

CASI-RUSCO...*Security Solutions for the 21st Century*

MicroProx Installation Guide



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WARNING: This is a Class A product. In a domestic environment, this product may cause radio interference; in which case, the user may be required to take adequate measures.

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Introduction

This manual is an installation guide for the CASI-RUSCO MicroProx™ and the optional MicroProx Accessory Unit (MAU).

MicroProx, as its name implies, is both a proximity reader and microcontroller in one. The microcontroller part of the system can control up to two readers. One reader is the proximity reader included with the controller part and the other is an external reader in the 4xx series (magnetic stripe) or the 94x-99x series (proximity). The MicroProx utilizes Flash Memory Technology (Patent No. 4218690).

In addition, MicroProx is one of the first CASI-RUSCO products to utilize switchless technology. Instead of physically moving a switch to set the address, a software utility (Switchless Micro Address Utility) is run which sets the address for the MicroProx. In fact, for **Picture Perfect** direct connect, an address is not even needed.

The MicroProx is designed to mount directly onto a wall or on a standard US dual gang box. Since the controller is included with the reader, some thought should be used when securing the MicroProx.

The optional MAU is designed to supplement the MicroProx. The Accessory Unit is housed in a metal cabinet that has a key lock. This cabinet can be mounted directly onto the wall in a secured and sheltered area. Furthermore, this unit supplements the functionality of the MicroProx by providing additional inputs (alarm points), outputs, and tamper alarms. The MAU is designed to supply power along with a battery backup to the MicroProx, door strike and relay output for door strikes.

NOTE: The MicroProx is shipped from the factory WITHOUT the application code installed. Upon reviewing and completing this manual, which includes addressing the MicroProx (see “Setting the Address for a MicroProx” on page 38), you will need to download the appropriate application firmware.

Product Features

The CASI-RUSCO MicroProx offers:

- State-of-the-art architecture
- Weatherproof housing for outdoor use
- Rugged molded ABS construction with integral backplate
- Standard 12V operation
- Ability to store 4,000 badges, 1,000 badge history transactions, and 500 alarm history transactions when using **Picture Perfect™** Host and 4,000 badges, and 2,048 history transactions when using **Entry Perfect™** or **Secure Perfect®** Host
- Ability to read all Proximity Perfect and Prox Lite badges
- Proximity Perfect badge read ranges up to 6 inches (152.4mm) (Universal mounting for both metal and nonmetal walls)
- Clear, logical user interface with three LEDs and a beeper
- Built-in tamper alarm
- Two supervised inputs (DIs): Door Input (alarm), Exit Request
- Two outputs (DOs): Door Strike Output for Relay (Internal Reader and External Reader)
- Ability to add a supervised reader, either Proximity Perfect or magnetic stripe (Model 430/435 or 440/445)

NOTE: 440/445 Readers do not support door inputs or exit request.

- Ability to add an MAU (see next page)
- Flash Memory Technology for easy application code upgrades
- ESD and transient protection on all pins
- Special diagnostic badge to place the MicroProx in diagnostic mode for assistance in installation and troubleshooting
- FCC and CE (European) compliant if installed per the requirements stated in this manual

The optional CASI-RUSCO MAU offers:

- Metal housing with a front access door and secured with a key lock
- Contains battery backed power supply (battery not included)
- Two dry contact NO/NC relays dedicated to the MicroProx (internal reader) and external reader door strike
- Additional four supervised inputs (DIs)
- Additional four auxiliary outputs (Aux DOs)
- Two built-in tamper alarms
- RS-485 communication between the MAU and the MicroProx to control all inputs and outputs
- Fire control input to open a door during a fire alarm
- Separate DC output power for
 - MicroProx/External Reader (+12VDC)
 - Door Strikes (+12VDC or +24VDC)
 - Modem (+9VDC)
- ESD and transient protection on all pins
- FCC and CE (European) compliant if installed per the requirements stated in this manual

Installation Overview

Installation Steps

The following is a recommended order of steps for installing and setting up the hardware.

1. Unpack and plan where you will locate each component of your system. See Figure 1, “Block Diagram of MicroProx, External Power Supply and External Reader” and Figure 2, “Block Diagram of MAU External Reader” for two possible MicroProx scenarios.
2. Mount the MicroProx. See “Mounting the MicroProx” on page 14.
3. If desired, mount the optional MAU. See “Mounting the Optional MicroProx Accessory Unit” on page 18.
4. Power up the MicroProx. See “Powering Up the MicroProx” on page 22.
5. Connect the MicroProx to the host system. See “Communications” on page 30.
6. Set the address for the MicroProx, if necessary. See “Setting the Address for a MicroProx” on page 38.
7. Wire the digital inputs and digital outputs. See “Outputs (DOs), Inputs (DIs) and LEDs” on page 63.
8. Setup the MicroProx and, if applicable, the MAU in the host software. See “Configuring Your Host System” on page 60.
9. If desired, mount the optional external reader. See “Optional External Reader” on page 81.
10. If this is a new European installation, you **MUST** install EMI Suppression Cores to be CE compliant. See “EMI Suppression for CE Compliance” on page 83.
11. See “Troubleshooting Guide” on page 85 if the hardware is not working properly.

FIGURE 1: Block Diagram of MicroProx, External Power Supply and External Reader

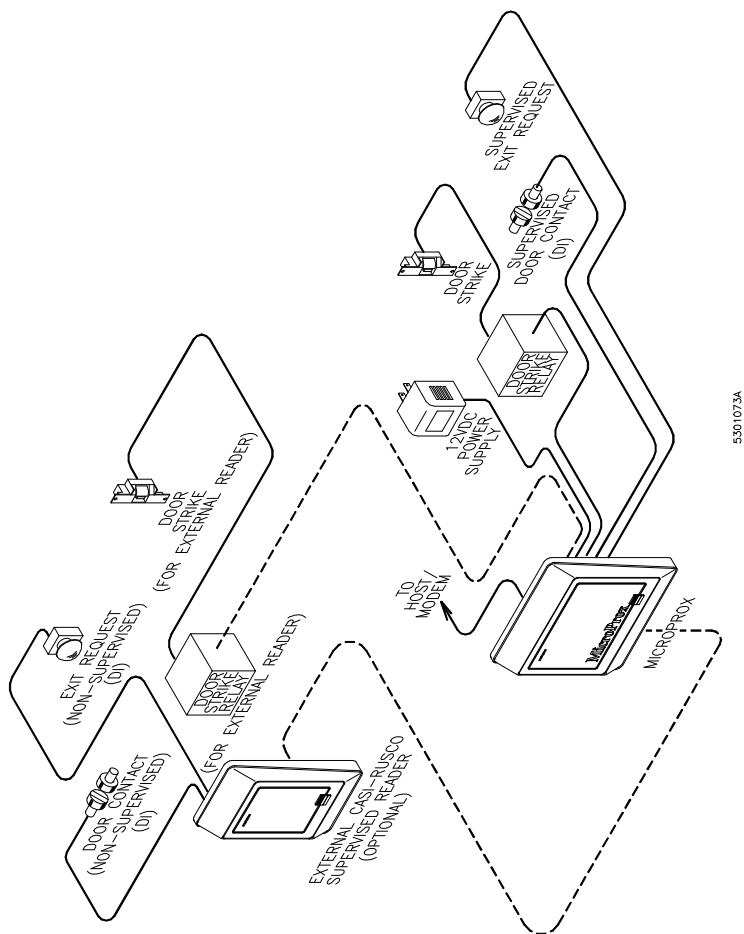
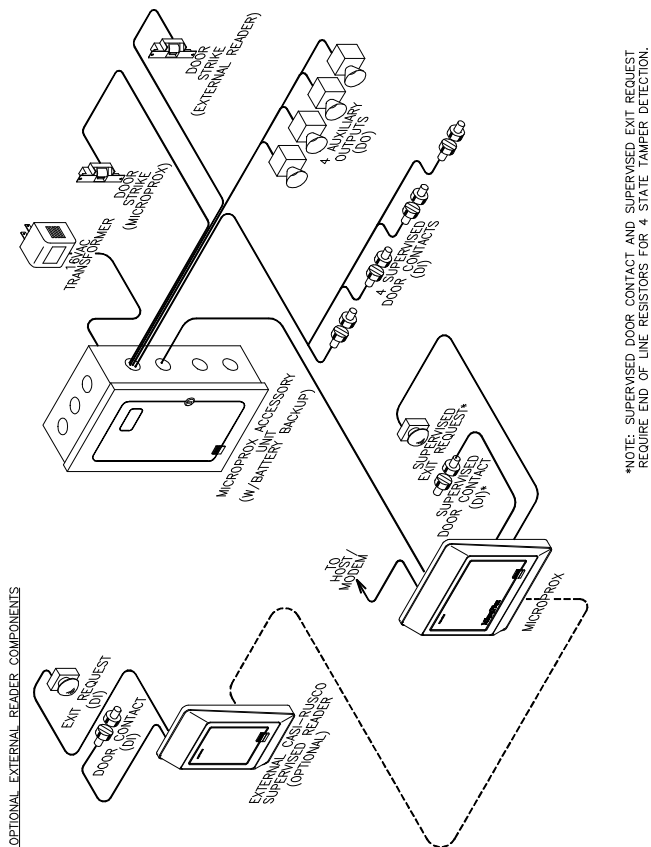


FIGURE 2: Block Diagram of MAU External Reader



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General Installation Rules

The authorized installation contractor is required to abide by the following rules.

1. Cables must be neatly labeled at both ends. This includes the MicroProx, external reader, inputs (alarms), and output devices including the MAU to which they are wired.
**For example, the label should include: Micro Address #/
Device or Reader #**
2. Use individually shielded pairs of cables only. All wiring must comply with local, state, and federal electrical codes and fire codes.
3. Obey all national, state, and local electrical and safety codes.
4. Obtain any required permits and/or inspections. Contact the local fire marshal for assistance if necessary.
5. Safety of customer personnel is the primary consideration of the installation.
6. Neatly dress and tie or lace all wiring in a professional manner.
7. Gather together and tape all unused conductors in multiple conductor cables.

WARNING: DO NOT run signal wiring in the same conduit with AC power wiring.

8. All cabling must be shielded. Ground one side of the shielded wire at the MicroProx, MAU or the host and float (leave open) the other end.

Required Noise Prevention Procedures

The authorized installation contractor must abide by the following guidelines to help prevent noise within the system.

Signal Transmission

1. Where practical, keep cables well separated from each other. Separate power cables from signal cables and any other cables with widely differing signal characteristics.
2. Keep the break-out at the ends of signal cables as short as possible.

3. **Ground all shield drain wire(s) and all unused wire(s) at the MAU or at the MicroProx if not using the MAU** by using the grounding studs provided inside the cabinet. If there is more than one microcontroller, ground to the upstream microcontroller only. **Do not ground both ends of a conductor.**

Cable Routing

Exercise caution when locating cables and MicroProx components near any other equipment that may cause electrical interference (noise). Examples of electrical and electro-magnetic noise sources are:

1. Fluorescent lighting and neon fixtures.
2. Power distribution panels, including wiring, transformers, generators, and alternators.
3. Motors that drive machinery such as air conditioners, elevators, escalators, large blowers, and machine tools. Electro-magnetic equipment such as degaussers, magnetic chucks, etc. Control equipment(relays) for machinery and other switching devices that carry or switch relatively large currents.
4. Radio and television receivers and transmitters. Signal generators, intercom systems, and other security systems. Radar transmitting equipment.
5. Arc welders, electro-discharge machinery and related equipment.
6. RF induction heaters.

Cable Length

Before installing the MicroProx or components, carefully plan their placement to minimize cable run lengths.

1. Minimize long parallel cable runs since they increase the likelihood of interference between signal cables and electrical interference sources.
2. Keep all cabling at least one foot (30.5 cm) away from any power line or other AC voltage source.
3. Minimize signal cable length between the source and the MicroProx system to reduce the signal degradation due to external effects.
4. The maximum cable distance for RS-232 is 100 feet. The maximum cable distance for RS-485 is 2,000 feet. For the maximum cable distance for power see Table 18 and Table 19 on page 91.

Unpacking the System

Check each carton, its packing slip, and each component for any sign of damage during shipment. If you see any damage, first notify the carrier and then contact CASI-RUSCO.

Standard Components

The following is standard with the MicroProx basic unit:

1. MicroProx
2. Screwdriver (for wiring Phoenix connector)
3. Diagnostic Badge

Optional Components

One or more of the following options is included only if specifically ordered.

1. External Power Supply
2. MAU
3. Back-to-Back Plate
4. Battery Kit
5. External Reader (43x, 44x or 9xx series)

NOTE: 44x Readers do not support door inputs or exit request.

6. Tamper Key Screwdriver (for tamper screws)

Handling Guidelines

All MicroProx units contain delicate wiring. Follow the guidelines below.

1. Avoid temperatures outside the range specified for the MicroProx operating environment.
2. Keep the interior and exterior housing of all MicroProx units and other components free of wire remnants.
3. Do not let dust and debris settle inside the MicroProx unit or the optional MAU.

Pinouts

For the MicroProx

The MicroProx contains two connectors: J1 and J2. The pinouts for these connectors can be found in the two tables that follow.

NOTE: See Figure 8, “MicroProx Connector Layout,” on page 23.

TABLE 1: MicroProx Unit : Connector J1

Pin	Signal Name
1	+12VDC
2	GND (Ground)
3	RS-485 – Poll Request (from the MAU)
4	RS-485 – Data +
5	RS-485 – Data –
6	RS-232 – CTS (Clear To Send)
7	RS-232 – CD (Carrier Detect)
8	RS-232 – RX (Receive)
9	RS-232 – TX (Transmit)
10	RS-232 – RTS (Request To Send)
11	RS-232 – Signal GND (Ground)

TABLE 2: MicroProx : Connector J2

Pin	Signal Name
1	External Reader Power (+12VDC)
2	External Reader Power (Ground)
3	External Reader Green LED

TABLE 2: MicroProx : Connector J2 (Continued)

Pin	Signal Name
4	External Reader Data 1
5	Internal Reader Door Output (DO)
6	External Reader Door Output (DO)
7	Supervised Door Contact (DI) Point
8	Supervised Door Contact (DI) Return
9	Supervised Exit Request (DI) Point
10	Supervised Exit Request (DI) Return

For the MicroProx Accessory Unit

The MAU contains four connectors: J1, J2, J3 and J4. The pinouts for these connectors can be found in the four tables that follow.

NOTE: See Figure 10, “Fuse and Connector Location,” on page 27.

TABLE 3: Accessory Unit: Connector J1

Pin	Signal Name
7	DC Power Output – (+12VDC) to MicroProx
6	DC Power Output – (GND) to MicroProx
5	Modem Power – (+9VDC (500 mA))
4	Modem Power – (GND)
3	RS-485 – Poll Request (to the MicroProx)
2	RS-485 – Data –
1	RS-485 – Data +

TABLE 4: Accessory Unit : Connector J2

Pin	Signal Name
1	Auxiliary DO 1
2	Auxiliary DO 2
3	Auxiliary DO 3
4	Auxiliary DO 4
5	Door Strike Relay (MicroProx) – NC
6	Door Strike Relay (MicroProx) – COM
7	Door Strike Relay (MicroProx) – NO
8	GND
9	Door Strike Relay (External Reader) – NC
10	Door Strike Relay (External Reader) – COM
11	Door Strike Relay (External Reader) – NO
12	GND
13	Door Strike Fire Control Return
14	Door Strike Fire Control Point
15	+12/24VDC Door Strike Power (Jumper Selectable)
16	GND

TABLE 5: Accessory Unit : Connector J3

Pin	Signal Name
1	AC Power Input – (16VAC-H)
2	AC Power Input – (16VAC-N)
3	Earth Ground (GND)
4	to Battery (+12VDC)
5	to Battery (GND)

TABLE 6: Accessory Unit : Connector J4

Pin	Signal Name
12	Tamper – Cabinet Door
11	GND
10	Tamper – External Tamper Input*
9	GND*
8	Supervised Input (DI) Return 4
7	Supervised Input (DI) Point 4
6	Supervised Input (DI) Return 3
5	Supervised Input (DI) Point 3
4	Supervised Input (DI) Return 2
3	Supervised Input (DI) Point 2
2	Supervised Input (DI) Return 1
1	Supervised Input (DI) Point 1

* Add jumper to eliminate false tamper condition.

Mounting the Equipment

Mounting the MicroProx

The MicroProx comes with a backplate suitable for mounting directly onto standard U.S. electrical dual gang boxes. The MicroProx may also be mounted directly onto a hollow wall. The microprox reader is also equipped with an external tamper feature. This feature can be activated by removing the key on the backplate prior to mounting. See Figure 3, “MicroProx - Direct Wall Mounting,” on page 15 and Figure 4, “MicroProx - Gang Box Mounting,” on page 16.

