain all stored programming in the event of a power outage.

- ◆ **ONCE THE SYSTEM IS INSTALLED, SET THE MEMORY BACKUP SWITCH TO THE ON POSITION** to prevent the loss of stored information.
- ◆ When the Memory Back-up switch is ON, the LED on the MBU Card (LED 1) will be lit.

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