ALERT GEOMATICS

A division of Xeos Technologies Inc.

Xi-100b User Manual

GLOBAL SATELLITE TRANSCEIVER

Version 4.2

April 2022

Shipped From

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Specifics

This manual version is written with respect to firmware version 6755. If you wish to acquire the latest firmware for your device, contact support@xeostech.com

Version History

Version No.	Date	Description
1.0	Nov 2011	Original Document
2.0	Aug 2014	Updated format and technical specification
2.1	Feb 2015	Update to connection and command information
3.0	May 2014	Format Revision & RUDICS information
3.2	Nov 2017	Document Overhaul
4.0	Sept 2018	Content overhaul, RUDICS Tunnel information, Cable drawings
4.1	Apr 2019	Edited XeosOnline RUDICS setup section
4.2	Apr 2022	Fixed Gateway IP command; misc minor changes

Regular checks for the latest manual are suggested. Be sure to check Alert Geomatics' manuals page to compare versions and download the latest version.

Table of Contents

Shipping Contents

The Xi-100b is normally shipped with the following items:

- Xi-100b Remote Monitoring System
- Xi-100b to Peripheral Device Communications Cable (Type depends on user application)
- Xi-100b Power Cable

Please note that special orders may differ from this list. Please refer to your packing list for more information or call 1-902-444-7650.

General Description

The Xi-100b project has been designed as a low power, two-way satellite telemetry system for deployment at remote stations in harsh environments. This project is made up of two parts:

- A device capable of sending data packets, for state of health, and data records.
- A RUDICS tunnel for a direct IP connection to remote devices through XeosOnline.

XeosOnline is also designed to easily send commands and remotely configure Xi-100b devices, retrieve system status and data messages on demand, and configure and maintain RUDICS tunnel configurations.

The main design criteria for the Xi-100b were low power and reliable operation while in the harsh Antarctic environment. The Xi-100b implements remote programmability, and heating capabilities within a rugged casing, capable of withstanding the extreme conditions of the polar regions.

See www.xeostech.com for details or call (902) 444-7650.

Operating Instructions

Setting up Your Iridium Account

The Xi-100b can be activated on several different Iridium account types. For more information about the best choice for your application, please contact activations@xeostech.com.

SBD

If the best choice is to use the Iridium satellite system's Short Burst Data (SBD) service, Xeos Technologies Inc. is an Iridium Value Added Reseller capable of providing this type of account.

The SBD service is a global, two-way, real-time, email-based data delivery service that has a maximum outbound (from Xi-100b) message size of 1960 bytes and a maximum inbound (to Xi-100b) message size of 254 bytes.

Setting up service requires the International Mobile Equipment Identity (IMEI) number. The 9522B modem has a unique IMEI number that must be registered with the preferred service provider. Xeos will make these numbers available as product is delivered.

Each IMEI number is capable of being associated with up to five (5) unique destinations; this may vary between service providers. When registering your IMEI, please provide the service provider with the temporary Xeos testing account email address:

xeosbeaconb@gmail.com

Setting up this email address allows for better technical support during the initial learning period for the product. Once service is activated, please notify the technical support team.

While any email application can be used to send and receive messages to the Xi-100b, XeosOnline is the easiest way to manage and monitor multiple devices. The messages contain various types of information and XeosOnline presents that information in a human-readable format.

RUDICS

If the best choice is to use a RUDICS tunnel, please contact Xeos for assistance in setting up and managing a RUDICS tunnel if you do not already have one established. It should be noted that the Xi-100b cannot initiate RUDICS connections independently; SBD commands must be sent to the device while it is in the field to begin RUDICS connections. As a consequence, an SBD plan is required when using RUDICS service with this device.

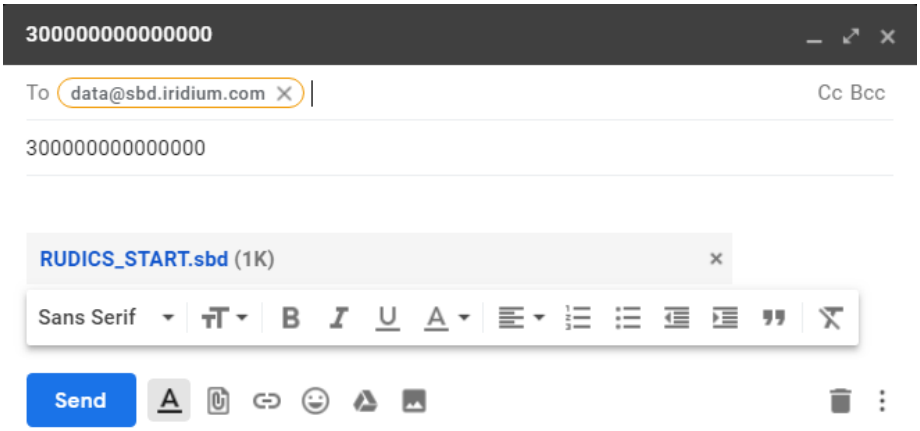
Communicating with the Xi-100b

Special email commands are used to communicate with the Xi-100b to configure settings and take specific actions. These commands are sent as email attachments, but can alternatively be sent via XeosOnline. All commands are given 'over the air' and the Xi-100b's antenna must have a good view of the sky to receive these commands.

Attaching Email Command Files

All command messages must be sent to the following email address:

data@sbd.iridium.com



- Messages must have only the unique IMEI number of the Xi-100b in the subject line
- Command files must be sent to Xi-100b as an attachment to a regular email message
- Text in the body of the message will be ignored
- Your message is sent to the Iridium Gateway in Arizona, USA

A confirmation is immediately returned from the Gateway to let you know that your message has been received and is in the queue. This message is received from the address:

sbdservice@sbd.iridium.com

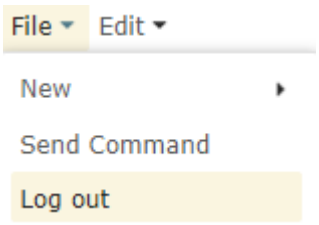
Note: The Iridium gateway uses separate email addresses for commands and responses.

Sending Commands Using XeosOnline™

Before using XeosOnline™ make sure that your account has been set up and your device added to your organization. Contact activations@xeostech.com for more information.

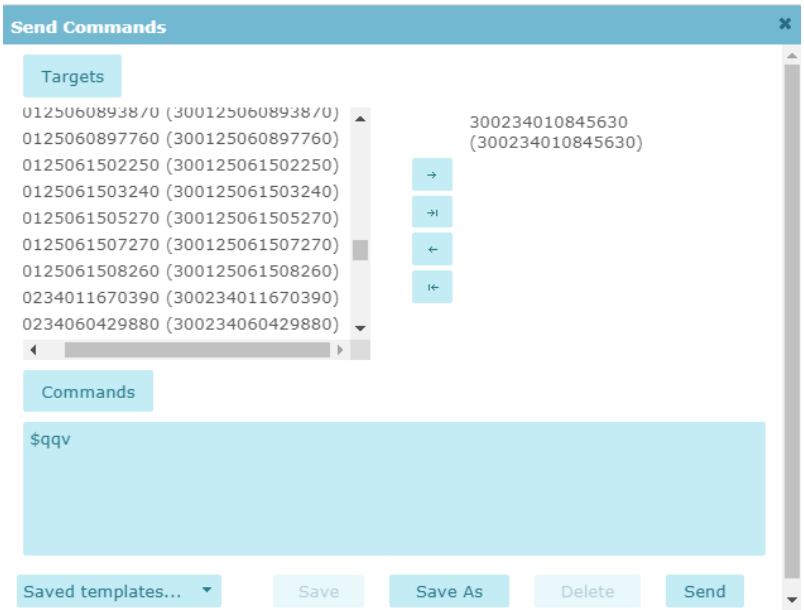
Setting up to Send

Navigate to the Send Command window.
From the Home Tab, choose **File > Send Command**



Select the units you wish to target with commands and move them over to the right-hand target list using the -> button. Type your command(s) into the command box and press send.

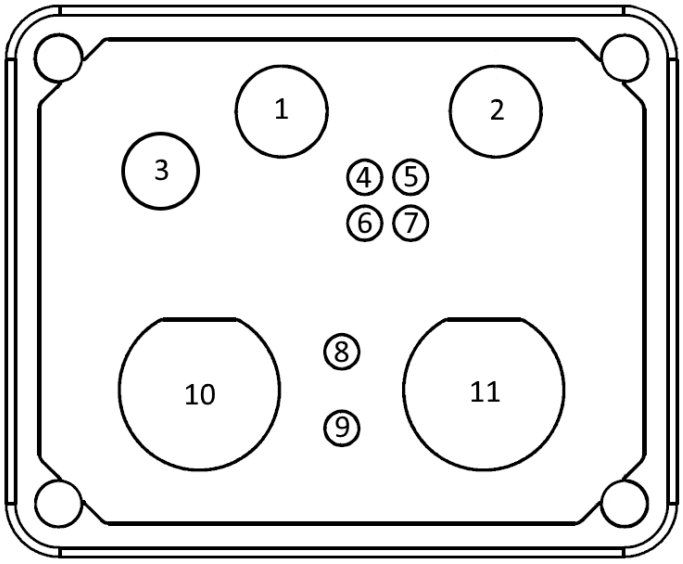
Remember to include the dollar sign (**$**) ahead of each command and enter each command on a separate line. Outgoing messages will appear in the Message Log for the commanded device and read in by the Xi-100b on its next Iridium interval.



