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RHINO AC DIN RAIL UPS

USER MANUAL



Warnings and Trademarks

~ WARNING ~

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Warnings and Trademarks

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IMPORTANT SAFETY INSTRUCTIONS

WARNING: SAVE THESE INSTRUCTIONS!!

WARNING: Manual contains important instructions regarding the UPS and batteries during installation and maintenance. Follow these instructions at all times.

WARNING: Install UPS in a room in which temperature and humidity are controlled and which is free from electrically conductive particles. **DO NOT** expose UPS to direct sunlight or high heat sources, and **DO NOT** block the ventilation openings around the housing.

WARNING: Explosion hazard. DO NOT reset circuit breaker unless power has been removed from the equipment or the area is free of ignitible concentrations.

AVERTISSEMENT: Risque d'explosion. NE PAS réarmer le disjoncteur à moins que l'alimentation de l'appareillage n'ait été coupée ou que l'emplacement ne soit exempt de concentrations inflammables.

WARNING: Explosion hazard. DO NOT disconnect power input/output terminals while the circuit is live or unless the area is free of ignitible concentrations.

CAUTION: Before conducting maintenance, repair, or shipment, please turn off and disconnect everything.

CAUTION: UPS is **NOT** suitable for use with inductive loads such as motors or domestic appliances like hairdryers, speakers, and fluorescent lamps.

CAUTION: All interconnection and power cables should be connected **ONLY AFTER** UPS is shut down and disconnected from mains.

CAUTION: Only use conductors 18 AWG or larger to connect the UPS and devices.

CAUTION: DO NOT unplug UPS from main power during operation, or protective ground will fail. **DO NOT** disconnect battery under load, or shut down may occur.

CAUTION: Ensure that total leakage current of UPS and the connected equipment less than 3.5 mA.

CAUTION: Ensure UPS is connected to grounded main power with a fuse or circuit breaker protection.

CAUTION: Dangerous voltage might still exist **even with the UPS disconnected from the main power** since residual voltage exists due to battery supply.

CAUTION: Beware of all the details on the cautionary sticker located on UPS.

CAUTION: NO USER SERVICEABLE PARTS: Removal of unit's cover is only permitted for battery removal or replacement. Please refer all service to qualified service technicians.

CAUTION: DO NOT dispose of UPS and its batteries in a fire, as they may explode.

CAUTION: DO NOT open or damage the battery, as electrolyte may be released which is harmful to the skin and eyes.

CAUTION: Battery can present a risk of electric shock and high short circuit current. The following precautions should be taken when working with batteries:

- *Remove watches, rings, or other metal objects.*
- *Use tools with insulated handles.*
- *Wear rubber gloves and boots.*
- *Please **DO NOT** place any tools or metal parts on top of batteries.*
- *Disconnect charging source before connecting or disconnecting battery terminals.*
- *Servicing of batteries should be performed or supervised by personnel with necessary precautions and knowledge. Keep unauthorized personnel away from batteries.*

DANGER: Hazardous electric components inside this unit remain energized from the battery supply even when the main power is disconnected.

DANGER: Battery circuit is not isolated from the AC input. Hazardous voltage may exist at battery terminals and ground – test for safety before any direct contact.

CAUTION: Remove the battery's pole during service inside the UPS.

CAUTION: ONLY replace batteries with the same type and quantity.

Revision History

Please include the Manual Number and the Manual Issue, both shown below, when communicating with Technical Support regarding this publication.

Manual Number: RHINOAC_UPR_UMW

Issue: First Edition

Issue Date: 07/20/2026

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Issue	***Date***	***Description of Changes***
First Edition	07/20/2026	Original Issue

Contents

Warnings and Trademarks 2
RHINO AC DIN Rail UPS User Manual Revision History 5
RHINO AC DIN Rail UPS User Manual Table of Contents 6
1: Overview 7
2: Installation 9
3: Operation 11
4: Alarms 12
5: UPS System Configuration and Control 13
6: UPS to PLC Interface 15
7: Maintenance and Precautions 33
8: DIN Rail UPS Battery Removal Instructions 34
Appendix A: RHINO AC DIN Rail UPS Troubleshooting Guide 35
Appendix B: RHINO AC DIN Rail UPS Specifications 37
Appendix C: Approved Batteries For UPR-A500-120DSH. 38

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

1. Overview



1. BATTERY FAULT / OVERLOAD Indicator (Red LED):

- *The LED will flash when the battery needs to be recharged and tested.*
- *The LED will illuminate when the unit is subjected to an overload condition.*
- *If the unit shuts down due to overload, the LED and alarm will continue for 2 min.*

2. BATTERY MODE Indicator (Yellow LED):

- *The LED will illuminate when then the UPS is supplying battery power to the loads.*

3. AC MODE Indicator (Green LED):

- *The LED will illuminate when the line input voltage is normal.*

4. ON/OFF/TEST/SILENCE Button

With the unit Off: Press button for...

- *15 ms–2s: Unit turns on and beeps twice before turning on AC output.*
- *More than 2s: Unit turns on and audible alarm sounds three times before turning on AC output in "Green Mode."*

With the unit On: Press button for...

- *Less than 160–170 ms or so: beeper activates, but unit does not turn on.*
- *170–980/990 ms: Unit enters battery self-test mode for about 10s.*
- *More than 1000 ms: Unit turns off.*

5. REMOTE ON/OFF Input Screw Terminals*

- *The remote ON/OFF input provides the same functions as the front panel switch including ON/OFF/TEST/SILENCE functions. Input voltage range: 5–30 VDC. See table for terminal specifications.*

6. INPUT Screw Terminals*

IP20 rated. See adjacent table for terminal specifications.

7. OUTPUT Screw Terminals*

IP20 rated. See adjacent table for terminal specifications.

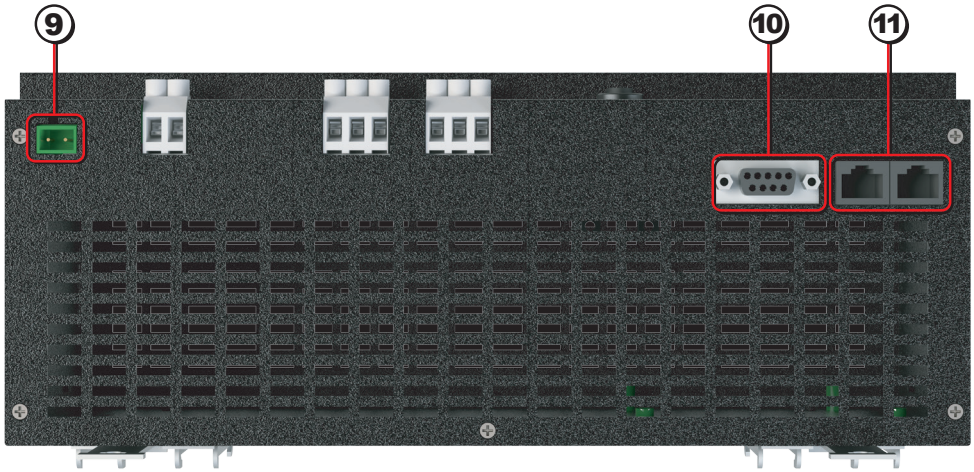
8. INPUT BREAKER

Protection from AC overloads and short circuits.

Screw Type	M3.0 Current rating = 30A, 300 VAC
Insulation Withstand Voltage	2000 VAC minimum
Wire Stripping Length	0.31in [8mm]
Wire Range	18–10 AWG copper
Screw Torque	9 lb•in [1 N•m]

**** Optional screw covers to prevent terminal contact are included.***

1. Presentation (continued)



9. AUX DC OUTPUT:

- *12 VDC auxiliary power supply for peripherals*
- *Max current: 300 mA*
- *Recommended connector terminal:*
  - *DINnector DN-2PLUGMN*
  - *Dinkle 5ESDV-02P*

10. COMM Port:

- *Female 9 pin sub-D (DB9) connector. Used for communication interface with an external PLC or computer.*

11. SURGE PROTECTION:

- *Data line surge protection – RJ45 in / RJ45 out connection*

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

2. Installation

2.1 Inspection:

Upon receiving the UPS, inspect it. The packaging is recyclable. Save it for reuse or dispose of it properly.

2.2 Placement:

To prevent the risk of fire or electronic shock, install the UPS in a temperature and humidity controlled ventilated enclosure, free of conductive contaminants, moisture, and corrosive substances. This equipment is evaluated for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

To reduce the risk of electronic shock, do not remove cover during operation. The cover may only be removed for battery replacement in a non-hazardous location. Hazardous live parts inside this unit are energized from the battery supply even when the input AC power is disconnected.

2.3 Utility power:

The terminal block is used to "hardwire" the UPS, thus allowing connection of input/output wiring. Use AWG wire as stated in the table. Input/Output wires should be secured with terminal block screws using 9 lb•in. of torque. See Appendix B for input and output power specifications.

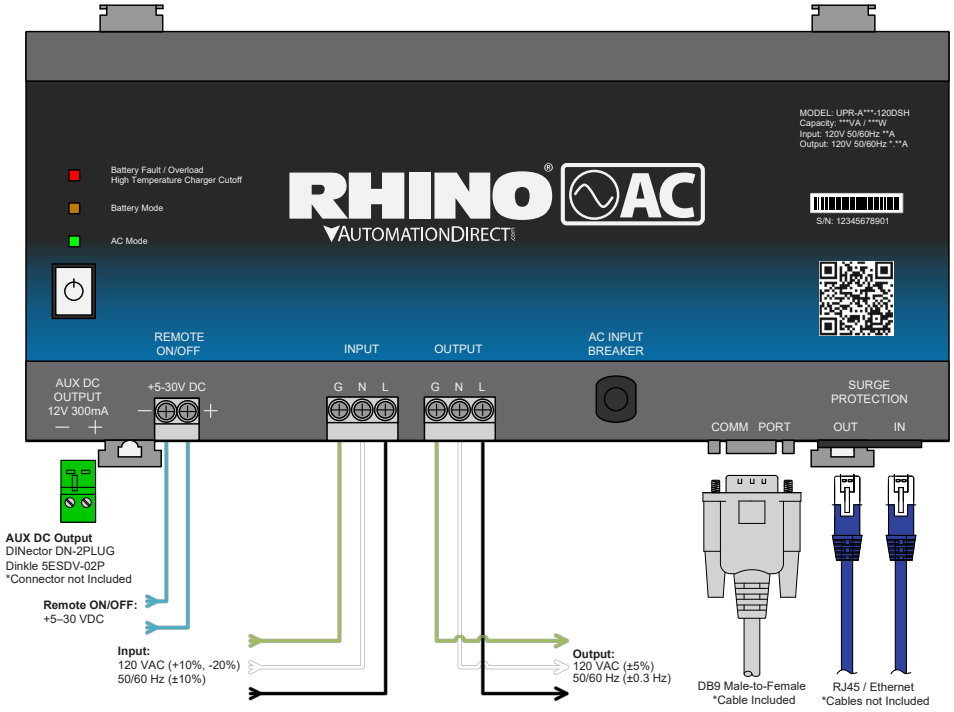
2.4 Connection:

a. Connect the AC input power conductors (L, N, and G) to the UPS input terminal blocks (L, N, and G) respectively.

b. Connect the output power conductors (L, N, and G) from the UPS output terminal blocks to the load equipment (L, N, and G) respectively.

