



# MicroPoint™ Cable

## INTREPID™ *Perimeter Intrusion Detection System*

*Next Generation Perimeter Protection*

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MicroPoint™ Cable combines patented Southwest Microwave technology with microprocessor power and laptop computer convenience. It is a sophisticated perimeter security system which provides precise location of alarms.

MicroPoint Cable is based on MicroPoint™ cable technology which detects any fence disturbance and locates it to within 10 feet (3 m). Precise location allows proprietary digital signal processing (DSP) algorithms to detect any attempt to cut or climb the fence while ignoring distributed noise from wind, rain or heavy vehicles. Reliable detection is assured.

MicroPoint Cable also transmits alarm signals and operating power to all modules and auxiliary sensors along the perimeter eliminating the need for extra wiring. MicroPoint Cable software interfaces directly with a personal computer (PC) so that your computer becomes the installation test set, graphic map, and alarm monitoring display. Installed cost is very low!

Best of all, MicroPoint Cable was designed by Southwest Microwave, and it is backed by more than 30 years experience with exterior security systems around the world.

### **Features:**

- ▶ MicroPoint Detection with location to 10 feet (3 m)
- ▶ Sensitivity Leveling™ for varying fence conditions
- ▶ Free Format Zoning eliminates hardware constraints in system design
- ▶ Point Impact Discrimination increases detection without increasing nuisance alarms
- ▶ MicroPoint cable with integrated power and data for reduced installation costs
- ▶ Windows® based PC installation

Sold by:  
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8185 S. Cass Ave  
Darien, IL 60561  
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# MicroPoint™ Cable

## INTREPID™ Perimeter Intrusion Detection System

### System Description

MicroPoint Cable is tie wrapped to a chain link fence where it detects vibrations from any cut or climb and precisely locates the point of intrusion. MicroPoint cable transmits alarm data and system status to each module and provides power to these modules and auxiliary sensors along the perimeter. No other equipment or wiring is needed.

#### Precise location of each fence disturbance provides:

##### ▶ Point Impact Discrimination

Sensitive to a localized fence disturbance caused by a cut or climb. Insensitive to distributed fence noise due to wind, rain and nearby vehicles.

##### ▶ Sensitivity Leveling™

Calibration automatically compensates for fence variations. Each meter (3 feet) of perimeter fence is equally sensitive to intrusions.

##### ▶ Free Format Zoning

Zones are set in software, independent of processor location and may be changed at will.

#### Built-in microprocessor and PC software provide:

##### ▶ Windows® based Site-Manager installation program

Installation and service is completed with easy to use graphic tools.

##### ▶ Remote diagnostics

Modem interface reports site conditions and alarm information over ordinary telephone lines. This feature allows for remote trouble shooting.

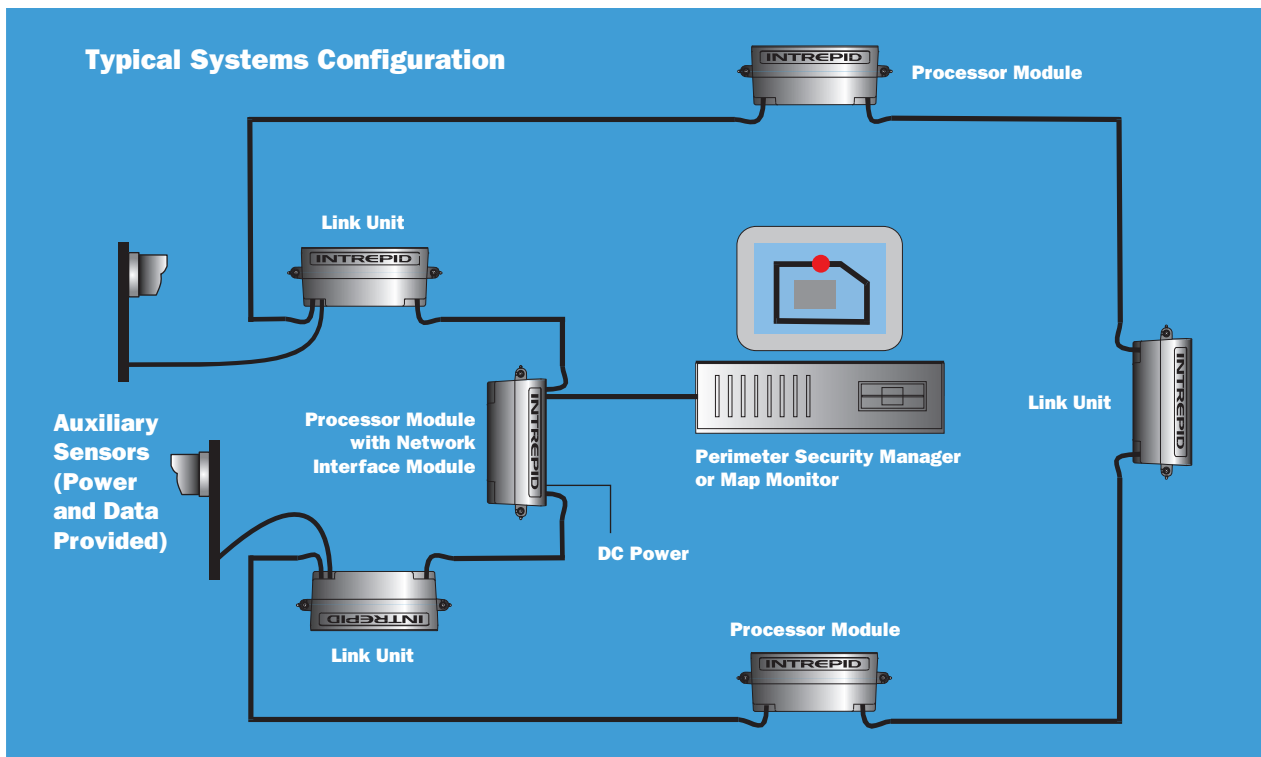
#### Optional alarm monitoring systems offer:

##### ▶ Graphic annunciation

With Map Monitor, the user-drawn INTREPID site map is converted into a full-color graphic annunciator map, with alarm reports.

##### ▶ Complete security management

Perimeter Security Manager features comprehensive alarm display, monitoring and control capabilities, as well as high-level interface to CCTV equipment and auxiliary perimeter security devices.





**INTREPID™ Map Monitor**  
for precise intrusion location  
and alarm reporting.



**Perimeter Security Manager**  
for complete perimeter control.

**MicroPoint Cable's** major components are the Processor Module, MicroPoint™ cable and Windows® software. The Processor Module provides the system intelligence to perform powerful signal processing, DC power distribution and data communications networking. The MicroPoint cable permits easy connection of the perimeter system and provides DC power, data communication for alarms and control, and intrusion detection capabilities. Site Manager software provides site design, installation, and service capabilities.

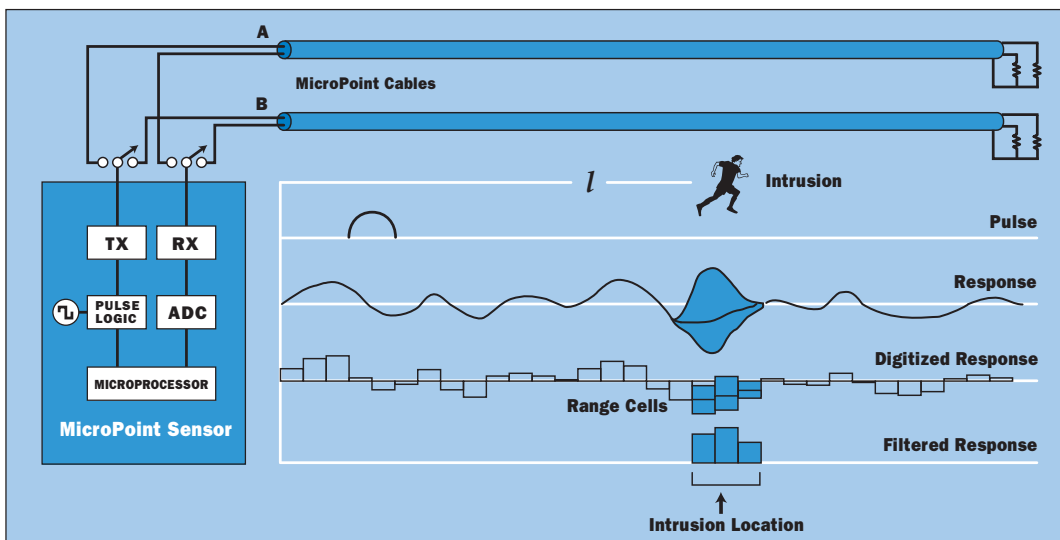
**Principle of Operation**

The Processor Module sends a pulse down the MicroPoint cable. The pulse is reflected back by a disturbance providing location of the intrusion along the length of cable. The received signal is sampled to create a signature which describes the reflected pulse. Digital Signal Processing (DSP) allows the MicroPoint sensor to measure the location and shape of the reflected pulse. The microprocessor recognizes the shape of the response from a point target (cutting or climbing) and distinguishes it from responses caused by distributed signals such as rain, wind and vehicle traffic.

