BURK TECHNOLOGY

Plus-X IIU / ICRU Installation Guide

Installing the Plus-X IIU & ICRU

The **Plus-X Integrated Input Unit (Plus-X IIU)** and **Plus-X Integrated Command Relay (Plus-X ICRU)** are used to connect site equipment to the ARC Plus. Each Plus-X IIU connects up to 16 metering and 32[*] status channels, and each Plus-X ICRU connects 16 relays or 8 pairs of raise/lower relay outputs. Units are connected to the ARC Plus via LAN or WAN. Up to 32 Plus-X devices can be connected to the ARC Plus.

The Plus-X IIU accepts 16 metering or status channels (left side of panel) and 16 status channels (right side of panel).

The Plus-X ICRU accepts 8 raise and 8 lower channels.

Network Settings
Prior to operation, each Plus-X IIU and Plus-X ICRU must be configured for your network. To configure the unit, open a web browser and enter the unit's IP address in the address bar. Prior to network configuration, the Plus-X IIU/ICRU operates on a default IP address of **192.168.0.100**. When the log on screen appears, enter the user name and password for the unit. The user name is **admin** and the default password is **password**.

After logging on, click the **Configuration** link in the menu bar, opening the Network Settings page. Enter the appropriate values where prompted (consult your network administrator if needed). Note that the default Plus-X port of 45000 will work in most installations. However, if you have changed the Plus-X port during ARC Plus configuration the Plus-X port you enter here must match that setting. The ARC Plus IP address field calls for the IP address of the ARC Plus that will host the channels of this Plus-X device.

Network Settings

IP Address:	192.168.0.246
Subnet Mask:	255.255.255.0
Gateway:	192.168.0.1
ARC Plus IP Address:	192.168.0.245
HTTP Port:	80
Plus-X Port:	45000
Change Password?	☐
Admin Password:	
Confirm:	

Save

Press the **Save** button when you are finished.

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[*] 16 inputs are dedicated to status. 16 inputs may be used as meter or status, for a total of up to 32 status channels.

Connecting Plus-X IIUs and Plus-X ICRUs to the ARC Plus
If you have not already done so, install the units in the equipment rack. If you wish, you may distribute the units in multiple racks, or at different locations. To add the channels from the Plus-X unit to the ARC Plus:

1. Start by downloading the Plus-X IIU and Plus-X ICRU XML files from the support section of www.burk.com. These files contain data that AutoLoad will need in order to configure the Plus-X unit. Save the files in the Plus-X folder, usually located in c:\Program Files\Burk Technology\AutoLoad Plus.
2. Launch AutoLoad Plus and connect to the ARC Plus site to which the Plus-X unit will be linked.
3. From the **Edit** menu, selected **Plus-X Devices…** and click **New**.
4. When the Plus-X Settings window appears, select Plus-X IIU or Plus-X ICRU from the device type drop-down. Enter a description of the Plus-X unit for your own reference, followed by the IP address and Plus-X port, as already configured on the Plus-X unit.
5. Check the box marked **Map Default Set of Channels** to add all channels for this Plus-X unit to the ARC Plus. If you are not using all channels, or if you do not wish for them to appear in sequential order, you will need to manually map these channels alter. In this case, leave this checkbox unchecked.
6. Press **OK** to close the Plus-X Settings window. Press **OK** to close the Plus-X Devices window.
7. To manually map Plus-X channels to the ARC Plus, click the Meter, Status, or Command tabs, as appropriate. Locate an unused channel and click the […] button in the Override column. This will bring up the Override Channel dialog. Click the **Plus-X channel** button and choose the Plus-X channel you wish to use.
8. Configure labels, limits, and alarms for the newly added Plus-X channels.
9. Lastly (Plus-X IIU only), you will need to calibrate the metering channels. If you have not already connected the input connector blocks, do so now. Then click the **Calibration** icon in the AutoLoad Plus toolbar to complete the calibration process.
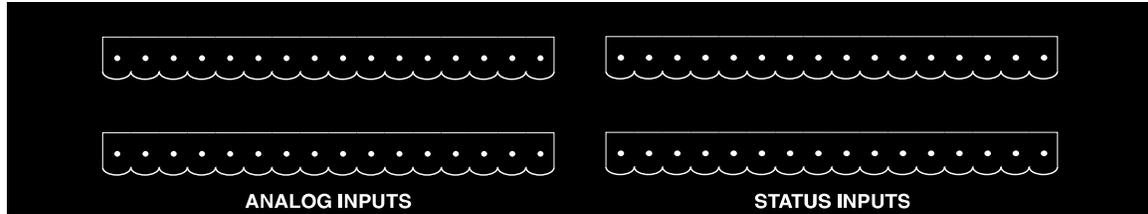
Restoring Factory Configuration
To reset the unit to its default configuration, press and hold the **MASTER INIT** button for three seconds. The Power LED will blink to confirm the configuration has been reset. Note that restoring the default configuration will reset the unit's password to **password** and the IP address to **192.168.0.100**.