The UPS input and output terminal blocks can accept conductors sized 18 – 10 AWG. Use 90 °C rated copper wire.

Screw Type	M3.0 Current rating = 30A, 300 VAC
Insulation Withstand Voltage	2000 VAC minimum
Wire Stripping Length	0.31in [8mm]
Wire Range	18–10 AWG copper
Screw Torque	9 lb•in [1 N•m]



2. Installation (continued)

2.5 DIN Rail UPS Mounting Instructions:

The recommended ventilation space allowance is 2in [50mm] top and bottom.

Start by tilting the UPS unit as shown below, with the upper edge of the UPS leaning forward. Installation of the UPS unit on the 35mm DIN rail can then be accomplished using the following procedure:

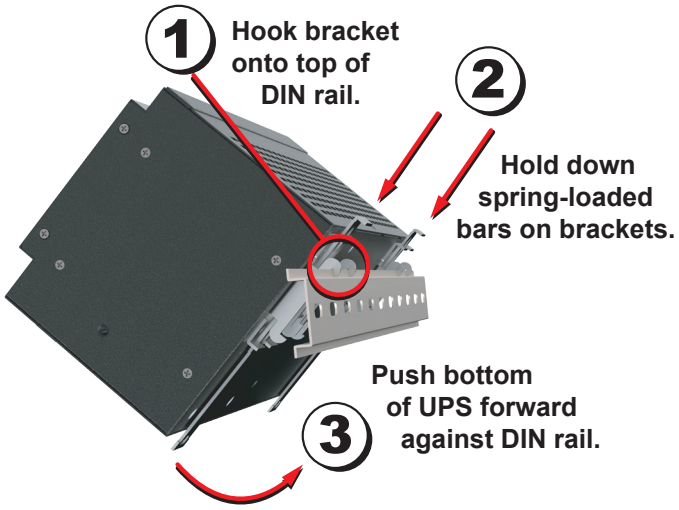
Step 1:
Place the upper hooks of the DIN rail brackets onto the upper edge of DIN Rail.

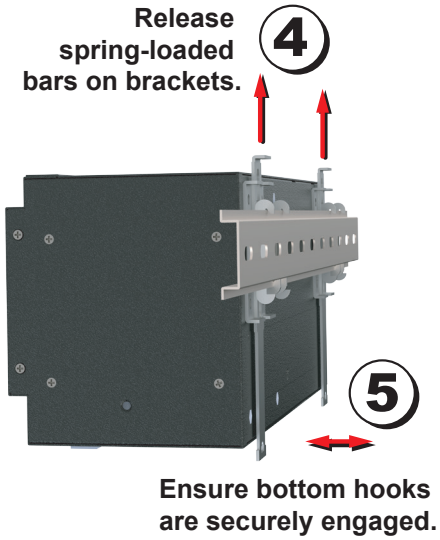
Step 2:
Push and hold down the spring-loaded bars on the DIN rail brackets.

Step 3:
Then push the bottom of the UPS forward against the DIN rail.

Step 4:
Finally, release the spring-loaded bars on the brackets.

Step 5:
Slightly pull the bottom of the UPS outward to ensure that the spring-loaded hooks are securely engaged onto the lower edge of the DIN rail.





RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

3. Operation

This section contains information necessary for the operation of the UPS unit.

3.1 General Description:

As an off-line UPS, this unit provides reliable protection to your critical equipment while automatically charging the battery.

- Main power is transferred to the equipment with surge protection.
- During a power failure, the UPS immediately transfers to backup power from the battery.

Line-Mode/Battery-Mode

The UPS will operate in Line-Mode that supports power and charges the battery while connected to AC power. During a power outage, the UPS will switch to Battery-Mode, and power will be maintained from the battery. In case power outage time exceeds the capability of the Battery-Mode to provide back-up power, the UPS will shut down until power is restored in order to prevent excessive discharge of the battery.

Diagnostic Test

An advanced battery management system monitors the condition of the batteries. It will send early warnings if a battery replacement is needed. Diagnostic tests can be performed from the control panel by pressing the On/Off/Test/Silence button as indicated in Section 1. A diagnostic test can also be initiated via the communication interface.

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

4. Alarms

4.1 "BACKUP" (slow alarm):

When the UPS is working in the "BACKUP" mode, there will be an audible alarm. When the UPS returns to "LINE" mode operation, the alarm will stop.

In the "BACKUP" mode, the alarm will sound every 2 seconds (slow-speed beep).

The UPS provides a mute function for this warning. When the audible alarm is active, press "ON" to stop the audible alarm. To resume the sound, press "ON" again.

4.2 "LOW BATTERY"(rapid alarm):

When the UPS is working in the "BACKUP" mode, with energy of the battery between 20% and 30% (low level), the UPS will sound the audible alarm at a rapid rate until the UPS shuts down from battery exhaustion or returns to "LINE" mode operation.

The alarm due to low voltage of the batteries is actuated every 0.5 seconds.

The rapid alarm under "LOW BATTERY" condition cannot be muted.

4.3 "OVERLOAD" (continuous alarm):

When the UPS is working under overload condition (that is, when the connected loads exceed the UPS unit's maximum rated capacity), the UPS will emit a continuous alarm to warn of an overload condition. In order to protect the unit and the loads, the UPS will automatically turn Off after the time period indicated in Appendix B. Please disconnect nonessential devices from the UPS to eliminate the overload alarm.

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

5. UPS System Configuration and Control

The UPS device and battery make up the system. Please remember to consider the following criteria before selecting a UPS system:

- The output power rating (VA) is determined by the power requirement of the load equipment. When measuring the power requirement, allow a margin for future expansion, tolerance and calculation error.
- The size of the battery is determined by the desired duration of operation in battery mode.

5.1 UPS Control

Control Panel Functions	
Display	***Function Description***
Battery Fault Overload	***Overload/battery fault (red): Battery fault: Rapid flash Overload: Steady light***
Battery Mode	***Battery mode (yellow): UPS is operating with battery power***
AC Mode	***AC mode (green): UPS is operating with mains power***

Button Display	
Display	***Function Description***
ON/OFF/TEST/Silence	***ON/OFF/TEST/Silence button The master button for UPS control; refer to Button Operation below***

Button Operation

Cold Start function

When the main power is disconnected from UPS, it is capable of starting with battery power. Simply start the UPS as per the instruction below.

"On/Off/Test/Silence" button

Turn on the UPS output

- Press the "On/Off/Test/Silence" button until the audible alarm turns off and the green AC mode LED turns on. The unit will then beep twice to confirm the power on command and will enter battery mode. The yellow battery mode LED will be illuminated, and the audible alarm will beep too while unit is in battery mode. The unit will return to AC operation automatically if AC input power is restored.

Turn off the UPS output

- Press the "On/Off/Test/Silence" button for 3 seconds during Line/Battery mode.

Test: Press once to start self-test function during Line-Mode

Silence: Press once to enable/disable alarm buzzer during Battery mode

Green Mode

The Green Mode feature will enable UPS no-load or light-load shutdown to maintain power consumption and battery life. During Battery Mode, the UPS will shut down after approximately 4 min under no load/light load operation.

Green Mode is disabled by default. It can be Enabled by holding the ON/OFF/TEST/Silence button for >2s when powering the unit on. The unit will sound the audible alarm three times to confirm that it has entered Green Mode.

If the Green Mode is enabled and the DIN rail UPS is in Battery Mode, the 300W model will shut down when the load is less than 30W. The 510W model shuts down when the load is less than 50W.

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

5. System Configuration and Control (continued)

UPS Manual Test

Manual tests for UPS or battery can be conducted from the UPS configuration and are functional even when the UPS is not charging the battery.

Simple Test: It is recommended to conduct a simple simulation test when any of the following occur:

1. The first use of UPS.
2. Adding new loads.
3. Every 6 months as a regular check-up

To perform a manual test, switch on the UPS and wait for the power indicator to light up. Remove power from the UPS input to simulate a main power failure. After confirming the functionality of the unit in battery operation, restore power to the UPS input. The unit should return to AC operation automatically.

Manual Battery Test:

To perform a manual battery test, do the following:

1. Press the "test" button once. UPS will automatically conduct a self-test.
2. Please note that the UPS will briefly switch to battery mode.

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

6. UPS to PLC Interface

6.1 Characteristics of the Computer/PLC Interface Port

The communication port located on the bottom of the UPS may be connected to a host computer or PLC. This port allows the computer or PLC to monitor the status of the UPS and to control its operations. Its major functions include the following:

a. To broadcast a warning when power fails.
b. To turn off the UPS.
c. Initiate safe shutdown of connected equipment.

6.2 DIN Rail UPS Protocol

A: General

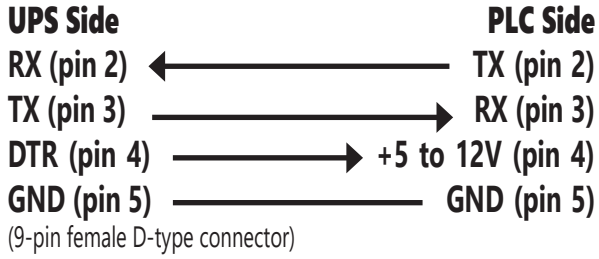
This section specifies the RS232C communication protocol of the UPS. The protocol provides the following features:

1. Monitor charger status.
2. Monitor battery status and condition.
3. Monitor the utility status.
4. Provide the power switch function for computer to turn ON and OFF the utility on schedule for power saving.

The computer/PLC will control information exchange by providing a command query followed by <cr>. The UPS will respond with information followed by a <cr> or action.

B: Hardware

BAUD RATE	***2400 baud***
DATA LENGTH	***8 bit***
STOP BIT	***1 bit***
PARITY	***None***



(9-pin female D-type connector)

REMOTE ON/OFF Input Terminals

The remote on/off input terminals provide the same functions as the front panel ON/OFF/TEST/SILENCE button. This input can be used to control the UPS output via a hard-wired interface. The input voltage range is 5–30 VDC. A logic high input voltage serves the same function as pressing the ON/OFF/TEST/SILENCE button. See page 7 of this manual for more information regarding ON/OFF/TEST/SILENCE button operation.

6.1. UPS to PLC Interface (continued)

C: Communication Protocol

1. Status Inquiry:

Computer/PLC Command: **Q1<cr>**

UPS: UPS status data stream, such as the following:
(MMM.M NNN.N PPP.P QQQ RR.R SS.S TT.T b7b6b5b4b3b2b1b0<cr>

UPS status data stream: There should be a space character between every field for data separation. The meaning of each field is listed as follows:

a. Start byte:

b. Input voltage: MMM.M, where M is an integer number ranging from 0 to 9. The unit is volts.

c . Input fault voltage: NNN.N, where N is an integer number ranging from 0 to 9. The unit is volts.

For OFFLINE UPS: Its purpose is to identify a short-duration voltage glitch which causes OFF line UPS to go to Inverter mode. If this occurs, input voltage will appear normal at query prior to glitch and will still appear normal at next query.