The installer uses any PC to calibrate the MicroPoint cable sensor and assign zones. During calibration, the sensitivity of each meter (3 ft) of cable is set to provide uniform sensitivity along the entire length of MicroPoint cable.

In fence installations, Sensitivity Leveling™ accommodates variations in the type of fence fabric and in the fabric tension. Zones are user defined in software. Free Format Zoning allows the number and location of zones to be easily altered to meet changing site conditions. Windows based installation software provides installation guidance and records “as installed” details for later maintenance and diagnostic purposes.

**MicroPoint Sensor - Detection Concept**



# MicroPoint™ Cable

## OTHER SENSORS

### MicroPoint Detection and Assessment

- YES** Locates Intruder within 3 meters
- ✓ Intruder stands out from wind/rain
- ✓ Digital processing increases Pd
- ✓ Focused CCTV assessment

### Sensitivity Leveling™

- YES** Calibrated per meter (3 feet)
- ✓ Compensates for fence variations
- ✓ Calibration optimizes Pd vs FAR
- ✓ Easy to locate problems

### Free Format Zoning

- YES** Software Controlled Zones
- ✓ Multiple zones per cable
- ✓ Easy to add zones
- ✓ Easy to redefine zone boundaries

### Point Impact Discrimination

- YES** Recognizes local disturbances
- ✓ Ignores noise from wind, rain

### MicroPoint cable with Integrated Power and Data

- YES** Power & Data superimposed on Transducer Cable
- ✓ One cable carries all
- ✓ Secured by the sensor
- ✓ Supports auxiliary sensors

### INTREPID™ Communications I-COM

- YES** Built-in FSK network
- ✓ Peer to peer network

### Computer Aided Installation

- YES** Windows® based software installation Instructions
- ✓ Install it right the first time
- ✓ Well documented sites
- ✓ Telephone maintenance, diagnostics, remote upload/download capability

- NO** Only detects presence
- NO** Intruder buried in wind/rain
- \$\$\$** External processors required
- \$\$\$** Many more processors needed

- NO** One threshold per zone
- \$\$\$** Often requires fence work
- NO** Pd vs FAR compromise
- \$\$\$** Difficult to locate problems

- NO** Hardware defined zones
- NO** Only 1 zone per cable
- \$\$\$** Requires more processors
- \$\$\$** Requires reinstallation

- NO** Responds equally to all disturbances
- NO** Sensitivity to wind, rain, vehicles

- NO** Separate power & data wires
- \$\$\$** Additional material & labor
- \$\$\$** Requires conduit to secure
- \$\$\$** Separate power and data required

- NO** Separate wiring required
- \$\$\$** Separate wiring from each sensor

- NO** User Manual is rarely read, often lost
- \$\$\$** Costly repairs
- NO** Documentation is lost or not completed
- \$\$\$** Many unnecessary trips to site

### Next Generation Perimeter Protection

# MicroPoint™ Cable

## INTREPID™ Perimeter Intrusion Detection System

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### **System Specifications**

- ▶ MicroPoint™ Detection and Assessment locates intrusions to within 3 meters (10 feet).
- ▶ Point Impact Discrimination recognizes and suppresses distributed disturbances.
- ▶ Sensitivity Leveling automatically compensates for fence variations to equalize entire perimeter.
- ▶ Free Format Zoning sets the zones in software and is independent of cable length or equipment location.
- ▶ MicroPoint cable provides detection, power distribution and data communications for the entire system.
- ▶ Windows® based INTREPID Site Manager with Site Design Tools and Installation Support Tools included.
- ▶ INTREPID Map Monitor software with precise intrusion location displayed in color graphics, or Perimeter Security Manager with high-level interface to CCTV systems and auxiliary devices.
- ▶ Auxiliary sensors and devices are powered and controlled by the system.
- ▶ One Processor Module protects up to 1310 Feet, (400 meters) of perimeter.
- ▶ Multiple Processor Modules can be connected together for larger lengths of perimeter.
- ▶ Operating voltage range (10.5 - 60 VDC)
- ▶ Temperature range -40°C to 70°C (-40°F to 159°F).

### **System Components**

#### **Processor Module**

Each module processes data from two lengths of MicroPoint cable (A and B). Each length of transducer cable can be up to 200 meters (656 ft) long. Both A and B lengths of transducer cable are terminated in either Link Units or Termination Units.

**Size:** 33.7L x 12.7W x 13.9H cm (13.25 x 5 x 5.5 in)

**Weight:** 1.36 kg (3 lb)

**Operating Temperature:** -40°C to 70°C (-40°F to 159°F)

**Power:** 10.5 to 60 VDC at 11 watts (without auxiliary sensors)  
12 VDC at 580 ma, 24 VDC at 260 ma  
and 48 VDC at 160 ma

**Inputs:** 2 MicroPoint cables (A and B)  
6 Dry contacts inputs  
3 Analog inputs (0-5V)  
4 Alarms and 2 Tamper from the Link Units over the MicroPoint cable

**Outputs:** 3 Alarm relays SPDT (Form C) - 2 amp @ 28 VDC  
+12 VDC at 150 ma for auxiliary sensors.  
Communications port for computer or Relay Models.  
(with optional 232 or 422A Adapter)

#### **MicroPoint Cable MC-115**

The MicroPoint cable is used for detection, power distribution and data communications.

#### **MC-115 Type**

**Size:** 4.902 mm (0.193 in) diameter

**Jacket:** High density polyethylene, UV resistant, black.

**Operating Temperature:** -40°C to 70°C (-40°F to 159°F)

**Minimum Bend Radius:** 10 cm (4 in)

#### **Packaged:**

<u>Size</u>	<u>Weight</u>
100 m (328 ft)	4 kg (9 lbs)
200 m (656 ft)	8 kg (18 lbs)

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## **Link Unit**

Link Units are used at the ends of the A and B MicroPoint cables. They terminate the detection process and provide a means of interconnecting multiple Processor Modules. They also provide terminals to interface to auxiliary sensors.

**Size:** 33.7L x 12.7W x 13.97H cm (13.25 x 5 x 5.5 in)

**Weight:** 1.36 kg (3 lbs)

**Operating Temperature:** -40°C to 70°C (-40°F to 159°F)

**Inputs:** 2 MicroPoint cables  
4 Isolated contacts

**Outputs:** +12 VDC at 150 ma for auxiliary sensors  
(optional with Power Converter Card)

**Optional Isolated Link Unit** used on larger systems, please consult factory.

## **Termination Unit**

The Termination Unit is used at the end-of-line in an open loop configuration to terminate detection process.

**Size:** 7.6L x 6.4W x 13.3H cm (3.0 x 2.5 x 5.25 in)

**Weight:** 0.45 kg (1 lb)

**Operating Temperature:** -40°C to 70°C (-40°F to 159°F)

**Inputs:** 1 MicroPoint Cable

## **Network Interface Module**

The Network Interface Module provides interface points for external connections to data and graphic displays. This module provides RS232 and RS422/RS485 data ports for external communications and real time clock. This module plugs into any Processor Module.

**Operating Temperature:** -40°C to 70°C (-40°F to 159°F)

**Outputs:** RS485 to Relay Module  
RS232 to PC/modem  
Real time clock  
RS422 to Converter

## **Relay Module**

Relay Modules communicate via RS485 to the Processor Module with a Network Interface Module. It provides both NO and NC relay contacts and analog channels for external alarm panels, auxiliary controls or remote devices.