NOTE: In order for this feature to work properly, the reader mounting surface must be flush with the backplate.

Back-to-Back MicroProx and Reader

The MicroProx is suitable for back-to-back installation (to provide in/out access control) with an external reader. (See “Optional External Reader” on page 81 for supported readers.) The two readers should be mounted with their centers offset by at least 10 inches to provide interference-free operation. Using the optional back-to-back metal mounting plates with the MicroProx and an external proximity reader allows the two readers to be mounted directly opposite each other on a 4-inch thick wall.

Important

- The MicroProx should not be mounted within three feet of a computer terminal. Some terminals radiate electrical noise that may reduce the effective maximum read range.
- Caulking is recommended to form a weatherproof seal between the mounting surface and the outside of the reader for outdoor installations. See Figure 5, “Caulking the MicroProx,” on page 17.

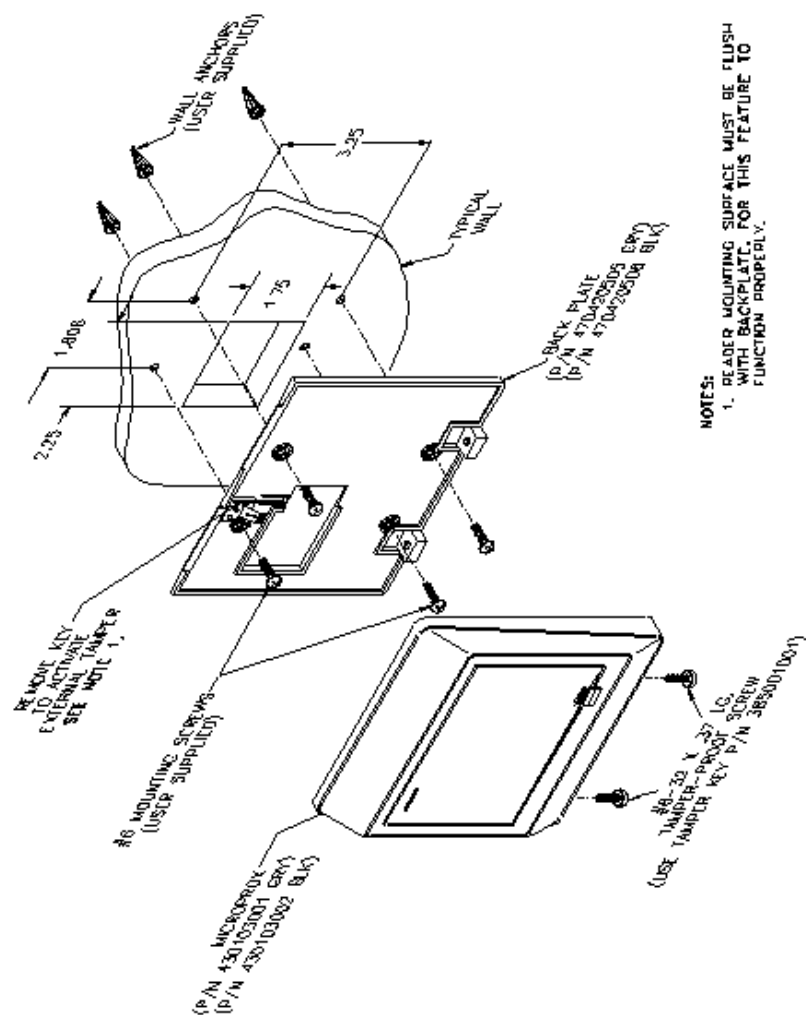
Mounting Instructions

The MicroProx can be mounted directly to the wall or in a gang box. See the appropriate figure (listed below) for mounting instructions.

Figure 3, “MicroProx - Direct Wall Mounting,” on page 15

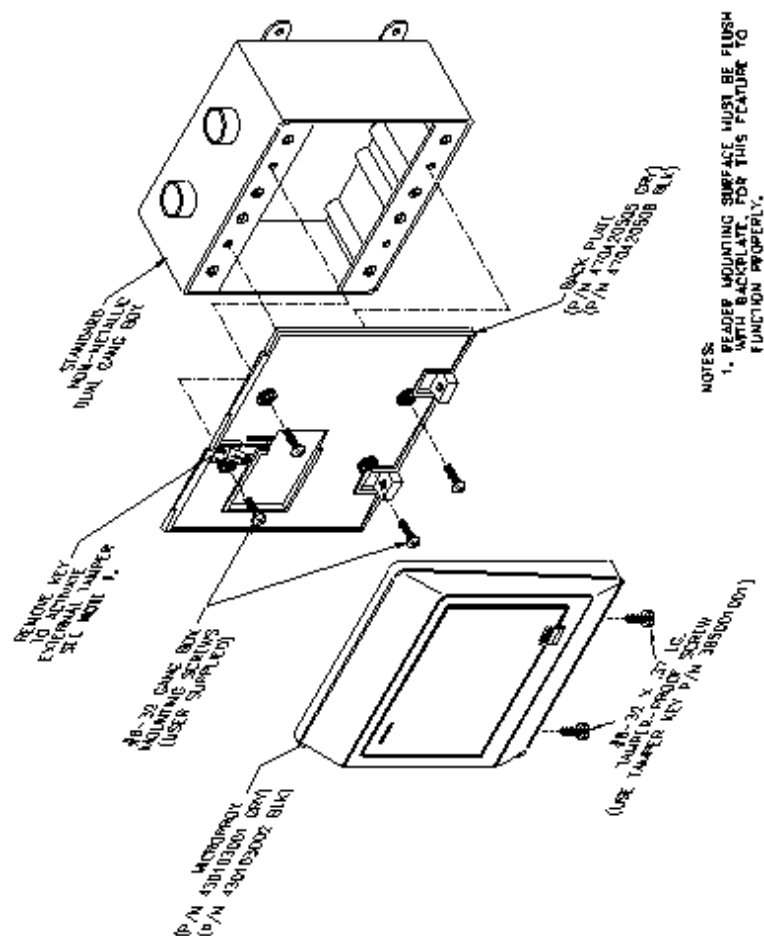
Figure 4, “MicroProx - Gang Box Mounting,” on page 16

FIGURE 3: MicroProx - Direct Wall Mounting



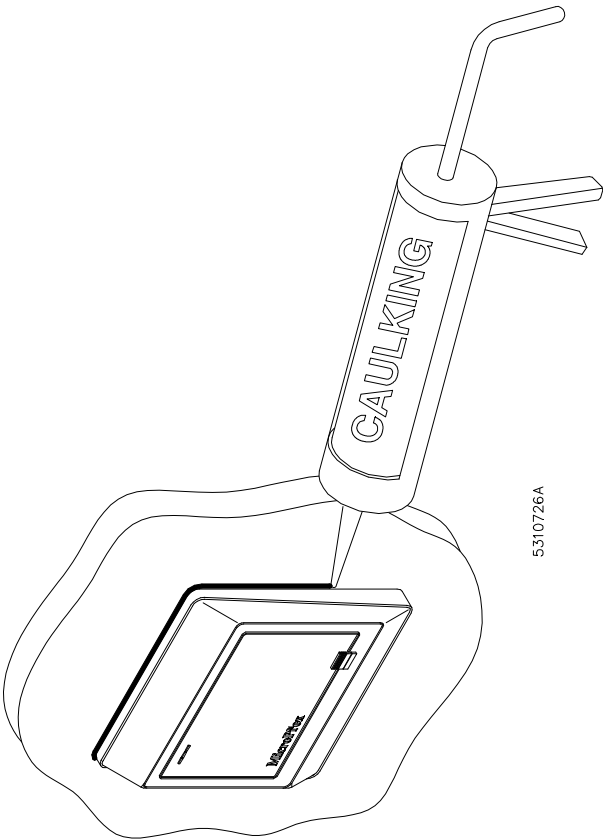
NOTES:
1. READER MOUNTING SURFACE MUST BE FLUSH WITH BACKPLATE FOR THIS FEATURE TO FUNCTION PROPERLY.

FIGURE 4: MicroProx - Gang Box Mounting



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FIGURE 5: Caulking the MicroProx



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Mounting the Optional MicroProx Accessory Unit

Important:

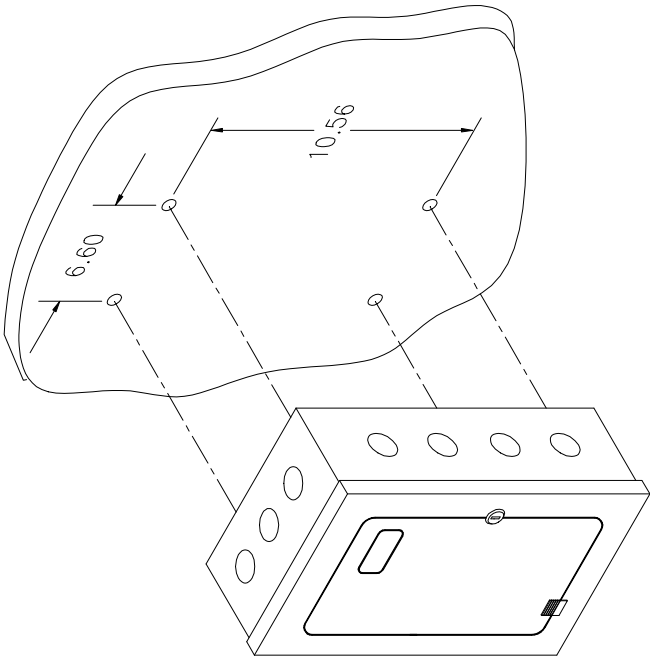
- The MAU should be located in an area that is secure from any disruption to data communications or tampering.
- All mounting areas must be clean and clear of corrosive gases and airborne metallic particles. Avoid installing near photocopiers due to contamination from toner particles.
- The MAU must be protected from hazardous (high) voltages.
- The MAU must be mounted on a vertical surface with at least six inches (15.2 centimeters) of clearance on all four sides to support thermal air cooling.
- The MAU must be located in a place that provides dedicated AC power and AC earth ground.

Mounting Instructions:

NOTE: See Figure 6, “Mounting the Optional MAU,” on page 19.

1. Remove the packing material from the cabinet.
2. Measure and drill the four mounting holes, if necessary.
3. Bolt the cabinet securely to the wall using four #8 bolts with screw heads and washers.
4. Install the cable conduit to the MAU cabinet knockout holes, if applicable.
5. There are 18 knockout holes on the cabinet. The cable is pulled through these holes. To open the holes, strike the knockouts from the outside of the cabinet.
6. Fit and tighten one 3/4-inch strain relief clamp in each knockout hole to be used.
7. Find the nearest earth ground (electrical box, ground bus, etc.). Run 14- to 18-AWG wire from the cabinet ground terminal pin J3-3 to earth ground point.

FIGURE 6: Mounting the Optional MAU



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Mounting the Battery

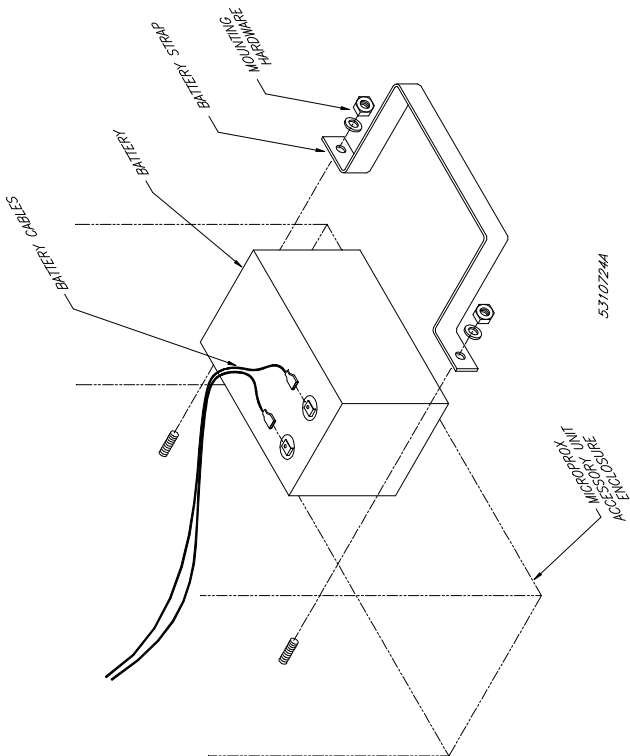
Mounting Instructions:

NOTE: See Figure 7, “Mounting the Battery in the MAU,” on page 21.

1. Place the battery in the bottom of the MAU.
2. Install the battery strap over the battery using the enclosed mounting hardware (#6 washer and nut).

For instructions on wiring the battery, see “Battery” on page 26.

FIGURE 7: Mounting the Battery in the MAU



Powering Up the MicroProx

The MicroProx unit requires a power supply of 12 to 15VDC with a minimum of 1A, 3A recommended. If you purchased the MAU, the MicroProx will be powered by that unit. If not, a separate power supply will be needed to power the MicroProx. See the appropriate section below for wiring instructions.

Wiring the MicroProx to the Power Supply

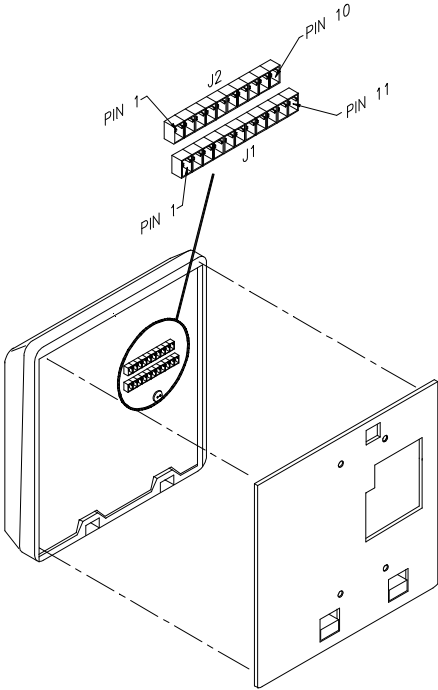
If you purchased a separate power supply and did not purchase the MAU, follow the steps below.

NOTE: See Figure 8, “MicroProx Connector Layout,” on page 23 and Figure 9, “Wiring the MicroProx to a Power Supply,” on page 24.

1. Connect the power supply + to pin J1-1 of the MicroProx unit.
2. Connect the power supply – to pin J1-2 of the MicroProx unit.
3. Connect the power supply – to Earth Ground.

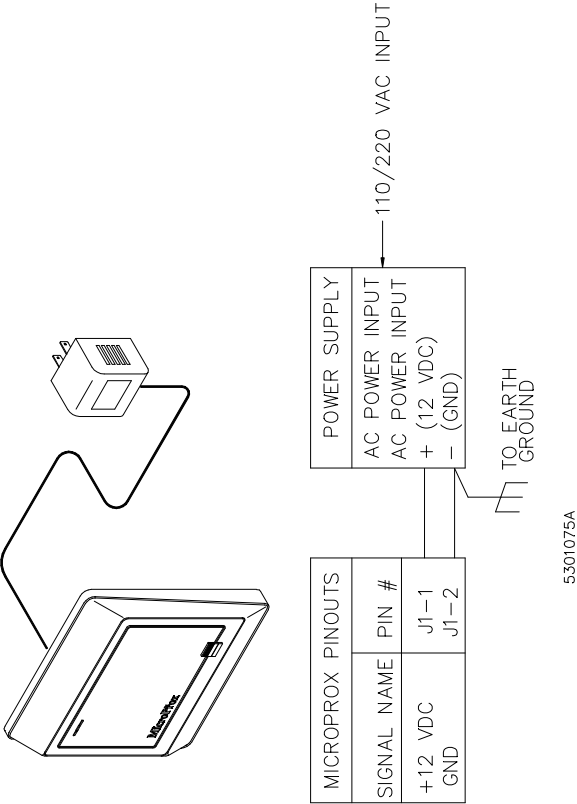
If this is a new MicroProx (i.e., contains no application code), then, once the system is powered up, all the lights will flash and it will beep every 30 seconds. This means that the MicroProx is in maintenance mode and will continue in this manner until the application code is downloaded.

FIGURE 8: MicroProx Connector Layout



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FIGURE 9: Wiring the MicroProx to a Power Supply



Wiring the MicroProx to the MicroProx Accessory Unit

If you purchased the MAU, several different items will need to be wired. The recommended order is:

- MicroProx Power
- RS-485 Communications
- CE Compliance for New European Installations
- Transformer
- Battery
- Optional Modem Power

NOTE: See Figure 11, “Wiring the MicroProx to the MAU,” on page 28.

☐ MicroProx Power

1. Wire the +12VDC by connecting pin J1-7 on the MAU to pin J1-1 on the MicroProx.
2. Wire the Ground by connecting pin J1-6 on the MAU to pin J1-2 on the MicroProx.
3. Wire the Earth Ground to pin J3-3 on the MAU.

