

PlusConnect™ GatesAir Sigma

Installation and Operation Manual



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Introduction

This manual describes the PlusConnect™ GatesAir Sigma. The PlusConnect provides a connection between the GatesAir Sigma transmitter series and the ARC Plus transmitter remote control system. The PlusConnect reads transmitter parameters using a serial connection. The PlusConnect then forwards real-time data to the ARC Plus via LAN, WAN, or Internet.

Monitor and control PlusConnect channels via:

- The front panel of the ARC Plus
- Web browser, using the built-in web interface on the ARC Plus
- Web-enabled mobile device, using the built-in mobile web interface on the ARC Plus
- PC, using optional AutoPilot® software
- Telephone, using the optional ESI or RSI Speech Interfaces for the ARC Plus

The PlusConnect is part of the Plus-X family of Ethernet I/O products designed for the ARC Plus.

Important! The PlusConnect operates in conjunction with an ARC Plus system. Be sure to complete configuration of the ARC Plus before adding the PlusConnect to the system.

Installation Note

Even though you may operate the ARC Plus and PlusConnect on different subnets, Burk Technology strongly recommends installing the PlusConnect on the same LAN as the ARC Plus. In a network failure, an ARC Plus can only continue to monitor and control a PlusConnect on the same LAN. If the network link between the units is not available, ARC Plus macros, alarm monitoring and telephone control will be unavailable for the PlusConnect unit.

Compatibility

Transmitter Compatibility

Model	Compatibility
PlusConnect GatesAir Sigma	All GatesAir Sigma transmitter models

Transmitter models, firmware versions and options are subject to change. Visit www.burk.com for current information.

ARC Plus Compatibility

Before installing the PlusConnect, please verify that the ARC Plus firmware, AutoPilot software and AutoLoad Plus software versions are current. Updates are available at www.burk.com.

Unpacking

The PlusConnect ships with the following:

- PlusConnect unit
- AC Power cord
- 10' Shielded CAT5 cable
- 10' DB9F to DB9F serial cable

Front Panel Indicators



Front panel of the PlusConnect unit

Indicator	State	Description
Power LED	On	Power is on
Power LED	Off	Power is off
Link LED	On	ARC Plus to PlusConnect connection is good
Link LED	Off	ARC Plus to PlusConnect connection is down

Hardware Configuration

This step will link the PlusConnect to a specific ARC Plus unit and will identify the transmitter to which the unit will be connected.

Important! This procedure will reset the PlusConnect to its default IP address: 192.168.0.100.

1. Connect your PC and the PlusConnect together using a cross-over Ethernet cable or network Hub.
2. Assign your PC to an available IP address on subnet 192.168.0.xxx (other than 192.168.0.100) with the subnet mask set to 255.255.255.0.
3. Connect the PlusConnect AC power cord and wait for the green Power LED to illuminate.
4. Use a paper clip or similar small object to press and hold the **Config** button on the rear panel of the PlusConnect unit. Hold the button in until the Power LED begins to blink. The Power LED will stop blinking when the unit has completed restoring default settings.
5. Enable Telnet on your Windows 7 or Windows 8 computer, if not already enabled, using the following steps:
 - Click **Start > Control Panel**
 - Click **Programs and Features**
 - Click **Turn Windows features on or off**
 - In the Windows Features dialog box, check the **Telnet Client** check box
 - Click **OK**. The system installs the appropriate files. This will take a few seconds to a minute to complete.
6. Open a Telnet session to the PlusConnect at the address 192.168.0.100 (port 23). Using Windows, you can launch Telnet by typing "telnet 192.168.0.100" from a command prompt.
7. When prompted, enter the password for the PlusConnect. If a password has not been set yet you will be asked to set it. The password cannot be set to "password".

```
Burk Technology
PlusConnect GatesAir Sigma v1.0.8
Password: *****
```

8. Telnet will display the main menu.

```
Burk Technology
PlusConnect GatesAir Sigma v1.0.8

Password: *****

Logged on successfully

Burk Technology
PlusConnect GatesAir Sigma v1.0.8

1. Log Off
2. Set IP Address:                192.168.1.96
3. Set Subnet:                   255.255.255.0
4. Set Gateway:                  192.168.1.1
5. Set Telnet Port:              23
6. Polling Rate:                 3 seconds
7. ARC Plus IP Address:          192.168.1.95
8. Plus-X Port:                  45000
9. Set Unit Name
10: Set Password
11: Diagnostics
12. Update Firmware.

99. Save Configuration and Reboot.
```

9. Enter the appropriate configuration settings for the following parameters:
To change a setting, enter the menu number for that setting and then press <Enter>.

