



Technical Bulletin:

Configuring the ARC-16 from the front panel

Provides instructions for editing ARC-16 configuration using the front panel

July 2010

BURK
TECHNOLOGY

Introduction

Scope

This document provides instructions for editing your ARC-16's configuration from the front panel. This document covers ARC-16 firmware versions 5.6 and above. For information on earlier versions, please refer to the ARC-16 manual, found online at www.burk.com.

Configuration Menu Groups

There are two ARC-16 configuration menu groups: the **system** menu and the **channel** menu.

The system menu group covers the following topics:

1. Determining if the ARC-16 is at a studio or transmitter site
2. The ARC-16 site letter (A, B, C, or D)
3. The characteristics of the link between ARC-16s in a multi-site installation (port assignments, baud rates, etc)
4. The site name for this ARC-16
5. The *Master* and *User* passwords
6. The maximum channel number used on each remote site
7. Optional hardware installed in this unit and remote sites

The channel menu group covers the following topics:

1. Selecting which remote ARC-16 to view and control from this unit's front panel
2. Enabling/disabling alarm monitoring
3. Enabling/disabling ESI alarm call out (if an ESI is installed in this unit)
4. Enabling/disabling ESI call answering (if an ESI is installed in this unit)
5. Meter calibration, decimal position, meter limits, and meter input types
6. Status channel polarity (normal or inverted)
7. Enabling/disabling alarms for each status channel
8. Status channel labels
9. ARC-16 firmware version and serial number

Operating the ARC-16 Menus

Use the front panel buttons to operate the ARC-16 menus. Note that some menu items allow configuration of multiple items, and may span more than one screen.

Button	Purpose
Channel	Move forward and backward within each menu.
Raise/Lower	Edit the current menu choice.
Mode	Accept your selections and advance to the next menu.
Clear	Accept your selections and exit the menu.

Master Initialization

Master initialization clears (erases) all the settings in the ARC-16, returning it to the factory default settings. After a master initialization, all user-defined settings (channel labels, site name, calibration, etc) will be cleared. Master initialization is *not* required in most cases. However, you may wish to use the master initialization feature for the following reasons:

1. Your ARC-16 is not functioning properly, typically after a power surge or nearby lightning strike.
2. You want to completely erase all settings because you are installing an existing ARC-16 at a new site.
3. You are changing the ARC-16's transmitter/studio designation, or re-assigning the site letter.
4. You are upgrading from an earlier firmware version. **When upgrading firmware, you should always clear the ARC-16 memory and reprogram the unit.**

Note: Before performing a master initialization, you may wish to save a copy of your system configuration using AutoLoad (available from www.burk.com). You can use AutoLoad to restore your settings after initializing the unit.

To perform a master initialization:

1. Unplug the ARC-16
2. Hold down the two white channel buttons on the front panel
3. Apply power to the ARC-16
4. After three seconds, release the channel buttons

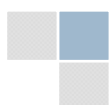
You will see "MASTER INIT" on the front panel, indicating that this procedure was successful. If you do not see this message, repeat the procedure, holding the channel buttons for a longer duration.

If you are unable to perform a master initialization on the ARC-16, contact Burk Technology for further assistance.

After a master initialization, the system will present you with two configuration options that can *only* be performed at this time:

1. Configure the ARC-16 unit as a studio or transmitter unit. This is just a label, and does not impact functionality.
2. Set the site identifier (site letter).

Once you have set these options, the system will enter the system menu group of configuration options (see below).



System Configuration Menu Group

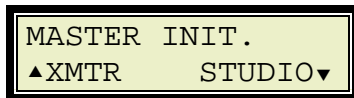
Important Note: Using this menu group may leave your unit in maintenance mode. If this is the case, be sure to turn maintenance mode off (if desired) when you are finished.

After a Master Initialization

Once you have completed the master initialization process (see above), the system will prompt you for two configuration options that are only available at this time.

Transmitter/Studio Designation

Use the **Raise** and **Lower** buttons to select XMTR or STUDIO, and then press **Mode** to accept the selection.



