
EQUIPMENT SETUP GUIDE FOR IST-2 LINE EXPANSION (ILE) UNIT



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Telecore, Inc. is a telecommunications research and development company. The company's unique vision supports both fundamental research and commercialization activities within one organization, funded by both private resources and programs. The company will achieve its long-term mission -- to be one of the world's telecommunications leaders -- by building on its track record of outstanding technical successes.

Telecore's products will produce a fundamental change in communications, in much the same way that the integrated circuit revolutionized data processing. Telecore's blend of world-class researchers and product developers place it at the forefront of the telecommunications industry.

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READ THIS FIRST

Safety Information

Caution

ELECTRICAL SHOCK HAZARD. This equipment is to be serviced by trained personnel only.

DANGER/HAZARDOUS VOLTAGES INSIDE. Voltage or current hazard sufficient to cause shock.

To avoid the risk of electrical shock, do not disassemble the unit.

There are no user serviceable parts inside. Refer servicing to qualified service personnel. Additionally, opening the unit, changing or modifying the equipment shall void the warranty. If a failure occurs, please return through the RMA supply chain.

At the first sign of smoke, an unusual smell or other problems indicating breakdown, disconnect external power cords. Should any solid or liquid fall into the unit, disconnect the unit and have the unit professionally checked before operating the unit again. Continued use risks damage to the unit, fire and possible electrical shock.

Ventilation openings must not be blocked or covered. Air intake and exhaust openings are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating. Clean as necessary using a dry, lint-free cloth to prevent blockage.

FCC COMPLIANCE

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that any changes or modifications not expressly approved by Telecore could void the user's authority to operate the equipment.

The equipment is supplied with two RS-232 serial interface cables, one for connection to an IST-2 and the other for connection to another ILE. Additionally the unit is supplied with an external power supply module and an AC power cord. These accessories must be used in operations of the phone equipment for continued FCC compliance.

Product Description

The IST-2 Line Expansion (ILE) unit is a 50-button expansion panel used in conjunction with an IST-2 to increase the number of line buttons available to IST-2 users. A single IST-2 will support up to 3 ILEs for a total of 200 line buttons. The ILE lines will provide the same functionality as IST-2 line buttons.

The first ILE is connected to the IST-2 via the Stuart Stamping connector to mini B USB connector cable; a second ILE is connected to the first ILE using the mini B USB connector to mini B USB connector cable. The third ILE uses the same daisy chain cabling to connect to the second ILE.

This ILE Equipment Setup Guide refers to the ILE as an expansion unit for the Integrated Services Telephone 2 (IST-2). The IST-2 User's Guide is Raytheon Part Number TM-03-006-UG.

Equipment Characteristics

Table 1 lists the physical, environmental and electrical characteristics of the ILE. The physical dimensions include the desk stand.

Table 1 ILE Characteristics

| Characteristic | Specification |
|---------------------------|----------------------------|
| Physical: | |
| Height | 4.25 inches |
| Width | 7.8 inches |
| Depth | 9.25 inches |
| Weight | 7 lbs |
| Environmental: | |
| Operating Temperature | 10 to 50 degrees C |
| Non-operating Temperature | -40 to 70 degrees C |
| Humidity | 10 to 90 %, non-condensing |
| Cooling | Ambient air |
| Electrical: | |
| AC input voltage | 100-240 VAC, 50/60 Hz |
| AC input power | 7 Watts, maximum |

Installation

The ILE may be either desk mounted or wall mounted with its IST-2 phone using a reversible stand. The stand has three mounting holes for wall mounting. The ILE comes equipped with an adjoining plate that allows the ILE to be attached to the IST-2 or another ILE. As shipped, the plate is attached with two screws to one side of the ILE. The ILE has two serial RS232 interfaces, allowing multiple ILEs to be connected via daisy chain cabling to a given IST-2. The ILE comes equipped with two short RS232 cables, one cable having Stuart Stamping connector on one end and mini B USB connector on the other end for connection of the ILE to the IST-2 and a second cable having mini B USB connectors on both ends for connection of the ILE to another ILE.

The ILE incorporates optical isolation on its primary RS232 serial interface, allowing the ILE, a Black device powered from Black AC power, to connect to the IST-2 J4 Red data port for its serial interface.