#	Setting	Description
2	IP Address	The IP address you want to assign to the PlusConnect unit
3	Subnet	The subnet mask for your LAN
4	Gateway	The gateway for your LAN
7	ARC Plus IP Address	The IP address of your ARC Plus unit
8	Plus-X Port	The Plus-X port number configured on your ARC Plus (typically 45000)
9	Set Unit Name	The PlusConnect unit name

Once the settings have been saved, the PlusConnect can be connected to the target LAN. All future Telnet sessions should use the newly configured IP address.

Setting the Password

Changing your password is strongly recommended. The PlusConnect password is used to access the Telnet configuration menu. To change the password, use option #10: Set Password, then #99 to save the modified password. The password cannot be set to "password".

Uploading New Firmware

To upload new firmware to the PlusConnect, use option #12: Update Firmware. When prompted to start the firmware upload, enter "Y" for yes. The system will respond with the following message:

```
Firmware upload enabled
To load firmware run:
tftp [IP Address] put [firmware.hex]
```

Download and install the Burk Firmware Loader (If not already installed)

1. If the Burk Firmware Loader is already installed on your computer, proceed to "Download the PlusConnect GatesAir Sigma Firmware."


NOTE: By default, only members of the Administrators group on a computer can install new software. If you do not have the rights to complete all steps of this process, please contact your system administrator.

2. Go to www.burk.com/downloads, select the ARC Plus tab, then scroll down to the PlusConnect section.
3. Download and install the Burk Firmware Loader.

Download the PlusConnect GatesAir sigma firmware

4. Go to www.burk.com/downloads and select the ARC Plus tab, then scroll down to the PlusConnect section.
5. Download and save the PlusConnect GatesAir Sigma firmware file.

Allow Burk Firmware loader through Windows Firewall

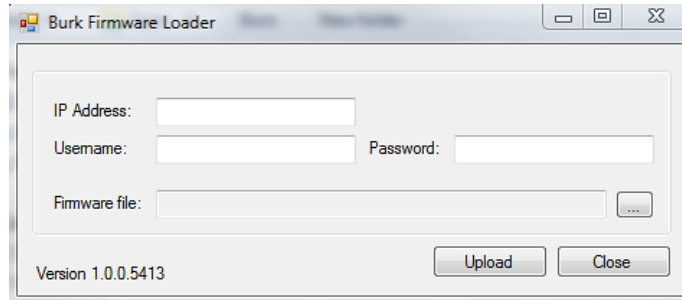
6. Click **Start**  > **Control Panel** and select **Windows Firewall**
7. Select **Allow a Program or feature through Windows firewall**
8. Select **Allow another program**

*NOTE: If the **Allow another program** button is un-selectable, click the **Change Settings** button first to unlock this.*

9. Now click browse and search for the file C:\Program Files(x86)\Burk Technology\Burk Firmware Loader.
10. Select **BurkFirmwareLoader** and click **Open** and then click **Add**

Run Burk Firmware Loader

11. Click **Start** > **All Programs** > **Burk Technology** > **Burk Firmware Loader** and launch the program. The dialog below will open.



Burk Firmware Loader dialog

12. Enter the IP Address, User Name and Password of the PlusConnect unit. Select the PlusConnect firmware file that you previously saved
13. Click **Upload**.
14. A notification window will open when the upload is complete. Click **OK**

Verify upload of firmware

To verify the firmware version, open a new Telnet session to the PlusConnect unit and observe the revision number that precedes the Telnet password prompt.

Installation

After entering the configuration settings, you are ready to install the PlusConnect in its permanent location. Connect the Ethernet port on the PlusConnect unit to your LAN. Connect the female-female straight-through DB-9 cable (provided) from the PlusConnect serial port to either J6 or J7, also called HP1 and HP2, on the Sigma Transmitter.