Channel	N/A
Raise/Lower	Raise: set as transmitter Lower: set as studio
Mode	Accept your selections and advance to the next menu.

Site Letter

Use the **Raise** and **Lower** buttons to select the site letter for this unit, and then press **Mode** to accept the selection. Each ARC-16 requires a unique site letter: A, B, C, or D. Stand-alone ARC-16s or the first transmitter unit in a full-time (two-box) system are usually assigned the site letter 'A'. The site letter 'D' is typically assigned to a studio ARC-16.



Channel	Select the site letter (A, B, C, or D).
Raise/Lower	Select the site letter (A, B, C, or D).
Mode	Accept your selections and advance to the next menu.

Once you have completed these two configuration options, the system will continue to the system configuration menu group.



Without a Master Initialization

To enter the system configuration menu group:

1. Power on the unit if it is not already on.
2. Press and hold the **Maint** and **Clear** buttons at the same time.
3. Wait two seconds.
4. Release the buttons.

The **Mode** button's LED will be illuminated.

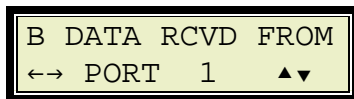
If your equipment does not enter the system configuration menu after attempt this procedure several times, hold the Maint and Clear buttons while power cycling the unit.

This configuration menu group has 13 settings. Some settings have multiple sections, requiring selections on multiple screens.

Menus

Receive Port

The *receive port* tells the local ARC-16 unit which ports to use to receive data from remote sites.



Channel	Select the site letter (A, B, C, or D).
Raise/Lower	Select the port number (No port, 1, or 2).
Mode	Accept your selections and advance to the next menu.

Note: On the rear of the ARC-16, port 1 is typically the lower pair of BNC connectors, and port 2 is typically the upper pair.

Example

If remote site 'D' is connected via the lower pair of BNC connectors on the local ARC-16 (port 1), select site letter 'D' using the **Channel** buttons, then select port 1 using the **Raise** and **Lower** buttons.

If one remote site is connected through another remote site (in a daisy-chain configuration), set the port number for that site letter to the port number used for the intermediary site.



Example

If remote site 'C' is connected via port 1 and remote site 'D' is connected to site 'C', set the port numbers as follows:

Site Letter	Port
C	1
D	1

Be sure to verify that all sites are configured for the correct port numbers before advancing to the next menu.

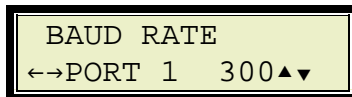
Note: Settings for site letters not in use for this system can be ignored.

Baud Rate

The *baud rate* menu is used to adjust the baud rate for ports 1 and 2. The available speeds rates are 300, 1200, 2400, 4800, and 9600.

Note: Speeds above 300bps are only used with bidirectional digital (RS-232) links between ARC-16s. Digital links require Digital-In and Digital-Out daughter cards for the Universal Modems in both sites.

Wire modems, FSK audio, and sub-carrier modem links only support 300bps.

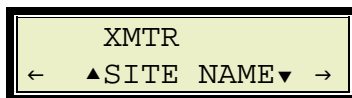


Channel	Select the port number (1 or 2).
Raise/Lower	Select the baud rate.
Mode	Accept your selections and advance to the next menu.

Select the correct speed for each port in use on this unit.

Site Name

The *site name* helps identify an ARC-16 unit in a multi-site installation. The site name may be up to seven characters long.

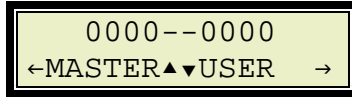


Channel	Move the cursor to the left or right.
Raise/Lower	Change the selected character.
Mode	Accept your selections and advance to the next menu.



Master and User Passwords

The *master* and *user* passwords are used to access this unit from the ESI, AutoPilot® and AutoLoad. The master password allows configuration options from the telephone using the ESI. These passwords are for the local unit only, and do not affect remote sites.

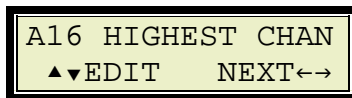


Channel	Move the cursor to the left or right.
Raise/Lower	Change the selected character.
Mode	Accept your selections and advance to the next menu.