Hardware

Front Panel

The front panel of the Xi-100b is used for all external connections and visual representation of various self-tests available.



Num.	Name	Description
1	DAS Test Button	Pressing the DAS Test button performs a test which indicates whether the Ethernet/Serial connection to the data logger is functioning properly
2	SAT Test Button	Pressing the SAT Test button performs a test which indicates whether the Xi-100b can communicate with the Iridium Satellite Network
3	Satellite Antenna (TNC)	Connection for an external Iridium Antenna
4	DAS OK LED	Indicates whether the DAS test has passed or failed
5	SAT OK LED	Indicates whether the SAT test has passed or failed
6	Mdm OK LED	Indicates whether the automatic modem test has passed or failed
7	Sensor OK LED	Indicates whether the automatic external sensor test has passed or failed
8	Power LED	Illuminates if power is detected in the Xi-100b during start-up
9	Reverse Power LED	This light will only illuminate if the polarity of power to the Xi-100b is incorrect
10	Power/External Sensor	The power cable provided with the Xi-100b connects here
11	Serial/Ethernet Interface	The serial or Ethernet connected data logger connects to here

SIM Card

With the Xi-100b, a SIM card activated on the Iridium network is **required** for Iridium operation. With SBD only devices, a "Register Only" SIM is sufficient. For RUDICS service, the SIM must be activated with that level of operation.

In either case, the SIM must be installed in the underside of the 9522B modem before using the Xi-100b.

Testing the Xi-100b before Deployment

1. Connect a Satellite antenna to the unit (make sure the antenna has clear view of the sky)
2. Connect the data cable to both the Xi-100b and the data logger.
3. Connect the Power Cable to the Xi-100b and apply 12VDC to the red and black leads of the cable

If the power anode/cathode poles are reversed, the unit will not power up and the Reverse Polarity LED will light. Correct the polarity if this occurs.

After power is connected, the **Power LED** and the **MDM OK LED** will start blinking. After about one minute, the **Mdm OK LED** should stop blinking and stay solid. This means that the internal modem diagnostic has finished, and you are now ready to test the modem for satellite communication.

If the Mdm OK LED stops blinking and then goes out, there is a problem with either the modem, or the connection between the modem and the main circuit board. Contact Xeos Technologies for more assistance if this happens.

4. Press the **SAT** test button **once**.

After pressing the SAT test button, the **SAT OK** LED will begin blinking. The device will attempt to contact the Iridium network. After about one minute, the **SAT OK** light will stop blinking and go solid, confirming successful connection.

Internal Test Protocol

Once the unit has a power source connected, the unit will begin its power-up sequence, performing automatic internal tests, and preparing for communications.

After fifteen minutes, the Xi-100b device will automatically turn off the LEDs, disable the buttons, and enter Autonomous mode. Once the unit enters Autonomous mode, interaction is only available via XeosOnline, over the Iridium network. If further on-site testing is required, the

power must be recycled to enter Interactive mode, or the command **$sleepmode 1** can be issued for further diagnostics.

A power cycle, or **$sleepmode 0** will reset the sleepmode state.

Test Name	Performed	Description	Results	LED
Modem	Automatically after power up	Internal Iridium modem diagnostic check	During	Flashes
			Success	Solid
			Failure	Nothing
External Sensor	Automatically after power up	Powers the internal interface and attempts to connect to the external device.	During	Flashes
			Success	Solid
			Failure	Nothing
SAT Check	When the SAT button is pressed	Attempts to send an Xi status message to the Iridium satellite network	During	Flashes
			Success	Solid
			Failure	Nothing
DAS Check	When the DAS button is pressed	Powers the Serial/Ethernet interface and attempts to communicate with connected device	During	Flashes
			Success	Solid
			Failure	Nothing

Commands

Settings and Commands Table

The Xi-100b serial communication is done over the diagnostic cable with a 38400 baud rate.

X indicates a parameter

Setting	Command(s)	Explanation
Xi-100b		
Soft Reset Device	$resetnow	Device resets without changing settings
Set to Defaults	$factorydefaults	Device sets all settings back to defaults. **Device should be reset after using this command.**
Show settings	$settings	A list of current settings
Sleep Mode	$sleepmode X	1 = Disable autonomous mode for extended diagnostics 0 = Restore autonomous mode
Uptime	$uptime	Show how long the system has been operating since last reset.
Version	$ver	Show device model and firmware version.
Battery Voltage	$vb	Read battery voltage.
Temperature	$htr	Read temperature
Enable	$enable **X Y**	Enable/Disable a system. **X** = system; ((**q**)uanterra (**s**)ensors (**r**)udics or ((**h**)eater) **Y** = Enable (**1**) or disable (**0**) $enable with no follow-up information returns the current state of the above systems
Heater	$htrtemp X	Set when the modem heater will turn off (°C) High: -15°C Low: -39°C Default: -32°C
Q330		
Q330 Quickview	$qqv	Inserts a quick-view of Q330 measured data into Iridium message queue.
Q330 Status	$qstat	Inserts a Q330 status message into iridium message queue.
Q330 Mass Recenter	$qctr	Sends a Quanterra re-center command to the Q330
	$qcmd X	Send the Q330 a Quanterra command; X should be a decimal number
RUDICS		
Rudic Routing mode	$rdcsserial X	1 = Serial 0 = Ethernet
Set RUDICS mode	$rdcsmode X	0 = Disabled 1 = Single RUDICS Session 2 = Continuous RUDICS

Continuous RUDICS Minutes	$rdcscontmins X	Sets a time limit on any subsequent continuous connection and initiates a RUDICS continuous connection.
Start/Stop RUDICS session	$rdcs X	1 = Initiate a RUDICS session 0 = Stop a RUDICS session
RUDICS Number	$rdcsnum X	Sets the number to dial the Iridium gateway to start a RUDICS session; this is the number given to your RUDICS group (8816 number). Add two leading zeros to this number (008816…)
IP Settings		
IP Address (Xi-100b)	$eip	Sets the Xi-100b's IP address; should be set to be on the same subnet as the peripheral device.
Mask	$enmask	Set the Xi-100b's Net Mask
DefRtr	$erouter	Shows the Xi-100b's Gateway IP; it should be set identically to the Gateway IP of the peripheral device.
All IP Settings to be set in the Xi-100b are **space delimited**; an address of 192.168.10.2 would be entered as **192 168 10 2**		

Schedule and Timers

The **$sched** command displays a list of all scheduled actions on the Xi-100b:

```
$Sched
Schedule.....
 n      Item     Enbld Rpt     Rate     TimeUntil      Min         Max
 0    SBDReport    Y     R    01:00:00    00:58:17    00:01:00 1d00:00:00
 1   EndStartup    Y     x    00:05:00    00:03:53    00:01:00    03:00:00
```

The **$rprt** command displays the schedule along with other status information and settings. It also displays the last Iridium sessions heater and registration statistics. This information also prints to diagnostics after an Iridium session is concluded regardless of sleep mode.

```
$Rprt

Report Info....
Rudics available: No
VBat=12.22
Heater Used: Yes
Heater Shutoff: -32
Schedule.....
 n      Item     Enbld Rpt     Rate     TimeUntil      Min         Max
 0    SBDReport    Y     R    01:00:00    00:04:53    00:01:00 1d00:00:00
 1   EndStartup    Y     x    00:05:00    00:01:24    00:01:00    03:00:00
Ird Heater Info:  T-Start=24, T PrHt End=24, T-CREG End=24, PrHt Secs=0, CREG Secs=14, Pwr Cycles=0
```

Setting Timers

To change an event interval in the Xi-100b, use the command format below, with the base command **$timer**

$timer item enabled time
$timer sbd y 1h

The above command enables SBD messaging and sets the timer for 1 hour.