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Connecting Analog and Status Inputs (Plus-X IIU)

Input Channel Pinouts

Each Plus-X IIU connects up to 16 metering inputs (±10VDC) and 16 status inputs (0-28VDC or switch closure). Meter inputs may be used as status channels by setting the high and low voltage thresholds (see below). Metering channels 1-8 are the top left bank of pins and 9-16 are the bottom left bank of pins row pins. Status channels 1-8 are the top right bank and 9-16 are the bottom right bank:

Each channel has a pin for common ground (left) and a pin for the signal voltage (right), as shown in the table below.

CH 1		CH 2		CH 3		CH 4		CH 5		CH 6		CH 7		CH 8	
-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
CH 9		CH 10		CH 11		CH 12		CH 13		CH 14		CH 15		CH 16	

Plus-X IIU Rear Panel Connector Pinouts. Analog and status pinouts are identical. Channels numbers are for reference on this unit only. ARC Plus channel numbers are assigned when the Plus-X IIU is added to the ARC Plus (see above).

Four 16-pin connector blocks are included to facilitate equipment wiring, two blocks for analog channels, and two for status channels. Analog channels are connected on the left side of the Plus-X IIU rear panel, and status channels are connected on the right, as shown below.

Using Metering Inputs for Additional Status

Each of the 16 metering inputs on the Plus-X IIU can be used as a status input (either as an alternative to the metering input or in addition to it). To configure the metering input behavior, use a web browser to connect to the Plus-X IIU. Click on the **Configuration** link in the menu bar, and click on **Meter Channels** from the sidebar.

Meter Channel Status Override Settings

Any meter channel can be used as a status input. Enter the voltage at which the channel should indicate a change of state.

	Low Threshold	High Threshold
Meter/Status 1	0.500	1.000
Meter/Status 2	0.500	1.000
Meter/Status 3	0.500	1.000
Meter/Status 4	0.500	1.000

Assign the low and high threshold (in Volts) for each channel that will be used as a status input. These inputs can be assigned to status channels on the ARC Plus using AutoLoad. If desired, one input can be used for both metering and status on the ARC Plus. In this case, the metering channel will show the analog value read on the input, and the status channel will show the status using the low and high thresholds defined here.

Input Diagnostics
The main page of the Plus-X IIU web interface shows the actual voltage read for each metering input (not its calibrated value), its associated status (applicable only where metering channels are used for status), and the state of each status input.

Meter Values			Status Values	
Meter Channel	Voltage	State	Status Channel	State
Meter 1	0.002	On	Status 1	Off
Meter 2	0.000	On	Status 2	Off
Meter 3	0.000	On	Status 3	Off
Meter 4	0.000	On	Status 4	Off

This page is provided for diagnostic purposes, and may be useful during initial setup or troubleshooting. The values on this page are not updated in real time, and should not be used for daily operation.

Labeling Analog and Status Inputs
The accessory kit supplied with the Plus-X IIU includes labels to identify the ground pin and supply voltage pin for each channel. To align and affix the labels:

1. Start by designating one of the 16-pin connector blocks for metering channels 1-8.
2. Orient the connector block with the set screws facing toward you and below the wiring terminals.
3. Peel off the label identifying ground and supply voltage for channels 1-8 and align the label on top of the connector block with the ground symbol above the left-most input and the CH 1 designator above the second input from the left. When the label is aligned correctly, the designator for CH 8 will be positioned above the right-most wiring input and there will be a small amount of overhang on each side of the label.
4. Wrap the overhang around the side of the connector.
5. Next, label a new connector block for metering channels 9-16, followed by the two connector blocks for status channels. On subsequent Plus-X IIUs, apply labels for channels 17-32, 33-48, etc. in the same way.