☐ RS-485 Communications

1. Wire the Poll Request by connecting pin J1-3 on the MAU to pin J1-3 on the MicroProx.
2. Wire the Data + by connecting pin J1-1 on the MAU to pin J1-4 on the MicroProx.
3. Wire the Data – by connecting pin J1-2 on the MAU to pin J1-5 on the MicroProx.

☐ CE Compliance

As of January 1, 1996, all new European installations **MUST** be CE compliant.

NOTE: See Figure 12, “Typical Installation Using Shielded Cable/Drain Wire,” on page 29.

To make the installation CE compliant, complete the following:

1. Ground the shield of the cable between the MicroProx and the MAU at the MAU.

☐ Transformer

1. Wire the transformer by connecting pin J3-1 on the MAU to a terminal on the transformer.
2. Connect pin J3-2 on the MAU to the remaining terminal on the transformer.

☐ Battery

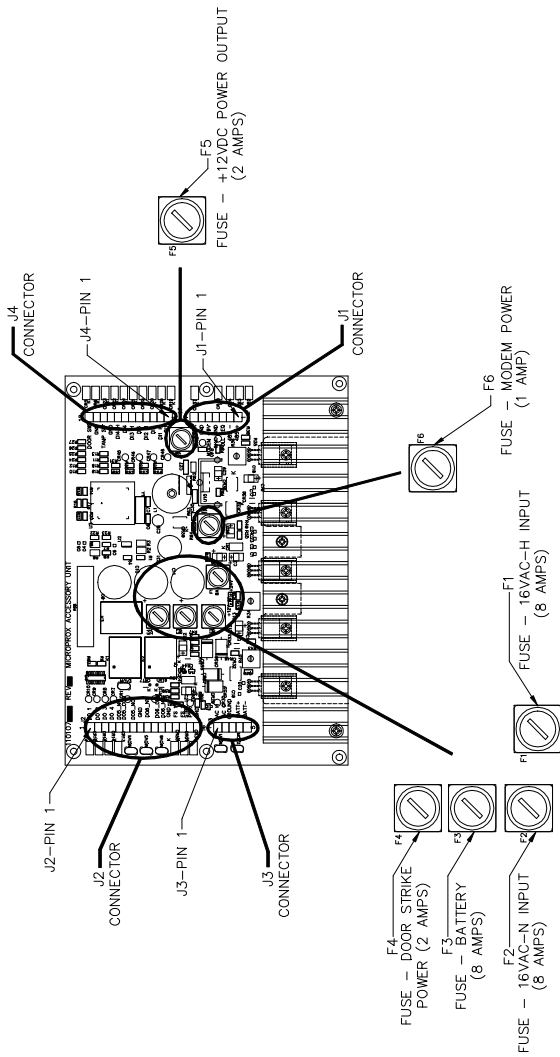
NOTE: See Figure 7, “Mounting the Battery in the MAU,” on page 21.

1. Wire the Battery +12VDC by connecting J3-4 to the + terminal on the battery.
2. Wire the Battery Ground by connecting J3-5 to the – terminal on the battery.

☐ Optional Modem Power

1. Wire the +9VDC Modem Power Output by connecting J1-5 to the + terminal on the modem.
2. Wire the Ground Modem Power Output by connecting J1-4 to the – terminal on the modem.

FIGURE 10: Fuse and Connector Location



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FIGURE 11: Wiring the MicroProx to the MAU

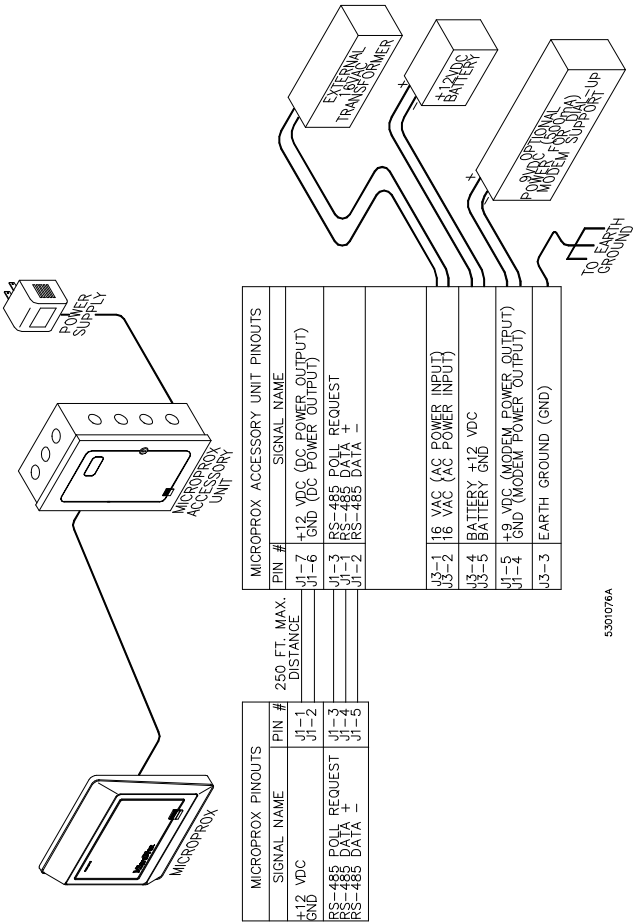
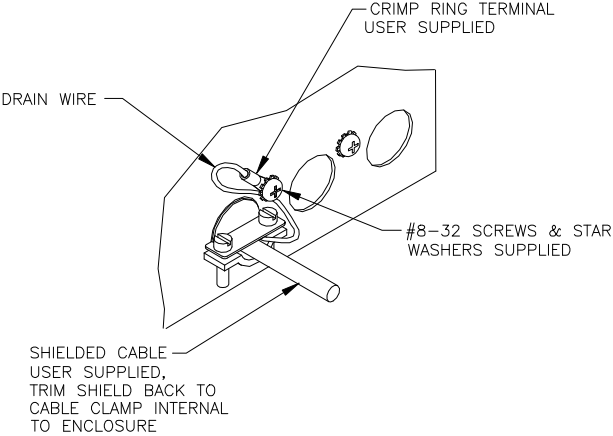


FIGURE 12: Typical Installation Using Shielded Cable/Drain Wire



Communications

For wiring communications to your host system, there are two options available:

- Direct connect to the host system at 9600 baud only (using either RS-232 or RS-485 converters)
- Modem connection to the host system at 9600 baud only

Regardless of the method chosen, RS-232 is the only protocol supported.

Direct Connect

Using RS-232

See Figure 13, “Direct Connect Wiring to the Host System,” on page 32 for the required wiring connections. The column headings “RISC/XT/PS2” and “AT/486/Pentium” are general guidelines only. In other words, RISC, XT, and PS2 computers usually have 25-pin connectors and AT, 486 and Pentium computers usually have 9-pin connectors. However, if your computer has a 25-pin connector, use the first column entitled “DB25F.” If your computer has a 9-pin connector, use the second column entitled “DB9F.”

For Picture Perfect

The MicroProx can be connected **ONLY** to the last Micro/4 or Micro/5 in a chain of micros.

For Entry Perfect or Secure Perfect

The MicroProx can be connected **ONLY** to the last Micro/5 in a chain of micros. The MicroProx can be connected on an RS-485 bus configuration. (See “Using RS-485 Converters” on page 31.)

NOTE: The address must be configured before adding MicroProx units. See “Setting the Address for a MicroProx” on page 38 for information on setting the address.

Using RS-485 Converters

See Figure 16, “Direct Connect Wiring Using RS-485 Converters,” on page 35 for the required wiring connections. The column headings “RISC/XT/PS2” and “AT/486/Pentium” are general guidelines only. In other words, RISC, XT, and PS2 computers usually have 25-pin connectors and AT, 486 and Pentium computers usually have 9-pin connectors. However, if your computer has a 25-pin connector, use the first column entitled “DB25F.” If your computer has a 9-pin connector, use the second column entitled “DB9F.”

For Picture Perfect

This configuration is not available.

For Entry Perfect or Secure Perfect

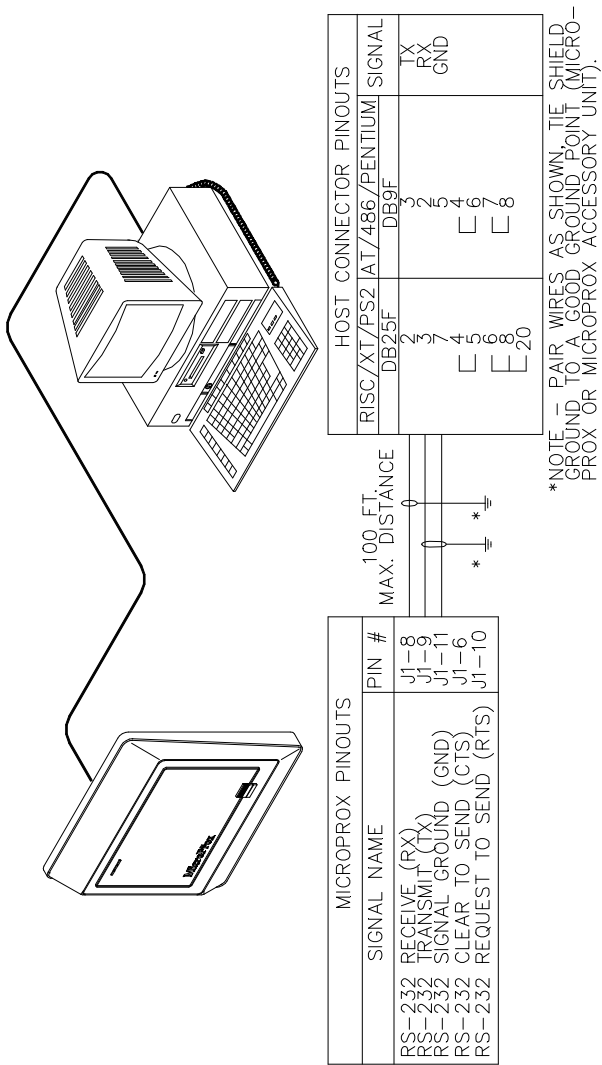
The RS-485 bus configuration must be on its own PC port line with a maximum of 16 micros on the line.

Modem Connection

For a MicroProx to Modem connection, see Figure 17, “Modem Connection Wiring to the MicroProx,” on page 36 for the required wiring connections.

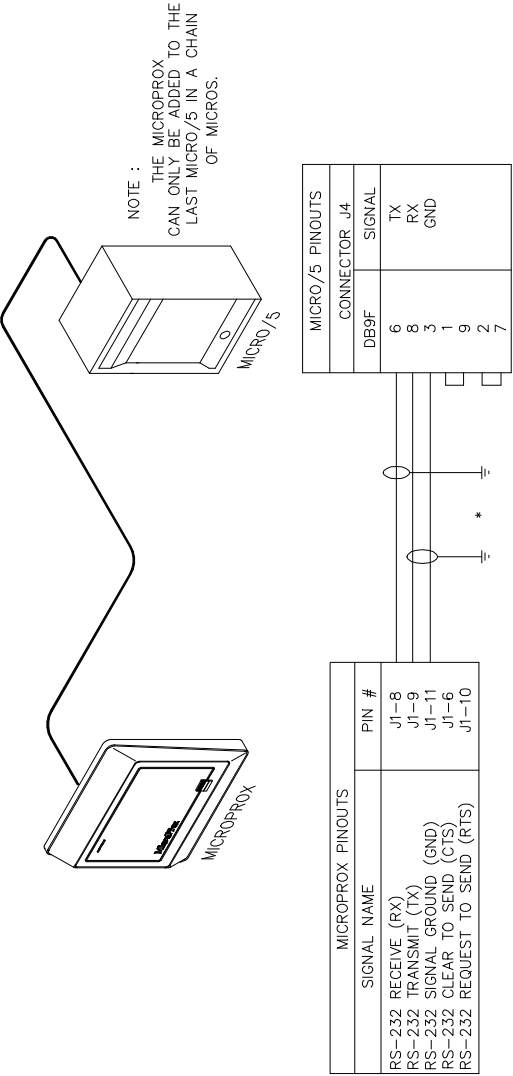
For a Host to Modem connection, the recommended cable is a PC to modem cable (DB25F to DB25M or DB9F to DB25M). See Figure 18, “Modem Connection Wiring to the Host System,” on page 37 for the required wiring connections.

FIGURE 13: Direct Connect Wiring to the Host System



5301077A

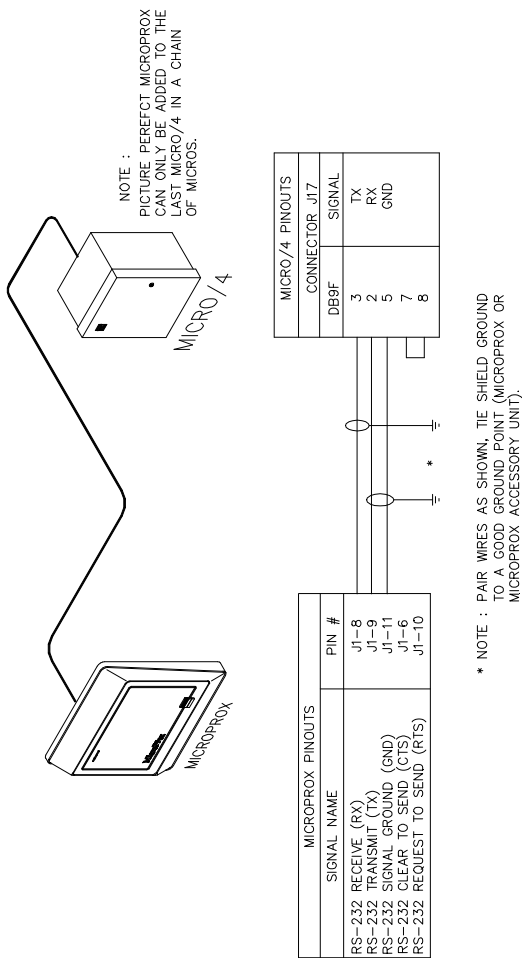
FIGURE 14: Direct Connect Wiring to a Micro/5



* NOTE : PAIR WIRES AS SHOWN, TIE SHIELD GROUND
TO A GOOD GROUND POINT (MICROPROX OR
MICROPROX ACCESSORY UNIT).