Timer	Description
SBD	Iridium message timer
ESP	Start-up period timer; when elapsed, the Xi-100b will turn off diagnostics and LEDs
QQV	Quanterra quickview timer
QST	Quanterra status message timer
SEN	Sensor report timer (Vaisala)

Settings

Issuing a **$settings** command, either serially or over Iridium, will return the full settings of the Xi-100b. An example of the readout is below:

```
$settings
tm:
ver:XI-100,3.104.4737
uptime:00:00:14
vb:12.22
temp:24
q330:Y
heater:Y,-32
sensor:n
rudics:Y,eth,Off,(120),(300s)
Dial#00881600005364

ethernet:Y
BadPg:0
IP:192.168.0.130
Mask:255.255.255.0
DefRtr:192.168.0.1
mo24:0
mt24:0
QQVMap:07
RTMax:50
RVMin:8.5
SBD:Y,01:00:00
ESP:Y,00:05:00
QQV:Y,01:00:00
QST:Y,01:00:00
SEN:Y,01:00:00
SIM:
IMEI:
```

Timer	Description
Ver	Xi-100b Firmware version
Uptime	Time (DD:MM:SS) since last power-up or reset
Vb	Supply voltage currently read by the Xi-100b
Temp	Shows current temperature read by the Xi-100b (Celsius)
Q330	Shows if Q330 functionality is enabled/disabled (Y/N)
Heater	Shows if heater functionality is enabled/disabled (Y/N), shows temperature heater needs to reach to shut off if turned on
Sensor	Shows if external sensor functionality is enabled/disabled (Y/N)
Rudics	Shows if RUDICS functionality is enabled/disabled (Y/N), routing (Serial/Ethernet), RUDICS Mode (Off, Single, Continuous), Continuous minutes, Cool-down period
Dial#	RUDICS number dialed to establish RUDICS connection
Ethernet	Shows if Ethernet is enabled/disabled (Y/N) for interface with peripheral device
Badpg	Number of bad flash pages in memory
IP	IP address set in the Xi-100b
Mask	Subnet mask set in the Xi-100b
DefRtr	Gateway IP set in the Xi-100b
Mo24	Mobile-originating messages, last 24 hours. Number of messages sent by the Xi-100b in the last day.
Mt24	Mobile-terminating messages, last 24 hours. Number of messages received by the Xi-100b in the last day.
QQVMap	Q330 Quickview channel map (bitmap, hex)
RTMax	RUDICS temperature Max
RVMin	RUDICS Voltage minimum
SBD	Iridium timer; shows Enabled/Disabled (Y/N), followed by repetition rate
ESP	Sleep mode timer; shows Enabled/Disabled (Y/N), followed by repetition rate
QQV	Q330 Quickview timer; shows Enabled/Disabled (Y/N), followed by repetition rate
QST	Q330 Status timer; shows Enabled/Disabled (Y/N), followed by repetition rate
SEN	External sensor timer; shows Enabled/Disabled (Y/N), followed by repetition rate
SIM	SIM of the modem; if blank, the modem has not sent this information to memory. SIM only shows number here if contact has been made with the Iridium network; therefore an Iridium antenna is required for this information.
IMEI	IMEI of the modem; if blank, the modem has not sent this information to memory

Using RUDICS

The Xi-100b allows you to establish a direct TCP/IP socket connection between a local terminal and your remote device. RUDICS itself has no underlying protocol.

If you are using the XeosOnline server, Xeos will provide you with the necessary Local Port and IP for tunnel configuration. If your SIM is provisioned through another provider other than Xeos, those local IPs and ports must be forwarded to that party.

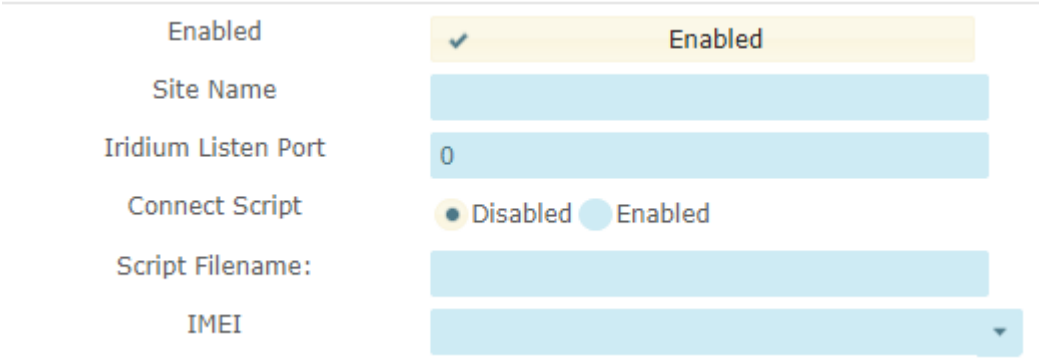
The Xi-100b combined with the XeosOnline Tunnel provides another layer on top of the standard RUDICS connection. When the Xi-100b connects to the tunnel, multiple preconfigured pass-through IP connections can be made to remote devices physically connected to the Xi-100b.

ALL CONNECTIONS MUST BE INITIATED BY THE USER. The Xi-100b will not initiate any RUDICS connections independently without being commanded via serial or SBD, and any connected devices **must** be able to accept a connection and have data retrieved from them.

What is required

1. The Xi-100b's modem and SIM card must be provisioned for use with XeosOnline. Contact Xeos Technologies and your SIM card provider for the necessary information
2. The IP address and Port of the remote device connected to the Xi-100b. This device must be listening on the specified port in order for a connection to be initiated
3. The IP and Port of the XeosOnline server, through which you will connect to the Iridium gateway. This will be supplied by Xeos Technologies.

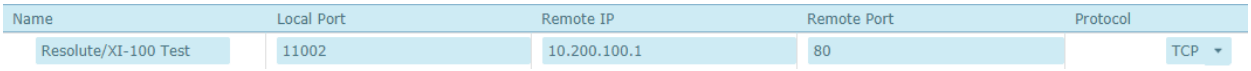
Once the device has been added to XeosOnline, a template can be created for your RUDICS connection. Only Xeos staff has access to configuring these items, but the user must supply the information to achieve tunnel creation.



Xeos will ask for the items listed below to create your tunnel:

Field Name	Description
Template Name	Give your template a descriptive name
Enabled	Enable or Disable the Tunnel template on XeosOnline (will be enabled)
Iridium Listen Port	The Iridium Port provisioned for your Xi-100b's SIM card which Xeos will supply ahead of time if using another provider of Iridium service
Connect Script	If a server-based script is used this is enabled
Script Filename	Name of the script supplied to Xeos to automatically acquire data
IMEI	The Xi-100b associated with this tunnel

Once the Tunnel is created, individual connection methods must be established. A maximum of 10 is possible and requires this information to set up:



Field Name	Description
Name	Give the tunnel a descriptive name
Local Port	The port of the XeosOnline server, based on the Iridium Listen Port. Xeos will supply this value
Remote IP	The IP address of the peripheral device connected to the Xi-100b
Remote Port	The Port of the remote device connected to the Xi-100b
Protocol	Choose the protocol (UDP or TCP) to be used by the RUDICS connection

There is also the ability to have the connection method disabled (checkbox) or deleted entirely (minus symbol) which Xeos will not employ unless requested to do so.

Configuring the Xi-100b for RUDICS

The Xi-100b is setup to work with the Quanterra Q330 seismic system by default.

To connect to an alternative device, several settings **must** be changed before deployment.

RUDICS settings

1. For devices using Ethernet to connect to the Xi-100b, RUDICS must be set to Ethernet mode, this is done by entering the command **$rdcsserial 0**
2. Set the IP address of the Xi-100b using the command format **$eip 192 168 0 2** using a space instead of decimal notation. The default IP value is 192.168.0.130
3. Set the Net Mask using **$enmask 255 255 255 0,** again using spaces instead of decimals. The default is 255.255.255.0
4. By default, the Xi-100b acts as a router with a network address of 192.168.0.1
   This can be changed with the command **$erouter 192 168 0 1** using spaces instead of decimals.
5. The RUDICS number for the Xi-100b to dial on the start of the session; this is the 8816 number given to the RUDICS group the SIM is a member of. Leading zeroes are required to add this setting to the Xi-100b. Ex. **$rdcsnum 008816000009999**

RUDICS Tunnel Set-up

Note: The Peripheral device in examples is a Trimble Net-R9 with connection via Ethernet.

The Xi-100b SAT-Comms Modes

SBD Only – A SIM card, even if not using RUDICS, is **REQUIRED** for Xi-100b's to work (inherent with the 9522B modem). This card needs to be activated **AT LEAST** as a "Register Only" card. "Register Only" allows the modem it is inside to "Register" with the Iridium network.

Both SBD and RUDICS – where both the SIM is set up for RUDICS, and the modem is active as well through an Iridium SBD account. Xeos has the ability to provide this service. For the Xi-100b, it is essential to have this service for command and control of the device, and to initiate RUDICS sessions.

Interfacing with the Peripheral Device

Connection between the Xi-100b and a peripheral device is dependent upon several items. Most of these involve the IP setups of both devices; incorrect settings will cause failed connections. It is suggested that the settings of the device are used to determine the setup of the Xi-100b, as opposed to the other way around.