To ensure that your transmitter is configured to interface with the PlusConnect, you should first verify the following Sigma CD Transmitter software and firmware revisions:

GUI Program Software for Windows® - **GUI Version 5.0.0** (or higher)

Main Controller Firmware - **Version 3.0** (or higher)

Amplifier Interface Board Firmware - **Version 1.11** (or higher)

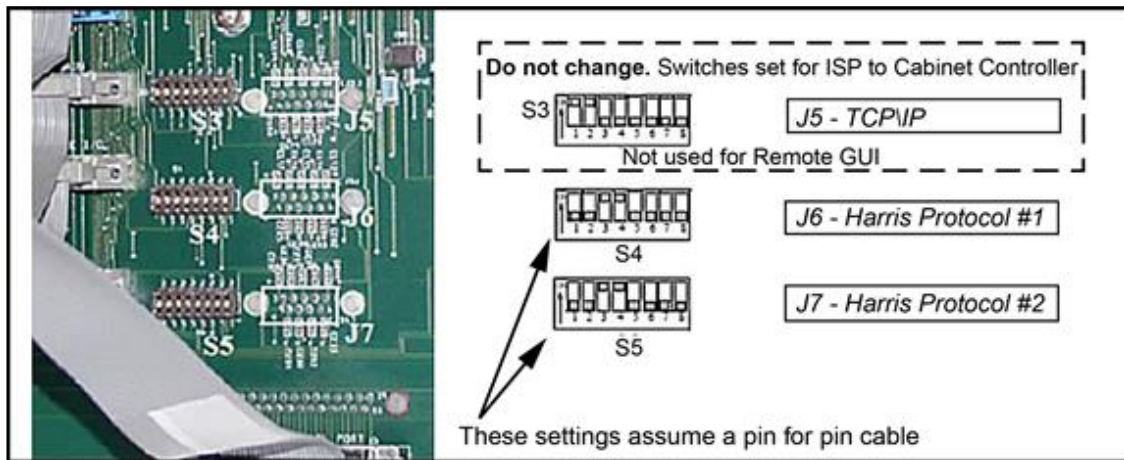
IPA Module Firmware - **Version 2.14** (or higher)

NOTE: To check the firmware revision levels on the transmitter see the Introduction section of the Sigma Software manual, 888-2469-001.

The Sigma Main Controller password requirement must be deactivated to enable communication with the PlusConnect. To accomplish this, set the S2 dipswitch on the transmitter Main Controller Board as follows:

- If the PlusConnect is being connected to J6 (HP1), set dipswitch S2 position 7 to ON
- If the PlusConnect is being connected to J7 (HP2), set dipswitch S2 position 8 to ON

To enable the Sigma serial port for connection to the PlusConnect, select System I/O board switches S4 and S5 as shown in the image below from the GatesAir software instruction guide. Both S4 and S5 dipswitches should only have positions 3 and 4 ON.



DIP Switch Settings for Direct Computer Connection

Now apply power to the PlusConnect unit and wait for the green Power LED to illuminate.

Software Configuration

Now that the PlusConnect is installed on the network and connected to the transmitter, you are ready to add the PlusConnect to the ARC Plus site using AutoLoad Plus. AutoLoad Plus is included with the ARC Plus and may be downloaded from www.burk.com.

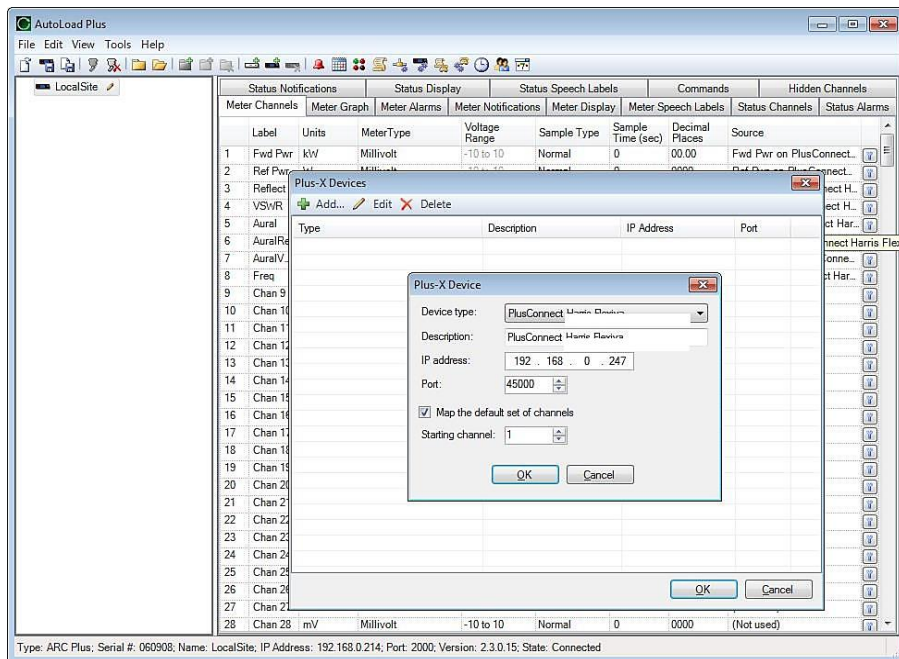
Configuration involves:

- Adding the PlusConnect unit to the ARC Plus site
- Mapping PlusConnect parameters to unused ARC Plus channels

Adding the PlusConnect Unit to the ARC Plus Site

In order for the ARC Plus to recognize the PlusConnect, the PlusConnect must be added to the ARC Plus site:

1. Open AutoLoad Plus and connect to the ARC Plus site to which you are adding the PlusConnect.
2. Select that site from the Navigator pane on the left side of the window.



Adding a Plus-X device in AutoLoad Plus

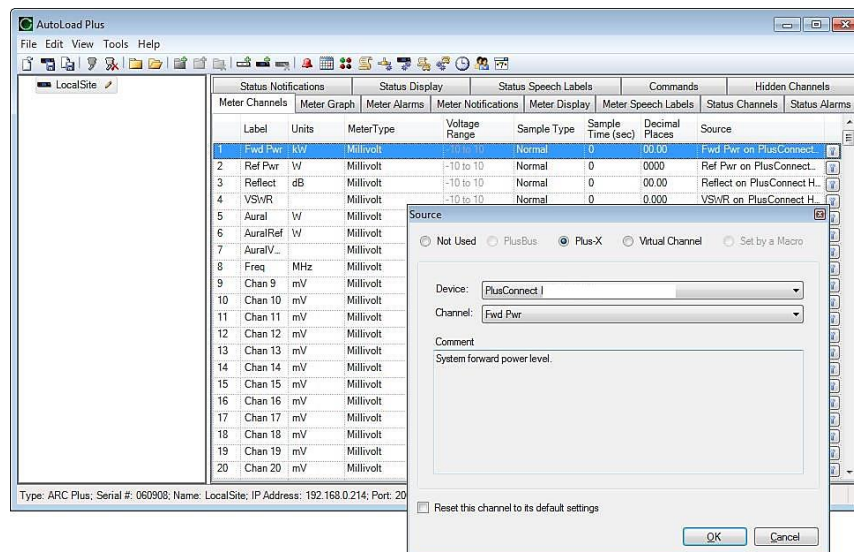
3. From the **Edit** menu, select **Plus-X Devices** to open the list of currently configured Plus-X Devices.
4. Click **Add...** to add the PlusConnect to the site. This opens the Plus-X Device dialog.
5. For Device type, select **PlusConnect GatesAir Sigma**. You may optionally change the description for the PlusConnect. The description appears in AutoLoad Plus to identify each PlusConnect channel.
6. Enter the IP address and port number of the PlusConnect. These should be the same settings you used when you configured the PlusConnect using Telnet.

7. Check the **Map the default set of channels** box if you wish to automatically add the most commonly used PlusConnect parameters to the ARC Plus (recommended).
8. Set **Starting channel** to the first unused channel in the ARC Plus.
9. Click **OK** on the Plus-X Device dialog, then click **OK** on the Plus-X Devices list. This will replace unused ARC Plus channels with 39 PlusConnect status channels, 5 meters and 5 commands. **There must be 39 consecutive unused channels, including the starting channel.** You do not need to have additional Integrated Input Units or Integrated Command Relay Units in order to use these channels.
10. Select **File>Save** to save the settings to the ARC Plus unit. Wait for the progress dialog to complete.
11. Observe that the green Link LED illuminates indicating that the PlusConnect is communicating with the ARC Plus unit.