Note: The master and user passwords are only accessible from the front panel. Be sure to make note of their values during setup/installation. If you need to reset your password, you can only do so directly from the front panel.

Highest Channel

You may assign the *highest channel* for each site in your system so that the front panel of this unit will display only the desired channels. This setting will also optimize site-to-site communications by sending only necessary channel data.



Channel	Select the site letter (A, B, C, or D).
Raise/Lower	Change the highest channel (0-16).
Mode	Accept your selections and advance to the next menu.

Note: Be sure to set the highest channel for each remote site you are using to at least 1. This will ensure that the remote site is visible on the front panel of this unit.

Hardware Options

Use the *hardware options* to specify what optional cards are installed on this unit, as well as on remote sites.

Note: Navigating through the hardware options menu is different from the previous menus. Use the Channel buttons to move forward and backward through the menus.

After you have configured the hardware options, press the **Mode** button to exit the configuration menu.

Channels 1-8

This option indicates if an I/O board is installed in the bottom I/O slot (channels 1-8). I/O boards connect eight channels of metering, status, and command to the ARC-16. If you are unsure if you have an I/O board installed, look for the DB-37 male and female connectors on the back of the ARC-16.

```
CH. 1-8  YES
←OPTION→  SET▲▼
```

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

Channels 9-16

This option indicates if an I/O board is installed in the top I/O slot (channels 9-16). I/O boards connect eight channels of metering, status, and command to the ARC-16. If you are unsure if you have an I/O board installed, look for the DB-37 male and female connectors on the back of the ARC-16.

```
CH. 9-16  YES
←OPTION→  SET▲▼
```

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

Local ESI

This option indicates if you have an ESI (Enhanced Speech Interface) installed in this unit. If you are unsure if you have an ESI installed, look for the ESI's phone jacks on the back of your ARC-16.

```
LCL ESI  YES
←OPTION→  SET▲▼
```

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

DTMF

If you have a local ESI selected, this option indicates if you want to use DTMF (Touch-Tone) dialing. If you select "NO" for this option, the ESI will use pulse dialing.

```
DTMF  YES
←OPTION→  SET▲▼
```

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.



P-1 ESI

Answer "YES" if an ESI is installed in the next site letter. For example, answer "YES" if this unit is site 'A' and an ESI is installed in site 'B', or if this unit is site 'D' and an ESI is installed in site 'A'.

P-1 ESI NO
←OPTION→ SET▲▼

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

P-2 ESI

Answer "YES" if an ESI installed in the second site letter following this unit. For example, answer "YES" if this unit is site 'A' and an ESI is installed in site 'C', or if this unit is site 'D' and an ESI is installed in site 'B'.

P-2 ESI NO
←OPTION→ SET▲▼

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

P-3 ESI

Answer "YES" if an ESI installed in the third site letter following this unit. For example, answer "YES" if this unit is site 'A' and an ESI is installed in site 'D', or if this unit is site 'D' and an ESI is installed in site 'C'.

P-3 ESI NO
←OPTION→ SET▲▼

Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

P-1 SSI

Answer "YES" if an SSI (Studio Status Indicator) is installed in this ARC-16 unit and you would like the SSI to display the status conditions from the site at the next site letter. For example, answer "YES" if this unit is site 'A' and you want the SSI to display the status conditions from site 'B', or if this unit is site 'D' and you want to display the status conditions from site 'A'.

If you are unsure if you have an SSI installed, look for the SSI's single DB-37 connector on the back of the ARC-16.

P-1 SSI NO
←OPTION→ SET▲▼

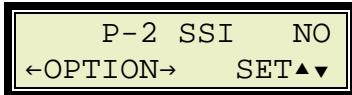
Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.



P-2 SSI

Answer "YES" if an SSI (Studio Status Indicator) is installed in this ARC-16 unit and you would like the SSI to display the status conditions from the site two site letters after this one. For example, answer "YES" if this unit is site 'A' and you want the SSI to display the status conditions from site 'C', or if this unit is site 'D' and you want to display the status conditions from site 'B'.