The I/P fault voltage will hold glitch voltage till next query. After query, the I/P fault voltage will return 000.0 until the next glitch occurs.

d. Output voltage: PPP.P, where P is an integer number ranging form 0 to 9. The unit is volts.

e. Output current: QQQ, where QQQ is a percent of maximum current, not an absolute value.

f. Input frequency: RR.R, where R is an integer number ranging from 0 to 9. The unit is Hz.

g. Battery voltage: SS.S, where S is an integer number ranging from 0 to 9.

h. Temperature: TT.T, where T is an integer number ranging form 0 to 9. The unit is °C.

i. UPS status: <U>, where <U>is one byte of binary information such as<b7b6b5b4b3b2b1b0>

j. Stop byte: <cr>

UPS Status	
Bit	***Description***
b7	*1 : Utility Fail (Immediate)*
b6	*1 : Battery Low*
b5	*1 : Bypass/Boost Or Buck Active*
b4	*1 : UPS Failed*
b3	*1 : UPS Status (0 is Online/1 is Offline)* *2 : Battery Fail (Online UPS)* *3 : Battery Fail (Offline UPS)*
b2	*1 : Test In Progress*
b1	*1 : Shutdown Active*
b0	*1 : Audible Alarm Enabled*

Example: Computer/PLC Command Q1<cr>

UPS Response: (128.0 000.0 128.0 034 60.0 13.9 38.0 00001001<cr>

Description: **I/P voltage** is 128.0V
I/P fault voltage is 000.0V (no fault present)
O/P voltage is 128.0V
O/P current is 34%
I/P frequency is 60 Hz
Battery voltage is 13.9V
Temperature is 38.0 °C
UPS type is off-line, battery is normal.
UPS Silence function is disabled and shutdown not active

6.1. UPS to PLC Interface (continued)

2. Status Inquiry:

Computer/PLC Command: **DQ1**<cr>

UPS: UPS status data stream, such as
(MMM.M NNN.N PPP.P QQQ RR.R CCCC FF.F b7b6b5b4b3b2b1b0<cr>

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For OFFLINE UPS: Its purpose is to identify a short-duration voltage glitch which causes OFF line UPS to go to Inverter mode. If this occurs, input voltage will appear normal at query prior to glitch and will still appear normal at next query.

The I/P fault voltage will hold glitch voltage till next query. After query, the I/P fault voltage will return 000.0 until next glitch occurs.

d. O/P voltage: PPP.P, where P is an integer number ranging form 0 to 9. The unit is volts.

e. O/P current: QQQ, where QQQ is a percent of maximum current, not an absolute value.

f. I/P frequency: RR.R, where R is an integer number ranging from 0 to 9. The unit is Hz.

g. Battery level: CCCC, where C is an integer number ranging from 0 to 9. CCCC is a percent of maximum battery capacity.

h. OP frequency: FF.F, where F is an integer ranging from 0 to 9. The unit is Hz.

i. UPS status: <U>, where <U>is one byte of binary information such as<b7b6b5b4b3b2b1b0>

j. Stop byte: <cr>

UPS Status	
Bit	***Description***
b7	*1 : Utility Fail (Immediate)*
b6	*1 : Battery Low*
b5	*1 : Bypass/Boost Or Buck Active*
b4	*1 : UPS Failed*
b3	*1 : UPS Status (0 is Online/1 is Offline)* *2 : Battery Fail (Online UPS)* *3 : Battery Fail (Offline UPS)*
b2	*1 : Test In Progress*
b1	*1 : Shutdown Active*
b0	*1 : Audible Alarm Enabled*

Example: Computer/PLC Command: DQ1<cr>

UPS: (128.0 000.0 128.0 034 60.0 0100 60.0 00001001<cr>
Description: **I/P voltage** is 128.0V
I/P fault voltage is 000.0V (no fault present)
O/P voltage is 128.0V
O/P current is 34%
I/P frequency is 60.0 Hz
Battery level is 100%
O/P frequency is 60.0 Hz
UPS type is off-line, battery is normal
UPS Silence function is disabled and shutdown is not active

6.1. UPS to PLC Interface (continued)

3. Test for 10 seconds
Computer/PLC command: **T<cr>**

UPS: Test for 10 seconds and return to utility.
If battery is low during testing, UPS will return to utility immediately.

4. Test until battery low
Computer/PLC command: **TL<cr>**

UPS: Test until battery is low and return to utility.

5. Test for specified time period
Computer/PLC command: **T<n><cr>**

UPS: Test for <n>minutes.
a. During testing, UPS returns to utility immediately, if battery is low.
b. <n> is a number ranging from 01 to 99.

6. Turn On/Off audible alarm – Toggle the audible alarm
Computer/PLC command: **Q<cr>**

When the AC power fails, UPS will generate an audible alarm to inform the user. This command can be used to disable the audible alarm.

7. Shutdown Command
Computer/PLC command: **S<n><cr>**

UPS: Shut UPS output off in <n> minutes.
a. The UPS output will be off in <n> minutes., even if the utility power is present.
b. If the battery low occurs before <n> minutes ,the output is turned off immediately.
c. After UPS shutdown , the controller of UPS monitors the utility power. If the utility is recovered, the UPS will wait for 10 seconds and connect the utility to output.
d.<n> is a number ranging from 0.2, 0.3,..., 01, 02,...,up to 10.
For example: S.3<cr> – shut output off in 0.3 minutes

8. Shutdown and Restore Command
Computer/PLC command: **S<n>R<m><cr>**

UPS: Shut UPS output off in <n> minutes, wait for <m> minutes, then turn on UPS output again.
- The shutdown sequence is the same as the previous command. When the <m> minutes expires, the utility does not restore, and the UPS will wait until utility restores.
- If UPS is in shutdown waiting state, then the "C" command will cancel the shutdown process.
- If UPS is in restore waiting state, the "C" command can let the UPS output turn on, but UPS must hold off at least 10 seconds (if utility is present).
- <n> is a number ranging from 0.2, 0.3,..., 01, 02,...,up to 10. <m>is a number ranging from 0001 to 9999.

9. Cancel Shutdown Command
Computer/PLC command: **C<cr>**

UPS: Cancel the SN<n><cr> and SN<n>R<m><cr> command.
a. If UPS is in shutdown waiting state, the shutdown command is cancelled.
b. If UPS is in restore waiting state, the UPS output is turned on, but UPS must hold off at least 10 seconds (if utility is present)

6.1. UPS to PLC Interface (continued)

10. Cancel Test Command

Computer/PLC command: **CT<cr>**

UPS: Cancel all test activity and connect the utility to output immediately.

11. Information Command

Computer/PLC command: **I<cr>**

UPS: #Company_Name UPS_Model Version<cr>

This function will make the UPS respond with the basic information about the company who manufactures the UPS, the model name of the UPS and the version number of the UPS firmware. The length of every field is listed as follows:

Company_Name: 15 characters – leave space if less than 15 characters

UPS_Model: 10 characters – leave space if less than 10 characters

Version: 10 characters – leave space if less than 10 characters

There should be a space character between every field for separation.

12. UPS Rating Information:

Computer/PLC command: **F<cr>**

UPS: #MMM.M QQQ SS.SS RR.R<cr>

This function makes the UPS return the electrical ratings of the unit. There should be a space character between every field for separation. The UPS's response contains the following information field:

a. Rating Voltage: MMM.M

b. Rating Current: QQQ

c. Battery Voltage: SS.SS or SSS.S

d. Frequency: RR.R.

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

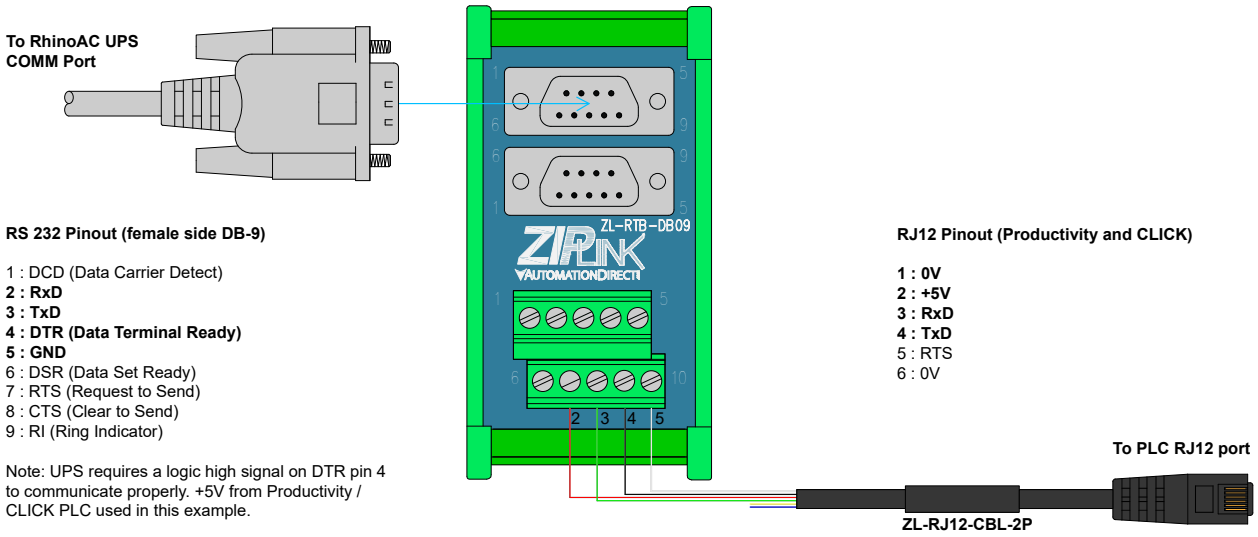
6.2. RHINO AC UPS PLC Serial Communication Example

The RHINO AC UPS can communicate with AutomationDirect.com's line of CLICK and Productivity PLCs via the onboard DB9 COMM port.

A ZIPLINK port adapter such as the ZL-RTB-DB09 or the ZL-CMA9 along with an ZIPLINK Communication cable ZL-RJ12-CBL-2P may be used to establish the hardware interface via the RJ-12 port on the CLICK or Productivity PLC.