5310725A

FIGURE 15: Direct Connect Wiring to a Micro/4



5310727A

FIGURE 16: Direct Connect Wiring Using RS-485 Converters

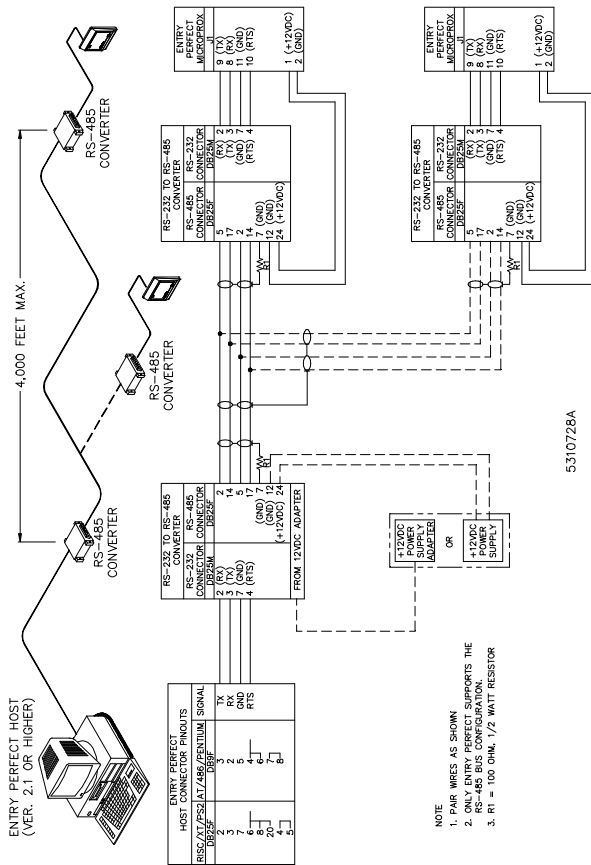
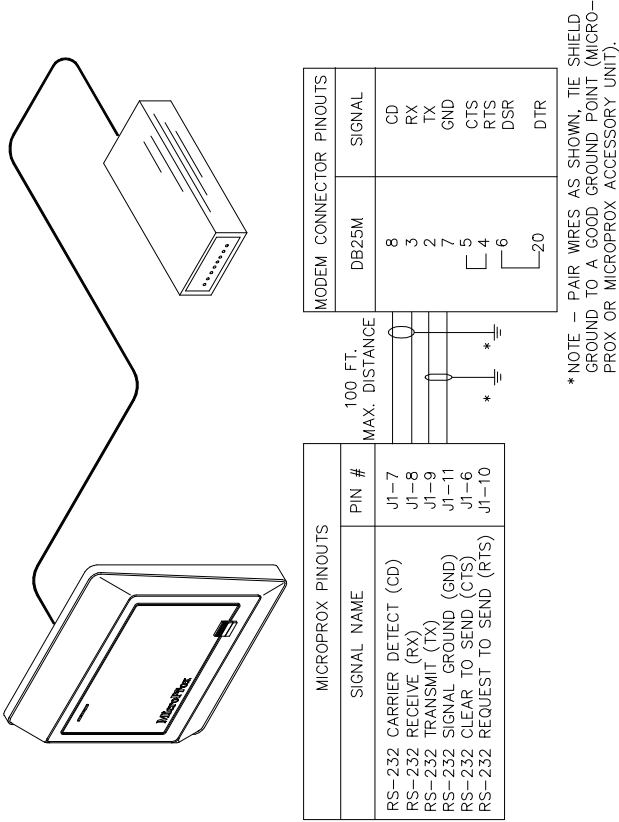
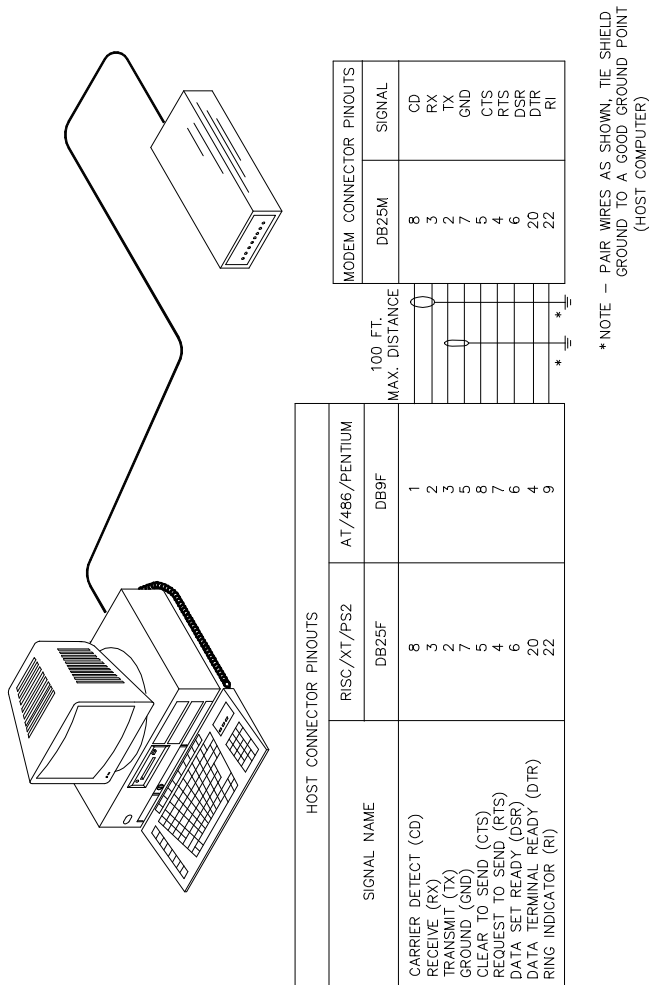


FIGURE 17: Modem Connection Wiring to the MicroProx



5301078C

FIGURE 18: Modem Connection Wiring to the Host System



5310729A

Configuring Your System

There are two steps required to configure your system:

1. Set the address for the MicroProx
2. Configure your host system

Each step will be explained in detail in the sections that follow.

Setting the Address for a MicroProx

In order for **Entry Perfect** or **Secure Perfect** to use a MicroProx unit, that MicroProx must have an address. The same is true if MicroProx is installed on **Picture Perfect** as a dial-up connection. With **Picture Perfect** direct connect, an address is not required.

NOTE: Only one MicroProx unit can be configured at one time. If you have more than one, connect the first MicroProx unit to the DOS/Windows machine that contains the utility, configure that unit, disconnect it and then attach the next unit.

The MicroProx has no switches; instead, use a CASI-RUSCO micro firmware installation tool in order to set the address and flash application code to a MicroProx:

1. MICTOOL-FLASH (Win95 and Win98)
2. MCUTIL32 (Windows)
MCUTIL (DOS utility)
3. **Picture Perfect** Flash Utility (AIX and UnixWare)

Each of these methods will be discussed in more detail on the following pages.

1. MICTOOL-FLASH

Downloading with MICTOOL-FLASH

Win95 and Win98 program distributed on CD-ROM (for FREE) and on the CASI-RUSCO Web site for download.

Features:

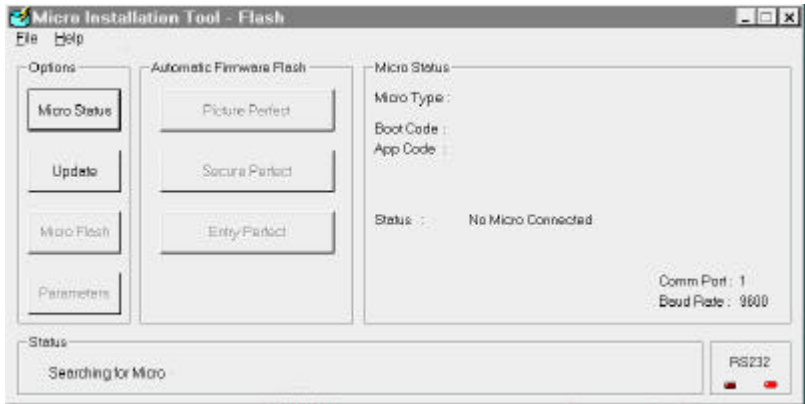
- Flashes all CASI-RUSCO micros (**Picture Perfect, Secure Perfect, and Entry Perfect**)
- Edits micro parameter settings such as phone numbers
- Checks syntax of parameter settings (i.e., dial-up micro must have an address)
- Provides online help

Limitations:

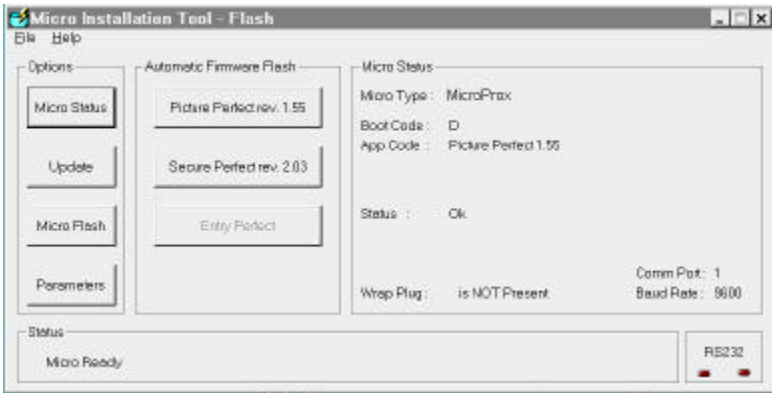
- Cannot flash downstream micros

The FLASH utility is part of the MICTOOL program; thus, it can be accessed from the MICTOOL main screen or a shortcut can be made to the **flash.exe** if you want to access the flash utility directly.

The utility automatically searches for micros and will usually find a micro within 30 seconds. If no micro is connected, the screen appears as follows:



When a micro is connected and found, the screen will display the **Micro Type** and firmware information.

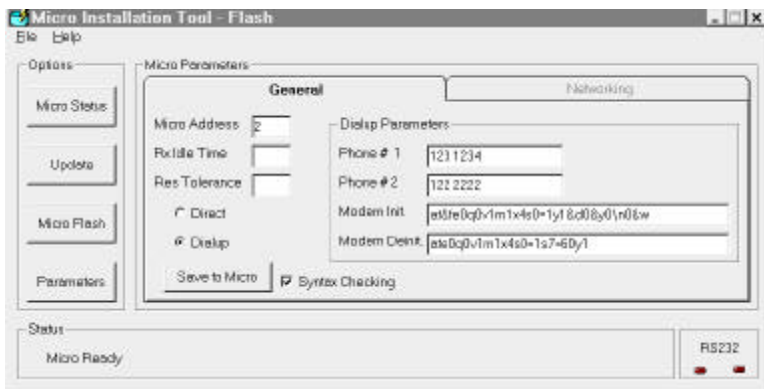


A micro can be flashed with application firmware in two ways:

- The easiest way is to use **Automatic Firmware Flash** in the middle of the screen. Press the button that corresponds to the firmware you want. (The buttons will display the latest firmware release on your PC.)
- Alternatively, you may press *MICRO FLASH* and select firmware from a pick list.

Updating the Micro Parameter Block with MICTOOL

When a micro has been detected by the program, the *PARAMETERS* button is enabled. Press the *PARAMETERS* button and the program will read the parameters from the Micro and present them on the screen. An example is shown below.

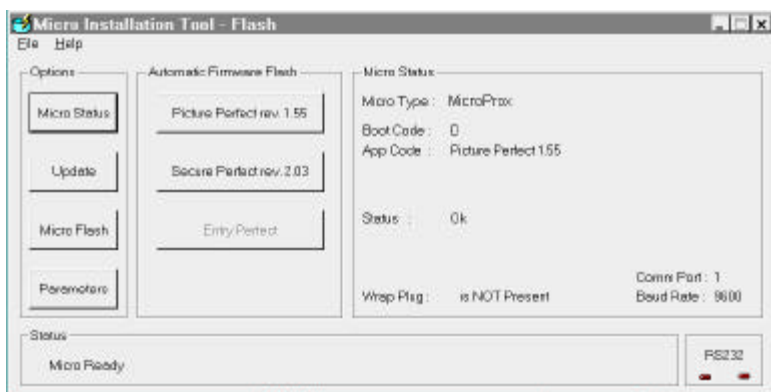


After you change any parameter, press **SAVE TO MICRO** to save the new settings in the micro.

Erasing the Application Firmware with MICTOOL

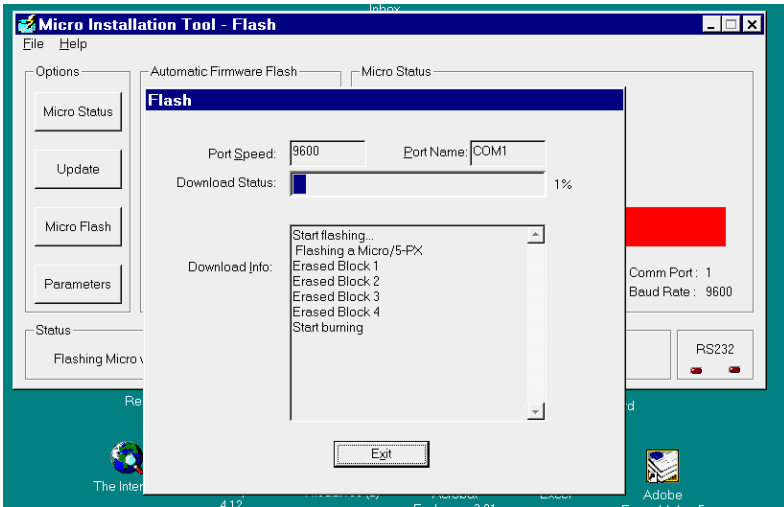
Individual circumstances may require the erasure of the application firmware. The following procedures indicate the process.

- When a micro is connected and found, the screen will display the **Micro Type** and firmware information.



- Under **Automatic Firmware Flash** in the middle of the screen, press any button.

- During the flash process, the screen will appear as follows:



- Wait approximately five seconds (the **Download Status** will indicate 1% and the last item in the **Download Info** block must be **Start burning**), then press **EXIT**.

The application code is now erased.

2. MCUTIL

MCUTIL32

Windows program distributed on disk and on the CASI-RUSCO Web site for download.

Features:

- Flashes all CASI-RUSCO micros (**Picture Perfect**, **Secure Perfect**, and **Entry Perfect**)
- Edits micro parameter settings such as phone numbers and micro IP address
- Flashes downstream micros

MCUTIL

DOS utility distributed on disk and on the CASI-RUSCO Web site for download.

Features:

- Flashes all CASI-RUSCO micros except Micro/5-P (**Picture Perfect**, **Secure Perfect**, and **Entry Perfect**)
- Edits micro parameter settings such as phone numbers and micro IP addresses
- Flashes downstream micros
- Provides a help text file (`mcutil.txt`)

MCUTIL allows you to create an address and, if necessary, save the phone number and modem initialization information for the MicroProx.

You **MUST** have a DOS/Windows machine (either a computer or laptop) in order to use this DOS utility. In addition, you will need a cable to connect the new MicroProx unit to that DOS/Windows machine.


The steps necessary are detailed in the sections that follow. Before continuing, however, you may want to change the setup of the communications port. Communications Port 1 (COM 1) is the default. If you plan on using a port other than COM 1 or need to change the baud rate or address of this port, go to the section below. Otherwise, go directly to the desired section: either “Setting the Address for use in a Picture Perfect System” on page 50, or “Setting the Address for use in an Entry Perfect or Secure Perfect System” on page 46.

☐ Starting the *MCUTIL* Program

- For **Entry Perfect** or **Picture Perfect**:
 1. If the MicroProx will be connected to **Entry Perfect**, you may either insert the MicroProx Firmware Application diskette into drive **A** of any DOS machine OR go to your **Entry Perfect** machine and change to your **Entry Perfect** directory. (The files on the diskette can also be found in your **Entry Perfect** directory.)


If the MicroProx will be connected to **Picture Perfect**, go to a DOS machine and insert the MicroProx Firmware Application diskette into drive **A**.

2. Connect the MicroProx to any serial communications port (1 through 12) on the DOS/Windows computer using a cable. COM 1 is the default. (See Figure 13, "Direct Connect Wiring to the Host System," on page 32 for the correct cable.)
3. If using the **diskette**, start the utility by typing the following at the DOS prompt:

a: `mcutil` 

If the installation diskette is in a drive other than **A**, replace the **A** in the command above with the letter of your drive.

If using the files in the **Entry Perfect** directory, start the utility by typing the following at your **Entry Perfect** directory:

`mcutil` 

Result: The **Password** screen appears.

4. Enter the password. If this is the first time entering the program or you did not change the password, enter:
master

If you changed the password, enter the new password.

Result: The **Main Menu** screen appears.

- For **Secure Perfect**:

1. Connect the micro to any serial communications port (1 through 12) on the computer using a cable. COM 1 is the default.
2. During the installation of **Secure Perfect**, the MCUTIL was installed for you. Start the utility under Windows 95 by clicking on the *START* button, **Programs**, **Secure Perfect**, and **Mcutil**.

Result: The **Password** screen appears.

3. Enter the password. If this is the first time entering the program or you did not change the password, enter:
master

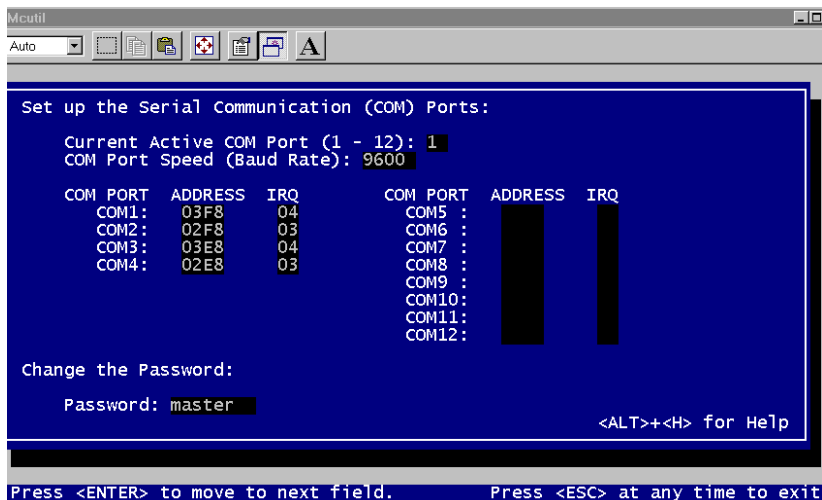
If you changed the password, enter the new password.

Result: The **Main Menu** screen appears.



❑ Changing the Communications Port

1. From the **Main Menu**, select **Utility Setup** by pressing: **S**

Result: The following screen appears.



The settings on the screen are the default settings. If you change these settings and exit out of the screen, your changes will still apply. However, if you exit out of the program, your changes will be replaced by the default settings when you enter the program again.

2. In the **Current Active COM Port (1-12): field**, enter the number or the COM port you are setting up.
3. In the **COM Port Speed (Baud Rate):** field, press  to display a picklist and select 9600 as the baud rate.
4. Check that the **ADDRESS** and **IRQ** default settings for the current COM port are correct. If they are not correct, change the setting in the appropriate **COM PORT** field.
5. Press  to return to the **Main Menu**.
6. If this MicroProx will be used with ...