IP Relationships:

Item	Relationship	Net-R9 Name	Xi-100 Command Name
IP Address	Same subnet	IP Address	$eip
Netmask	Identical	Subnet Mask	$enmask
Gateway	Identical	Gateway IP	$eRouter

Example – IP Setup Relationships

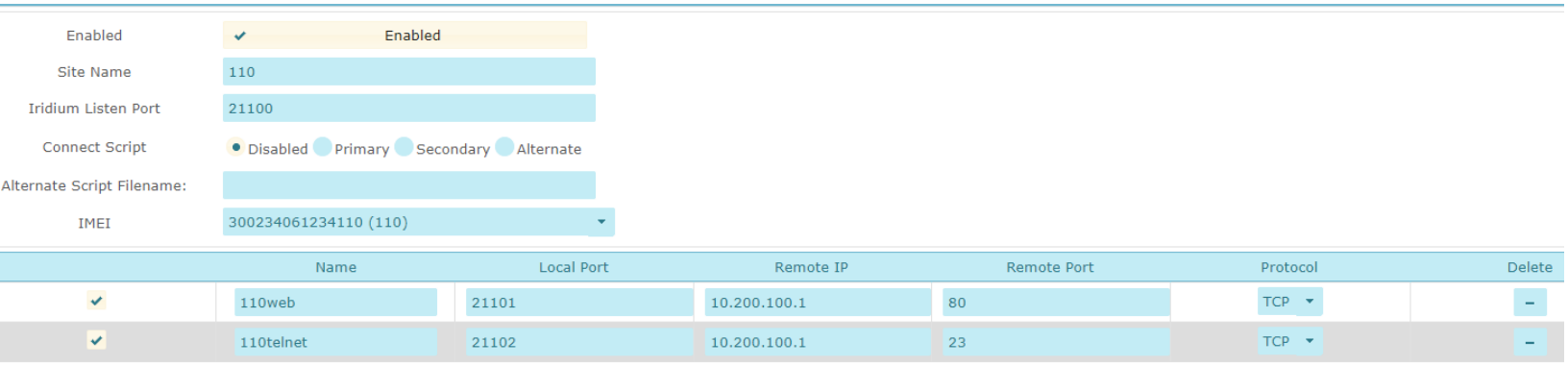
Item	Peripheral Device	Xi-100
IP Address	**192.168.1.131**	192.168.1.255
Netmask	255.255.255.0	255.255.255.0
Gateway IP	192.168.1.2	192.168.1.2

RUDICS Tunnel	
Remote IP Remote Port	**192.168.1.131** Port 80 for TCP
Listen Port	Given by Xeos
Local Port	Given by Xeos

Note: The IP address of the peripheral device is exactly the same as the Remote IP set in the tunnel.

RUDICS Tunnel Setup

The setup of the RUDICS template and tunnels in the template depend on the user. A general layout is below:



SETUP OF A RUDICS TUNNEL USING A COMMERCIAL SIM.

Setup Specifics – Main setup

Enabled	Allow the Tunnel to function
Site Name	Name your tunnel anything you want (you'll want to make it easy to find)
Iridium Listen Port	**Assigned by Xeos; the SIM card must be provisioned to XeosOnline's IP and this Port (Supplied to customer if through another Iridium provider)**
Connect Script	Allow script to be used to download data
Alternate Script Filename	Script for downloading data
IMEI	Device to which the tunnel is associated

Setup Specifics – Individual Tunnels

Checkbox	Enable/Disable this individual tunnel
Name	Name the tunnel what you want
Local Port	The port used to make the connection via XeosOnline to the peripheral device **assigned by Xeos.**
Remote IP	IP address of the device connected to the Xi-100b
Remote Port	Choose an appropriate port for the device connected to the Xi-100b
Protocol	TCP or UDP where appropriate
Delete	Delete this tunnel

Once all settings are input, click "Save Tunnel" on the bottom of this window.

Making the connection

With all settings input properly on both the Xi-100b and the RUDICS tunnel, a successful RUDICS session is available.

All RUDICS sessions must be initiated by the user; the Xi-100b does not start RUDICS sessions without being commanded, that is, it does not use RUDICS on a scheduled basis.

Create an SBD message, either through XeosOnline or Email using the following commands:

SINGLE MODE

Single Mode allows for one RUDICS session of the specified length. If the connection is broken, it is not re-established automatically.

CONTINUOUS MODE

Continuous mode allows for a RUDICS session of the specified length, however if the connection is interrupted, it will attempt to re-establish.

Note: In either case, RUDICS mode will be set to OFF at the end of a completed session. Therefore, it is imperative that the mode be changed at each RUDICS start attempt. That means that each RUDICS start command block must include the RUDICS mode desired, and the turn-on command. For example, a RUDICS Single Mode on block would contain:

- **$rdcsmode 1**
- **$rdcs 1**

These commands are then queued for delivery to the Xi-100b.

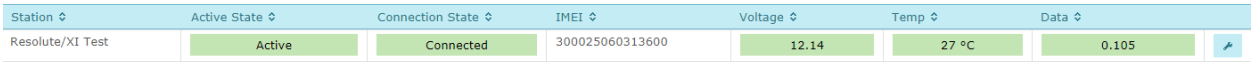
At the next Iridium interval, the Xi-100b will:

- Send any data that it has previously queued for the session
- Receive and act upon any commands that were queued before the session

In this case, the device will:

- If using Single Mode, switch its RUDICS mode to a single session, for the length of time specified by the previously set rdcscontmins setting
- Dial the set RUDICS number to initiate the RUDICS session.
- If using Continuous Mode, switch its RUDICS mode to continuous, for the length of time specified by the rdcscontmins value that has been sent.

Once the device makes the RUDICS connection, the XeosOnline RUDICS tunnel will show as **Connected.**



When an Iridium device makes the connection with XeosOnline over RUDICS, the user can then "tunnel" into the device connected to the Xi-100b on the **Local Port**. Data can be retrieved

automatically upon connection using a Bash or Batch script that has been added to the tunnel by Xeos in the “Connect Script” slot.

In the graphic on page 18, the Local Port for the tunnel is set to 21101 for the web service “110web.” To reach this destination, one would enter the following on a browser:

online.xeostech.com:21101

Alternatively, to connect to the device called “110telnet,” enter the following:

online.xeostech.com:21102

The result is a remote connection which creates a direct connection between the peripheral device and the PC being used.

The RUDICS connection will then continue for the specified time, or until the device is sent an **$rdcs 0** SBD command.

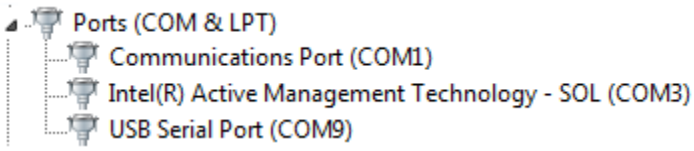
Appendix A: Programming the Xi-100b

Required Equipment

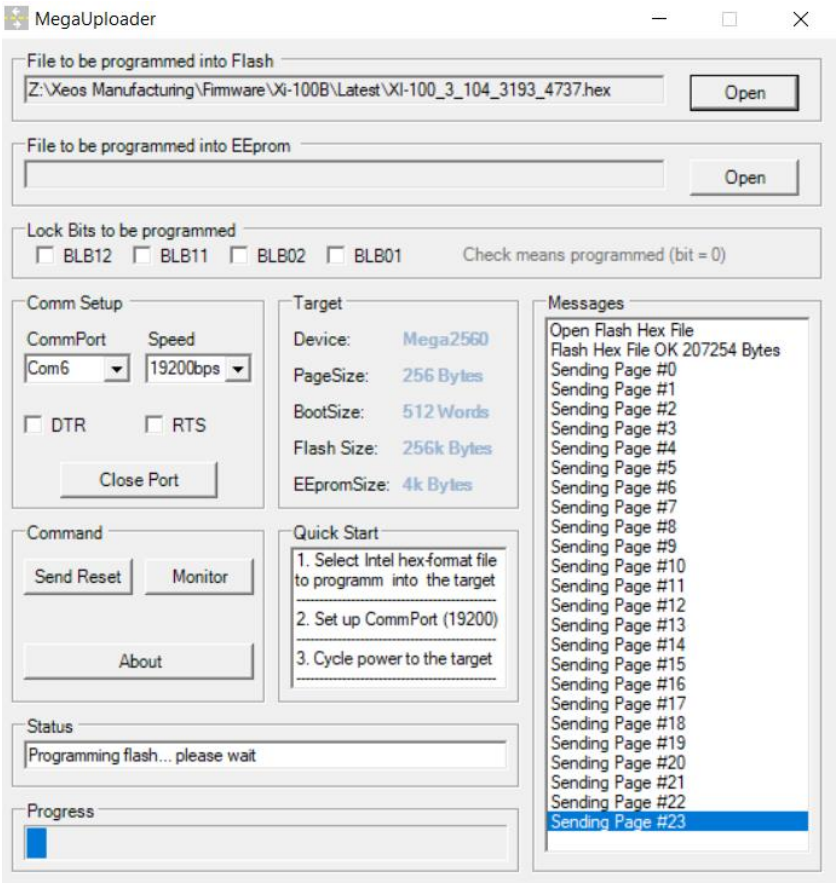
- MegaUploader Software
- Xi-100b
- Xi-100b Programming Cable (A-05-027)
- DB-9 to USB Cable
- Firmware Hex file
- PC
- Power Source @ 12V

Setup

1. Connect the Xi-100b to a power supply, but **do not** turn on power
2. Plug in the programming cable to your PC and connect it to the Xi-100b
3. Make sure the Serial-to-USB adapter driver is installed; note the COM port in the device manager



4. Open the MegaUploader program
5. Under **File to be programmed into Flash** click on **Open** and browse for the firmware file you wish to use.



6. Under **CommPort**, select the port to which the Xi-100b is connected
7. Under **Speed** select 19200bps
8. Apply 12VDC to the power leads of the Xi-100b. The firmware will begin to load in the **Messages** window.
9. When the Firmware has finished upgrading, the **Messages** window will display “Flash Prog Done!”
10. When complete, the lights on the Xi-100b will begin flashing. The device is ready for use.