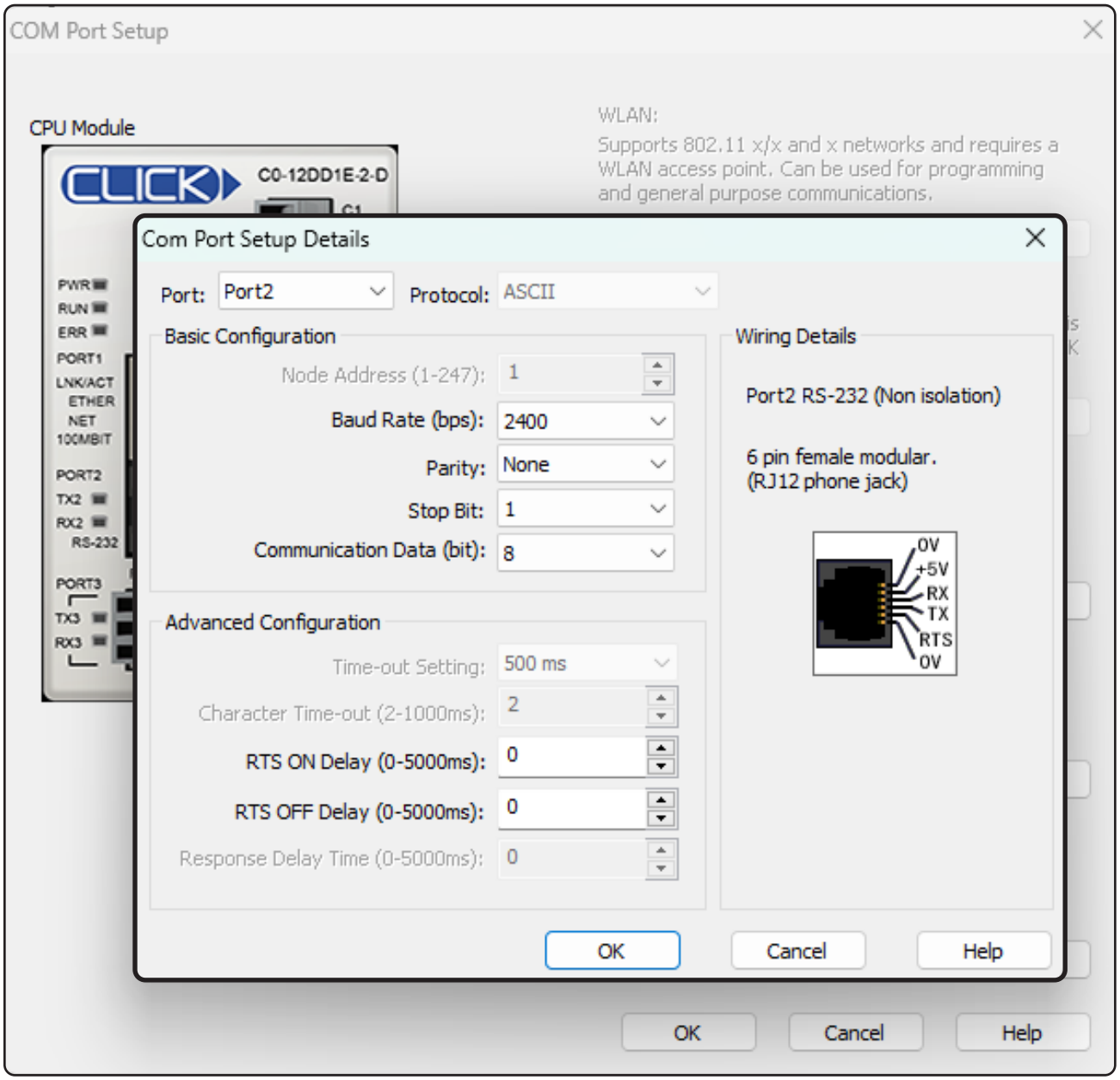
The Com Port on the PLC should be configured for ASCII serial communication. Please note that the communication protocol is acyclic, thus the ASCII receive block should be executed with minimal delay to ensure the PLC is able to receive the complete response. PLC cycle times should not exceed 20 ms.

Wiring Diagram / Connection Example:



6.3. CLICK PLC Example Program

RJ12 Com Port Setup

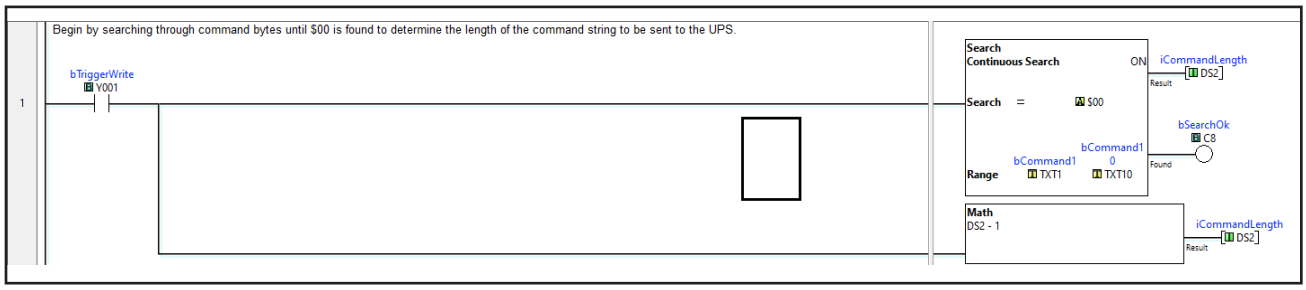


RHINO AC DIN Rail UPS User Manual

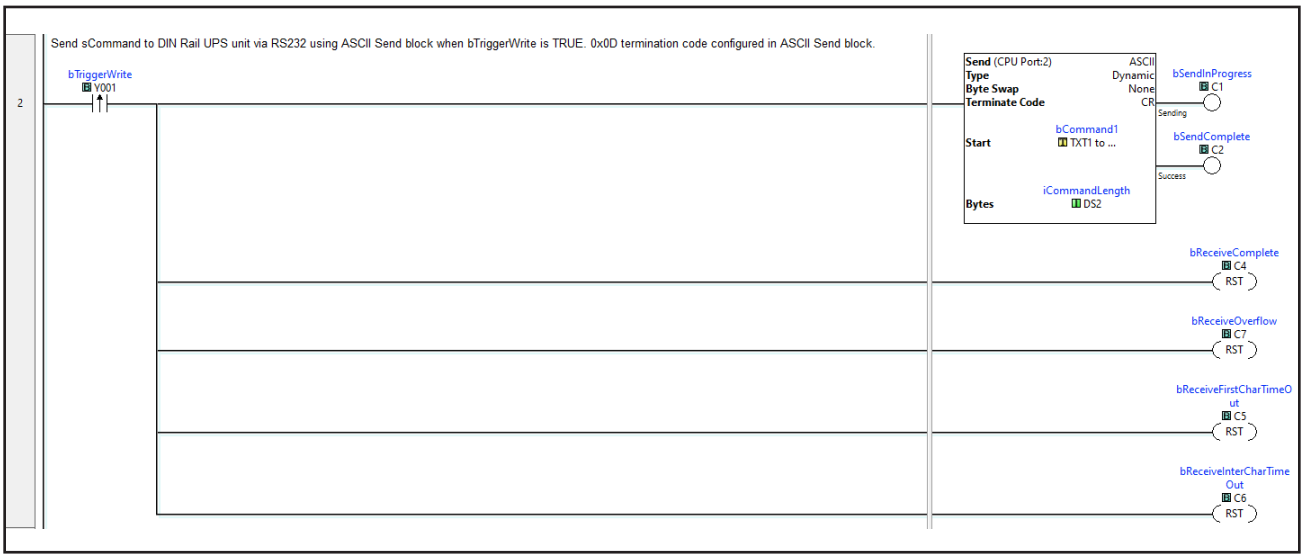
Models UPR-A300-120DSH and UPR-A500-120DSH

6.3. CLICK PLC Example Program (continued)

Begin by searching through the command bytes until $00 is found to determine the length of the command string to be sent to the UPS.

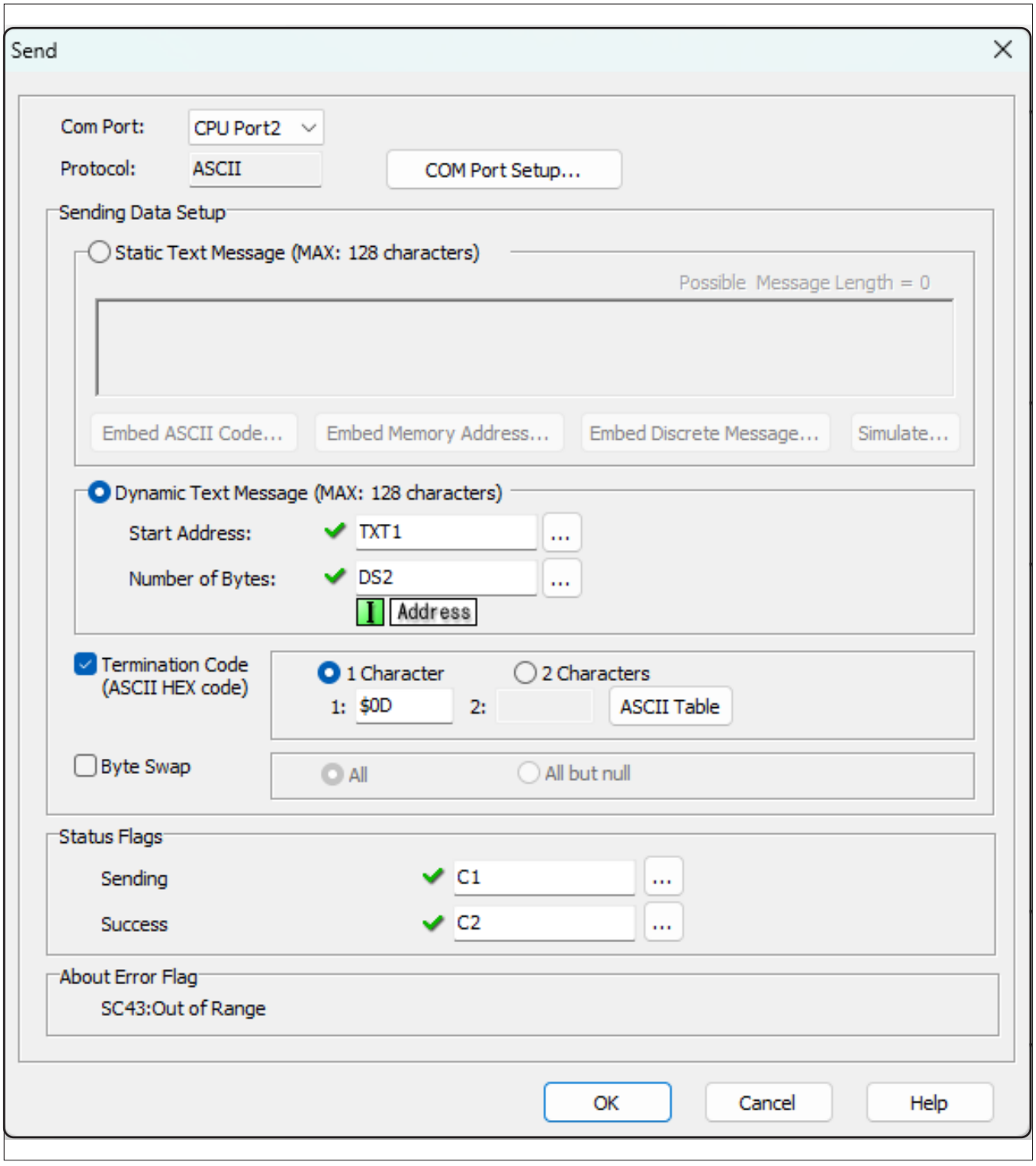


Send sCommand to the DIN Rail UPS via RS232 using the ASCII Send block when bTriggerWrite is TRUE. The 0x0D termination code is configured in the ASCII Send block.