**Size:** 33.7 x 12.7 x 13.9H cm (13.25 x 5 x 5.5 in)

**Weight:** 1.36 kg (3 lbs)

**Operating Temperature:** -40°C to 70°C (-40°F to 159°F)

**Power:** 10.5 to 13 VDC at 2.0 watts (110 ma)

**Inputs:** 6 Dry contact inputs  
4 Analog Inputs (0 - 5 VDC)  
RS485 from Network Interface Module

**Outputs:** 6 Alarm Relays SPDT (Form C) - 2 Amp @ 28 VDC  
12 VDC at 150 ma for Auxiliary Sensors  
(optional with Power Converter Card)

### **Accessories:**

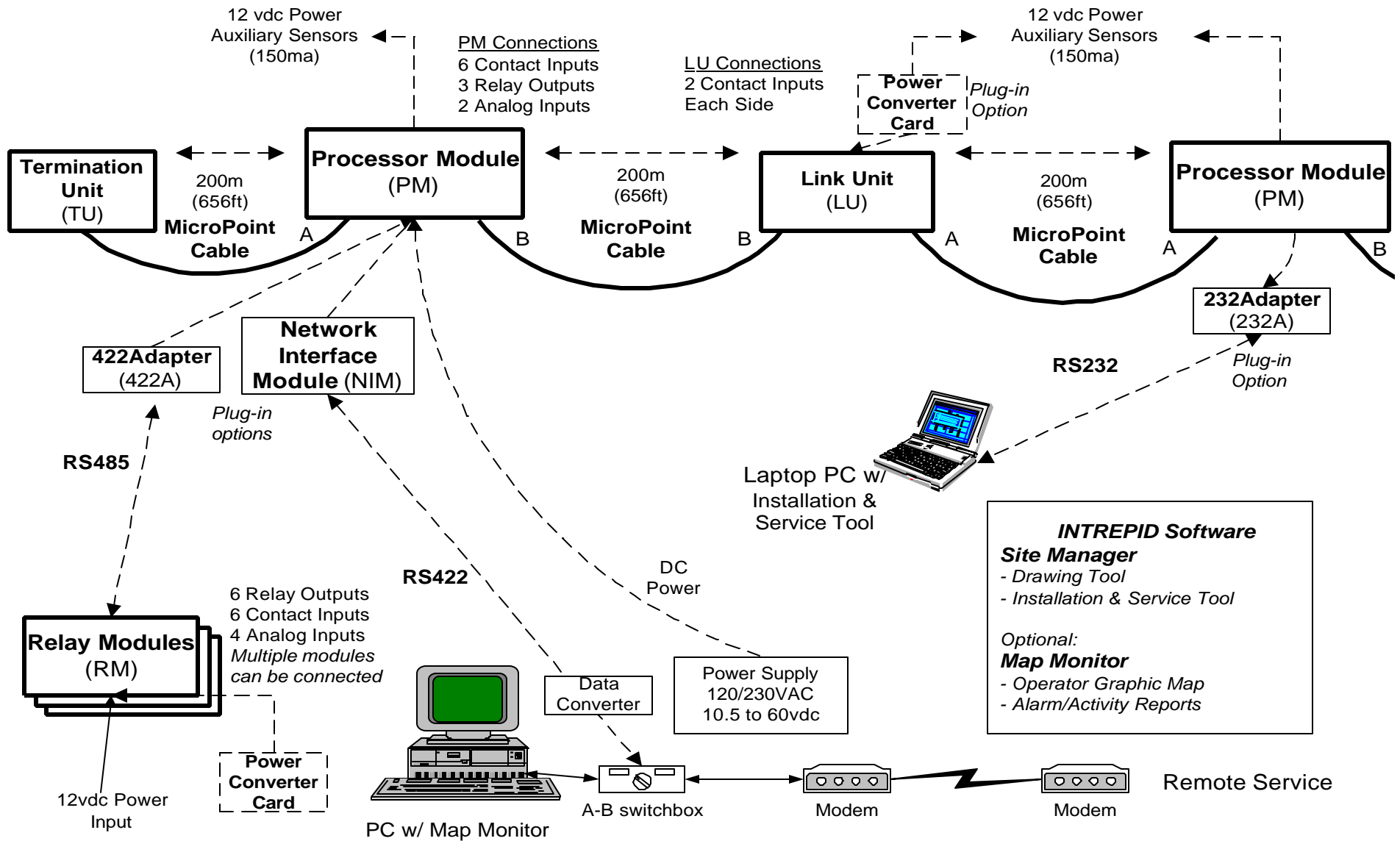
- ▶ Heavy Duty DC Power Supplies
- ▶ MicroPoint Cable Splice Kit
- ▶ 232A or 422A Adapter for Communication Connection
- ▶ Power Converter Card

### **Options:**

- ▶ Multiple Map Graphic Display & Control Software
- ▶ Armored MicroPoint cables available

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# INTREPID *MicroPoint Cable Perimeter Security System* System Components



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# INTREPID™

## MicroPoint Cable System

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### Installation Guide

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**Version 3.0**

**Note:** This Guide provides a reference for installing and commissioning Intrepid MicroPoint Cable System. It is designed for an Installer who has successfully completed the Southwest Microwave Technical Training course. Numerous references are made to the Intrepid MicroPoint System Installation and Operations Manual – when in doubt refer to the manual.

## A. Prior to Going to the Site

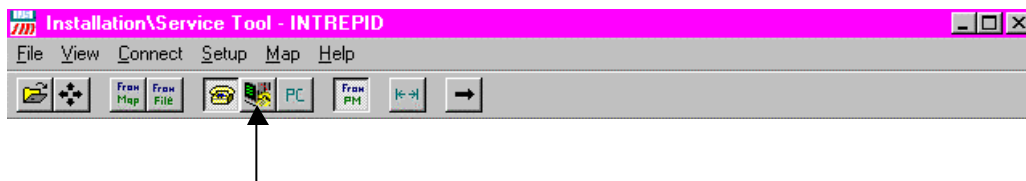
1. Check Your Bill of Materials. (Chapter 4)
  - Do you have all of the necessary MicroPoint hardware to complete the installation? (Cable, PM, LU, ILU, TU, RM, NIM, RS232A, RS422A, PCC).
  - Do you have all the extra equipment?  
(Computer, Power Supply, Auxiliary Sensors, Modem, Cut Simulator Tool).
  - Do you have all of the necessary MicroPoint software?  
(Drawing Tool, Installation/Service Tool, Map Monitor (Optional) or Multiple Map Monitor (Optional)).
  - Do you have the necessary installation materials and tools?  
(Tie Wraps, Hook up wire, Ground Rods, Computer cables, conduit, etc.).
2. Load the Intrepid Site Manager Software on the Site PC or your Service Laptop PC (Section 4.2)
  - Start Windows NT or Windows 95 and insert Site Manager Disk.
3. Sketch Perimeter using Intrepid Drawing Tool. (Chapter 5)
  - Draw MicroPoint Cable (Section 5.2)
    - Key Point to Key Point around the entire perimeter.
    - Place Key Points at corners, gates, each Intrepid PM, LU, ILU, TU and any zone boundaries which do not coincide with these points.
  - Attach the Intrepid PM, LU and TU components to the appropriate Key Points
  - Add RM components to drawing.
  - Add Auxiliary Sensors to drawing and attach them to the appropriate Intrepid PM, LU, ILU or RM.
  - Extra reference features like buildings, walls, fences, etc. can be added now or later.
  - Name and Save Map file (\*.map) in the Intrepid Site Manager folder (Section 5.2.9).
4. Preliminary Key Point Setup using Installation and Service Tool (Chapter 7)
  - Open Intrepid Installation and Service Tool program.
  - Open the Map file (now \*.smp) created from Drawing Tool (Section 7.2.1)  
(All units should appear connected with Display Segments numbered in the order that they were drawn.)
  - Press the “From Map” button.
  - Scale and Reposition Map as desired (Section 7.2.2).
  - Invert Cable ID if required (Section 7.2.3).  
(Are the “A” and “B” ports of the PM on the correct side of the units – **if not invert cable ID at this time before you proceed.**)
  - Name and Estimate position of Key Points (Section 7.4).
    - Click on each module and Key Point in sequence.
    - Enter Key Point Name and an estimate of the Key Point location.