Three additional custom view templates are available for use with the GatesAir Sigma. These custom view templates are optimized for Sigma transmitters with one, two or three power amplifier cabinets. The names of these specialized custom view templates are “PlusConnect GatesAir Sigma 1PA”, “PlusConnect GatesAir Sigma 2PA” and “PlusConnect GatesAir Sigma 3PA”, respectively.

Important! PlusConnect channels take the place of normal I/O channels. If a metering input, status input, or command relay is connected to an ARC Plus channel and a PlusConnect parameter is subsequently mapped to that channel, the I/O channel will no longer be displayed.

Manually Mapping PlusConnect Parameters



Mapping Plus-X channels using the Source dialog in AutoLoad Plus

The PlusConnect provides access to more remote control parameters than are included in the default set of channels. Even if you chose to map the default set of channels when you added the PlusConnect to the site, you may wish to map additional PlusConnect channels to the ARC Plus. (There must be sufficient unused channel capacity.)

Mapping additional channels is accomplished in AutoLoad Plus by selecting the **MeterChannels, Status**

Channels or Commands tab, as appropriate:

1. Within any of these tabs, click the button at the right edge of the **Source** field to change a channel's assignment from a traditional I/O channel to a Plus-X channel.
2. When the Source dialog appears, select the **Plus-X** radio button and choose the PlusConnect device from the list.
3. Select the PlusConnect channel you wish to use in place of this I/O channel.
4. Click **OK**.

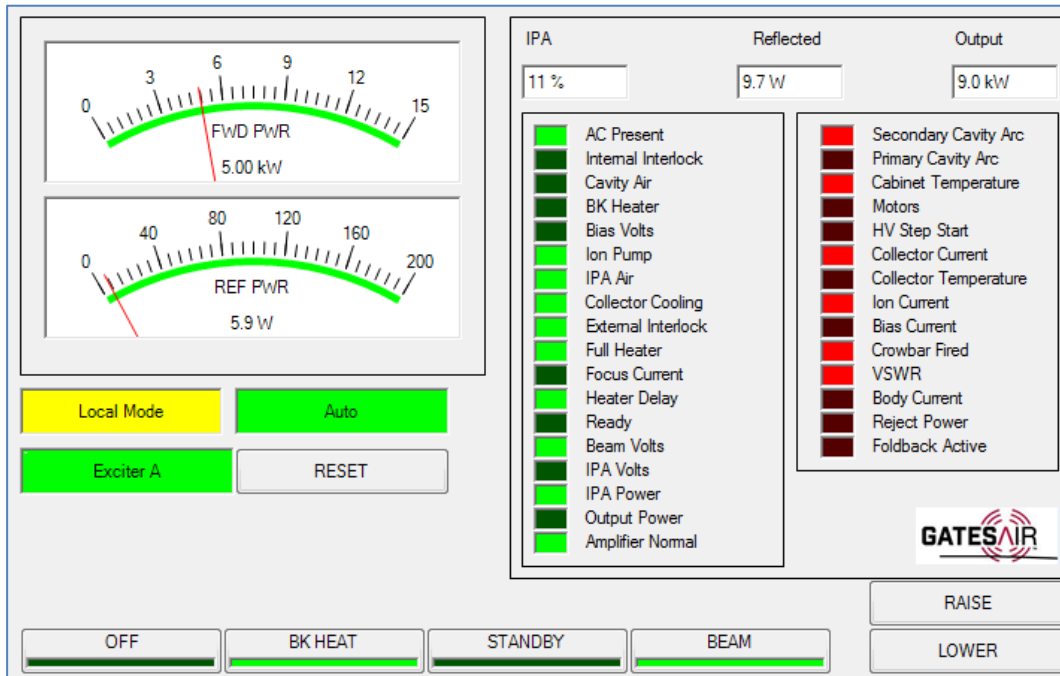
Once mapped and saved, the PlusConnect channel will appear on the front panel of the ARC Plus, in AutoPilot, on the ARC Plus web page, and will be accessible via the ESI or RSI.

Setting up Labels, Limits and Alarms

Labels, limits and alarms for PlusConnect parameters are set up in AutoLoad Plus. The process is the same as for limits and alarms of other ARC Plus channels. Refer to the ARC Plus manual for information on channel configuration.

Important! Because operation preferences vary so widely, no alarms are pre-configured within the PlusConnect channels. You must use AutoLoad Plus to set up alarms for the PlusConnect channels.