Appendix B: Specifications

Mechanical	
Dimensions	27.31cm x 10.80cm x 8.89cm (10.75” x 4.25” x 3.5”)
Mass	1841g (4.06 lbs)

Electrical	
Input Voltage	8.5 – 20VDC
Sleep (Autonomous Mode)	450 uA
Iridium SBD Session	150 mA (15s avg.)
RUDICS connection	350 mA *(no heaters)* 700 mA *(heaters)*

Communications	
Iridium Modem	9522B Iridium Transceiver Iridium SIM card
Services available	SBD and/or RUDICS
Antenna	Mast mount antenna provided

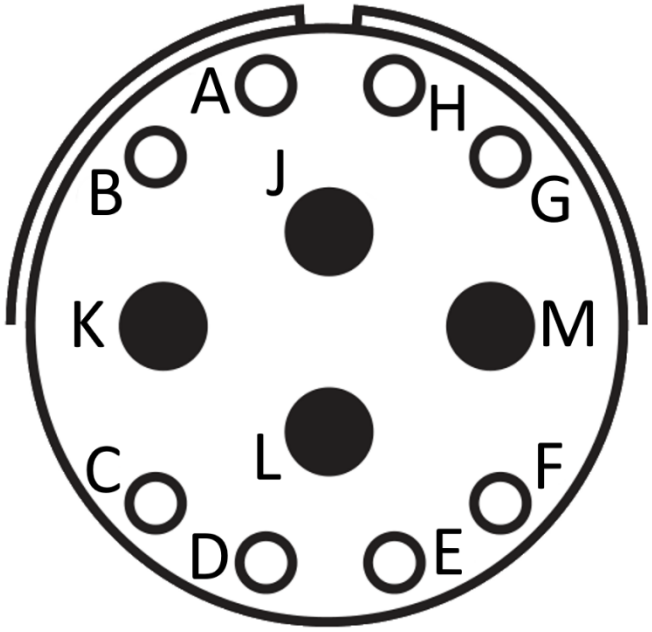
Environmental	
Operational Temperature	-55 deg °C to +60 deg °C

Appendix C: Cables

The Xi-100b comes with two cables for connection; a data cable and a power cable. The type of data cable depends upon the intended peripheral device and type of connection at the time of order.

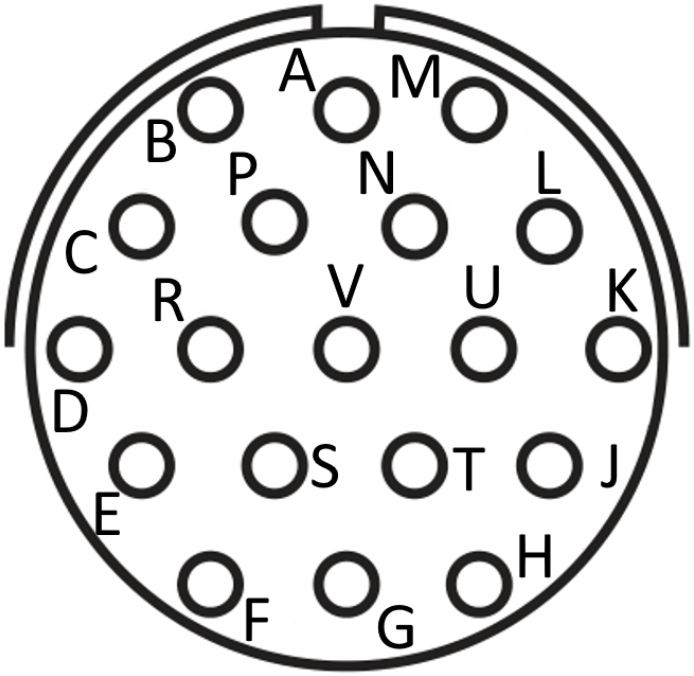
Pinout: PWR/EXT Sensor (12 Pin, size 14)

A	RS-232 TXD-0
B	RS-232 RXD-0
C	GND
D	RS-232 RTS-0
E	RS-232 CTS-0
F	RS-232 DTR-0
G	RS-232 DSR-0
H	SNS-PWR
J	SUPPLY (8.5-20VDC)
K	SUPPLY GND
L	SNS GND
M	PGP

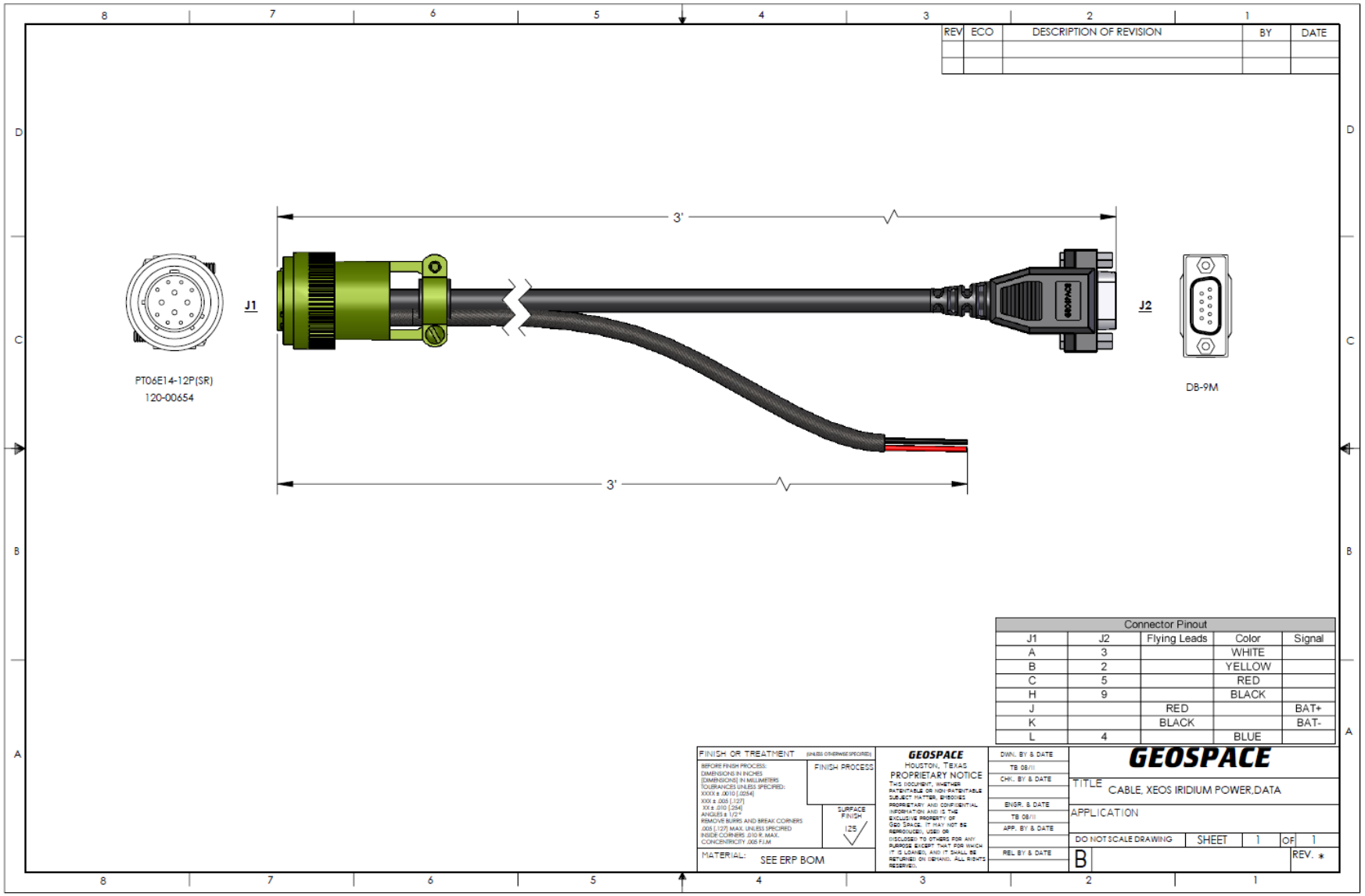


Pinout: DAS Interface (19 Pin, size 14)