Estimate the distance from the PM to the Key Point and divide by 1.1 if in meters and by 3.6 if in feet to determine the approximate subcell number.

190 to 1- "A" PM "B" - 1 to 190

- Assign Auxiliary Inputs (Section 7.5).  
Double click the center of the blue line or diamond of an auxiliary sensor for "External device setup" dialog box.  
(An Auxiliary Input [dry contact closure] can be assigned to a PM, LU, ILU or RM).
- Review the Display Segmentation (Section 7.7).  
Select "Site Data" ? for dialog box under "DispS" Display Segments.  
(Check that all the Display Segments and Auxiliary Sensors are assigned properly).

5. Set PC COM port (Section 7.7.1).



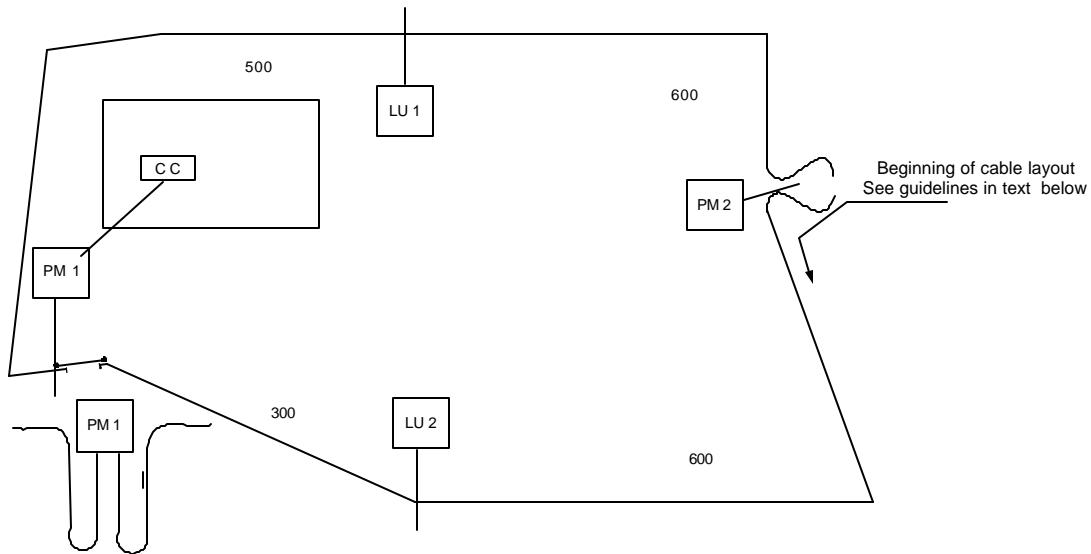
- Select "Com Port Setup".
- Set COM port & baud rate (Normally set to 19.2k baud).

6. Address and Set COM Termination for each PM using Installation and Service Tool (Section 7.1.1).

- Connect PM with NIM or 232A to PC serial comm. port with DB9 serial cable.
- Apply power to the PM.
- Set PM Communication Parameters one PM at a time.



- Click on Connect Button to connect PM to the PC using a serial cable to a RS232A or a NIM.  
(PM1 will come "online" and the remaining PMs will show COM Failure on the map).
- Select "Connect" then "Set Local PM Address".  
(A Control Box appears in which you enter the PM Address [PM number 1,2 etc.] and Termination "Patch Through", "Com A" or "Com B". The Intrepid data line must be terminated at two locations. When "Com A" is selected it terminates "B" and when "Com B" is selected it terminates "A". In "Patch Through" neither port is terminated).
- Temporarily label each PM to identify it for installation at site.
- Install NIM in the "communication feed point" PM.  
-Set Battery Jumper (JMP3) to "ON".  
-Set Termination Jumpers (JMP1 or JMP2) to "TERM" Position.



1. Guidelines for hanging the Micropoint Cable:

- Some forethought should be given to placement of LUs and PMs before you start, so that external inputs land at PMs if at all possible, if LUs are used, they will require a PCC to be added to power microwaves.
- When passing under and looping onto swing gates, estimate the cable length at roughly four times the width for a single sided gate and five times for a double swing gate.
- Perform Resistance Test on Cable before unreeling (Section 6.2.2).  
(Tests for shorts, opens and damaged cables – should be greater than 6 Megohms between Sense Wires and Braid).
- Carefully unroll cable on ground beside fence – walk backwards holding the spool on a pipe to unreel cable (Section 6.2.3).
- Shake out cable - gently “flip” cable to remove stress in the sense wires due to spooling.
- Repeat Resistance Test on cable with cable laying on ground

2. Install Cable on Fence usually starting at far end of the perimeter (Section 6.2)

- Tie cable loosely to fence approximately every 20 feet after shake out during preliminary layout to allow easy shifting of cable if needed.
- Leave a 6-foot (2m) loop for connections and service loop at end of each cable.
- Do not go further than 600 linear feet before placing the Link Unit. You most likely used more than 600 feet of cable to get there due to fence posts and don't forget the service loops.
- Do not cut or remove caps from cable until you are ready to terminate cable, if you do have to split a cable early, seal with grease and wrap with rubber tape for moisture protection.
- Tie wrap cable to fabric (Section 6.3.1).

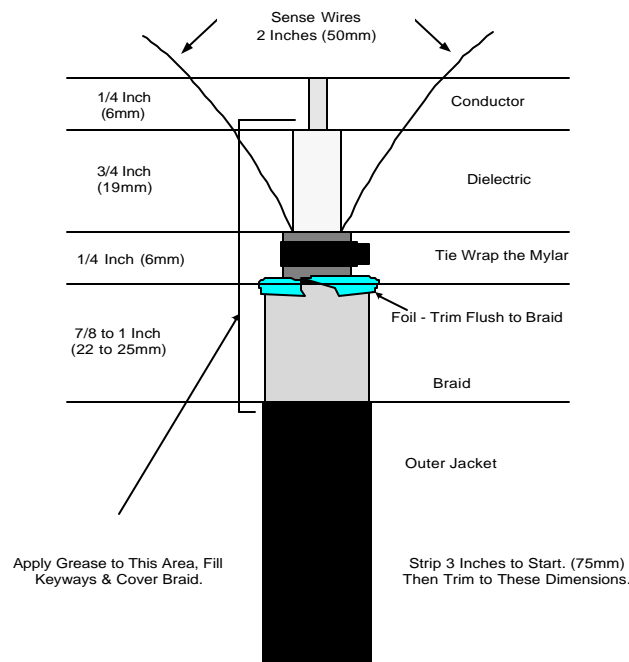
- Leave at least 6 feet (2 meters) for connections and drip loop at each end.
- Tie approximately every 9 inches around crossover point of chain link fabric.
- Apply Cable to Swing Gates (Section 6.3.2.1 or 6.3.2.2 or 6.3.2.3).
- Bypass Sliding Gates (Section 6.3.2.4).
  - Gently pull the cable though buried or overhead conduit
  - Pull shortest length possible (this may require an SU)
  - Make sure that water drains from conduit used to go under roadways.

3. Install Processor Modules (PM's) – follow assigned numbering (Section 6.4.1).

- Attach MicroPoint Cable to the PM (Section 6.5.1 & Chapters 13 & 14).
  - From the end of the cable, cut the jacket back 3 inches, the braid 2 inches, the mylar 1 ¾ of an inch and the dielectric ¼ of an inch.
  - Be sure to apply the **dielectric grease** (provided with each PM and LU) to terminations.

***Failure to complete this will allow moisture to enter and damage the cable.***

- Ground communication point PM - Drive ground rod below the JB70 and connect to ground lug (Sections 6.5.2 and 6.6).



Refer to Section 13 of the Manual for Details

4. Install Link Units and Termination Units.

- Attach LU's and TU's to the fence fabric at the appropriate location.
- If required, attach ILU's to fence fabric at appropriate location. (There must never be more than 4 PMs in a row without an ILU.)
- Attach MicroPoint Cables (Section 6.5.1 & Chapters 13 & 14)
  - Be sure to apply the **dielectric grease** provided with each LU, ILU and TU to the cable terminations.

***Failure to complete this will allow moisture to enter and damage the cable.***

Install Auxiliary Sensors and connect to PM, LU or ILU as required.