If you are unsure if you have an SSI installed, look for the SSI's single DB-37 connector on the back of the ARC-16.



Channel	Accept your selections and advance to the next/previous hardware option.
Raise/Lower	Toggle YES/NO
Mode	Accept your selections and exit the menu.

Channel Configuration Menu Group

The channel configuration group of ARC-16 settings primarily includes settings related to the display and behavior of meter and status channels. To enter this menu group, simply press the **Mode** button.

Navigating the Channel Configuration Menu Group

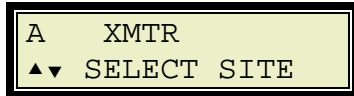
From any item in this menu group, you may press **Mode** to accept your changes and move to the next item, or **Clear** to accept your changes and exit the menu.

Menus

Select Site

Note: This menu item will only appear if you have at least one remote site configured with a highest channel value of at least one (see above).

Select the site letter that will appear on the front panel of this unit.



Channel	Select the next/previous site letter.
Raise/Lower	Select the next/previous site letter.
Mode	Accept your selections and advance to the next menu item.

Limits Monitors

This configuration option selects whether or not you will be notified when this ARC-16's meter or status channels are out of tolerance. Alarm notifications include the following:

- Front panel **Clear** button LED
- ESI call out
- AutoPilot alarm list
- ARC-16 Web Interface alarm email

Out of tolerance conditions include the following:

- Meter channel below the lower limit
- Meter channel above the upper limit
- Status channel configured for alarm and in the *on* state (front panel LED illuminated)



Channel	Toggle ON/OFF.
Raise/Lower	Toggle ON/OFF.
Mode	Accept your selections and advance to the next menu item.

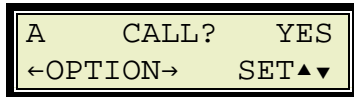


Call/Answer

Note: this menu will only appear if you have an ESI installed in this unit.

Call

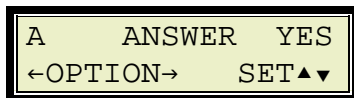
Set this option to "YES" if you want the ESI to dial out to report alarms.



Channel	Switch between CALL? and ANSWER.
Raise/Lower	Toggle YES/NO.
Mode	Accept your selections and advance to the next menu item.

Answer

Press the right **Channel** button to switch to the *answer* setting. Set this option to "YES" if you want the ESI to answer incoming calls.



Channel	Switch between CALL? and ANSWER.
Raise/Lower	Toggle YES/NO.
Mode	Accept your selections and advance to the next menu item.

Calibration

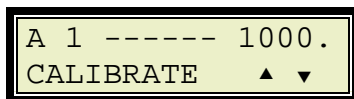
The *calibration* menu allows you to calibrate each meter channel to the correct value for its corresponding equipment.

Effective Range

To assure accuracy across the entire input range, you may only calibrate channels when the input voltage is between 250mV and 4.5VDC. If a channel's input voltage is too high, the ARC-16 will display a reading of 9999.

Note: Before calibrating meter channels, configure the meter types for each channel (power, linear, or indirect).

Note: You cannot calibrate a meter channel if its type is set to DEG (degrees).



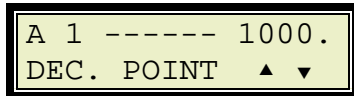
Channel	Select the channel you want to calibrate.
Raise/Lower	Adjust the channel value. <i>Note: You can hold this button down.</i>
Mode	Accept your selections and advance to the next menu item.



Decimal Point

You may move the decimal point to any of four positions. The decimal position will affect the display on the front panel, in AutoPilot, and on the Web Interface.

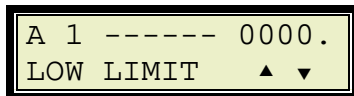
Note: For a channel set to DEG (degrees), the input will always be displayed in millivolts, regardless of the decimal position. In other words, an input of 2V will read 2.000, 20.00, 200.0 or 2000 depending on the decimal position.