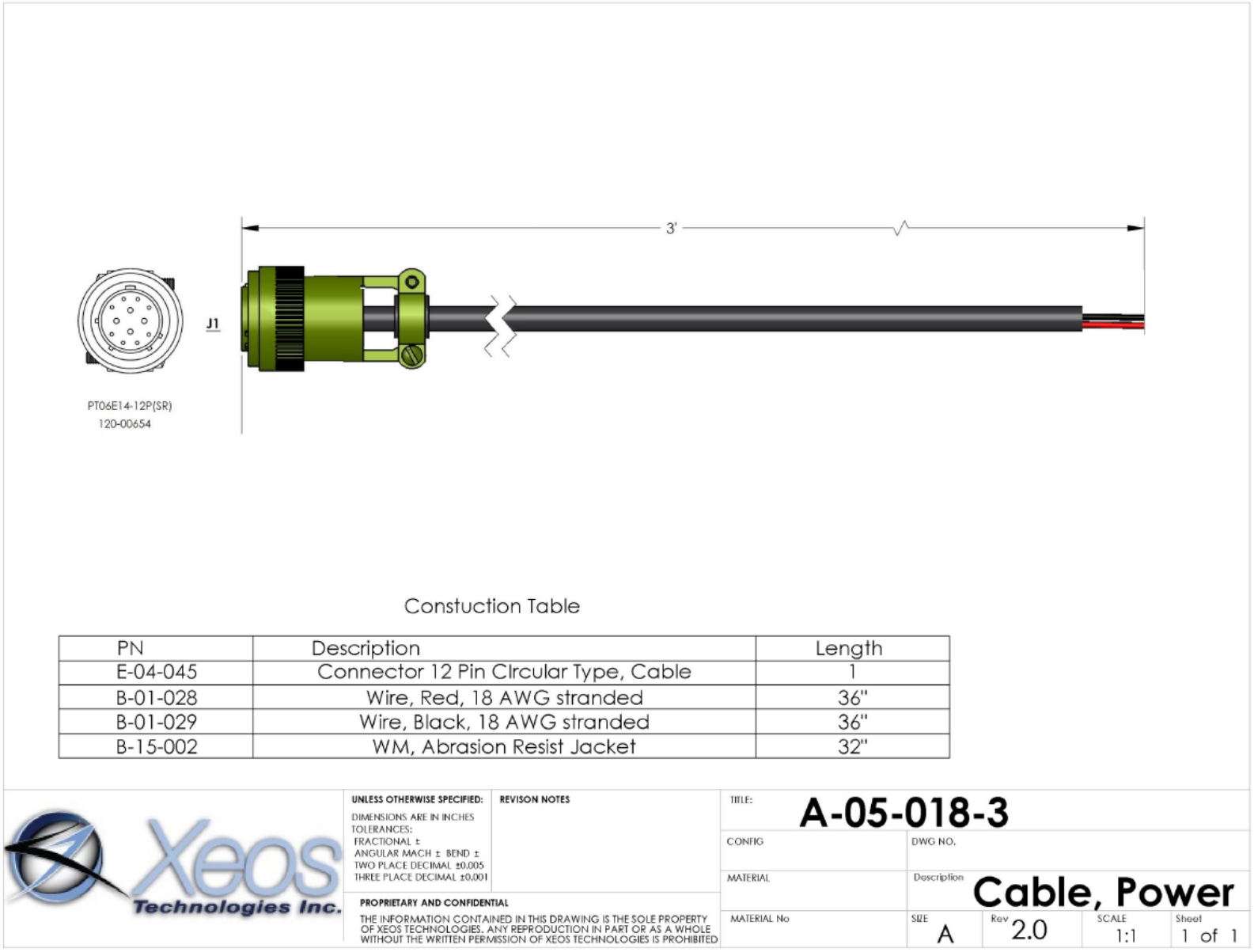
A	RX-
B	RX+
C	TX+
D	TX-
E	RS-232 DSR-2
F	RS-232 GND-2
G	RS-232 RXD-2
H	RS-232 CTS-2
J	RS-232 TXD-2
K	RS-232 RTS-2
L	RS-232 DTR-2
M	RS-232 GND-3
N	RS-232 RXD-3
P	RS-232 CTS-3
R	SUPPLY GND
S	RS-232 TXD-3
T	RS-232 RTS-3
U	+12V DC
V	PROT GND



A-05-018-1: Xi-100b Port 1 – Power Supply/External Sensor DB9



A-05-018-3: Xi-100b Port 1 – Power Supply



Constuction Table

PN	Description	Length
E-04-045	Connector 12 Pin CIrcular Type, Cable	1
B-01-028	Wire, Red, 18 AWG stranded	36"
B-01-029	Wire, Black, 18 AWG stranded	36"
B-15-002	WM, Abrasion Resist Jacket	32"

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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR MACH ± BEND ±
TWO PLACE DECIMAL ±0.005
THREE PLACE DECIMAL ±0.001

REVISON NOTES

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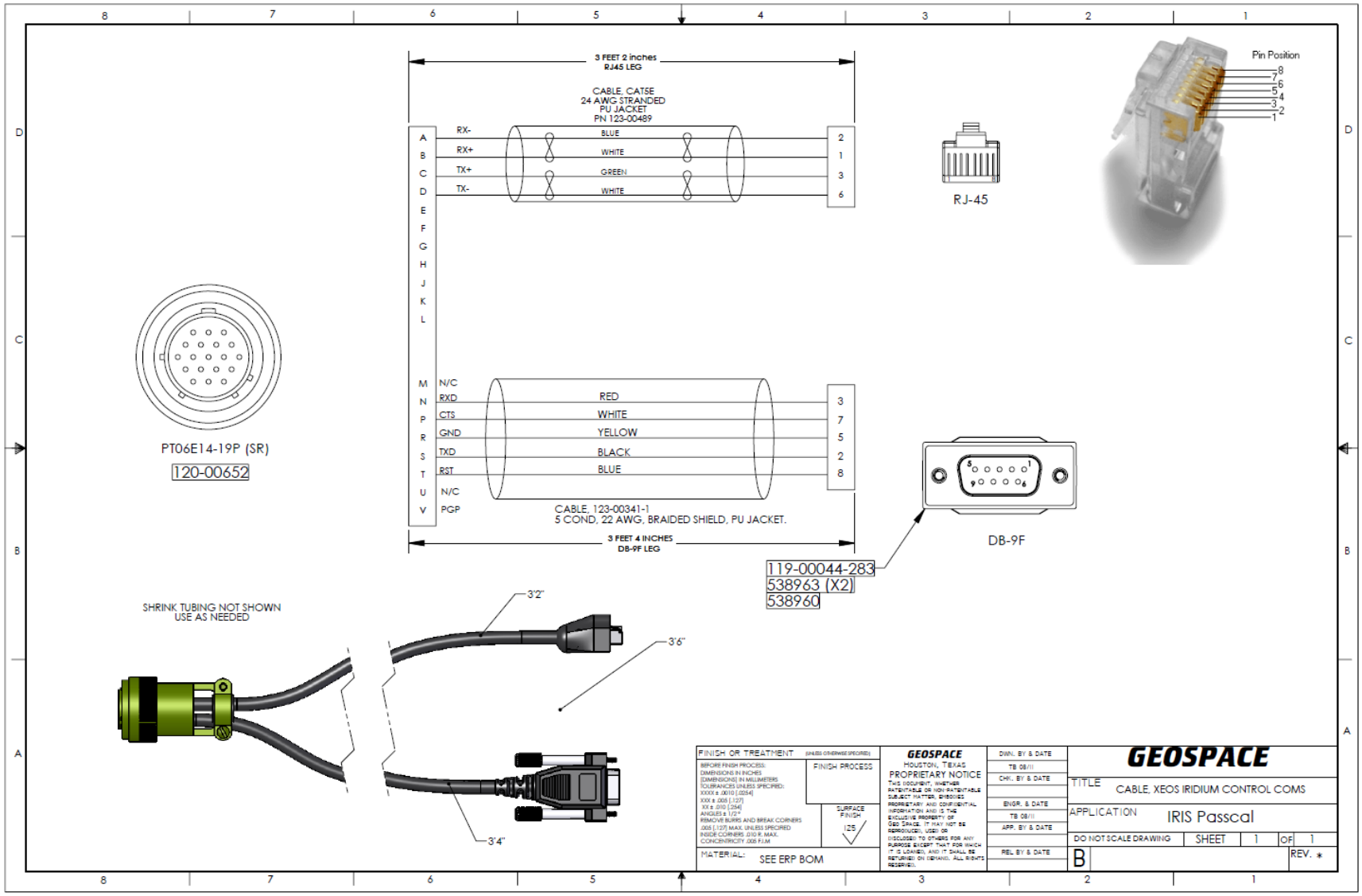
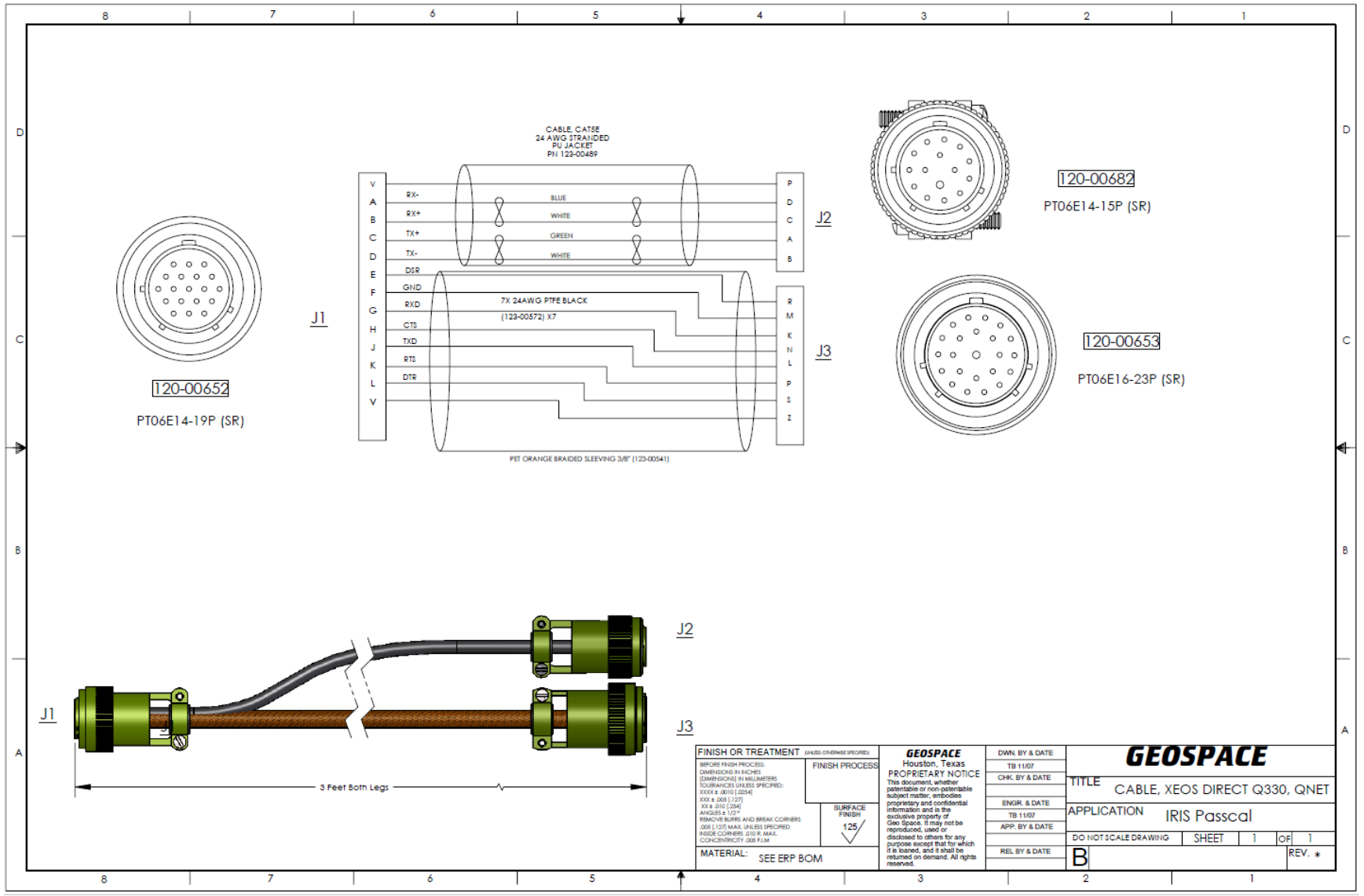
TITLE: A-05-018-3				
CONFIG	DWG NO.			
MATERIAL	Description: Cable, Power			
MATERIAL No	SIZE A	Rev 2.0	SCALE 1:1	Sheet 1 of 1