- Follow manufacture's installation and setup procedures carefully.
- Connect power from module or unit to auxiliary sensors.
- Connect alarm output relay contacts to auxiliary input terminals.

5. Install Power Supplies.

- Wire power supplies according the local electrical code and connect to appropriate PM, LU or ILU on the perimeter.
- Connect power supply to UPS if required.

6. Install Data Communication Lines (Section 6.6).

- Wire RS422 (using 22 or 24 gauge wire) from NIM to JB70 (or other surge suppressor) on outside of building with grounding according to local electrical code.

7. Install the PC or modem if part of system configuration, (Section 6.6).

- Wire from JB70 to the Converter Kit near the PC or modem.
- Connect Converter Kit to PC or modem.
- Make sure that Converter Kit and PC share a common grounded power bar.
- Install modem if applicable.
- Connect PC to UPS if required.

8. Install RM's (Section 6.8).

- Address the RM's with SW1 address switch on card (Section 14.8.2).
- Wire RS485 (using 22 or 24 gauge wire) line from PM or 422A to RM(s).
- Connect RS485 to NIM or 422A Adapter.
- Connect Relay Outputs and Inputs as required.

**C. System Setup**

**(Chapter 7)**

1. Power Up the System.

- Connect PC with Installation and Service Tool software.
- Establish Communications with all PMs – no Red "X"s.

2. Download Segmentation Data to PMs with "From Map" depressed (Section 7.3).

3. Assign Display Segments and Auxiliary Sensors to Zones (Section 7.16).  
(Select the "Zones" tab on the Site Data Dialog Box for set-up).

4. Assign Zones to Relay Outputs (Section 7.17).

5. Check "Input" Displays for each PM – the excursions may briefly exceed but not remain more than +/-16 at start of cable and +/-64 at end of cable – if there is a large permanent

offset to the input there may be cable damage – (Section 12.4.1). Monitor these during a quiet time on the fence.

6. Check “Clutter” Displays for each PM – normal clutter is a jagged line but it should not exceed +/- 1792. If it reaches +/-1792 there may be cable damage (Section 12.4.2).
7. Download PM Status File or “pmi file” from each PM.
  - Check power supply voltages – 10.5 to 60 vdc.
  - Check Sense Wire Voltages – Low = 0.79, Hi = 4.21, Diff =  $0.01 \pm 0.3$ .
  - Check Communication Terminations.
8. Calibrate the MicroPoint Cable (Sections 7.13 & 7.14).
  - Select a PM and turn on Calibration.
  - Walk along both A and B cable for the selected PM, rattling the fence with a large screwdriver.
  - Check “Sensitivity Plot” for each cable.
  - Recalibrate any missed locations.
  - Stop Calibration.
  - Save Calibration to Flash.
9. Repeat step 8 (Calibration) for each PM.
10. Finalize Key Point Settings – One Person Operation (Section 7.15).
  - Clear Alarm/Event Record on each PM (Section 8.2.2).
  - Broadcast Real Time to all PMs.
  - Strike the fence at each Key Point around entire perimeter – keep track of time and strike the Key Points in sequence.
  - Retrieve Event/Alarm Record from each PM (Section 8.2.2).
  - From time stamp identify the Subcell location of each Key Point.
  - With “From Map” selected, update Key Point locations – right click on each Key Point and replace with the new data.
11. Set Active and Inactive Display Segments (Section 7.7)
  - With “From Map” selected, select each Display Segment from table and ensure that the correct segments are set Active. (When viewed on the map the Active Display Segments are green and the Inactive segments are gray.)
12. Download Key Point data to PM’s.
  - Review the Display Segmentation with “From Map” selected.
  - Download this Key Point data to PM using “Update All”.

1. Set the Calibration Factor – repeat for each PM.
  - Ensure that there is only one Control Segment (190A to 190B).
  - Set all Control Segments to Level 1.
  - Set all Calibration Factors to –30.
  - Be sure to clear alarm buffer.
  - Strike each fence panel for cable A and B for each PM.
  - Retrieve Alarm/Event Record from the PM.
  - View the “Event Scatter” graph - ensure that the sensitivity threshold is selected. (There should be a “X” mark for each strike).
  - Increase Calibration Factor to raise the threshold until it approximates the top “X” marks of each cable.
  - Subtract 10db from the Calibration Factor and apply using “Modify” and “Update PM”.
  
2. Define Additional Control Segments as necessary.
  - Use the slider to set the subcell location of each Control Segment.
  - Set the Detection Level for each Control Segment as desired (Level 2 recommended).
  - Set the Detection Window for all Level 2, 3 or 4 operation.
  - Adjust Incremental Threshold for each Control Segment as desired.

**Performance Test**

1. Test Target for each PM (Section 12.5).
  - Activate the Test Target under “Alarm” menu.
  - Record amplitude and location of the Test Target from Absolute Response display.
  - Deactivate when complete.
  
2. Nuisance Alarm Test – as time and conditions permits – can be done remotely if a modem is available. (This test is to be done over a “quiet” period such as over night when no activity is anticipated.)
  - Clear the Alarm/Event Record prior to an anticipated “quiet” period.
  - Retrieve Alarm/Event Record after the “quiet” period.
  - Check Alarm and Event Histograms.
    - If a number of events occur at specific locations, locate cause and repair (a loose sign on the fence, Display Segment too close to a gate, etc.).
    - Make adjustments to Control Segments and Parameters (Incremental Threshold, Detection Level and Detection Window)
  
3. Detection Test – verify that system detects properly, have customer witness and sign-off.
  - Clear the Alarm/Event Record.

- Strike every other fence panel using the SMI Cut Simulator Tool the appropriate number of times (one more than the Detection Level setting).
- Retrieve the Alarm/Event Record.
  - Check the Alarm/Event Records or the Alarm Histogram.  
(Greater than 95% of strikes should have caused Alarms)

## **F. Document the Site**

1. Save the “\*.SDF” Site Data File for each site on a separate disk for future reference. Save by selecting “Save” on Site Data window tabs. (Section 7.2.0)
2. Save all files \*.MAP, \*.SMP, \*.SMI and \*.SDF files on a disk for future record.
3. Retrieve and save the PM Status file “PM.PMI” for each PM.
4. Keep record of Test Target amplitudes and locations.
5. Keep record of site telephone numbers and the customer contacts.

## **J. Acronyms**

PM	Processor Module
RM	Relay Module
NIM	Network Interface Module
MC110	Standard MicroPoint Cable
MC310	Armored MicroPoint Cable
LU	Link Unit
ILU	Isolated Link Unit
TU	Termination Unit
SU	Splice Unit
RS232A	RS232 Adapter
RS422A	RS422/RS485 Adapter
JB70	Lightning/Surge Protection Module
CST	Cut Simulator Tool
UPS	Uninterrupted Power Supply

## H. SYSTEM INSTALLATION SITE CHECKLIST

\*\*\*\*\*

### **Installation Checks**

\_\_\_\_ Check fence line for objects that might hit the fence; gates, signs, shrubs, trees that will cause nuisance alarms.

\_\_\_\_ Check that fence fabric is properly tied to posts and rails to avoid Nuisance Alarms.

\_\_\_\_ Check that all wire or cable connections are sound and properly sealed.

\_\_\_\_ Check for proper lightning protection and site grounding to meet local codes and protect system from damage.