Channel	Select the channel you want to adjust.
Raise/Lower	Move the decimal point.
Mode	Accept your selections and advance to the next menu item.

Low Limit

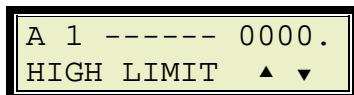
Set the lower limit for each meter channel. When a meter value falls below its lower limit, it will trigger an alarm (if limits monitoring is enabled). To disable limits monitoring for a channel, set its high and low limits to zero.



Channel	Select the channel you want to adjust.
Raise/Lower	Set the limit value.
Mode	Accept your selections and advance to the next menu item.

High Limit

Set the upper limit for each meter channel. When a meter value rises above its upper limit, it will trigger an alarm (if limits monitoring is enabled). To disable limits monitoring for a channel, set its high and low limits to zero.

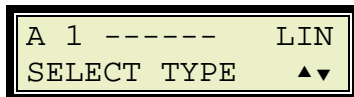


Channel	Select the channel you want to adjust.
Raise/Lower	Set the limit value.
Mode	Accept your selections and advance to the next menu item.

Meter Type

Each meter channel may be set to calibrate as one of four types:

Type	Description
DEG Degree	<p>Primarily used for temperature inputs using the BTU-4. The ARC-16 will directly read and display the voltage of the input. DEG channels values are always divided by 10 to support temperature inputs that measure 10mV/degree. For example, a value of 723mV will display as 72.</p> <p>DEG channels support a range of -999 to 999.</p> <p><i>Note: DEG channels cannot be calibrated.</i></p>
LIN Linear	This is the most common meter type. Linear meters apply a calibration constant (see <i>Calibration</i> , above) by multiplying the sample value by the constant.
PWR Power	PWR channels square the input sample voltage (n^2) so that a voltage representation of power will display accurately. Use this meter type of RF power samples.
IND Indirect	<p>IND channels are calculated as the product of the previous two channels. For example, if channel 3 is set to IND, its value will equal Ch. 1 * Ch. 2.</p> <p>IND channels <i>can</i> be calibrated. When calibrated, the calculated value of channel is multiplied by the calibration constant.</p>



Channel	Select the channel you want to adjust.
Raise/Lower	Scroll through the meter types (see above).
Mode	Accept your selections and advance to the next menu item.

Status Polarity

The polarity of each status channel may be set to **Normal** or **Inverted**. Normal polarity means that the status LED for the selected channel is normally *off*, and turns on when the status input closes to ground. When inverted, the LED is normally *on*, and turns off only when the status input closes to ground.

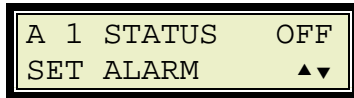


Channel	Select the channel you want to adjust.
Raise/Lower	Toggle NORM/INVRT.
Mode	Accept your selections and advance to the next menu item.



Status Alarm

Each status channel may be set to trigger an alarm when the status LED illuminates (when the channel is "on").



Channel	Select the channel you want to adjust.
Raise/Lower	Toggle ON/OFF.
Mode	Accept your selections and advance to the next menu item.

Edit Label

This menu allows you to assign a label to each meter channel. These labels will be displayed on the front panel of the ARC-16 (and on the front panels of remote sites), and on the Web Interface.

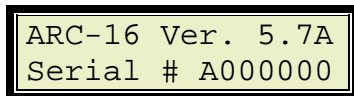


Channel	Move the cursor to the left or right.
Raise/Lower	Change the selected character.
Mode	Accept your selections and advance to the next menu item.

Site Information

The final menu in this group displays the ARC-16's serial number and firmware version.

Keeping a record of your serial number and its firmware version is highly recommended.



Channel	Move the cursor to the left or right.
Raise/Lower	Change the selected character.
Mode	Accept your selections and advance to the next menu item.

Once you have advanced to the final menu, press the **Mode** button to exit and return to normal operating mode.

Getting Help

For additional information and assistance, visit www.burk.com. You may also contact Burk Technology customer support at support@burk.com or 978-486-3711 between the hours of 9AM and 5PM Eastern Time.