Each ILE comes equipped with its external power supply module and AC power cord. The power supply module has an attached DC cable that connects to J1 of the ILE unit. Figure 1 below illustrates the connection of three ILEs to the IST-2. The three ILEs are daisy-chained together via the supplied short RS232 cables.

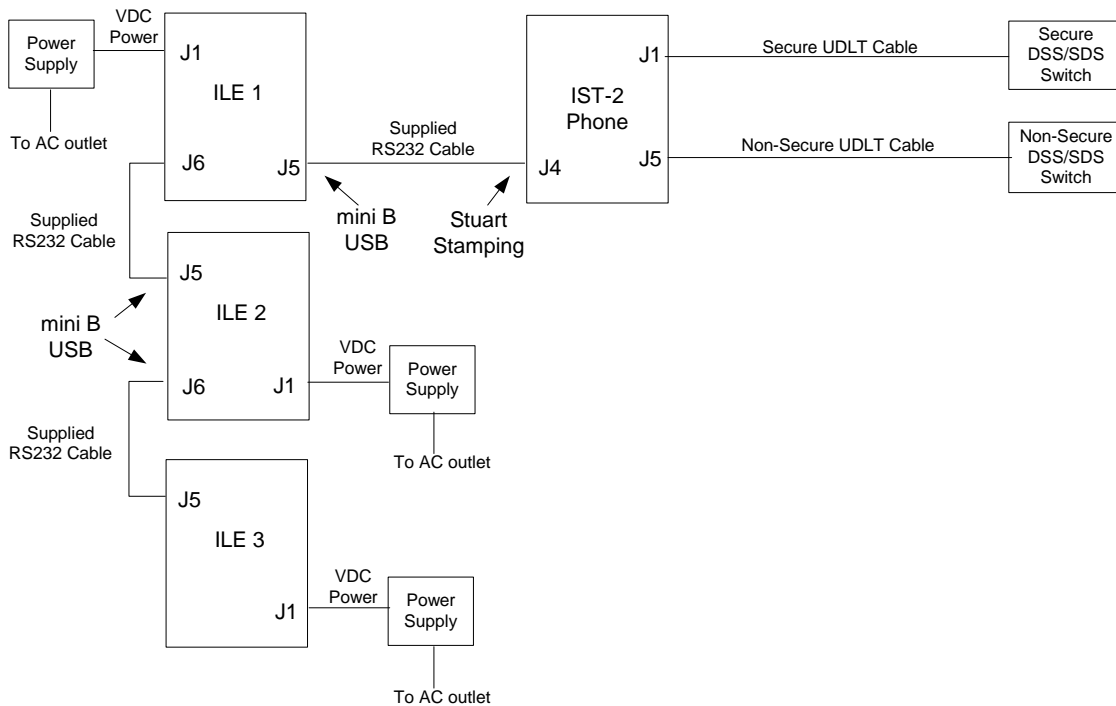


Figure 1 ILE Connection Diagram

Connectors/Pinout

Table 2 below lists the ILE connectors with associated part number and manufacturer. Connector reference designators are identified on the bottom of the unit. Connectors J2, J3, J4 and J7 are not used for the current application. Connector J1 is used for DC power and connectors J5 and J6 are used for the connection of ILE units to the IST-2 as shown in Figure 1.

Table 2 ILE Connectors

| Ref | Description | Part Number | Manufacturer |
|-----|-------------------------------|----------------------|--------------|
| J1 | Primary Power | KPJ-4S-S | KYCON |
| J2 | VGA (Analog) - Not Used | 1-788624-1 | AMP |
| J3 | Primary Ethernet - Not Used | JFM24011-0101 | MIDCOM |
| J4 | Secondary Ethernet – Not Used | JFM24011-0101 | MIDCOM |
| J5 | RS-232 (Isolated) | KMB-SMT-5S-S-30TR | KYCON |
| J6 | RS-232 (Secondary) | KMB-SMT-5S-S-30TR | KYCON |
| J7 | USB Host – Not Used | 896-30-004-00-000000 | MIL-MAX |