Picture Perfect, then go to step 1 on page 50.

Entry Perfect or **Secure Perfect**, then go to step 1 on the following page.

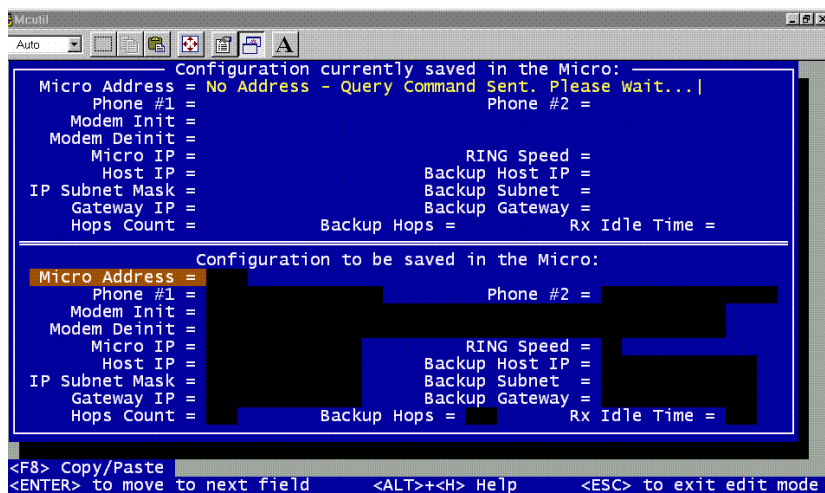
- ☐ Setting the Address for use in an **Entry Perfect** or **Secure Perfect** System

1. To select **Entry Perfect**, press: **1**
To select **Secure Perfect**, press: **3**

Result: The Utility Menu appears.

2. To configure the Micro address, select SMA Utility by pressing: **1**

Result: The following screen appears.



The utility looks for a MicroProx that contains **Entry Perfect** or **Secure Perfect** Application Code.

If the attached MicroProx contains the Application Code, the address of that MicroProx is posted in the top section of the screen entitled **Configuration currently saved in the Micro:**. Otherwise, a message will be displayed stating that no MicroProx units were found containing **Entry Perfect/Secure Perfect** Application Code.

3. Query the MicroProx by pressing: **(F1)**

Result:

- If the attached MicroProx contained Application Code, this step places the MicroProx in maintenance mode and displays the current configuration settings of the

MicroProx in the top section of the screen entitled ***Configuration currently saved in the Micro:***.

- If no MicroProx units were found containing **Entry Perfect/Secure Perfect** Application Code, this step checks to see if the MicroProx is in maintenance mode (i.e., a new MicroProx).
 - If a MicroProx is found in maintenance mode, any information currently saved in that MicroProx is displayed in the top section of the screen entitled ***Configuration currently saved in the Micro:***. If there is no information, the message **No Address** is displayed.
 - If the message **TIME OUT** displays, check the connection to the MicroProx and re-query the MicroProx by pressing **(F1)**. If the message still does not change, this MicroProx does not contain **Entry Perfect/Secure Perfect** Application Code. It may contain **Picture Perfect** Application Code. Restart this utility and select **Picture Perfect**. (See the previous section entitled “Setting the Address for use in a Picture Perfect System” on page 50.) If the same message appears, then this MicroProx is not working. See the “Troubleshooting Guide” on page 85.
- 4. To enter new information or change existing information, press: **(F2)**

Result: A cursor displays in the bottom section of the screen entitled ***Configuration to be saved in the Micro:*** in the field ***Micro Address =***.

- 5. If this MicroProx has no address, enter an address at the ***Micro Address =*** field and press **(Enter)**.

If this MicroProx contains an address, you can accept that address by pressing **(Enter)** or change it by typing over the existing one and then pressing **(Enter)**.


Result: The cursor moves to the ***Phone Number =*** field. The format of this number is modem dependent. Check the manual received with your modem for guidelines.


NOTE: If this is a dial-up MicroProx, there **MUST** be a number in the **Phone Number** field.

For example, if the number is (561) 555-6666 and the number 9 needs to be dialed to get an outside line, you would enter:

9,5615556666

The comma is a pause which gives the telephone system time to access an outside line. However, as stated before, the format is modem dependent. Check your modem manual.

6. If this is a dial-up MicroProx, enter the complete phone number for the modem that connects the MicroProx to the host and press .

Otherwise, press .


Result: The cursor moves to the **Modem Init =** field. The modem initialization sequence instructs the modem on hanging up. This field is defaulted to the following string even though it does not appear in the field:

ATE0Q0V1M1X4S0=1Y1&D0&W

If your modem uses this init string, you DO NOT need to enter anything in this field. However, if your modem cannot use this string, you can enter a new string. See your modem manual for more information.

NOTE: Any time this field is blank, it will automatically default to the above string.

7. If this is a dial-up MicroProx and you wish to use the default string OR this is not a dial-up MicroProx, press .

If this is a dial-up MicroProx and you DO NOT wish to use the default, enter the modem initialization sequence for the modem and press .

Result: The cursor moves to the **Modem Deinit =** field. The modem deinitialization sequence instructs the modem on dialing out and answering automatically. This field is defaulted to the following string even though it does not appear in the field:

ATE0Q0V1M1X4S0=1S7=60Y1

If your modem uses this deinit string, you DO NOT need to enter anything in this field. However, if your modem cannot use this string, you can enter a new string. See your modem manual for more information.

NOTE: Any time this field is blank, it will automatically default to the above string.

8. If this is a dial-up MicroProx and you wish to use the default string OR this is not a dial-up MicroProx, press **(Enter)**.

If this is a dial-up MicroProx and you DO NOT wish to use the default, enter the modem deinitialization sequence for the modem and press **(Enter)**.

Result: The following fields are reserved for future use:

Micro IP, Ring Speed, Host IP, Backup Host IP, IP Subnet Mask, Backup Subnet, Gateway IP, Backup Gateway, Hops Count and Backup Hops.

9. Press **(Enter)** until you reach the **Rx Idle Time =** field. Enter the amount of time (20 - 255 milliseconds) the micro will wait to receive an entire message. If you leave this field blank, a default value of 20 milliseconds @ 9600 baud is used.
10. Press **(Esc)** to exit from Edit mode.
11. Press **(F3)** to save the configuration changes to the MicroProx.

Result: If these changes were successfully downloaded to the MicroProx, the top section of the screen entitled **Configuration currently saved in the Micro:** will be updated with this new information.

If the changes were not successfully downloaded, a **TIME OUT** message will display. Press **(F3)** again.

12. Press **(Esc)** to return to the Main Menu.
13. Press **(Esc)** or **(4)** to exit the program.
14. Press **(Enter)** to return to the DOS prompt.
15. If this MicroProx is a new installation, the MicroProx will still be in maintenance mode (i.e., the lights will flash and it will beep every 30 seconds). At this point, download the firmware to the new MicroProx by using the download utility in the **Entry Perfect/Secure Perfect** host program.

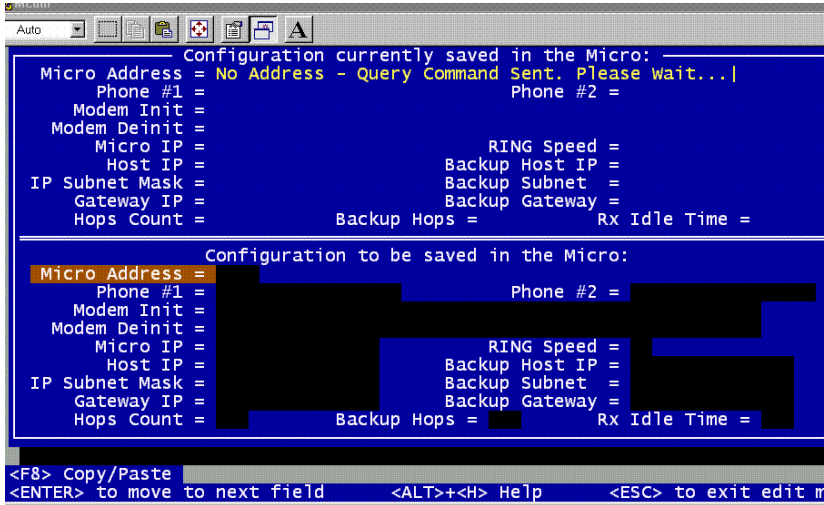
☐ Setting the Address for use in a **Picture Perfect** System

1. To select **Picture Perfect**, press: **2**

Result: The Utility Menu appears.

2. To configure the Micro address, select SMA Utility by pressing: **1**

Result: The following screen appears.



The utility waits for an answer from a MicroProx that contains **Picture Perfect** Application Code.

If the attached MicroProx contains **Picture Perfect** Application Code, the address of that MicroProx is posted in the top section of the screen entitled **Configuration currently saved in the Micro:**. Otherwise, a message will be displayed stating that no MicroProx units were found containing **Picture Perfect** Application Code.

3. Query the MicroProx by pressing: **(F1)**

Result:

- If the attached MicroProx contained Application Code, this step places the MicroProx in maintenance mode and displays the current configuration settings of the MicroProx in the top section of the screen entitled **Configuration currently saved in the Micro:**.


- If no MicroProx units were found containing **Picture Perfect** Application Code, this step checks to see if the MicroProx is in maintenance mode (i.e., a new MicroProx).
 - If a MicroProx is found in maintenance mode, any information currently saved in that MicroProx is displayed in the top section of the screen entitled ***Configuration currently saved in the Micro:***. If there is no information, the message **No Address** is displayed.
 - If the message **TIME OUT** displays, check the connection to the MicroProx and re-query the MicroProx by pressing (F1). If the message still does not change, this MicroProx does not contain **Picture Perfect** Application Code. It may contain **Entry Perfect** Application Code. Restart this utility and select **Entry Perfect**. (See the next section entitled “Setting the Address for use in an Entry Perfect or Secure Perfect System” on page 46.) If the same message appears, then this MicroProx is not working. See the “Troubleshooting Guide” on page 85.
- 4. To enter new information or change existing information, press: (F2)

Result: A cursor displays in the bottom section of the screen entitled ***Configuration to be saved in the Micro:*** in the field **Micro Address =**.

- 5. If this MicroProx has no address, enter an address at the **Micro Address =** field and press (Enter).

If this MicroProx contains an address, you can accept that address by pressing (Enter) or change it by typing over the existing one and then pressing (Enter).

Result: The cursor moves to the **Phone Number =** field. The format of this number is modem dependent. Check the manual received with your modem for guidelines.

6. Enter the complete phone number for the modem that connects the MicroProx to the host and press .

NOTE: If this is a dial-up MicroProx, there **MUST** be a number in the **Phone Number** field.

For example, if the number is (561) 555-6666 and the number 9 needs to be dialed to get an outside line, you would enter:

9,5615556666

The comma is a pause which gives the telephone system time to access an outside line. However, as stated before, the format is modem dependent. Check your modem manual.


Result: The cursor moves to the **Modem Init** = field. The modem initialization sequence instructs the modem on hanging up. This field is defaulted to the following string even though it does not appear in the field:

ATE0Q0V1M1X4S0=1Y1&D0&W

If your modem uses this init string, you **DO NOT** need to enter anything in this field. However, if your modem cannot use this string, you can enter a new string. See your modem manual for more information.

NOTE: Any time this field is blank, it will automatically default to the above string.

7. If this is a dial-up MicroProx and you wish to use the default string **OR** this is not a dial-up MicroProx, press .

If this is a dial-up MicroProx and you **DO NOT** wish to use the default, enter the modem initialization sequence for the modem and press .

Result: The cursor moves to the **Modem Deinit** = field. The modem deinitialization sequence instructs the modem on dialing out and answering automatically. This field is defaulted to the following string even though it does not appear in the field:

ATE0Q0V1M1X4S0=1S7=60Y1

If your modem uses this deinit string, you **DO NOT** need to enter anything in this field. However, if your modem cannot use this string, you can enter a new string. See your modem manual for more information.

NOTE: Any time this field is blank, it will automatically default to the above string.

8. If this is a dial-up MicroProx and you wish to use the default string OR this is not a dial-up MicroProx, press **(Enter)**.

If this is a dial-up MicroProx and you DO NOT wish to use the default, enter the modem deinitialization sequence for the modem and press **(Enter)**.

Result: The cursor moves to the **Micro IP =** field.

9. Move to the **Rx Idle Time =** field.
10. Enter the amount of time (20 - 255 milliseconds) the micro will wait to receive an entire message. If you leave this field blank, a default value of 20 milliseconds @ 9600 baud is used.
11. Press **(Esc)** to exit from Edit mode.
12. Press **(F3)** to save the configuration changes to the MicroProx.

Result: If these changes were successfully downloaded to the MicroProx, the top section of the screen entitled **Configuration currently saved in the Micro:** will be updated with this new information.

If the changes were not successfully downloaded, a **TIME OUT** message will display. Press **(F3)** again.

13. Press **(Esc)** to return to the **Main Menu**.
14. Press **(Esc)** or **(4)** to exit the program.
15. Press **(Enter)** to return to the DOS prompt.
16. If this MicroProx is a new installation, the MicroProx will still be in maintenance mode (i.e., the lights will flash and it will beep every 30 seconds). At this point, download the firmware to the new MicroProx by using the download utility in the **Picture Perfect** host program.

3. Picture Perfect Flash Utility

Downloading with Picture Perfect Flash Utility (AIX and UnixWare)

Features:

- Flashes Micro/5-PXN, Micro/5-PX, MicroProx, and Micro/5-P micros with **Picture Perfect** code
- Flashes downstream micros

Limitations:

- Cannot edit micro parameter settings such as phone numbers or a micro IP address
- Does not provide online help
- Can download only **Picture Perfect** code

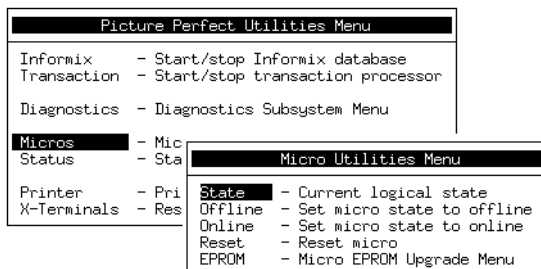
This download procedure can only be used with **Picture Perfect** Version 1.3 host systems or later. The flash download program to upgrade the EPROMs of a Micro/5 is accessed through the CMENU utility of **Picture Perfect** or through the flash utility using the command line.

Using the CMENU Utility

You must be logged on as **root** at the console in order to run this program. Press **F1** for onscreen **Help**.

1. Log in as **root** at the console.
2. Type **cmenu** at the command-line prompt and press **Enter** to display the **Utilities Menu**.

- From the **Utilities Menu**, select **Micros** to display the **Micro Utilities Menu**.



- From the **Micro Utilities Menu**, select **EPROM** to display the **Micro Flash Eprom Upgrade** menu. Refer to "Micro Flash EPROM Upgrade" on page 55.

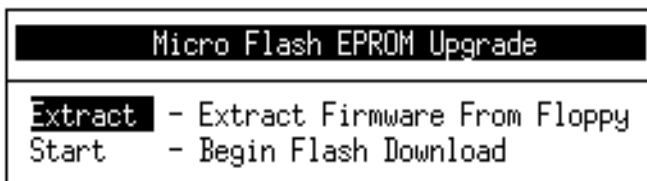
Using the FLASH Utility

You must be logged on as **root** at the console in order to run this program. Press **(F1)** for onscreen **Help**.

- Log in as **root** at the console.
- Type **flash** at the command-line prompt and press **(Enter)** to display the **Micro Flash Eprom Upgrade** menu. Refer to "Micro Flash EPROM Upgrade" on page 55.


Micro Flash EPROM Upgrade

This menu enables flash downloading to Micro/5 EPROMs. The **Extract** option transfers new EPROM data from a floppy disk to the hard drive. The **Start** option allows the new EPROM files to be flash-downloaded to any or all of the Micro/5s on the system, regardless of whether the micros are dial-up, direct, or network.



Extract

Follow these steps to extract the upgrade data from the floppy disk:

1. Insert the firmware-upgrade floppy into the disk drive.
2. Select **Extract** from the **Micro Flash Eprom Upgrade** menu.
3. The floppy-drive device path will be displayed. Press  to start the extract. The new EPROM information will be transferred to the hard drive.
4. When the extract is complete, a summary of the information appears, similar to the following:

```
Floppy drive          /dev/fd0

Directory...../cas/flash/m5p140
Version Info.....M/5P Ver 1.40 Direct
Optimized.....454784 bytes
Non-Optimized.....620099 bytes
```

NOTE: If this is for UnixWare, the Floppy drive field will display A:.