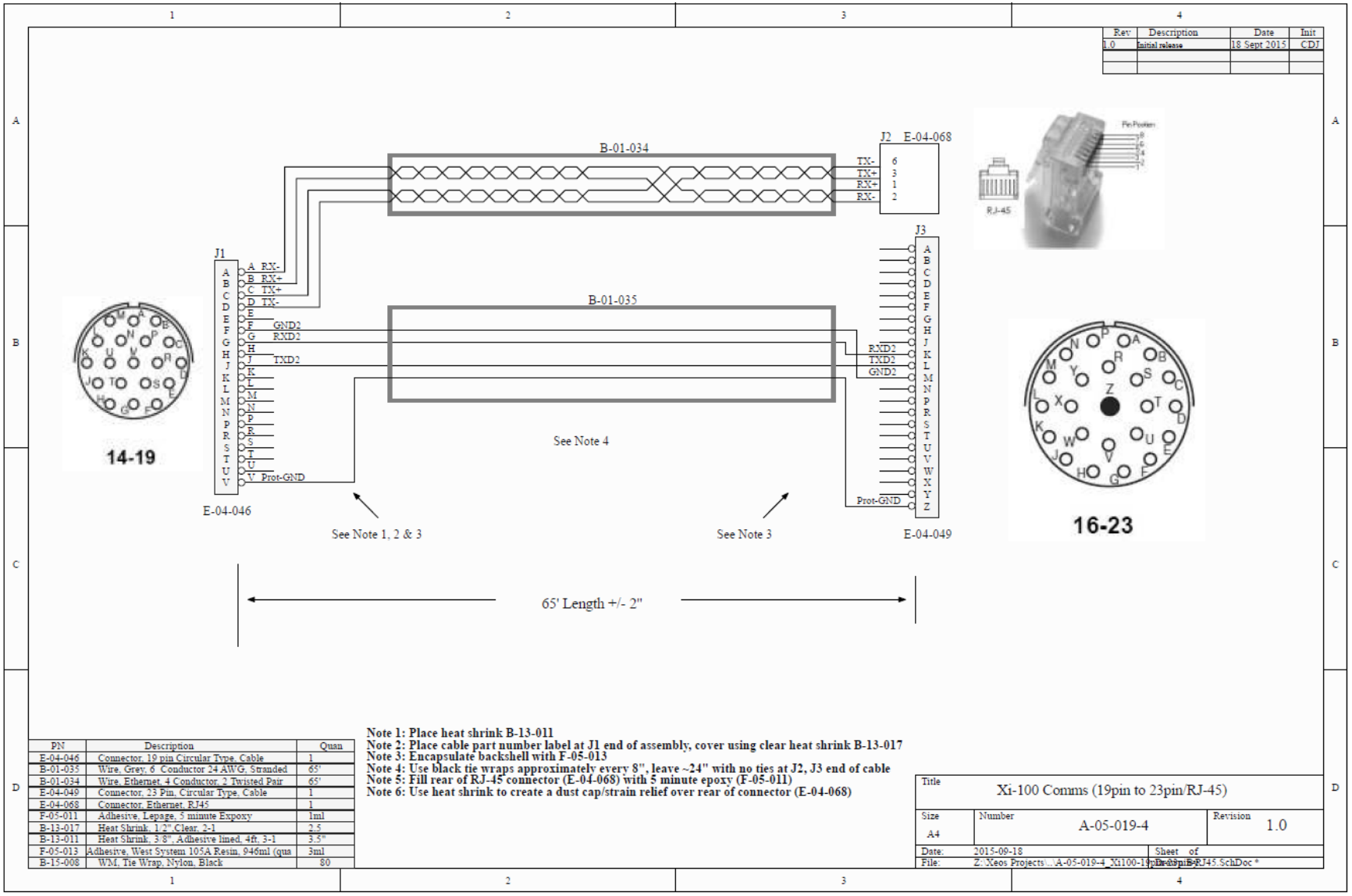
A-05-019-1: Xi-100b Port 2 – Ethernet RJ45/Serial DB9



