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PRODUCT REVISION: 0

CP7317RS

RS – 232 CONTROLLER

USER'S GUIDE

ALTINEX

SIGNAL
MANAGEMENT
SOLUTIONS

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CONTROLLERS

INTRODUCTION

Thank you for purchasing the **CP7317RS** RS-232 Controller. We are sure you will find it a reliable and useful product.

Superior performance for the right price backed by solid technical and customer support is what we have to offer.

The product you are holding in your hands is designed using state-of-the-art technology and is superior to anything available on the market. You will find this and our other products reliable, long lasting, and simple to operate.

We are committed to providing our customers with solutions to the most demanding audio-visual installations at very competitive pricing.

We appreciate your selection of our products and are confident that you will join the ranks of our many satisfied customers throughout the world.

This manual covers:

CP7317RS – RS-232 Controller

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PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **CP7317RS** RS-232 Controller. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **CP7317RS** and to prevent fire and shock hazard. Please read them carefully and heed all warnings.

1.1 GENERAL

- Unauthorized personnel shall not open the unit since there are high-voltage components inside.
- Qualified Altinex service personnel, or their authorized representatives must perform all service.

1.2 SAFETY GUIDELINES FOR THE RACK-MOUNTING OF THE CP7317RS

- Maximum operating ambient temperature is 35 (degrees C).
- Never restrict the air flow through the devices' fan or vents.
- When installing equipment into a rack, distribute the units evenly. Otherwise, hazardous conditions may be created by an uneven weight distribution.
- Connect the unit to a properly rated supply circuit.
- Reliable Earthing (Grounding) of Rack-Mounted Equipment should be maintained.

1.3 INSTALLATION

- For best results, place the **CP7317RS** on a flat, level surface in a dry area away from dust and moisture.
- To prevent fire or shock, do not expose this unit to rain or moisture. Do not place the **CP7317RS** in direct sunlight, near heaters or heat radiating appliances, or near any liquid. Exposure to direct sunlight, smoke, or steam can harm internal components.
- Handle the **CP7317RS** carefully. Dropping or jarring can damage internal components.
- Do not place heavy objects on top of the **CP7317RS**. If the **CP7317RS** is to be mounted, to a table or wall, use only Altinex made mounting accessories (Rack Mount Shelf

DA1298FC, Rack Mount Ears **DA1299RM**) and cables for optimum setup.

- To turn off the main power, be sure to remove the cord from the power outlet. The power outlet socket should be installed as near to the equipment as possible, and should be easily accessible.
- Do not pull the power cord or any cable that is attached to the **CP7317RS**.
- If the **CP7317RS** is not used for an extended period of time, disconnect the power cord from the power outlet.

1.4 CLEANING

- Unplug the **CP7317RS** power cord before cleaning. Clean surfaces with a dry cloth. Never use strong detergents or solvents such as alcohol or thinner. Do not use a wet cloth or water to clean the unit.

1.5 FCC / CE NOTICE

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- Any changes or modifications to the unit not expressly approved by Altinex, Inc. could void the user's authority to operate the equipment.

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ABOUT CP7317RS - RS-232 CONTROLLER

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The **CP7317RS** RS-232 Controller is designed to provide expanded capabilities to any control system. The **CP7317RS** is designed to accept RS-232 commands from a control device and output those commands as relay contacts or digital high or low. The **CP7317RS** also is able to convert digital inputs through I/O ports to the preprogrammed RS-232 command. There are a variety of applications that are available with this versatile and very flexible controller. The **CP7317RS** has one RS-232 port, 16 relay contacts, and 32 digital I/O pins. The unit can be easily set-up and controlled using Windows software.

TECHNICAL SPECIFICATIONS

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FEATURES/DESCRIPTION	CP7317RS
GENERAL	
RS-232	9-pin D Female
Digital I/O Ports	(4) 9-pin D Female
Relays	(5) 5-pin terminal block connectors

Table 1. **CP7317RS** General

MECHANICAL	CP7317RS
Width (inches)	8.50in (216mm)
Height (inches)	1.75in (44mm)
Depth (inches)	4.93in (125mm)
Weight (pounds)	2.0lbs (0.91kg)
Ship Weight (pounds)	4.0lbs (1.82kg)
Material	0.1" Al
Finish	Gray
Front/Back Panels	Lexan
T° Operating	10°C-35°C
T° Maximum	50°C
Humidity	90% non-condensing
MTBF (calculations)	40,000hrs.