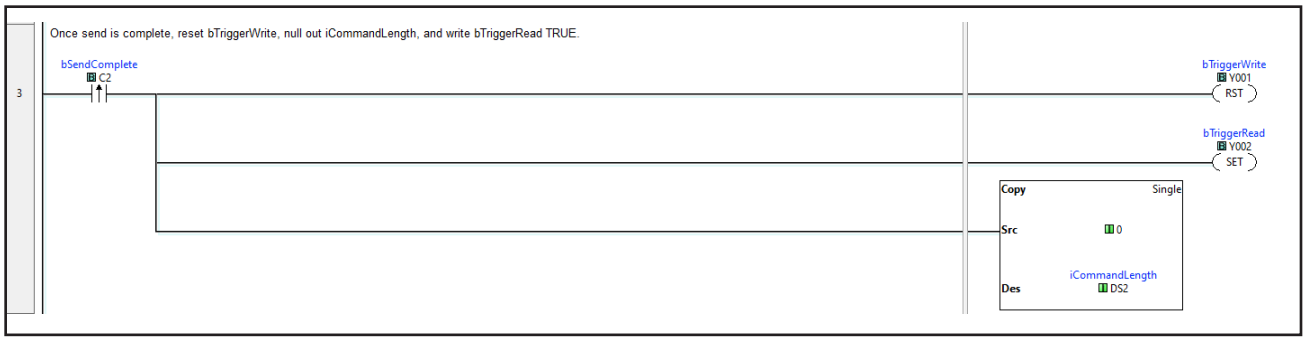
6.3. CLICK PLC Example Program (continued)

ASCII Send block setup

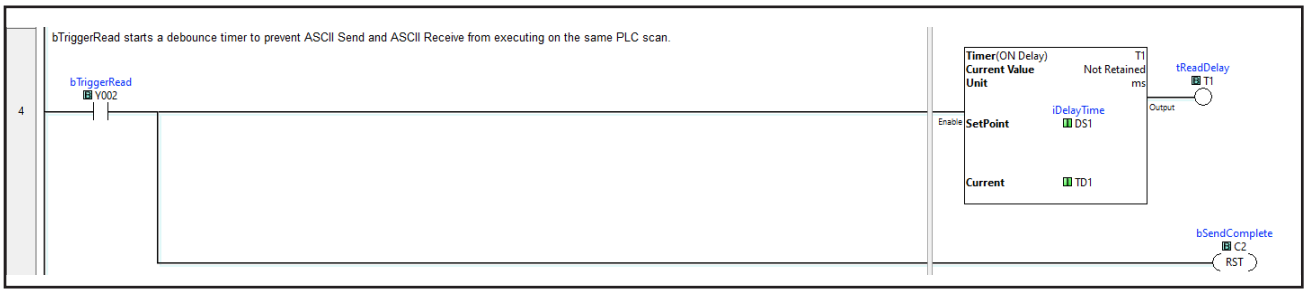


6.3. CLICK PLC Example Program (continued)

Once the send is complete, reset bTriggerWrite, null out iCommandLengh, and write briggerRead TRUE.

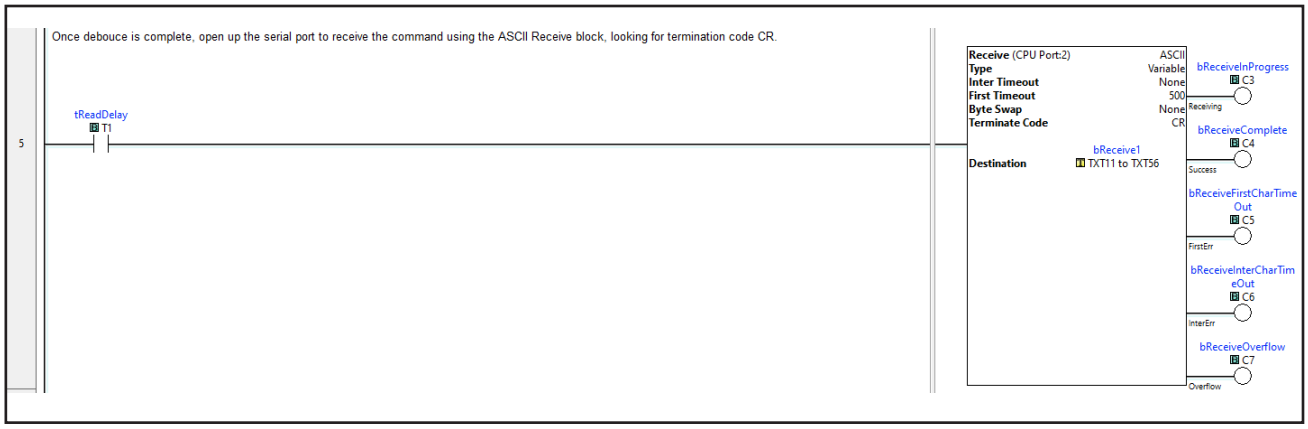


bTriggerRead starts a debounce timer to prevent ASCII Send and ASCII Receive from executing on the same PLC scan.



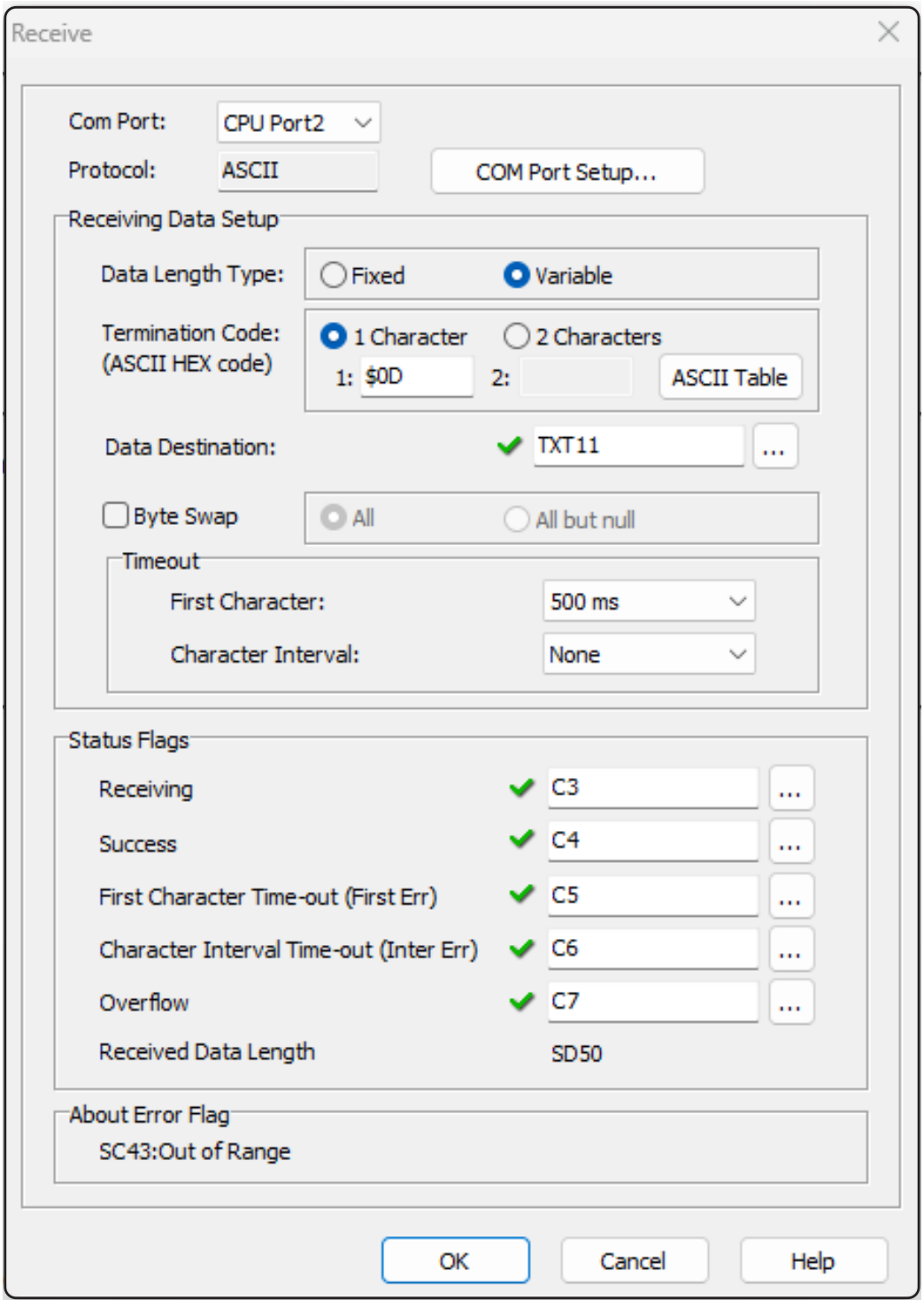
6.3. CLICK PLC Example Program (continued)

Once the debounce is complete, open the serial port to receive the response using the ASCII Receive block, looking for termination code CR.



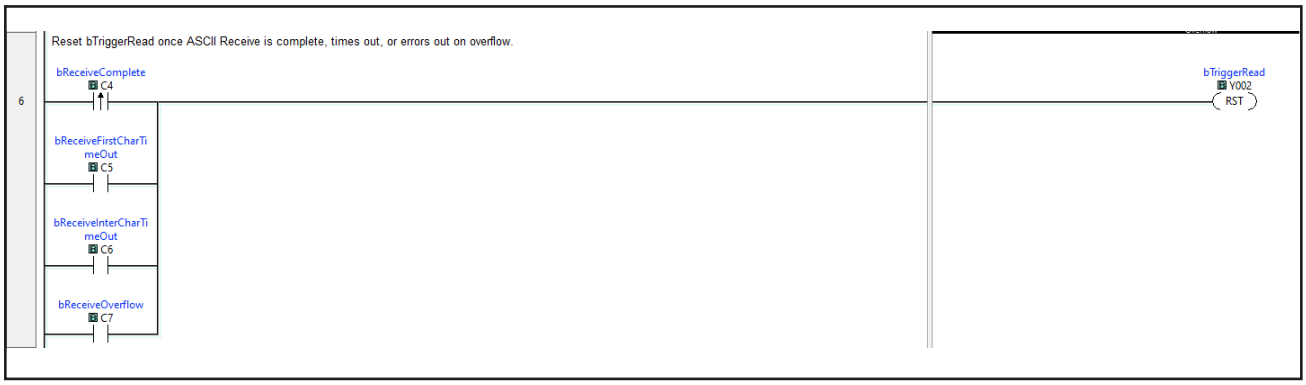
6.3. CLICK PLC Example Program (continued)