A-05-019-2: Xi-100b Port 2 – Q330 Serial/QNet

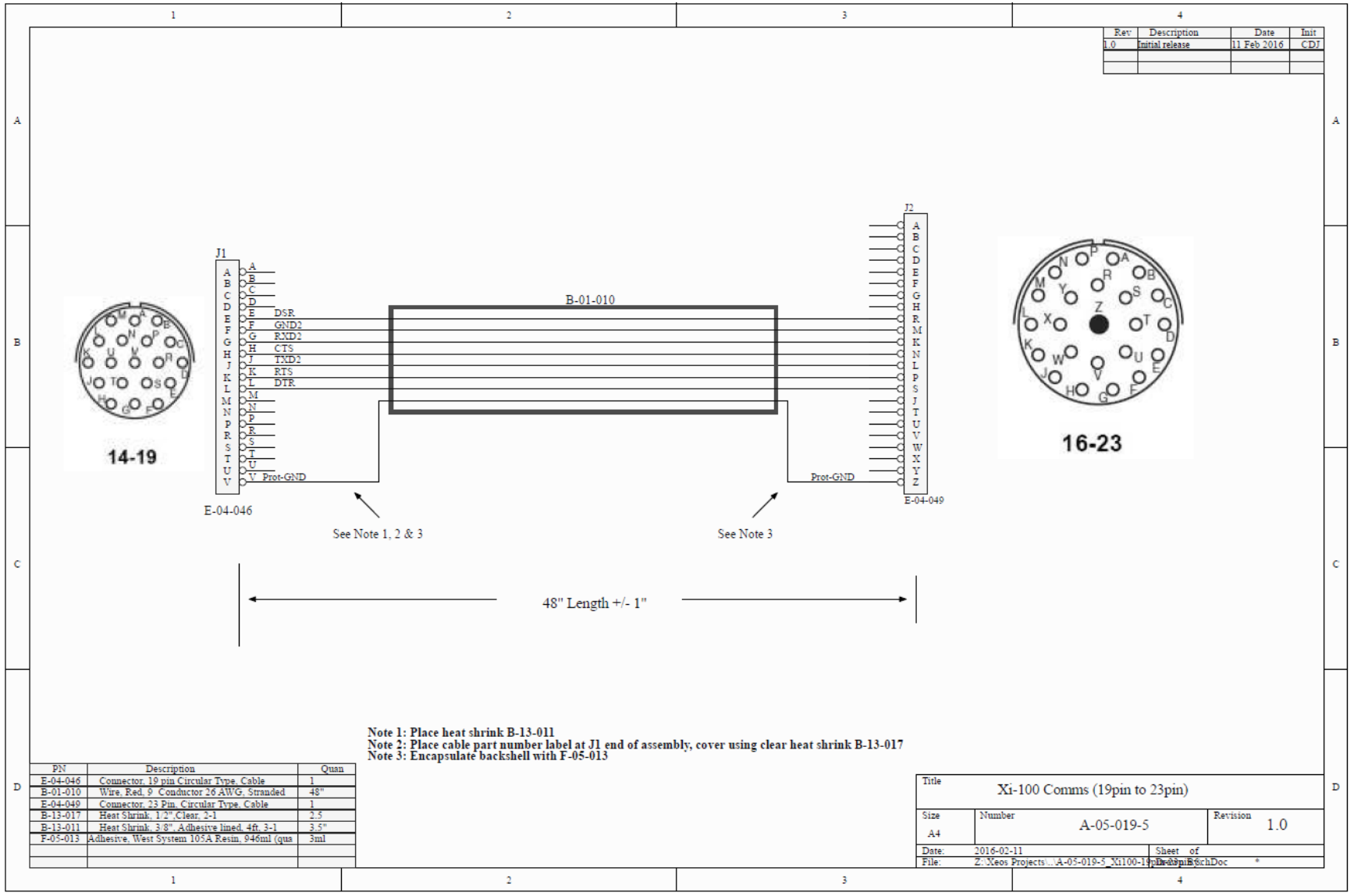


A-05-019-4: Xi-100b Port 2 – Q330 Serial/Ethernet RJ45



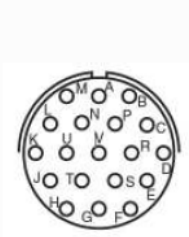
PN	Description	Quan
E-04-046	Connector, 19 pin Circular Type, Cable	1
B-01-035	Wire, Grey, 6 Conductor 24 AWG, Stranded	65'
B-01-034	Wire, Ethernet, 4 Conductor, 2 Twisted Pair	65'
E-04-049	Connector, 23 Pin, Circular Type, Cable	1
E-04-068	Connector, Ethernet, RJ45	1
F-05-011	Adhesive, Lepage, 5 minute Expoxy	1ml
B-13-017	Heat Shrink, 1/2", Clear, 2-1	2.5
B-13-011	Heat Shrink, 3/8", Adhesive lined, 4ft, 3-1	3.5"
F-05-013	Adhesive, West System 105A Resin, 946ml (qua	3ml
B-15-008	WM, Tie Wrap, Nylon, Black	80

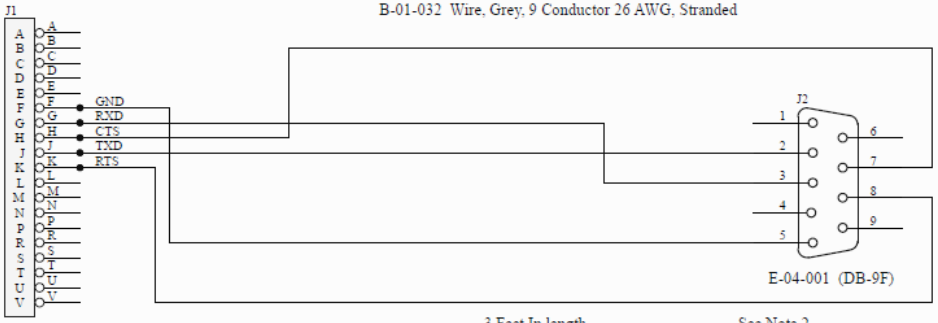
A-05-019-5: Xi-100b Port 2 – Q330 Serial



A-05-027: Xi-100b Port 2 – Xi-100b Programming Cable DB9

Rev	Details	Date	Init
1.0	Initial Release	20-04-15	CDJ
1.1	Chng format	20-04-15	CDJ





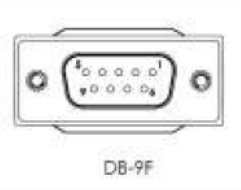
B-01-032 Wire, Grey, 9 Conductor 26 AWG, Stranded

E-04-046 See Note 2

3 Feet In length

See Note 2
See Note 1

E-04-001 (DB-9F)



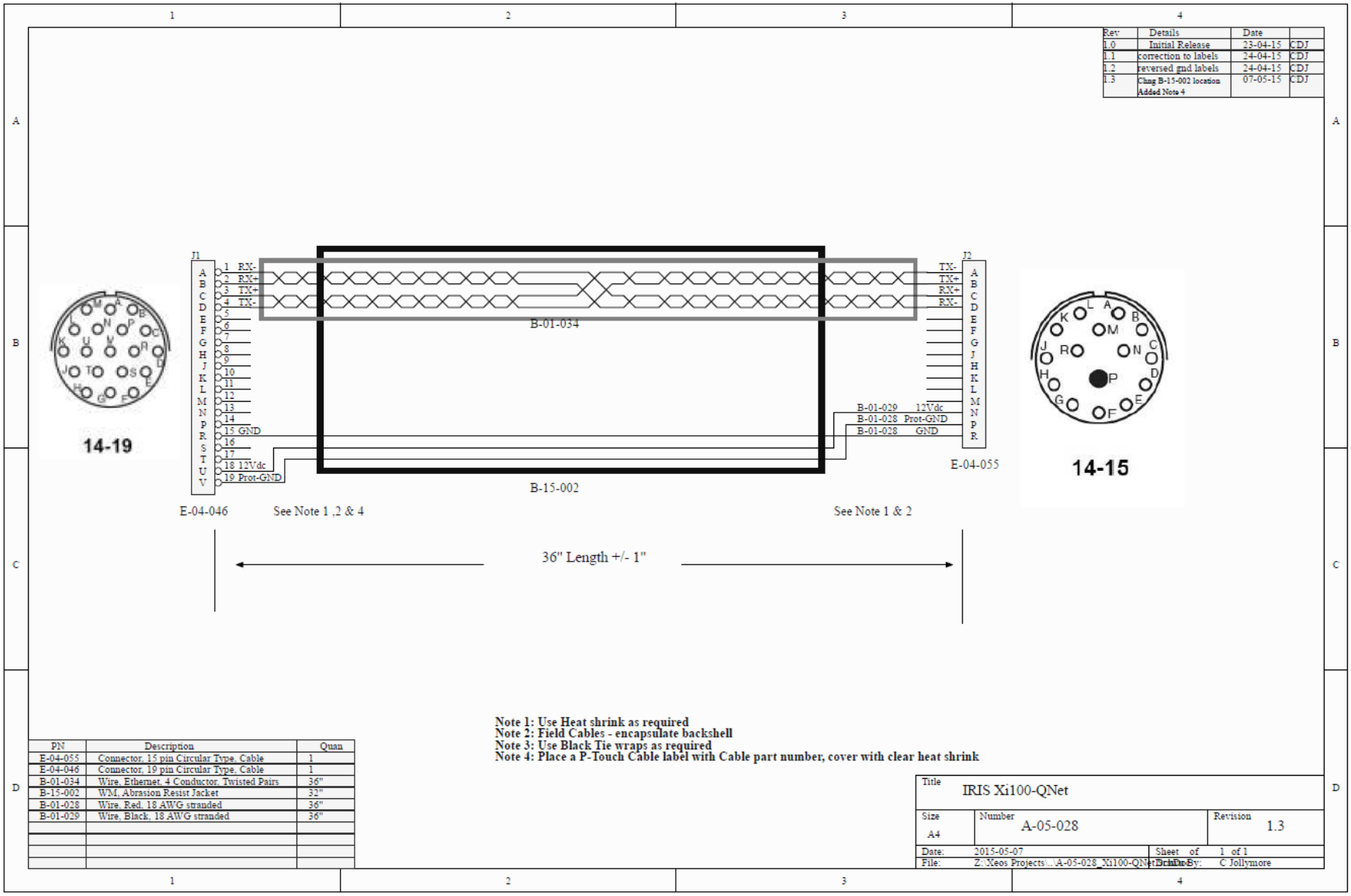
Note1: Place a label on DB-9 end of cable indicating 'Programming Only'

Note 2: Use Heat shrink as required

PN	Description	Quan
E-04-001	Connector, DE-9, Female	1
E-04-046	Connector, 19 pin Circular Type, Cable	1
B-01-032	Wire, Grey, 9 Conductor 26 AWG, Stranded	36"
B-13-011	Heat Shrink, 3/8", Adhesive lined, 4ft, 3-1	N/A

Title	Xi-100B Programming Cable		
Size	Number		Revision
A4	A-05-027		1.1
Date:	2015-04-20	Sheet of	1
File:	C:\Users\...\A-05-027_Xi-100B Prgm.SchDoc	Drawn By:	C Jollymore

A-05-028: Xi-100b Port 2 – Q330 QNet



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