Table 2. **CP7317RS** Mechanical

ELECTRICAL	CP7317RS
Baud Rate	
Default	2400
Max	19,200
Handshake	
Default	8 bit, No parity, & 1 stop bit
Relay Max Voltage	48V @ 1.0A non-inductive
I/O Max voltage	25ma sink @ 12v 0.1ma source
Power	
Internal Power Supply	90-140/200-240 V AC
Power Consumption	10 watts max.

Table 3. **CP7317RS** Electrical

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CP7317RS FEATURES

4.1 RS-232 PORT

This port (located next to the power outlet) is a fully programmable, bi-directional, and full duplex port that has the ability to operate at any baud rate up to 9600. The general standard on transmission is 8 bits, no parity, and 1 stop bit. The factory default for communication through this port is 2400 baud. Several standard baud-rates are available through programming: 300, 600, 1200, 2400, 4800, and 9600 baud. The following table shows the pin-out configuration of RS-232 ports on the **CP7317RS**.

Pin No. on RS-232 port	Function
2	TX (Transmit)
3	RX (Receive)
5	Ground

4.2 RELAY CONTACTS

The **CP7317RS** has 4 ports with relay contacts. Port 1 has two groups of 4 relays. The relays are single-pole, single-throw (SPST) type and can be set to default to either a normally open or normally closed condition. Each relay of port 1 can be individually turned "ON" or "OFF". Figure 1 shows port 1 configuration.

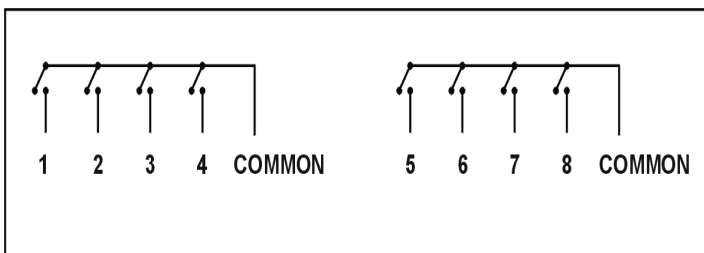


FIGURE 1

Port 2 has one group of 4 relays. The relays are single-pole, single-throw (SPST) type and can be set to default to either a normally open or normally closed condition. Each relay of Port 2 can be individually turned "ON" or "OFF". Figure 2 shows Port 2 configuration.

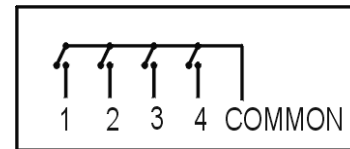


FIGURE 2

Port 3 and 4 consist of 2 single-pole, single-throw (SPST) isolated relays each, as shown in Figure 3.

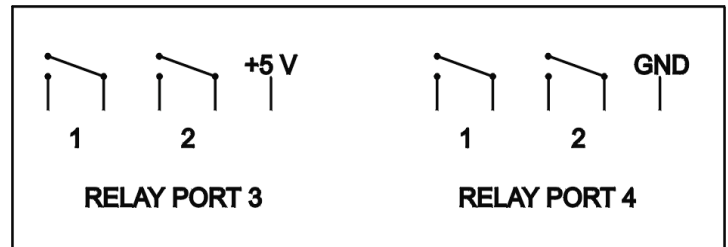


FIGURE 3

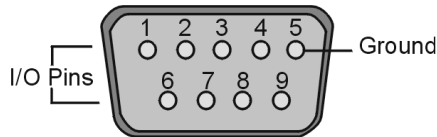
Subsequently, Port 2,3, and 4 can be treated as a single port with 8 relays or as three independent ports. Port 2 can be treated as a single port with 4 relays and Port 3 and 4 with 2 relays each.

In addition to relay contacts the **CP7317RS** Controller has "+5" voltage available on ports 3 and "GND"(ground) available on port 4. The (+5) volts output is designed to drive external circuitry and has 280mA maximum current output. The graph below shows the maximum of allowable current from +5V pin and through digital I/O pins as a function of the number of relays turned ON at any given time.

The ground pin on Port 4 is true ground and is connected to the system ground but it is not connected to any common pins.

4.3 DIGITAL I/O PORTS

These **ports** are designed as general-purpose input/output ports (see Figure 4).