#### 1. Draw Tool

Sketch Cable \_\_\_\_\_  
 Add MicroPoint Modules \_\_\_\_\_  
 Aux. Sensors \_\_\_\_\_  
 Set Display Segments \_\_\_\_\_  
 Set Zoning \_\_\_\_\_  
 Add Features \_\_\_\_\_

#### 2. Install Equipment

Unroll & Shake Cable \_\_\_\_\_  
 Tie Cable to Fence \_\_\_\_\_  
 PM's, LU's, TU's \_\_\_\_\_  
 Seal Connections \_\_\_\_\_  
 Aux. Sensors \_\_\_\_\_  
 Power & Data Wiring \_\_\_\_\_  
 Lightning Protection \_\_\_\_\_  
 Power Supply \_\_\_\_\_  
 Computer \_\_\_\_\_  
 RM's \_\_\_\_\_

#### 3. Installation Tool

Check Input Display \_\_\_\_\_  
 Check Clutter \_\_\_\_\_  
 Check Line Voltages \_\_\_\_\_  
 Calibrate \_\_\_\_\_  
 Check Sensitivity \_\_\_\_\_

#### 4. Set Control Parameters (all PMs)

Set Control Segments \_\_\_\_\_  
 Set Detection Level \_\_\_\_\_  
 Set Calibration Factor \_\_\_\_\_  
 Set Incremental Threshold \_\_\_\_\_  
 Clear PM Data \_\_\_\_\_  
 Store Site Data \_\_\_\_\_

#### 5. Verifying Performance

Retrieve PM Data \_\_\_\_\_  
 Overnight Com Test \_\_\_\_\_  
 Overnight FAR Test \_\_\_\_\_  
 Pd Test (Histogram) \_\_\_\_\_  
 Adjust (Scatter Graph) \_\_\_\_\_  
 Verify Zoning \_\_\_\_\_  
 Customer Acceptance \_\_\_\_\_  
 Service Connection \_\_\_\_\_

#### 6. Save Site Data Files

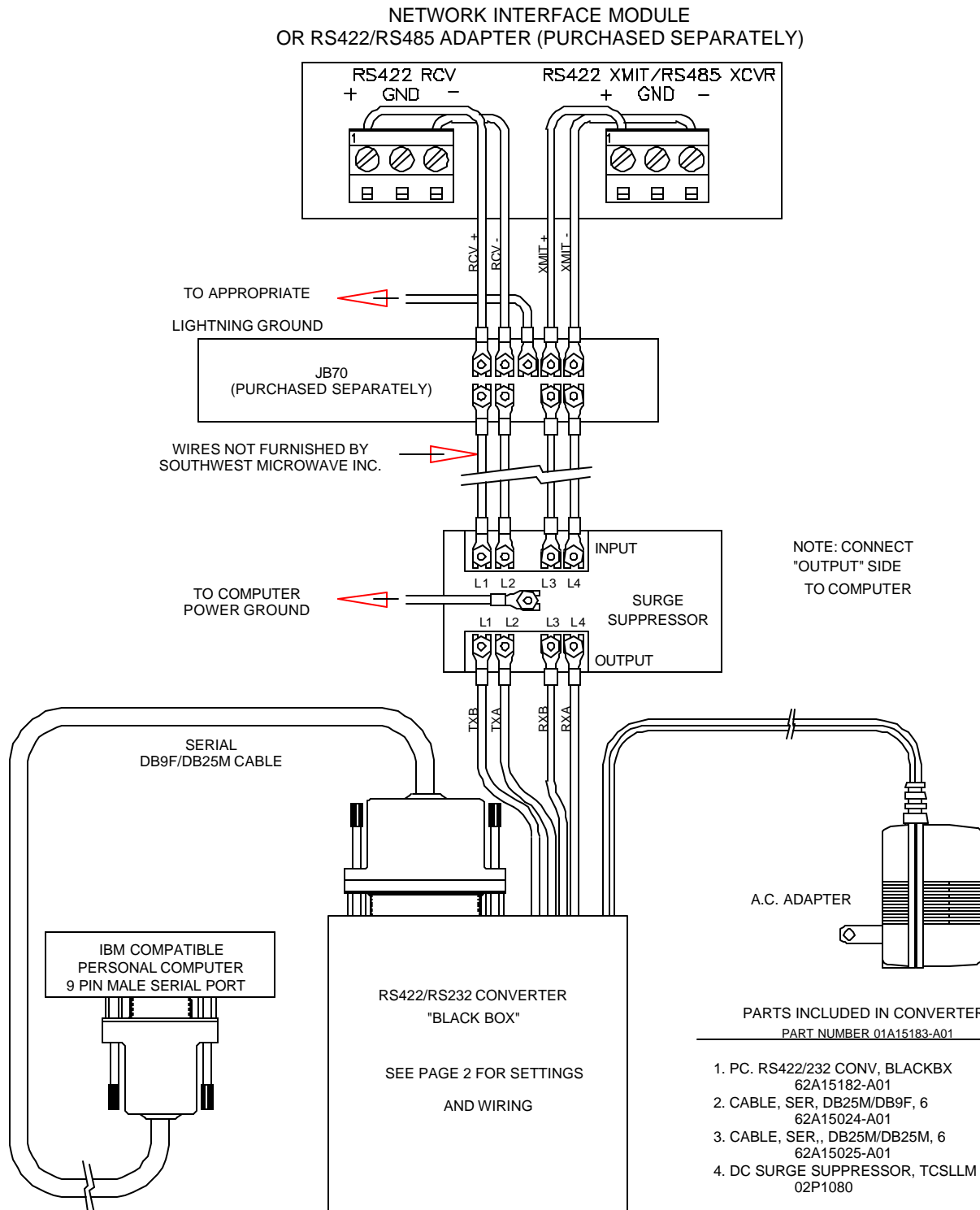
Copy Site Data files \_\_\_\_\_  
 Send files to SMI \_\_\_\_\_

#### 7. Training

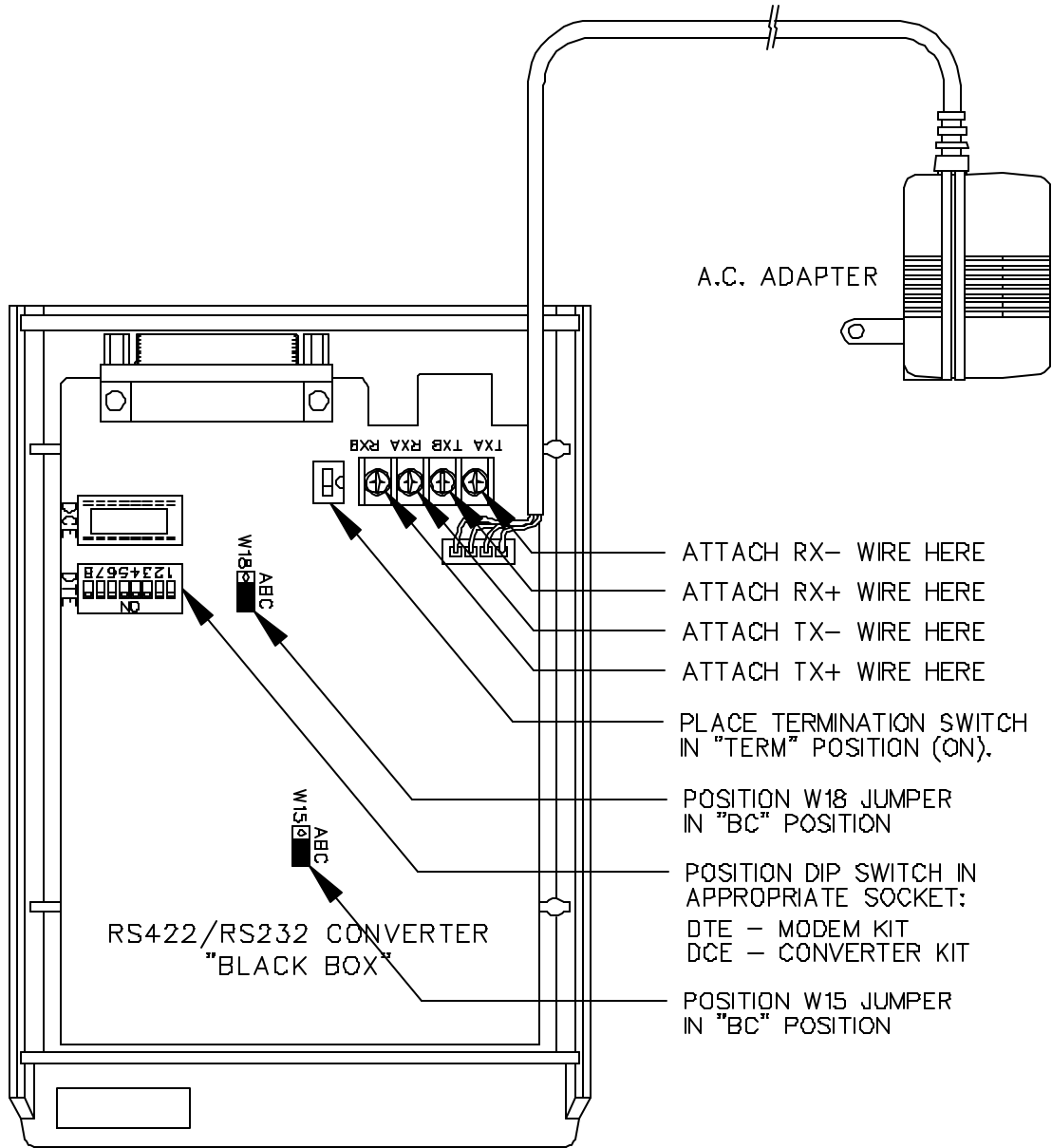
Operator Training \_\_\_\_\_  
 Map Monitor (option) \_\_\_\_\_  
 Site Maintenance \_\_\_\_\_