5. Press any key to return to the **Micro Flash Eprom Upgrade** menu.

Start

Follow these steps to select and download to Micro/5 EPROMs:

1. Once the new EPROM information is transferred to the hard drive, select **Start** from the **Micro Flash Eprom Upgrade** menu. The **Begin Flash Download** form appears.

TTY	MICRO MAP	STATUS	FRAMES	%
tty3	<input type="checkbox"/>			
tty8				
tty4	0001	Idle	0	0
tty2	0031	Idle	0	0
tty7	0075-0000-0100-0101	Idle	0	0
tty5	0128	Idle	0	0
tty9				
tty6	0200-0201-0202	Idle	0	0
micro152				
micro999	0999	Idle	0	0

Screen 1 of 2

Press <F1> for HELP

All system micros (Micro/4 and Micro/5) are displayed under the **Micro Map** column and all micro types can be selected, however the flash download will only execute on the Micro/5s. Selecting Micro/4s will not affect the downloading process to the selected Micro/5s.

2. Use the arrow keys to move to the desired micros for flash download. Press **(F2)** or **(T)** to select or de-select a micro. All micros in a micro line must be selected individually (use the left and right arrows to reach them).

When a micro is selected it appears in boldface. The system determines whether the micro is direct, dial-up or network, so no communication specification needs to be made.

3. When all desired micros have been selected, press **(Esc)** to display a listing of hex files available for download.

xterm				
M/5 Flash EPROM Update Begin Flash Download				
TTY	MICRO MAP	STATUS	FRAMES	%
tty3	□			
tty8				
tty4	0001	Idle	0	0
tty2	0031	Idle	0	0
tty7	0075-0000-0100-0101	Idle	0	0
tty5	0128	Idle	0	0
tty9				
tty6	0200-0201-0202	Idle	0	0
micro152				
micro999	0999	Idle	0	0
Screen 1 of 2				
Press <F1> for HELP				

4. Cursor to the desired hex file then press **Enter** to select it and start the download. If you need to manually enter the hex file and path name, do not select a file from the list. Instead, press **Esc** again, type the path name, then press **Enter** to start the download.

The **Status** column indicates the action taking place on the highlighted micro of each micro line selected. The status messages include **maint**, **polling**, **erase**, **sending**, **connecting**, **connect**, **restore**, and **ignoring**. An asterisk (*) beside the *sending* status message indicates that the file being downloaded is the optimized version of the hex file (determined by the micro's boot prom), and will complete its download more quickly (in approximately 10 minutes).

The **Frames** column indicates the number of data blocks downloaded to the highlighted micro. The **%** column indicates the percentage of the download completed to the highlighted micro.

When the download for a micro is complete, that micro will no longer appear in boldface. If the download for a micro is unsuccessful, that micro will remain in boldface. At this point, it takes about 60 seconds for the flash program to terminate. If the micros were defined as online in the database, the micros will reset and receive their database and come online.

HEX Files

There is a separate directory for each type of micro's hex file. For example, the directory `m5p150o` contains the hex file for the Direct-Connect Micro/5-PX.

The following is a list of all hex file directories and what type of hex file each contains.

```
total 336
drwxr-xr-x  8 root  sys      512 Mar 31 16:34
./

drwxr-xr-x 16 root  sys      512 Mar 27 09:14
../

-rw-r--r--  1 root  system 133276 Mar 31 16:33
flash.dat
drwxr-xr-x  2 root  system  512 Mar 13 16:43
m5o150s/
drwxr-xr-x  2 root  system  512 Mar 14 11:02
m5p150o/
drwxr-xr-x  2 root  system  512 Mar 14 18:32
m5p150p/
drwxr-xr-x  2 root  system  512 Mar 19 15:44
m5p150s/
drwxr-xr-x  2 root  system  512 Mar 28 16:28
mpp150q/
drwxr-xr-x  2 root  system  512 Mar 28 16:28
mpp150r/
-rw-r--r--  1 root  system  556 Mar 28 17:33
tty7.log
```

Micro/5-PX Network Operating System (OS)

Micro/5-PX Direct

Micro/5-PX Dial-Up

Micro/5-PX Network Application

MicroProx Direct

Configuring Your Host System

In order to use your MicroProx unit with your host system, you will need to know the addressing not only of the MicroProx (which was covered in “Setting the Address for a MicroProx” on page 38) but also for the reader, inputs, outputs, etc. The following tables provide this addressing which tells **Picture Perfect**, **Entry Perfect** and **Secure Perfect** where to find these items.

TABLE 7: Picture Perfect Addressing

	MicroProx	MicroProx - External Reader	MAU
Readers	Board 1, Address 0	Board 1, Address 1	N/A
Door DIs	Board 1, Address 0	Board 1, Address 1	N/A
Exit DIs	Board 1, Address 8	Board 1, Address 9	N/A
Door DOs	Board 1, Address 0	Board 1, Address 1	Same as MicroProx
Auxiliary DOs (1, 2, 3, 4)	N/A	N/A	Board 1, Address 16, 17, 18, 19
Supervised DIs (1, 2, 3, 4)	N/A	N/A	Board 1, Address 16, 17, 18, 19
Tamper – Cover/Door	Board 0, Address 1	N/A	Board 1, Address 20
Tamper – External	N/A	N/A	Board 1, Address 21
Low Battery	N/A	N/A	Board 1, Address 22
AC Power Fail Input	N/A	N/A	Board 0, Address 0

TABLE 8: Entry Perfect and Secure Perfect 2.0 and Earlier Addressing

	MicroProx	MicroProx - External Reader	MAU
Readers	Reader 1	Reader 2	N/A
Door DIs	Alarm (DI) 1	Alarm (DI) 2	N/A
Exit DIs	Reader 1	Reader 2	N/A
Door DOs	Reader 1	Reader 2	Same as MicroProx
Auxiliary DOs	N/A	N/A	DO 17, 18, 19, 20
Supervised DIs	N/A	N/A	Alarm (DI) 9, 10, 11, 12
Tamper–Cover/Door	Alarm (DI) 49	N/A	Alarm (DI) 13
Tamper–External	N/A	N/A	Alarm (DI) 14
Low Battery	N/A	N/A	Alarm (DI) 15
AC Power Fail Input	N/A	N/A	Alarm (DI) 50

NOTE: When the records are created, the default description is in the format:

mm-b-pp = *mm* represents the micro number to which this digital input is associated
b represents the board number
pp represents the point or device number

01-1-05 MAU Tamper = Digital input on micro 1, board 1, point 5

02-1-05 MAU Tamper = Digital input on micro 2, board 1 point 5

TABLE 9: Secure Perfect 2.1 and Later Addressing

	MicroProx	MicroProx - External Reader	MAU
Reader Door DOs	<mm>-0-01 Reader	<mm>-0-02 Reader	N/A
Door DIs	<mm>-0-01 Reader	<mm>-0-02 Reader	N/A
Exit DIs	<mm>-0-01 Supervised Exit	<mm>-0-02 Supervised Exit	N/A
Auxiliary DOs	N/A	N/A	<mm>-1-01 DO <mm>-1-02 DO <mm>-1-03 DO <mm>-1-04 DO
Supervised DIs	N/A	N/A	<mm>-1-01 DI <mm>-1-02 DI <mm>-1-03 DI <mm>-1-04 DI
Tamper–Cover/Door	<mm>-0-03 Tamper	N/A	<mm>-1-05 MAU Tamper
Tamper–External	N/A	N/A	<mm>-1-06 MAU Tamper Ext.
Low Battery	N/A	N/A	<mm>-1-07 Low Battery
AC Power Fail Input	N/A	N/A	<mm>-0-04 Power

Outputs (DOs), Inputs (DIs) and LEDs

For the MicroProx

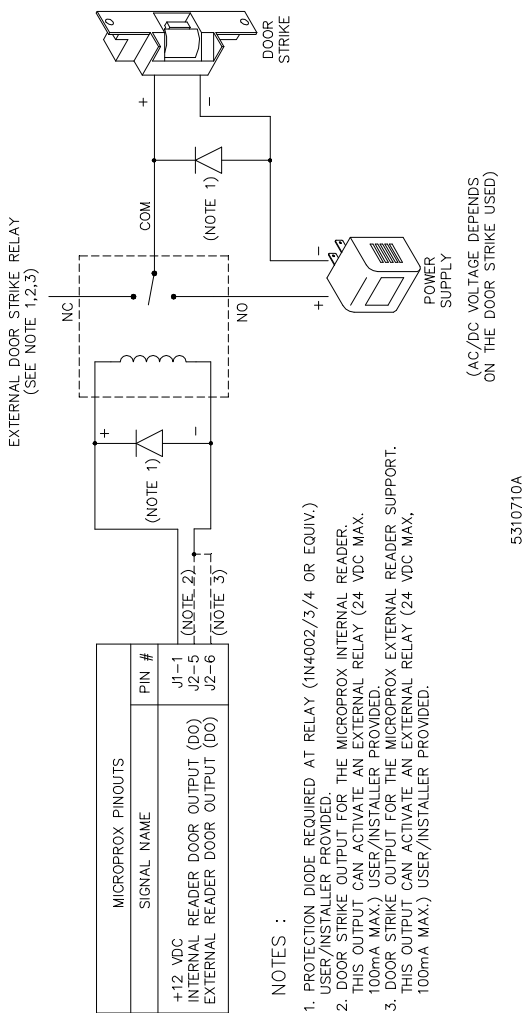
☐ Digital Output (Door Strike)

The door strike output can handle up to +24VDC at 100mA maximum. An external relay is required for door strike control.

NOTE: See Figure 19, “MicroProx Digital Output (Door Strike) Wiring,” on page 64.

1. Install the external door strike relay for the internal reader between pin J1-1 (+12VDC) and pin J2-5 (Internal Reader Door Output).
2. If using an external reader, install the external door strike relay between pin J1-1 (+12VDC) and pin J2-6 (External Reader Door Output).
3. Install protection diode across relay. Use 1N4002, 1N4003, 1N4004 or equivalent diodes.
4. Install door strike and door strike power and wire to relay Common and either Normally Open (NO) or Normally Closed (NC).
5. Install protection diode across door strike. Use 1N4002, 1N4003, 1N4004 or equivalent diodes.

FIGURE 19: MicroProx Digital Output (Door Strike) Wiring



☐ Digital Input (Door Contact and Exit Request)

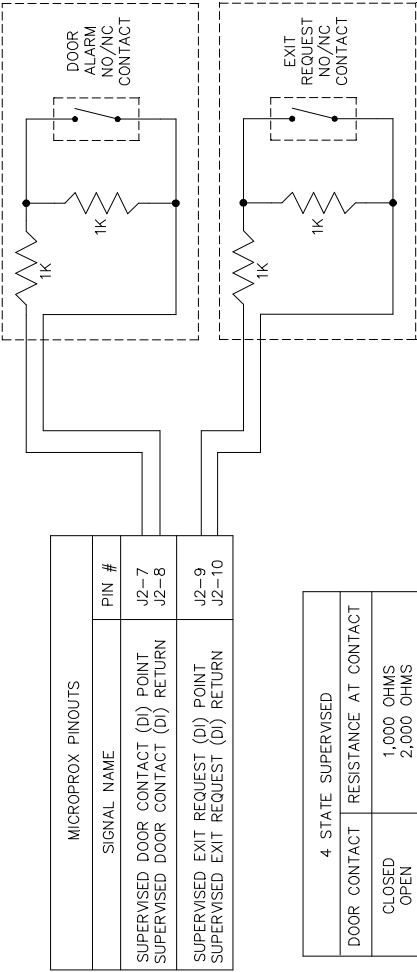
The door contact (alarm) and exit request are both configured for 4-state supervision which requires end-of-line resistors (2 at 1,000 Ohms each)

NOTE 1: The end-of-line resistors MUST be installed at the contact. We recommend high quality, 1000 (1K) Ohms, 1/4 watt, 1% to 5% tolerance end-of-line resistors.

NOTE 2: See Figure 20, “MicroProx Digital Input (Exit Request and Door Contact),” on page 66.

1. Install the door contact and the two end-of-line resistors (installer-supplied) at the contact.
2. Wire the door contact/end-of-line resistors to pin J2-7 and pin J2-8.
3. Install the exit request contact and the two end-of-line resistors (installer-supplied) at the contact.
4. Wire the exit request/end-of-line resistors to pin J2-9 and pin J2-10.

FIGURE 20: MicroProx Digital Input (Exit Request and Door Contact)



LEGEND

1K = 1,000 OHMS, 1/4 WATT RESISTANCE (INSTALL RESISTORS AT CONTACT)
NO = NORMALLY OPEN
NC = NORMALLY CLOSED
SUPERVISED = 4 STATE TAMPER DETECTION

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❑ LEDs

The LEDs have three different modes. Normal mode (during normal operation), Diagnostic mode for host communication and supervised DI status, and Maintenance mode. To activate the Diagnostic mode, present to the reader the special proximity diagnostic badge that has been provided.

The color of the LEDs in the different modes indicates a certain condition. This is detailed in the table below.

TABLE 10: LED Colors in Normal and Diagnostic Mode

If the LED color is ...*	And the Mode is ...	
	Normal	Diagnostic
Red	Tamper condition	Host Communications OK
Yellow	Power & Badge Read Status	Door Contact Status (See Table 11)
Green	Valid Access	Exit Request Status (See Table 11)

* If the LEDs are flashing, then the MicroProx is in maintenance mode.

TABLE 11: LED Indications in Diagnostic Mode

If the Yellow or Green LED ...	Indicates that the Contact is ...
is on continuously	Closed
is off continuously	Open
flashes at rate of 250ms (4 times per second)	Shorted
flashes at rate of 1sec	Cut (line open)

If all three LEDs are flashing for more than five seconds, the MicroProx is in maintenance mode which means the MicroProx has no application code.

For Picture Perfect:

Upon a reset, all three LEDs will flash while resetting (approximately 5 seconds) and then will remain on until the **Picture Perfect** MicroProx gets its database. Once the **Picture Perfect** MicroProx receives its database, the red and green LEDs will turn off. The yellow LED will remain lit indicating that the **Picture Perfect** MicroProx is working.

For Entry Perfect and Secure Perfect:

Upon a reset, all three LEDs will flash while resetting (approximately 5 seconds) and will turn off except for the yellow LED. It will remain lit indicating that the **Entry Perfect/Secure Perfect** MicroProx is working.

For the MicroProx Accessory Unit

☐ Door Relays (Door Strike)

Two Door Strike Relays are provided. One for the internal MicroProx reader and the second for the external reader. Maximum output rating of the relays is 2 Amps at 28VDC or 20VAC.

The following steps refer to using the door strike power (+12VDC) from the MAU.

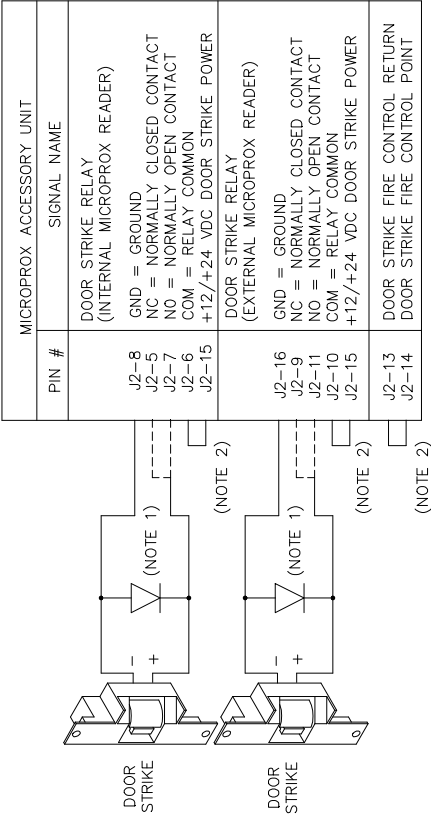
Internal Reader

1. Install the door strike for the internal reader with a protection diode. Use 1N4002, 1N4003, 1N4004 or equivalent diodes.
2. Wire the door strike + (12VDC) to either J2-5 (Normally Open) or J2-7 (Normally Closed).
3. Wire the door strike – (Ground) to pin J2-8 (Ground).
4. Install jumper wire between J2-6 and J2-15.
5. If you are installing an external reader, continue to the next section, otherwise, go to “Door Strike Fire Control” on page 71 even if you do not intend on connecting to a fire control system.

External Reader

1. Install the door strike for the external reader with a protection diode. Use 1N4002, 1N4003, 1N4004 or equivalent diodes.
2. Wire the door strike + (12VDC) to either J2-9 (Normally Open) or J2-11 (Normally Closed).
3. Wire the door strike – (Ground) to pin J2-16 (Ground).
4. Install a jumper wire between J2-10 and J2-15.
5. Go to “Door Strike Fire Control” on page 71 even if you do not intend to connect to a fire control system.