ASCII Receive block setup



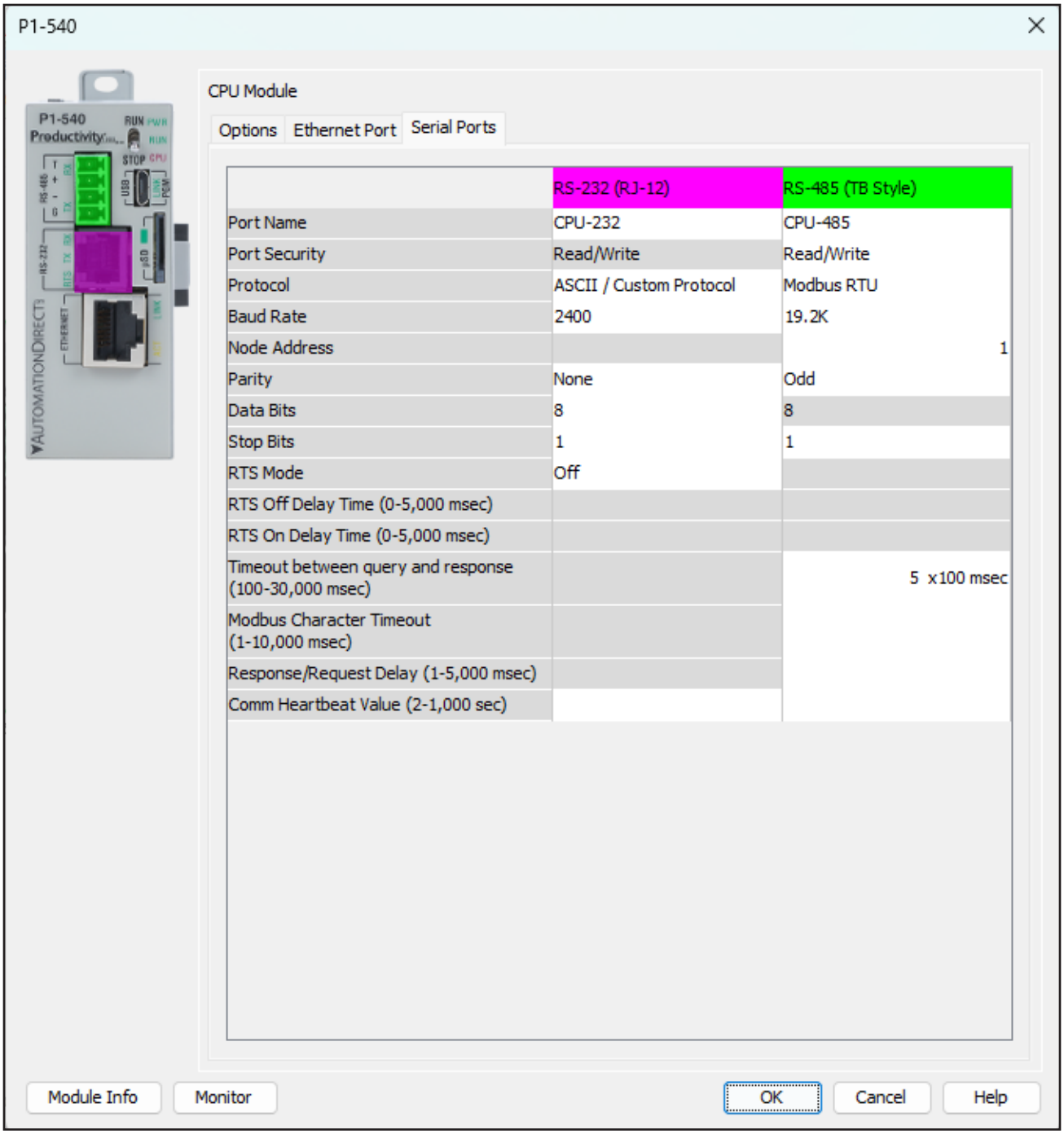
6.3. CLICK PLC Example Program (continued)

Reset bTriggerRead once ASCII Receive is complete, times out, or errors out on overflow.



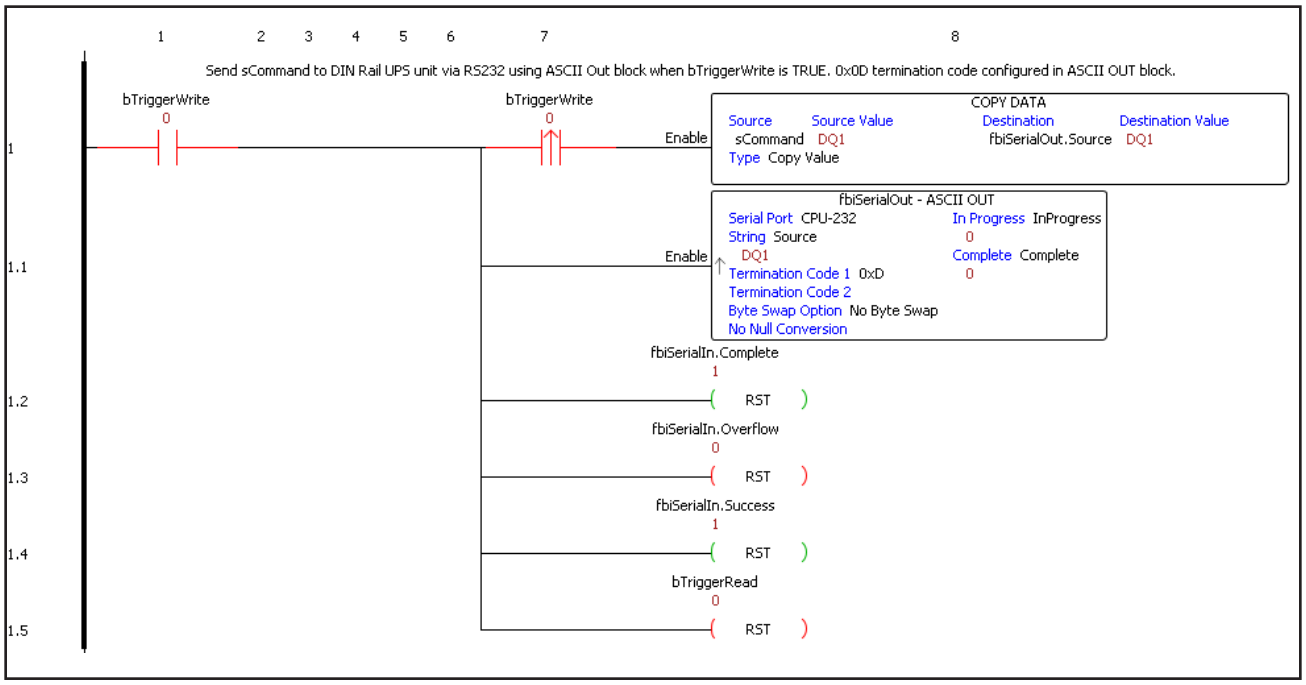
6.4. Productivity PLC Example Program

RJ-12 Serial Port setup



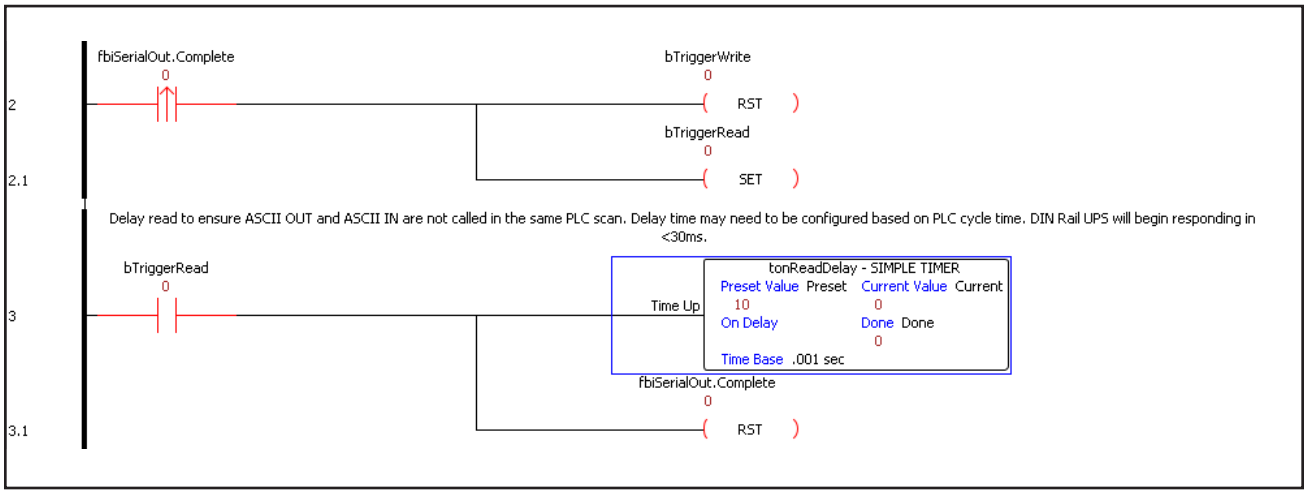
6.4. Productivity PLC Example Program (continued)

Send sCommand to DIN Rail UPS unit via RS232 using ASCII OUT block when bTriggerWrite is TRUE. 0x0D termination code is configured in the ASCII OUT block.



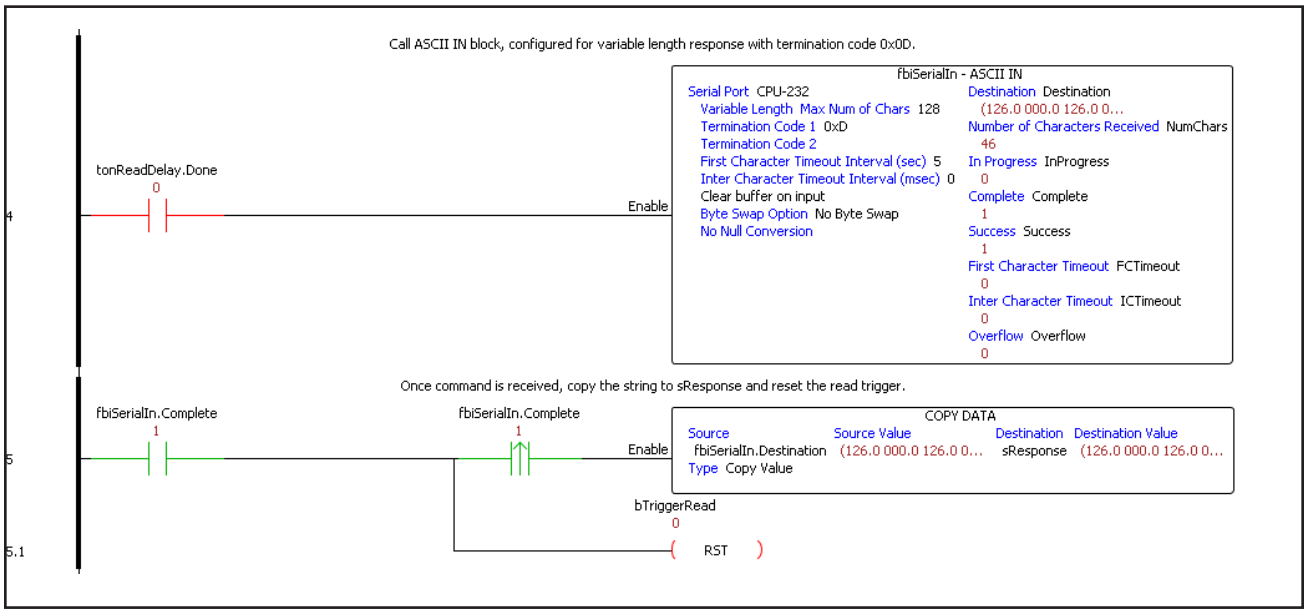
6.4. Productivity PLC Example Program (continued)

Once ASCII OUT block is finished executing, begin delay timer to ensure ASCII OUT and ASCII IN are not called in the same PLC scan. Delay time may need to be configured based on PLC cycle time. DIN RAIL UPS will begin responding in < 30 ms.