Table 3 J1 Connector I/O Descriptions

| Connector-Pin | Signal Name | I/O | Comment |
|---------------|-------------|-----|------------------------------------|
| J1-1 | 12V | I | 12V Power (used for LCD Backlight) |
| J1-2 | 5V | I | Primary 5V power |
| J1-3 | GND | - | GND |
| J1-4 | GND | - | GND |

Table 4 J5 Connector I/O Descriptions

| Connector-Pin | Signal Name | I/O | Comment |
|---------------|-----------------|-----|--|
| J5-1 | 5V Power In | I | 5V Power Input (approximately 25mW Power Required) |
| J5-2 | Primary TX Data | O | RS-232 Level Serial Data Output |
| J5-3 | Primary RX Data | I | RS-232 Level Serial Data Input |
| J5-4 | n/c | | No connect |
| J5-5 | 5V Return | - | 5V Power Input Return |

Table 5 J6 Connector I/O Descriptions

| Connector-Pin | Signal Name | I/O | Comment |
|---------------|-------------------|-----|-----------------------------------|
| J6-1 | 5V Power Out | O | 5V Power Output (fused at 500 mA) |
| J6-2 | Secondary RX Data | I | RS-232 Level Serial Data Input |
| J6-3 | Secondary TX Data | O | RS-232 Level Serial Data Output |
| J6-4 | n/c | | No connect |
| J6-5 | 5V Return | - | 5V Power Input Return |

ILE Power Up Self Tests

When the ILE is powered up, the unit will initiate internal diagnostic tests—self-tests. The unit will perform memory checks plus cycle through a series of line button LED tests. The ILE performs a RAM and Flash memory self test, temporarily displaying the Pass/Fail results using the LEDs of the bottom two line buttons of the left-most column. The bottom line button is for the results of the Flash memory while the second from the bottom is for results of the RAM memory. Both red and green LEDs will temporarily come on and then the Red LED will go off, indicating a pass result. Prior to displaying the RAM/flash memory test results the ILE will cycle through multiple iterations of line button LED up/down illumination patterns. This is part of the power up self-test. At the conclusion of the LED tests, all LEDs will flash one last time and then extinguish, indicating that the unit is now ready for normal operations.

ILE Operations

The ILE simply provides additional line buttons for the IST-2. All line button functionalities of the IST-2 are extended to the ILE. IST-2 line assignments (SDNs, hotlines, features keys) are received from the Red and/or Black UDLT interfaces from the DSS/SDS switches. The switches can assign up to 200 lines. The first 50 line assignments will appear on the IST-2. The lines assignments 51 through 100 will appear on the ILE connect to the IST-2. Lines 101 through 150 will appear on ILE 2 while lines 151 through 200 will be assigned to ILE 3.

Warranty Terms and Conditions

Telecore, Inc. provides a manufacturer's warranty that for a period of ninety days commencing on date of shipment: Goods are and will be free from defects in design, material, and workmanship; will conform to and perform in accordance with the Specifications, if any; that it will convey good and valid title to all Goods; and that all Goods are being provided free and clear of any and all liens and encumbrances. This warranty will survive inspection, acceptance, and payment. This warranty shall be null and void in the event the Buyer or any third party attempts to repair or alter the Goods in any way without Telecore, Inc. advanced written authorization, or in the event the Goods are misused, including termination of non-compliant third party equipment on Telecore's interfaces, or damaged by Buyer, or shipped to any country other than that originally specified in Buyer's Purchase Order. Goods not meeting this warranty will be promptly repaired or replaced, at Telecore's option, upon return to Telecore's facility freight prepaid; provided, however, that Buyer has first obtained a return materials authorization number ("RMA Number") from Telecore authorizing such return. The RMA Number shall be placed on the exterior packaging of all returns. Telecore will pay shipping costs

to return repaired or replacement Goods to Buyer. THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF TITLE, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE HOWSOEVER ARISING.

Shipping Return Address

Equipment will be shipped to the following Supplier address as directed by the Supplier's Customer Service Department at the time the RMA number is assigned:

ADDRESS:

Telecore Inc
1800 North Glenville Dr.
Suite 116
Richardson, TX 75081-1953
ATTENTION: Customer Service