FIGURE 21: Accessory Unit Door Relays (Door Strike)



NOTE :

- 1. PROTECTION DIODE REQUIRED (1N4002/3/4 OR EQUIV.) USER INSTALLER SUPPLIED.
- 2. INSTALL JUMPER WIRE

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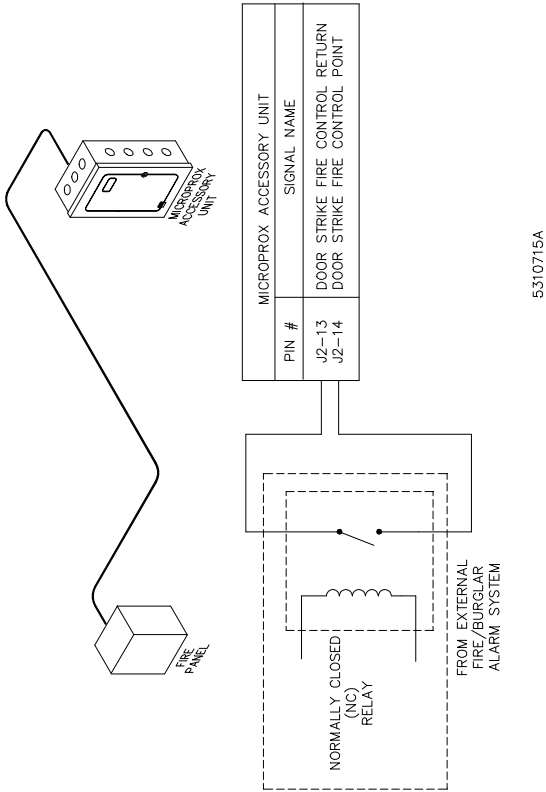
☐ Door Strike Fire Control

The MAU supports a Fire Control input which will disengage the door strike(s).

- If you are not using the Fire Control feature, you must install a jumper wire between pins J2-13 and J2-14.
- If you are using the Fire Control input, the input will require a Normally Closed dry contact from the fire/burglary alarm system between pins J2-13 and J2-14.

The Fire Control input does not have an alarm associated with it. If you need alarm notification, you must use one of the MAU's supervised input points.

FIGURE 22: MAU Door Strike Fire Control



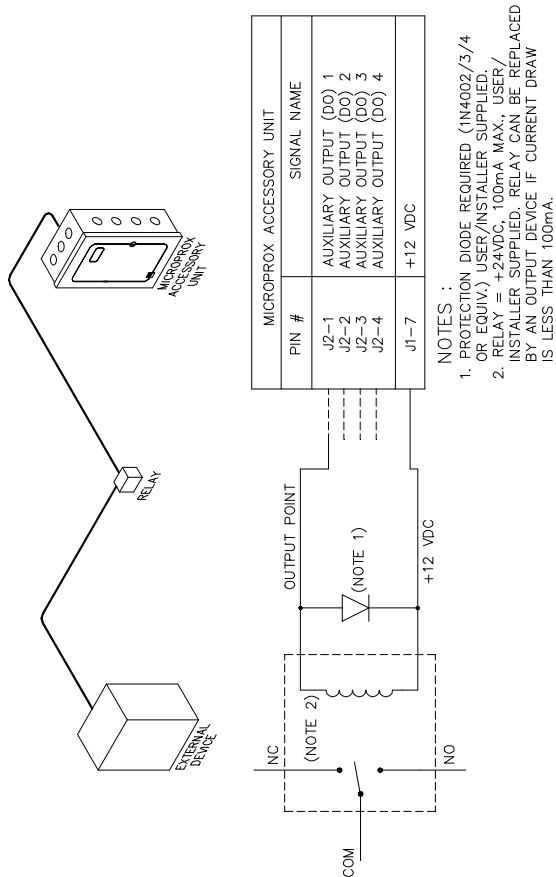
❑ Auxiliary Digital Output (DO)

The auxiliary outputs can handle up to +24VDC maximum at 100mA maximum. An external relay is required for auxiliary outputs.

1. Install a relay with a protection diode between J1-7 (+12VDC) and J2-1 for Auxiliary DO 1, J2-2 for Auxiliary DO 2, J2-3 for Auxiliary DO 3 and J2-4 for Auxiliary DO 4.

Use 1N4002, 1N4003, 1N4004 or equivalent diodes.

FIGURE 23: Accessory Unit Auxiliary Digital Output (DO)



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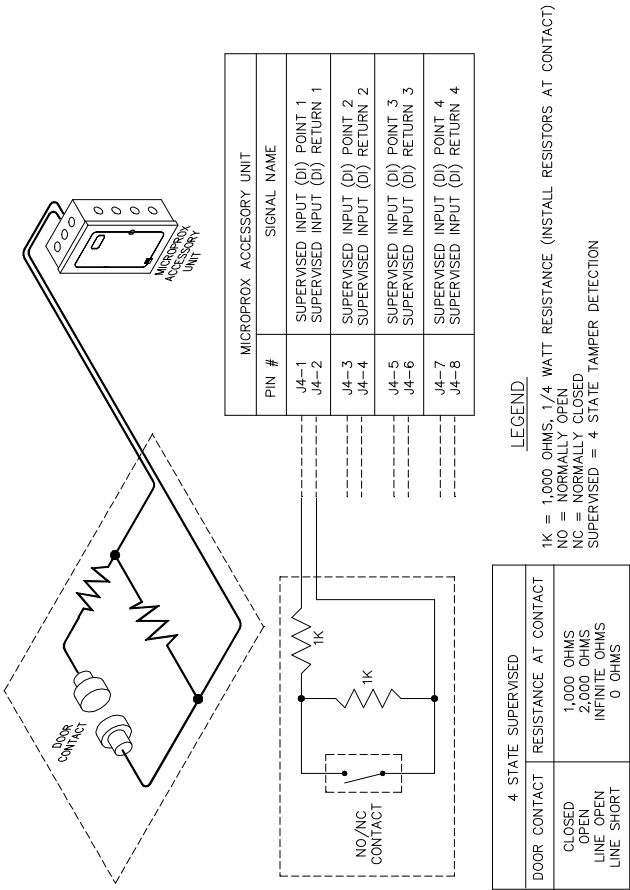
❑ Supervised Digital Inputs (DIs)

The four supervised inputs are configured for 4-state supervision which requires end-of-line resistors (2 at 1,000 Ohms each).

NOTE: The end-of-line resistors MUST be installed at the contact. We recommend high quality, 1000 (1K) Ohms, 1/4 watt, 1% to 5% tolerance end-of-line resistors.

1. Install the Normally Open/Normally Closed contacts and the 2 end-of-line resistors (installer-supplied) at the contact.
2. Wire the contact/end-of-line resistors for DI 1 between J4-1 and J4-2, for DI 2 between J4-3 and J4-4, for DI 3 between J4-5 and J4-6, for DI 4 between J4-7 and J4-8.

FIGURE 24: Accessory Unit Supervised Digital Inputs (DIs)



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LEDs

There are twelve LEDs on the MAU board. The table below lists the LEDs and what they represent. The tables following show the possible states of the LEDs and their meaning. See Figure 25 on page 80 for the location of the LEDs on the board.

TABLE 12: Accessory Unit LEDs

LED Number	Meaning	Color
CR7	Auxiliary DO 4	Green
CR8	Auxiliary DO 3	Green
CR9	Auxiliary DO 2	Green
CR10	Auxiliary DO 1	Green
CR11	Door Strike Relay (MicroProx)	Green
CR12	Door Strike Relay (External Reader)	Green
CR30	16VAC Power	Red
CR42	DC Power (12VDC)	Red
CR45	Supervised DI 4	Red
CR46	Supervised DI 3	Red
CR47	Supervised DI 2	Red
CR48	Supervised DI 1	Red
CR49	RS-485 Communications	Green
CR52	Door Strike Power (+12/24VDC)	Red

Meaning of the LEDs

TABLE 13: Auxiliary DO LEDs

If CR7, CR8, CR9, or CR10 Green LED is ...	Indicates that the Output is ...
on continuously	off
off continuously	on

TABLE 14: Door Strike Relay LEDs

If CR11 or CR12 Green LED is ...	Indicates that the Relay is ...
on continuously	on
off continuously	off

TABLE 15: Power LEDs

If CR30, CR42, or CR52 Red LED is ...	Indicates that the Power is ...
on continuously	on
off continuously	off

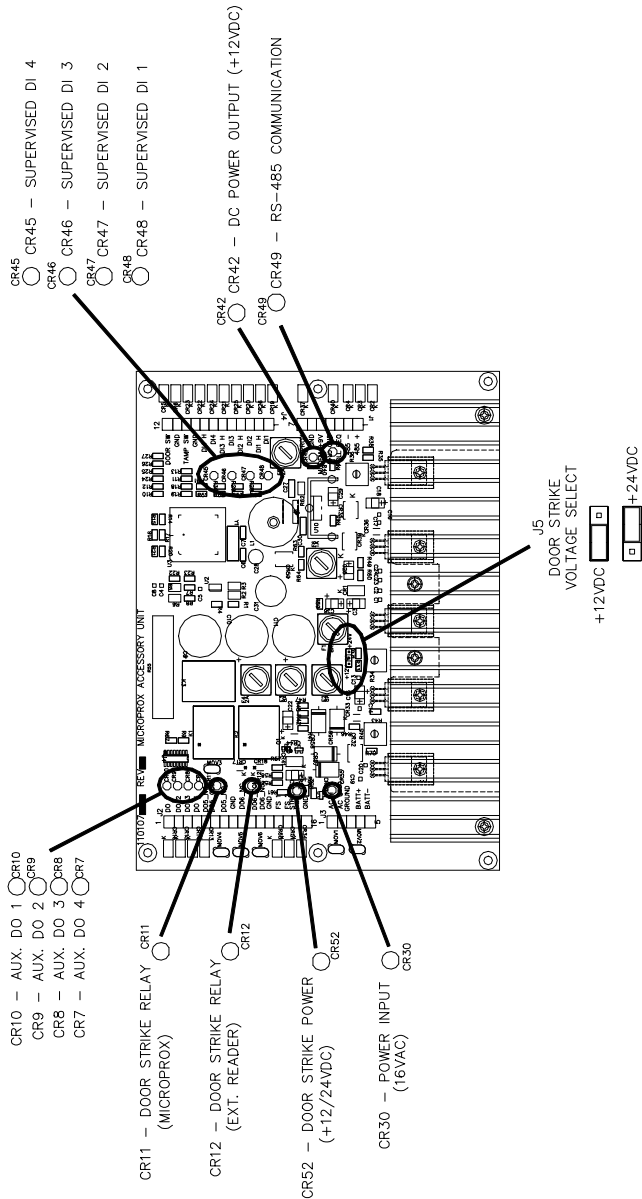
TABLE 16: Communications LED

If the CR49 Green LED is ...	Indicates that Communications is ...
flashing	active
off continuously	off

TABLE 17: Supervised DI LEDs

If the CR45, CR46, CR47, or CR48 Green LED is ...	Indicates that the Contact is ...
on continuously	closed
off continuously	open
flashing at a rate of 250ms (4 times per second)	shorted
flashing at a rate of 1sec	cut (line open)

FIGURE 25: LED and Jumper Location and Meaning



Optional External Reader

The MicroProx can be connected to a CASI-RUSCO supervised F/2F reader. Supported reader families are:

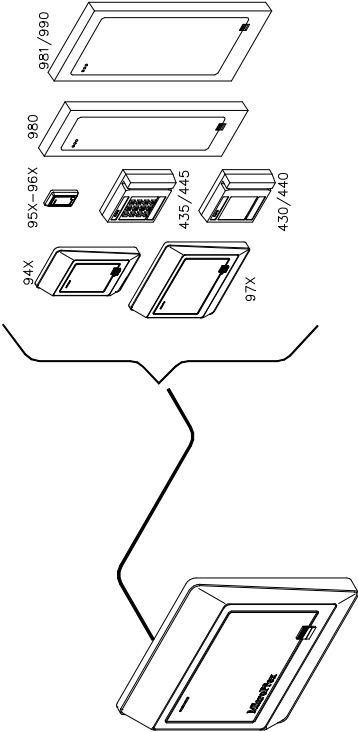
- 43x and 44x Magnetic Stripe

NOTE: 44x Readers do not support door inputs or exit request.

- 94x, 95x, 96x, 97x, 98x, 99x Proximity

See Figure 26, “Wiring the MicroProx to an External Reader,” on page 82 for the appropriate pinout connection.

FIGURE 26: Wiring the MicroProx to an External Reader



EXTERNAL SUPERVISED F2F READER *									
SIGNAL NAME		MODEL 94X/95X/96X/97X		MODEL 980/98X		MODEL 43X		MODEL 981/990	
		COLOR		COLOR		COLOR		COLOR	
+12 VDC		1		7		7		7	
GROUND		2		BLACK		BLACK		BLACK	
GREEN LED		4		RED/BLACK		BROWN		BROWN	
DATA 1		7		WHITE		RED		RED	

MICROPROX PINOUTS		PIN #
EXTERNAL READER POWER (+12VDC)		J2-1
EXTERNAL READER POWER GROUND		J2-2
EXTERNAL READER LED		J2-3
EXTERNAL READER DATA 1		J2-4

* NOTE - REFER TO THE APPROPRIATE READER MANUAL

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EMI Suppression for CE Compliance

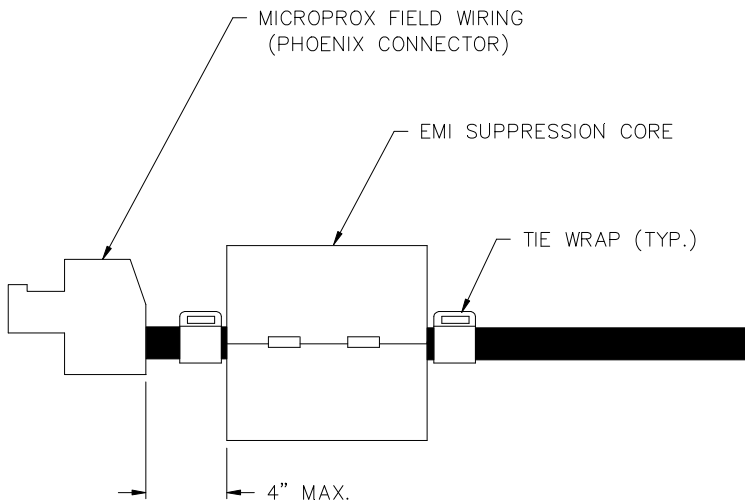
As of January 1, 1996, all new European installations MUST be CE compliant. For the MicroProx to be compliant, an EMI Suppression Core must be attached.

NOTE: For the MAU to be CE compliant, the shield of the cable between the MicroProx and the MAU must be grounded at the MAU. See “CE Compliance” on page 26 for more information.

1. Attach an EMI Suppression Core (P/N 290066001) to the power cables and the I/O cables at the MicroProx within four inches of the connector.

See Figure 27, “Placement of the EMI Suppression Core” shown below.

FIGURE 27: Placement of the EMI Suppression Core



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Testing the MicroProx

Follow the steps below to verify that the MicroProx is working correctly.

1. Check all cabling and electrical connections from the MicroProx to the power supply or the MAU. See the wiring diagrams on page 24 and page 28.
2. Apply power to the MicroProx and verify that the yellow LED is on. You may want to use a multimeter to test the voltage at the MicroProx connector J1, using Ground (pin 2) as a reference. The power pin (pin 1) should read approximately 12V.
3. If all three LEDs are flashing and remain flashing for more than five seconds, the MicroProx is in maintenance mode and does not contain application code. You will need to download the application code to the MicroProx.
4. Close the tamper switch by joining the MicroProx and backplate. When all wires are connected to the MicroProx, ensure that the supervision function is operating properly by verifying that the MicroProx is not sounding a short triple beep every 30 seconds and the red LED is not flashing slowly. If such an alarm is present, refer to the troubleshooting guide at the end of this manual.

NOTE: If external tamper is activated, be sure reader backplate mounting surface is flush with backplate.

5. Check that the door is secure. Present the badge to the reader. Observe that the MicroProx beeps briefly and the yellow LED blinks off.
6. If the badge has been entered into the host system and is a valid badge for this door, open the door. This verifies that the door strike operates correctly.

Troubleshooting Guide

If the operation of a component is in doubt, substitute a known good component and retry the system. Always verify wiring against wiring diagrams before powering up the system.

This section of the manual is split into three sections. The first two cover troubleshooting the MicroProx and the MAU. The final section tells you how to receive additional help.

MicroProx – Problems and Solutions

All LEDs are on and the beeper is on.

This usually indicates that the MicroProx's voltage is too low. This may be caused by a low voltage or too long a cable between the MicroProx and the external power or the MAU. Follow the steps below.