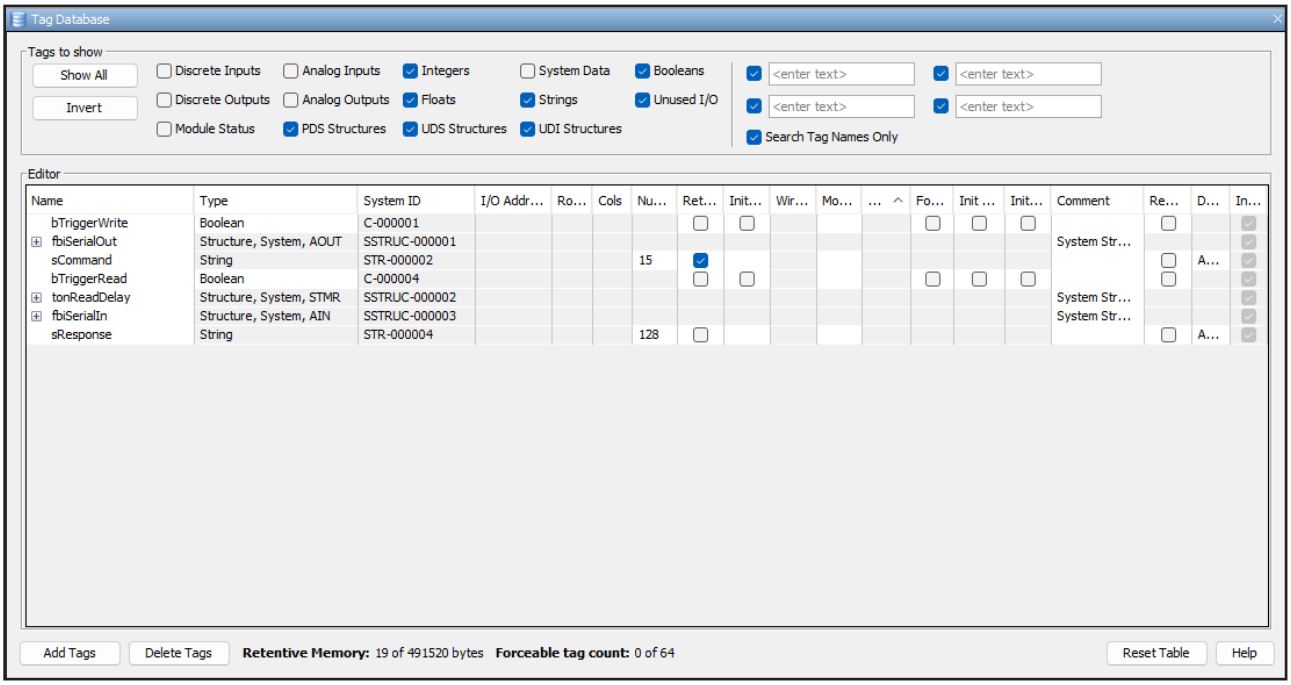
6.4. Productivity PLC Example Program (continued)

Call ASCII IN block, configured for variable length response with termination code 0x0D.



6.4. Productivity PLC Example Program (continued)

Example tag database



7. Maintenance and Precautions

As long as all the installation, environmental and operational requirements have been followed and met, the UPS will require little or no maintenance for many years.

The batteries are the only component that should eventually need replacing. Their useful life depends primarily on the following two factors: the ambient temperature of the environment in which the UPS is located and the number of times they're called into use (i.e., discharged). In both cases, the lower the number, the longer they will last. At an ambient temperature of 77 °F [25 °C], typical battery lifetime is 2 years.

A test of the UPS and batteries should be carried out at regular intervals (every 6 months) to verify that back-up time is still adequate for the application. The UPS should also be charged every six months if it is kept in storage and not used.

7.1 Harsh Environments:

RHINO AC UPS units are generally designed for clean environments which are free of dust, salt, and other environmental contaminants.

- Dust, chemicals and airborne pollutants can clog and corrode the inside of a UPS and lead to failures.
- Installing a UPS in a harsh environment can lead to overheating and damage to internal boards, components, etc. It can also create arc flashes which can be very dangerous to anyone in close proximity to the UPS. Arc flashes are a shock hazard to anyone nearby and could potentially cause serious injury or death.
- Salt from humid, ocean air can also corrode the internal components of a UPS as well as the batteries. This can cause premature failure of parts/components and lead to electrical short circuits.

Please read the following safety instructions

7.2 Transportation

Please handle UPS with extreme caution since a high amount of energy is within the batteries. Keep the unit in position as marked on the packaging and never drop the unit.

7.3 Storage

Please read the following instructions if the UPS is not installed immediately:

- Store the equipment in its original packing and shipping carton.
- If the unit is stored in temperatures exceeding 25 °C, then the time period for required recharging of the batteries is decreased.
- Protect the equipment from wet or damp areas and moist air.
- To maintain the life of the batteries, please recharge the UPS at least 8 hours every 6 months.

7.4 Operation

CAUTION: Ensure that all environmental concerns and requirements are met according to safety instruction.

- Avoid extreme temperature and humidity. Protect the equipment from moisture.
- Ensure that the front of the UPS remains clear for user operation.
- Only authorized personnel or technicians may service the unit.
- Do not touch live parts, components may contain hazardous or fatal voltage.
- Output terminals may carry live voltage without connecting to the main power.
- Pay special attention to UPS air inlet; do not let it be blocked by dust.

RHINO AC DIN Rail UPS User Manual

Models UPR-A300-120DSH and UPR-A500-120DSH

8: DIN Rail UPS Battery Removal Instructions

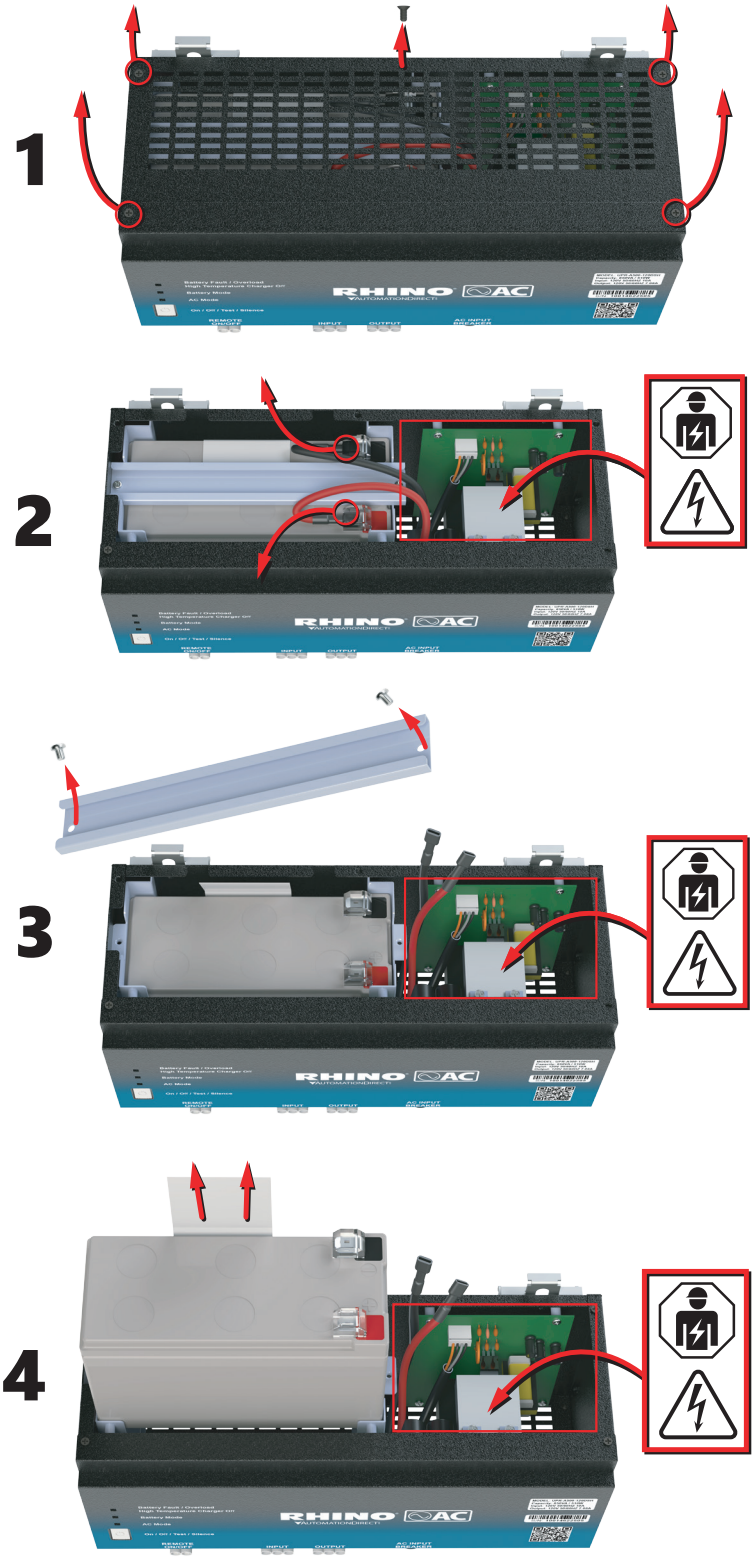
To remove the battery from the DIN Rail UPS unit, do the following:

STEP 1:
Remove the screws from the ventilated panel to access the battery, and remove the panel.

STEP 2:
Carefully disconnect the red and black wires from the battery terminals.

STEP 3:
Remove the screws from the metal bracket on top of the battery, and remove the bracket.

STEP 4:
Use the pull tab on the battery to carefully remove the battery from the UPS. Then replace the old battery with a new battery. Finally, reverse the previous steps to reassemble the UPS.



Warning! Hazardous voltage! Installation and maintenance should be performed only by persons with electro-technical expertise.