# I. Typical Wiring Diagrams

## Converter Kit



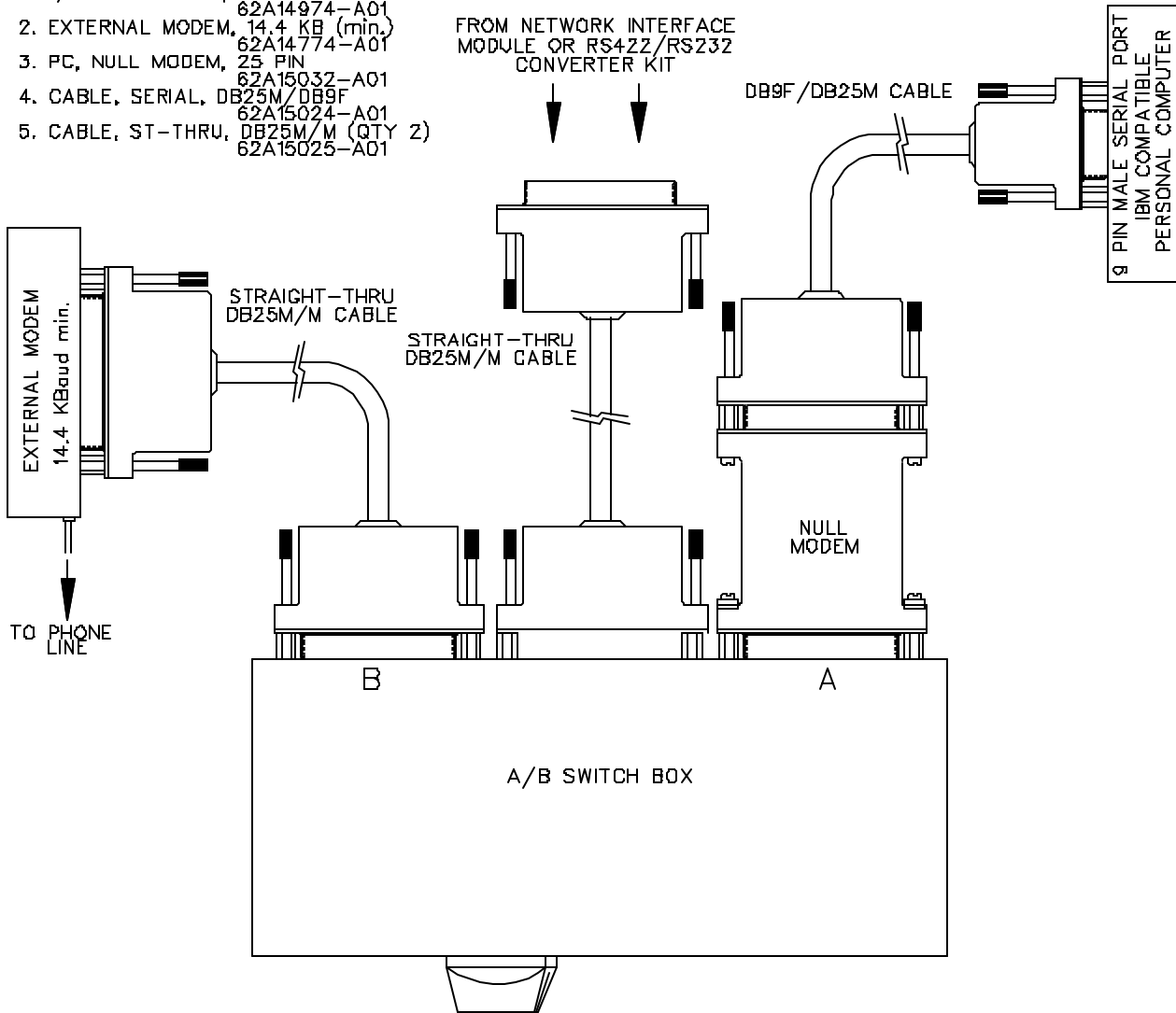
# Converter Box



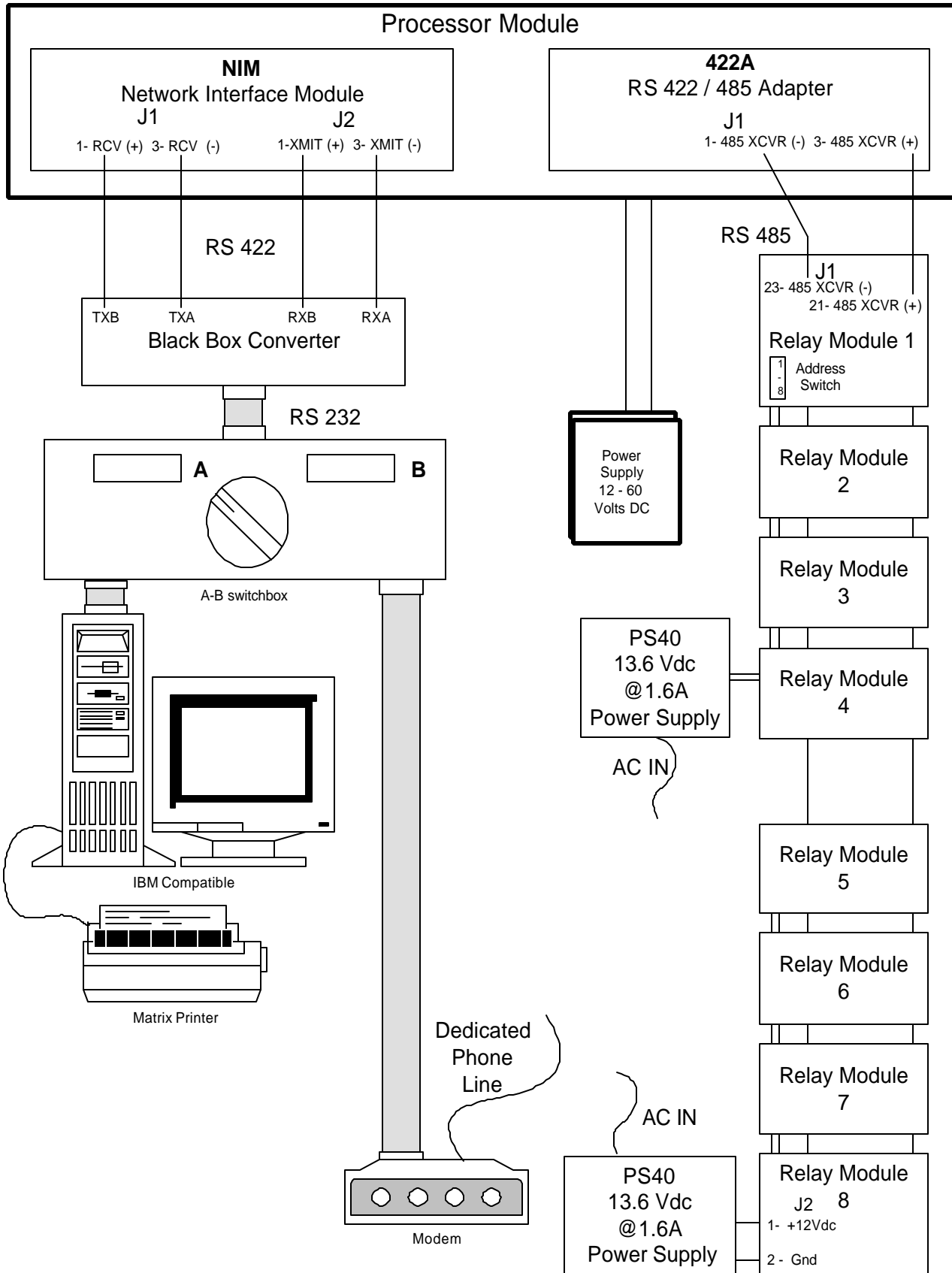
# Modem Kit

PARTS INCLUDED IN MODEM KIT  
PART NUMBER 01A15028-A01

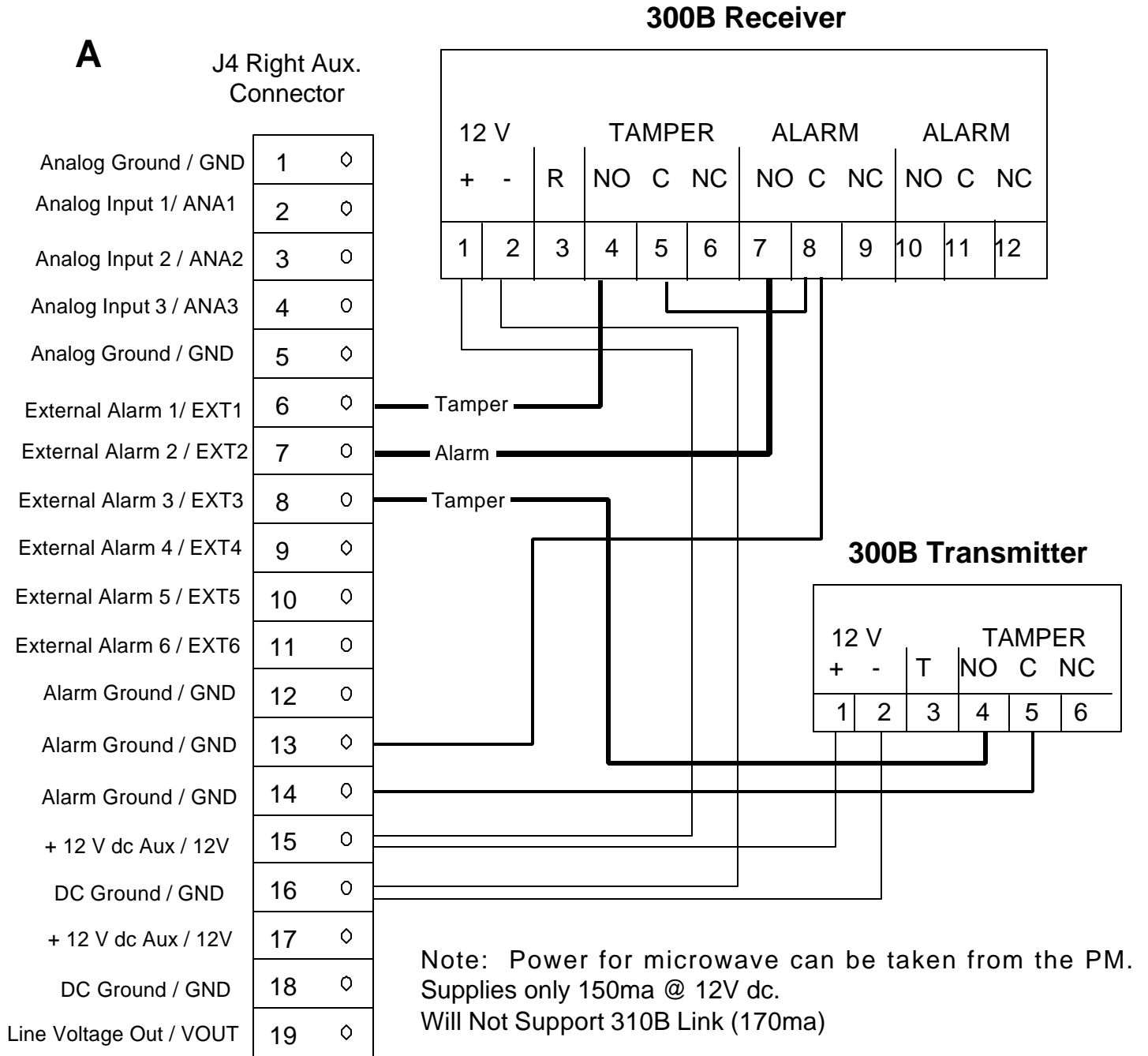
1. A/B SWITCH BOX, 25 PIN FEMALE  
62A14974-A01
2. EXTERNAL MODEM, 14.4 KB (min.)  
62A14774-A01
3. PC, NULL MODEM, 25 PIN  
62A15032-A01
4. CABLE, SERIAL, DB25M/DB9F  
62A15024-A01
5. CABLE, ST-THRU, DB25M/M (QTY 2)  
62A15025-A01



# Comm Line Configuration w/ Switch / Computer / Modem and Relay Modules

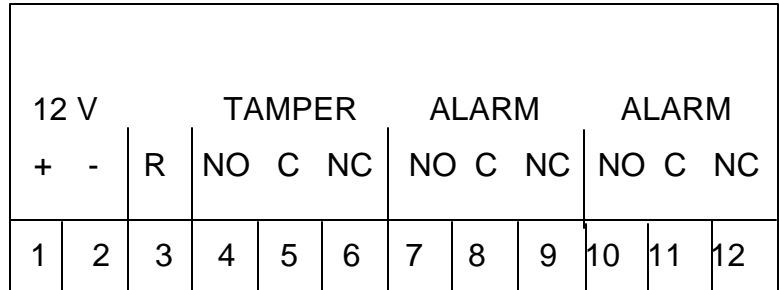