1. Measure the MicroProx supply voltage at the source either the external power supply or the MAU depending on the installation. It should read between 12 and 15VDC. If the voltage is correct, continue to step 2 below. If the voltage is incorrect, refer to the section "Wiring the MicroProx to the Power Supply" on page 22 or to the manual included with the external power supply.
2. If the problem is still present, measure the voltage between J1 pin 1 (Power) and J1 pin 2 (Ground). This voltage should be greater than 10VDC and less than or equal to the supply voltage. If the voltage is too low, correct the wiring. If the voltage is correct, replace the MicroProx.

None of the LEDs are on.

Present a known good Proximity Perfect or ProxLite™ test badge to the MicroProx while listening for the beeper.

If the beeper sounds, the MicroProx is faulty and should be replaced. If the beeper does not sound, check the power connections to the MicroProx and check the supply voltage at connector J1 pin 1 and pin 2.

The green LED is always on.

The green LED indicates that the door strike is open. This can be caused by a setting in the host software. See your **Picture Perfect** or **Entry Perfect** manual. For **Secure Perfect**, see the online help.

Below are a few suggestions:

1. Check that the door has not been set for open. If using **Picture Perfect**, check the **Door** screen that the door is not set for **Unlocked**. If using **Entry Perfect**, check the **Status** screen. If the door is open, it can be closed using the **DO Operations** screen.
2. If using **Picture Perfect**, **Entry Perfect**, or **Secure Perfect**, check that a schedule which opens the door is not in effect.

Green LED turns on but the door does not open.

Verify the correct door strike wiring and operation. See Figure 19, “MicroProx Digital Output (Door Strike) Wiring,” on page 64 and, depending on the installation, Figure 21, “Accessory Unit Door Relays (Door Strike),” on page 70.

The green LED does not turn on and the door does not open when a badge is presented.

Verify that the badge and reader are properly entered into the host system.

The green LED does not turn on, but the door strike unlocks the door when a valid badge is presented.

The MicroProx is defective. Replace the MicroProx.

The beeper doesn't sound and the yellow LED doesn't blink when a badge is presented to the reader OR the badge read range is very poor.

When the beeper sounds and the yellow LED blinks off, it indicates that a badge has been read. Follow the steps below.

1. Check that the reader is not mounted within 3 feet (1 meter) of a computer terminal or within 10 inches (250mm) of another

Proximity Perfect Reader. The only exception to this 10-inch (250 mm) limit is when the optional, back-to-back, metal mounting plate is installed.

2. Present a Proximity Perfect test badge (known to be working) to the reader. If the beeper and yellow LED still fail to indicate a valid badge read and send, replace the reader with a reader that you know is working correctly. If this corrects the problem, the original reader is faulty and should be replaced.

The yellow LED is off and/or the beeper is always on.

The MicroProx is defective. Replace the MicroProx.

The reader sounds a short triple beep every 30 seconds and the red LED flashes quickly (every 400ms).

Indicates a tamper violation. Verify that the housing and backplate are properly joined, if external tamper feature is activated, and if the mounting surface is flush with backplate. If it is, then the reader is faulty and should be replaced.

The red LED is always on.

This indicates a tamper condition at the MicroProx or the MAU.

MicroProx Accessory Unit – Problems and Solutions

NOTE: See Figure 10, “Fuse and Connector Location,” on page 27 and Figure 25, “LED and Jumper Location and Meaning,” on page 80 for the location of fuses, LEDs and jumpers.

MicroProx is not working, i.e., dead.

1. Check DC Power Output LED CR42. If it is on, then there should be 12VDC output. Verify this by checking for 12VDC output at J1 Pin 7 and Ground (Pin 6).
2. Check +12VDC Power Output fuse (F5). If blown, replace the fuse.

3. Check 12VDC output without the MicroProx attached to J1 Pins 7 and 6. If 12 volts are now present, a short circuit exists between the MicroProx and the MAU.
4. Check the AC Power input J3 Pins 1 and 2 for 16VAC.

RS-485 communication LED CR49 is not flashing.

Check the three wires needed between the MAU and the MicroProx.

MAU is not working. There are no LEDs on.

1. Check Power Input LED CR30. If it is on, then there should be 16VAC output. Verify this by checking for 16VAC input at J3 Pin 1 and Pin 2.
2. Check 16VAC-H Input fuse (F1) and 16VAC-N Input fuse (F2). If either or both are blown, replace the fuse.
3. Check 120VAC power to 16VAC transformer.

An AC power failure occurred and the MicroProx lost power.

1. Check the battery connection.
2. Check the battery voltage. It should be approximately 12VDC.
3. Check the Battery fuse (F3). If it is blown, replace the fuse.

No Door Strike power.

1. Check Door Strike Power LED CR52. If it is on, then there should be power to the door strike. Verify this by checking for +12VDC or 24VDC door strike power at J2 Pin 15 and GND (Pin 16).
2. Check the Door Strike Power fuse (F4). If it is blown, replace the fuse.
3. Check that the Door Strike Voltage Select jumper is installed.

The door is always unlocked.

Check for the following:

1. Check Door Strike Relay LEDs CR11 and CR12. If either or both are on, then the **Door Strike Relay (MicroProx and/or external reader) is active.**
2. Check the host software configuration to find out if the door has been unlocked manually or by a schedule.
3. Check the wiring for the door strike fire control input. See Figure 22, “MAU Door Strike Fire Control,” on page 72. If this feature is not used, then add a jumper wire between J2-13 and J2-14 to reactivate door strike control.

Modem has no power.

The following suggestions assume you are using the 9VDC power available on the MAU to power the modem:

1. Check for +9VDC output at J1 Pin 5 and Ground (Pin 4)
2. Check the Modem Power fuse (F6). If it is blown, replace the fuse.
3. See the manual received with your modem.

Supervised inputs LEDs CR45/46/47/48 are flashing.

Check the wiring for the following:

1. a short if the LEDs are flashing 4 times per second.
2. a cut line if flashing once per second.

Additional Help

If the above suggestions do not correct the problem, contact your local CASI-RUSCO business partner. They will be more than happy to assist you. Should you need further assistance, contact CASI-RUSCO Customer Support Monday through Friday, 8:00am to 5:00pm EST in the U.S.A., Toll Free: (800) 428-2733, International: (561) 998-6101 or E-mail: support@casi-rusco.com.

Technical Specifications

For the MicroProx

Operating Temperature Range: -35° C to +66° C
(-31° F to +151° F)

Humidity Range: 0% to 95%, noncondensing

Weatherproofing: Use of silicone caulking is recommended.

Index of Protection (IEC529): IP55

Physical Dimensions: 4.75 in (H) x 5.500 in (W) x 0.90 in (D)
121mm (H) x 140mm (W) x 23mm (D)

Power Supply: Nominal 12.7VDC minimum, 1 Amp

Optional External Reader Power: +12VDC, 250mA maximum
The MicroProx supplies +12VDC short circuit protected and current limited at 250mA to the external reader.

Color: Light Grey and Black

Pinouts: The MicroProx is supplied with one ten-pin connector and one eleven-pin connector.

Parts List:

- Additional Screwdriver
- Additional Tamper Installation Wrench
- Back-to-Back Metal Mounting Plate - Light Grey
- Back-to-Back Metal Mounting Plate - Black

Refer to the CASI-RUSCO Product Catalog for part numbers and ordering information.

Maximum Reader Range: Up to six inches

NOTE: The read range of the MicroProx may be reduced during battery backup operation.

Communication Baud Rate: For both direct and dial-up connections, the only speed is 9600 baud.

Approved modems: Please check the CASI-RUSCO Web site for the current list of approved modems.

Maximum Cabling Distance: The maximum cable distance between the MicroProx and the host/modem is influenced by a number of factors including wire gauge, environment and RS-232 limitation (100 feet maximum). Use individually shielded, stranded pair wires.

The RS-485 limitation on cable distance between the MicroProx and the MAU is 2,000 feet, however, the 12V power reduces this to 250 feet.

TABLE 18: Maximum Cable Distance: Power Supply to MicroProx

	Maximum Cable Distance Using 12VDC Power @13.5VDC		
	18AWG	20AWG	22AWG
MicroProx without External Reader	240 ft	140 ft	90 ft

TABLE 19: Maximum Cable Distance: Power Supply to MicroProx and MicroProx to External Reader

Readers	Maximum Cable Distance Using 12VDC Power @ 13.5VDC		
	18AWG	20AWG	22AWG
External 94x–99x Reader at Low Power			
Supply to MicroProx	200 ft (61 m)	115 ft (35 m)	70 ft (21 m)
MicroProx to External Reader	3300 ft (1000 m)	2000 ft (610 m)	1240 ft (380 m)
External 94x–99x Reader at Medium Power			
Supply to MicroProx	170 ft (52 m)	100 ft (30 m)	60 ft (18 m)
MicroProx to External Reader	1700 ft (520 m)	1000 ft (300 m)	600 ft (180 m)
External 94x–99x Reader at High Power			
Supply to MicroProx	150 ft (46 m)	90 ft (27 m)	55 ft (17 m)
MicroProx to External Reader	1200 ft (366 m)	700 ft (213 m)	440 ft (134 m)

TABLE 19: Maximum Cable Distance: Power Supply to MicroProx and MicroProx to External Reader (Continued)

Readers	Maximum Cable Distance Using 12VDC Power @ 13.5VDC		
	18AWG	20AWG	22AWG
External 43x or 44x Reader			
Supply to MicroProx	210 ft (64 m)	125 ft (38 m)	80 ft (24 m)
MicroProx to External Reader	6250 ft (1900 m)	3700 ft (1127 m)	2300 ft (700 m)

For the Optional MicroProx Accessory Unit

Operating Temperature Range: +2° C to +50° C
(+35° F to +122° F)

Humidity Range: 0% to 95%, noncondensing

Index of Protection (IEC529): IP40

Physical Dimensions: 12 in (H) x 10 in (W) x 5 in (D)
304.8mm (H) x 228.6mm (W) x 101.6mm (D)

Power Supply: Nominal 16VAC, 75VA or higher transformer

DC Power Output:

- MicroProx/External Reader = +12VDC @ 0.7A max
- Door Strikes = +12VDC @ 1.1A max or +24VDC @ 0.6A max
- Modem = +9VDC @ 0.5A max

Battery Backup Time: 5 hours at maximum load
(MicroProx/External Reader=0.7A, strike power=1.1A and modem=0.5A) with battery kit installed

Battery Backup Charge Time: 24 hours to fully recharge

Optional Components:

- Battery 12VDC, 12 Amp Hour
Power Sonic PS12120
- Battery Kit (includes battery, cable, and mounting hardware)

- Modems

Please check the CASI-RUSCO Web site for the current list of approved modems.

(Internal mounting space is 5 in x 4.5 in x 2 in)

- 16VAC, 75VA transformer
110 VAC input (See NOTE below.)
- 16VAC, 75VA transformer
220VAC input

NOTE: These wall-mount transformers will support a maximum of 1A between door strike power and modem power. If you require more power, a heavier (i.e., greater than 75VA) transformer will be needed.

Wiring Chart

The chart below gives the number of wires needed to connect the following items.

	MicroProx	MAU
DC Power	2	2
16VAC Power	N/A	3
Communication (Host/Modem)	3	N/A
Communication RS-485 (MAU to MicroProx)	N/A	3
Door Strike	2 (relays required)	2
1 Alarm Input (MicroProx)	2	N/A
4 Alarm Inputs (MAU)	N/A	8 (2 per input)
1 Exit Input (MicroProx)	2	N/A
External Reader	4	N/A

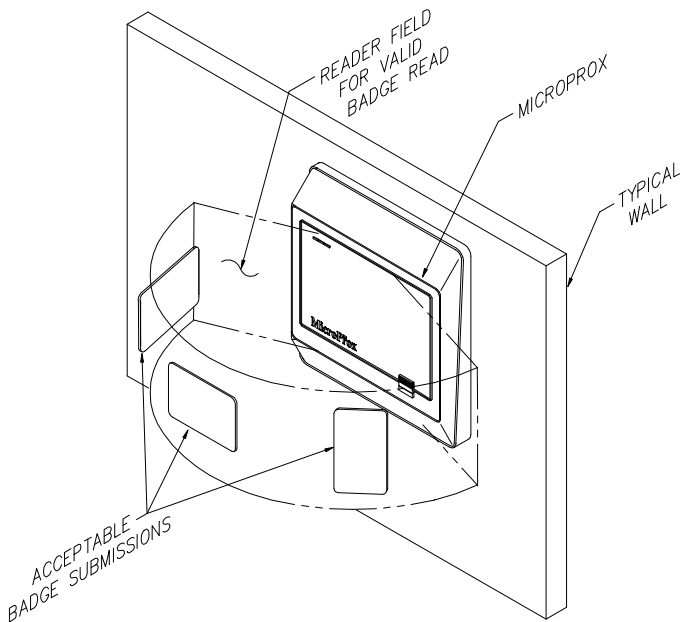
Functional Specifications

For the MicroProx

Product Operation

The reader portion of the MicroProx transmits a *wake-up* field extending all around the reader (generating virtually no back field). When a badge is presented, energy from the field powers the electronics inside the badge allowing it to transmit its unique data to the reader. The reader receives, interprets and checks the data, sending only uncorrupted badge data to the microcontroller section of the MicroProx. Due to the nature of the *wake-up* field, the maximum read range will be realized only if the badge is presented to the reader on an imaginary semi-circle centered on the reader, as shown below.

FIGURE 28: Badge to MicroProx Presentation



While the reader will read and send another badge's data immediately, the risk of multiple badge reads is reduced by a two second *SAME BADGE SEND* delay.

The MicroProx also monitors and reports the status of the door contact switch and an exit request push button.

Application

Intended for areas requiring a moderately high level of security for controlled access.

Host System Requirements

- CASI-RUSCO **Picture Perfect** systems versions 1.4 or later
- CASI-RUSCO **Entry Perfect** systems versions 2.10 or later
- CASI-RUSCO **Secure Perfect** systems.

Badge Technology Types

- CASI-RUSCO Proximity Perfect Read/Write technology
- CASI-RUSCO ProxLite Read Only technology

Badge Formats

CASI-RUSCO Proximity Perfect badges encoded with 2801, 2804, 3201, or 40-bit data formats; or CASI-RUSCO Prox Lite badges.

Mounting

The MicroProx can be mounted directly onto a hollow wall or a standard U.S. electrical dual gang box. Silicone caulking should be used for weatherproofing outdoor installations. See "Mounting the MicroProx" on page 14 for additional details.

Indicators

Red, yellow and green LEDs and a beeper are incorporated into the reader. The normal operation of these LEDs is as follows:

Red LED

The red LED flashes quickly (every 400ms) to indicate a tamper condition at the MicroProx unit. The red LED remains on during an MAU tamper.

Yellow LED

Normally on when power is applied to the reader. Blinks off briefly to indicate that a badge has been read.

Green LED

Indicates that the MicroProx has activated the door strike.

Beeper

The beeper sounds briefly to indicate that a valid badge has been read. A short triple beep sounds every 30 seconds to indicate a MicroProx tamper.

Tamper Operation

The MicroProx reader has both an internal and external tamper. If the reader is separated from the backplate or the reader and backplate are removed from the wall together, then the reader functions are disabled and a tamper condition is indicated by a triple beep every 30 seconds. In addition, the red LED flashes at a rate of 400ms during a tamper condition. The diagnostic badge will still work during a tamper condition

Door Contact and Exit Request Inputs

The MicroProx has a door contact switch input (normally closed) and an exit request switch input (normally open). These inputs are four state supervised. Changes to switch inputs are reported immediately.

For the MicroProx Accessory Unit

Product Operation

The MAU transmits and receives information from the MicroProx unit for activating and deactivating sensing inputs and outputs which include 2 door strike relays. The MAU also supplies power for the MicroProx Unit, the external reader, and the outputs which include the door strikes. The information transmitted and received are not control lines but are actually encrypted communications protocol between the two. Therefore, no one can open the door by tampering with the control lines.

Application

Intended to supplement the MicroProx unit by providing a battery backup power supply, additional DIs and DOs and more security for the MicroProx unit by the ability to provide door strike relays which can not be accessed from the MicroProx.

Compatibility

Interfaces to the CASI-RUSCO MicroProx unit.

Mounting

The MAU can be mounted directly onto a hollow wall. See “Mounting the Optional MicroProx Accessory Unit” on page 18 for additional details.

Tamper Operation

The MAU has a built-in tamper switch that is door-mounted. This switch will trigger a tamper alarm message that will be sent to the MicroProx unit and to the host. The red LED on the MicroProx unit will be on continuously and all functionality of the MicroProx will be suspended.

Battery Kit

Provides battery backup power for at least five hours. The kit includes a battery, battery cable, mounting bracket and mounting hardware.

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