Note: If you wish, you can apply the label directly on the rear panel of the Plus-X IIU instead of on the connector block.
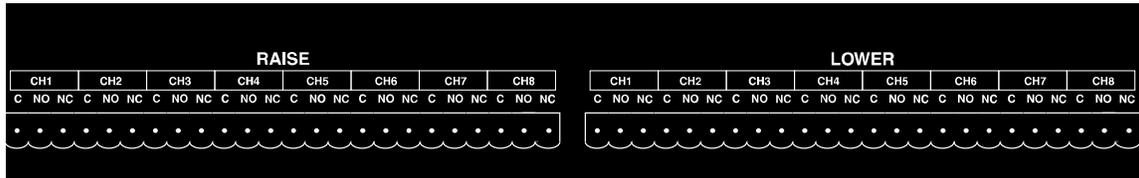
Wiring the Input Channels
Once you have labeled the connector blocks for your input channels, attach wiring for each remote control channel to the connector block using the connector labels as a guide. Secure the wiring using the built-in set screws before attaching the connector block to the appropriate rear panel connector.

Connecting Command Channels (Plus-X ICRU)

Command Channel Connector Pinouts

The Plus-X ICRU connects 8 raise and 8 lower channels using two identical 24-pin connector blocks. Raise channels connect to the left set of 24 pins on the rear panel, and lower channels connect to the right set of 24 pins, so shown below:

Closeup of Form C contacts on the Plus-X ICRU rear panel.

Each channel has three pins: a pin for common (left), and pins for the normally open or normally closed contact. Pinouts for raise channels 1-8 and lower channels 1-8 are identified on the chart below.

1	2	3	4	5	6	7	8
C NO NC	C NO NC	C NO NC	C NO NC	C NO NC	C NO NC	C NO NC	C NO NC

Plus-X ICRU rear panel pinouts. Pinouts for raise channels (left side of Plus-X ICRU rear panel) are identical to the pinouts for lower channels (right side of Plus-X ICRU rear panel).

Pairing Relays

The 16 relays on the Plus-X ICRU may be used individually as up to 16 channels, or in raise/lower pairs (8 channels). To configure the relay behavior, use a web browser to connect to the Plus-X ICRU. Click on the **Configuration** link in the menu bar, and click on **Relay Settings** from the sidebar.

Click the **Pair** checkbox in the center column to pair the associated relays (1 and 9, 2, and 10, etc). When paired, the relays will behave as one raise/lower channel. When not paired, each relay behaves independently.

Relay Diagnostics

The main page of the Plus-X ICRU web interface shows the state of each relay. This page is provided for diagnostic purposes, and may be useful during initial setup or troubleshooting. The values on this page are not updated in real time, and should not be used for daily operation.

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Labeling Command Channels

The accessory kit supplied with the Plus-X ICRU includes labels to identify each command channel. To align and affix the labels:

1. Start by designating one of the 24-pin connector blocks for raise channels 1-8.
2. Orient the connector block with the set screws facing toward you and below the wiring terminals.
3. Peel off the label identifying channels 1-8 and align the label on top of the connector block so that the "CH 1" segment of the label corresponds with the first three pins on the left side of the connector block. "CH 2" corresponds with the next set of three pins, and so on. When the label is aligned correctly, the three pins on the far right of the connector block are identified as "CH 8" and there will be a small amount of overhang on each side of the label.
4. Wrap the overhang around the side of the connector.
5. Next, label the second connector block for lower channels 1-8. On subsequent Plus-X ICRUs, apply labels for channels 9-16, 17-24, etc. in the same way.

Note: If you wish, you can apply the label directly on the rear panel of the Plus-X ICRU instead of on the connector block.

Wiring Command Channels

Once you have labeled the connector blocks for your command channels, attach wiring for each channel to the connector block using the connector labels as a guide. Secure the wiring using the built-in set screws before attaching the connector block to the appropriate rear panel connector.