RHINO AC DIN Rail UPS User Manual Appendices

Models UPR-A300-120DSH and UPR-A500-120DSH

Appendix A: RHINO AC DIN Rail UPS Troubleshooting Guide		
Problem	***Cause***	***Corrective Action***
UPS does not turn ON or LED does not illuminate	ON/OFF/TEST/SILENCE button not pushed or push-time too short	Press the ON/OFF/TEST/SILENCE button more than 1 second
	Battery voltage less than 10V	Recharge the UPS for at least 6 hours
	PCB failure	Replace the PCB, call for service
	Load less than 40W in battery mode	Normal condition, “No load shutdown function” is active
UPS always in battery mode	Loose AC input connection	Recheck input connection
	Blown input AC fuse	Replace the AC fuse
	Line voltage too high, too low or AC power failure	Normal condition
	PCB failure	Replace the PCB, call for service
Backup time too short	Battery not fully charged	Recharge the UPS for at least 6 hours
	PCB failure	Replace the PCB, call for service
Buzzer alarms continuously	Output overload	Remove some loads

RHINO AC DIN Rail UPS User Manual Appendices

Models UPR-A300-120DSH and UPR-A500-120DSH

Appendix A: RHINO AC DIN Rail UPS Troubleshooting Guide (continued)

DIN Rail UPS Troubleshooting Notes This guide provides basic troubleshooting steps for the UPS before requesting technical support.	
UPS Will Not Power On	A. Verify the A/C input is present and the outlet has power. Press and hold the Power button for approximately 3 seconds. B. If the UPS still does not power on, replace the internal 12V battery. In most cases, batteries that have been deeply discharged or have reached the end of their service life will prevent the UPS from powering on. C. Refer to the appropriate battery replacement guide for your model (UPR-A300-120DSH or UPR-A500-120DSH) D. If the issue persists after replacing the battery, contact Technical Support.
UPS Shuts Down During a Power Outage	A. Verify the connected load/s does not exceed the UPS's rated capacity (UPS will annotate this condition) B. In most cases, this condition indicates the internal 12V battery has reached the end of its service life. Replace the internal 12V battery and retest the UPS. C. If the issue persists after replacing the battery, contact Technical Support.
UPS Beeps Continuously	A. Verify the A/C input is present and the outlet has power. B. Verify the UPS load within the UPS rated output. C. If the issue persists after adjusting the load, contact Technical Support.
UPS Does Not Provide Expected Backup Time	A. Connect UPS to utility power and allow it to charge for at least 24 hours. B. Perform a battery backup test by disconnecting utility power (simulated power interruption). C. If the UPS immediately shuts off or provides little backup time, replace the internal 12V battery. D. If the issue persists after replacing the battery, contact Technical Support.
Battery Replacement Recommendation	For best performance, replace the internal 12V battery every 3 years. Battery life may be reduced in high-temperature environments or applications with frequent power outages

Appendix B: RHINO AC DIN Rail UPS Specifications

Model	UPR-A300-120DSH	UPR-A500-120DSH
Capacity	500VA / 300W	850VA / 510W
INPUT		
Voltage	120V (+10%, -20%); 230V (±20%); 240V (+15% -20%)	
Frequency	50Hz ± 10%; 60Hz ± 10%	
Maximum Input Current	10A	
Inrush Current	25A	
Transient Pulse Immunity	EN61000-4-5, L-N: 1 KV – L-G or N-G: 2 KV	
Short-Circuit Protection	Yes	
Battery String Voltage	12 VDC	
OUTPUT		
Power Rating	500VA / 300W • 850W / 510W	
Output Voltage	120V / 208V / 230V / 240V ± 5%	
Frequency (On Battery)	50 / 60HZ ±0.3Hz	
Output Power Factor	0.6	
Waveform	Stepped square wave	
Load Crest Factor	3:1	
Transfer time	4-6 ms typical	
Overload Capacity	UPS automatic power off if overload exceeds 105% of nominal at 20s; 120% at 10s;130% at 3s	
Short circuit protection	UPS output cut off immediately	
BATTERY		
Type	Sealed, maintenance-free lead acid battery	
Battery quantity	12V 7.2 Ah x 1	12V 8.5 Ah x 1
Typical recharge time	8h to 90% capacity after full discharge	

BACKUP TIME 500 VA / 300W										
% of Max Load (Watts)	10	20	30	40	50	60	70	80	90	100
Minutes	110	48	24	15	14	10	7	6	4	4
BACKUP TIME 850 VA / 510W										
% of Max Load (Watts)	10	20	30	40	50	60	70	80	90	100
Minutes	73	32	17	13	8	6	5	3	2	2

GENERAL		
Dimension (W x D x H)	11.1 x 4.6 x 4.9in [281 x 116 x 124mm]	
Product Weight	9.7 lb [4.4 kg]	10.8 lb [4.9 kg]
Mounting	DIN rail	
Input Connection	Hardwire terminal block	
Output Connection to Loads	Hardwire terminal block	
Shock and Vibration	Conforms to ISTA 2A	
Audible Noise	< 40 dBA (1m from surface)	
Altitude	5000ft [1524m] without derating	
Operating Temperature	0–49 °C (± 2 °C) [32–120 °F]	
Storage Temperature	-15 to +60 °C [+5 to +140 °F]	
Humidity	<95%, non-condensing	
Cooling	Natural convection	
TSCA Section 12b	Exempt	
Approvals	Ordinary Locations: UL 1778, CSA C22.2 NO. 107.3-14 (cURus - UL file # E550237) Hazardous Locations: UL 121201, CSA C22.2 NO. 213-17 (cURus - UL file # E550236)	

Appendix C: Approved Batteries For UPR-A500-120DSH

Manufacturer	Type	Rating	Battery Case Flame Rating
CSB Battery (MH14533)	HR1234W FR	12 VDC, 8.5 Ah	V–0
	HR1234W	12 VDC, 8.5 Ah	HB
	XTV1285 (supplied with unit)	12 VDC, 8.5 Ah	HB
	XTV1272	12 VDC, 7.2 Ah	HB
	HR1228W F2	12 VDC, 7.2 Ah	HB
	HR1228WF2FR	12 VDC, 7.2 Ah	V–0
	GP1272	12 VDC, 7.2 Ah	HB
	GP1272 F2	12 VDC, 7.2 Ah	HB
	GP1272 FR	12 VDC, 7.2 Ah	V–0
	GP1270	12 VDC, 7.0 Ah	HB
	GP1270 FR	12 VDC, 7.0 Ah	V–0
Taiwan Yuasa (MH28947)	NPW45-12	12 VDC, 7.5 Ah	HB
	NPW45-12 FR	12 VDC, 7.5 Ah	V–0
	REW45-12	12 VDC, 7.5 Ah	HB
	REW45-12 FR	12 VDC, 7.5 Ah	V–0
	NPW36-12	12 VDC, 7.0 Ah	HB
	NPW36-12 FR	12 VDC, 7.0 Ah	V–0
	NP7.2-12	12 VDC, 7.0 Ah	HB
	NP7.2-12 FR	12 VDC, 7.0 Ah	V–0
	NP7.0-12	12 VDC, 7.0 Ah	HB
	NP7.0-12 FR	12 VDC, 7.0 Ah	V–0
LEOCH BATTERY SHENZHEN CORP (MH26866)	DJW12-9.0	12 VDC, 8.0 Ah	HB
	DJW12-9.0FR	12 VDC, 8.0 Ah	V–0
	DJW12-7.2	12 VDC, 7.2 Ah	HB
	DJW12-7.2FR	12 VDC, 7.2 Ah	V–0
	DJW12-7.0	12 VDC, 7.0 Ah	HB
	DJW12-7.0FR	12 VDC, 7.0 Ah	V–0
Kung Long Batteries (MH16982)	WP1234W	12 VDC, 8.5 Ah	HB
	WP1234W V0	12 VDC, 8.5 Ah	V–0
	WP7.2-12	12 VDC, 7.2 Ah	HB
	WP7.2-12V0	12 VDC, 7.2 Ah	V–0
	WP7.0-12	12 VDC, 7.0 Ah	HB
	WP7.0-12V0	12 VDC, 7.0 Ah	V–0
HENGYANG RITAR POWER CO LTD (MH28539)	RT1280	12 VDC, 8.0 Ah	HB
	RT1272	12 VDC, 7.2 Ah	HB
	RT1270	12 VDC, 7.0 Ah	HB
Shenzhen Center Power (MH25860)	CP1272	12 VDC, 7.2 Ah	HB
	CP1270	12 VDC, 7.0 Ah	HB
B&B BATTERY (USA) INC (MH19884)	BP7-12	12 VDC, 7.0 Ah	HB
	BP7-12RT	12 VDC, 7.0 Ah	V–0
	BPL7-12	12 VDC, 7.0 Ah	HB
	BPX7-12FR	12 VDC, 7.0 Ah	V–0
	EP7-12	12 VDC, 7.0 Ah	HB
	EVP7-12	12 VDC, 7.0 Ah	HB
FUJIAN MINHUA POWER SOURCE CO LTD (MH47104)	MS7-12	12 VDC, 7.0 Ah	HB

Appendix C: Approved Batteries For UPR-A300-120DSH (continued)

Manufacturer	Type	Rating	Battery Case Flame Rating
CSB Battery (MH14533)	GP1272	12 VDC, 7.2 Ah	HB
	XTV1272 (supplied with unit)	12 VDC, 7.2 Ah	HB
	HR1228W F2	12 VDC, 7.2 Ah	V-0
	HR1228WF2FR	12 VDC, 7.2 Ah	HB
	GP1272 F2	12 VDC, 7.2 Ah	HB
	GP1272 FR	12 VDC, 7.2 Ah	V–0
	GP1270	12 VDC, 7.0 Ah	HB
	GP1270 FR	12 VDC, 7.0 Ah	V–0
Taiwan Yuasa (MH28947)	NPW36-12	12 VDC, 7.0 Ah	HB
	NPW36-12 FR	12 VDC, 7.0 Ah	V–0
	NP7.2-12	12 VDC, 7.0 Ah	HB
	NP7.2-12 FR	12 VDC, 7.0 Ah	V–0
	NP7.0-12	12 VDC, 7.0 Ah	HB
	NP7.0-12 FR	12 VDC, 7.0 Ah	V–0
LEOCH BATTERY SHENZHEN CORP (MH26866)	DJW12-7.2	12 VDC, 7.2 Ah	HB
	DJW12-7.2FR	12 VDC, 7.2 Ah	V–0
	DJW12-7.0	12 VDC, 7.0 Ah	HB
	DJW12-7.0FR	12 VDC, 7.0 Ah	V–0
Kung Long Batteries (MH16982)	WP7.2-12	12 VDC, 7.2 Ah	HB
	WP7.2-12V0	12 VDC, 7.2 Ah	V–0
	WP7.0-12	12 VDC, 7.0 Ah	HB
	WP7.0-12V0	12 VDC, 7.0 Ah	V–0
HENGYANG RITAR POWER CO LTD (MH28539)	RT1272	12 VDC, 7.2 Ah	HB
	RT1270	12 VDC, 7.0 Ah	HB
Shenzhen Center Power (MH25860)	CP1272	12 VDC, 7.2 Ah	HB
	CP1270	12 VDC, 7.0 Ah	HB
B&B BATTERY (USA) INC (MH19884)	BP7-12	12 VDC, 7.0 Ah	HB
	BP7-12RT	12 VDC, 7.0 Ah	V–0
	BPL7-12	12 VDC, 7.0 Ah	HB
	BPX7-12FR	12 VDC, 7.0 Ah	V–0
	EP7-12	12 VDC, 7.0 Ah	HB
	EVP7-12	12 VDC, 7.0 Ah	HB
FUJIAN MINHUA POWER SOURCE CO LTD (MH47104)	MS7-12	12 VDC, 7.0 Ah	HB