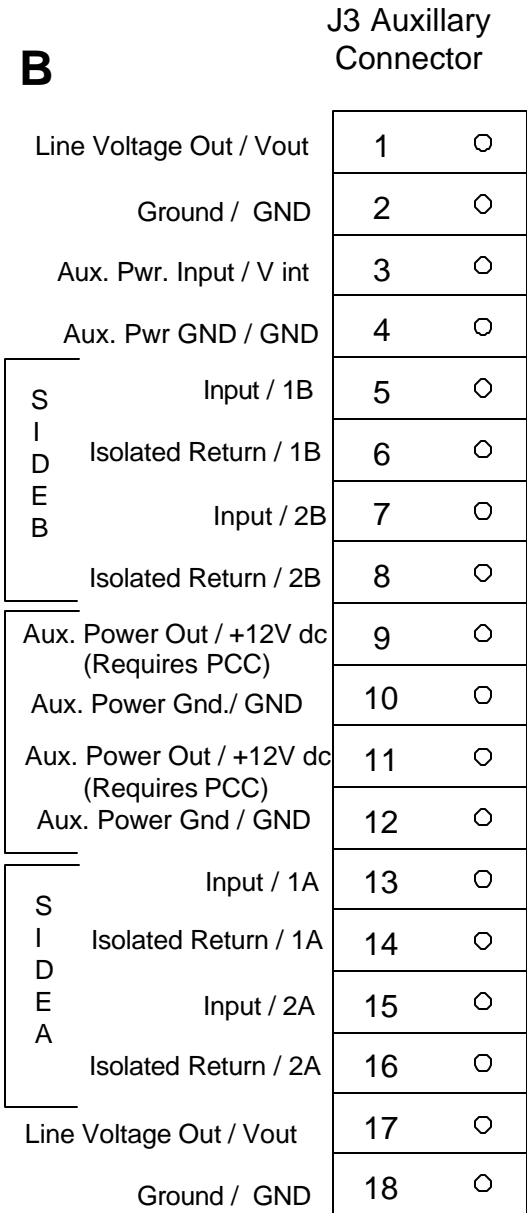


## PM wiring for External Microwave Link Alarm Inputs

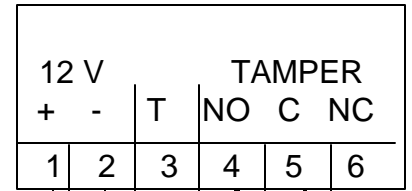


## Link Unit wiring for External Microwave Link Alarm Inputs

### 300B Receiver



### 300B Transmitter



Note: Power for microwave can be taken from the LU if a PCC is installed. A separate power supply can be used to power units at remote locations if necessary. Only 150ma @ 12V dc available from the PCC  
Will Not Support 310B Link (170ma)

If there is no "A" or "B" side detection cable the associated inputs will not work due to no communications from that side to a PM.

**A**