Creating a PlusConnect Custom View in AutoPilot



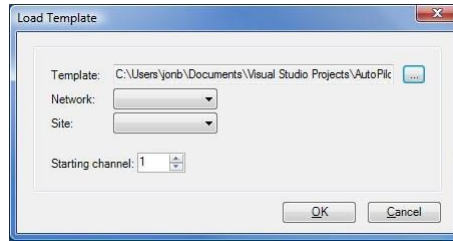
PlusConnect Custom View Template for the GatesAir Sigma transmitter

The easiest way to monitor your PlusConnect parameters is by creating a Custom View in AutoPilot using a pre-built template specific to your transmitter model. In order to use templates, you must map

the default set of channels to the ARC Plus during setup. If you have modified the default channel mapping, the Custom View template may not function as intended.

To create a custom view with a PlusConnect template:

1. Start AutoPilot and select the site and the ARC Plus unit you are using. If the site has not been created in AutoPilot, see “Adding Sites” in the AutoPilot Instruction Manual, available at www.burk.com/downloads.
2. Select **File>Connect**. A progress dialog will be displayed while the connection to the ARC Plus is being established.
3. Open the Custom View Editor by selecting **File>New>Custom View**.
4. When the Custom View Editor opens, select **File>New From Template**. This opens the Load Template dialog.



Load Template dialog

5. Browse for the desired template by clicking on “...” at the right side of the Template selection. The default location for templates is ProgramFiles\Burk Technology\AutoPilot\Templates\Custom Views.
6. Choose the sub-directory named **PlusConnect** then select the sub-directory named **GatesAir Sigma**.
7. Select the template for the PlusConnect GatesAir Sigma. *If there is no custom view template for the GatesAir Sigma preinstalled, visit www.burk.com to download the most current version of AutoPilot.*
8. Select the **Network** and **Site** of the ARC Plus connected to the PlusConnect.
9. Enter the **Starting channel** for the PlusConnect parameters. This starting channel must be the same as the starting channel you used when adding the PlusConnect to the ARC Plus site.
10. Press **OK**. AutoPilot will load the template in the editor and automatically populate the channels.
11. Save the Custom View using the **Save** icon in the tool bar.
12. Close the editor. You may then select the Custom View for display in AutoPilot.

For additional information on creating and editing AutoPilot Custom Views, see “Creating Custom Views” in the AutoPilot Instruction Manual.

Operation

Once the PlusConnect parameters are mapped to ARC Plus channels using AutoLoad Plus, accessing the transmitter parameters is no different from any other ARC Plus channel. You may view channels using:

- The front panel of the ARC Plus
- The front panel of any ARC Plus configured for site-to-site operation with this site
- The built-in web interface
- A mobile device, via the built-in mobile web interface
- AutoPilot
- The ESI or RSI Speech Interface

For more information on using the ARC Plus to monitor and control the remote site, please see the ARC Plus Installation and Operation Manual.

Note that the PlusConnect channels are routed only through the ARC Plus unit specified during PlusConnect configuration. In order to access the transmitter, the ARC Plus unit must be powered and connected to the network.

Troubleshooting

Connection Errors

If the network connection between the PlusConnect and ARC Plus is lost, the ARC Plus will log an alarm after three minutes of network failure. The PlusConnect Link LED will also turn off.

Note: PlusConnect events and errors are logged to the ARC Plus event list, which is accessible by the ARC Plus front panel and from AutoPilot.

Getting Help

For customer support, please email support@burk.com or call our direct customer support line at 978-486-3711. We will be glad to assist you. The customer support office is open Monday – Friday, 9AM to 5PM Eastern Time.

Warranty

Burk Technology, Inc. warrants the PlusConnect GatesAir Sigma to be free of defects in materials and workmanship for a period of 24 months from the date of purchase. Equipment will be repaired or replaced at the option of Burk Technology and returned freight prepaid to the customer. Damage due to abuse or improper operation or installation of the equipment or caused by fire or flood or harsh environment is not to be covered by this warranty. Damage in shipping is not the responsibility of Burk Technology. A return authorization must be obtained before returning any equipment. Materials returned under this warranty must be shipped freight prepaid and insured in the original shipping carton or suitable substitute to Burk Technology, Inc., 7 Beaver Brook Road, Littleton, MA 01460. Repairs not covered under this warranty will be made at prevailing shop rates established by Burk Technology.

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