Available +5 volts current

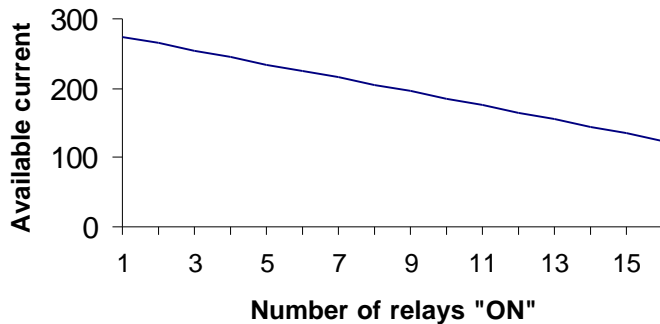


FIGURE 4

The following table shows the pin-outs on the connector corresponding to the following I/O port pin numbers.

Connector Pin No.	1	2	3	4	5	6	7	8	9
I/O Port Pin No.	1	3	5	7	9	2	4	6	8
					Ground				

There are 4 ports with 8 I/O pins and one ground pin, #5 on each port. Each pin of each port can be individually addressed and programmed to be high or low. The "power ON" status of each pin is also fully programmable. Each pin can be programmed as an input pin or output pin. If the pin is programmed as an output pin, it can be set to high or low. When set to high, the I/O pin is pulled to 5 volts with a 10k resistor. When set to low, the I/O pin can sink up to 25 mA. If the pin is programmed as input then this pin is internally pulled up to 5 volts with a 10k resistor. In this condition external circuitry or switch can set the input high or low. The **CP7317RS** provides feedback through RS-232 port at any time when transition on the pin of any I/O port occurs. Transition on the pin from low to high or from high to low will produce different feedback codes on RS-232 port. These feedback codes are fully programmable and can also be fully disabled.

4.4 INTERNAL POWER SUPPLY

The **CP7317RS** comes with its own built-in power supply, which will work with either 100 or 240 volts. To change the input voltage for this unit, follow the procedure below:

1. Remove the fuse box.
2. Remove the gray fuse holder from the fuse box, by gently squeezing the black tabs together.
3. Look on the rear of the gray fuse holder. You will find two numbers (110 and 220), turn the gray fuse holder to the desired voltage.
4. Gently insert the fuse holder in the fuse box.
5. Check the display window for the proper voltage setting.

4.5 SOFTWARE & CUSTOM PROGRAMMING

Soon the **CP7317RS** will be supplied with a Windows based software that allows easy configuring and programming of the unit through a computer.

The ASCII and binary communication formats are currently available. As an option, custom programming is available. If you know your requirements and would like for ALTINEX to program the unit prior to shipment, our technical support team will be happy to discuss your needs and provide programming at a very reasonable fee.

4.6 ASCII (RS-232) COMMUNICATION

ASCII commands for controlling the **CP7317RS** Controller are divided into two categories: Programming commands and control commands. These commands are sent or received through the RS-232 port of the controller.

- A. Programming commands are used to setup the **CP7317RS** Controller. The action of these commands is stored in a non-volatile memory and is maintained in "POWER ON/OFF" service.
- B. Control commands are used to operate **CP7317RS** Controllers in everyday use. Control commands are lost when the unit is powered down.

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4.7 PROGRAMING COMMANDS

The commands below are used for presetting the default status of the unit.

Note: AFTER USING THE PROGRAMMING COMMANDS LISTED BELOW, THE **CP7317RS** SHOULD BE POWERED OFF AND THEN ON.

[SETIp,b,n]

This command sets individual pins of each I/O port to input or output status. It is a programming command and needs to be issued only once during the configuration of the **CP7317RS**. Once issued, it is stored in the non-volatile memory and is maintained during the "Power ON/OFF".

The factory preset for the **CP7317RS** is that all pins on I/O ports are set as output pins.

When the pin is set as input, then an RS-232 code is produced whenever the pin changes from high to low or from low to high. When the pin is set as an output, then the RS-232 command is sent through the RS-232 port can change the specified pin to high or low. (The RS-232 code cannot be produced when the pin is set to the output status and the pin set to the input status cannot be set to low with the **[SETD]** command as all the pins with input status are always high).

- p** This letter designates a port number. It is an ASCII character ranging from 1 to 4 and matching the port number on the rear panel of the **CP7317RS** Controller. The acceptable values are 1, 2, 3 or 4. Any other value will cause an error as a feedback code.
- b** Bit number. This bit number relates to the pin number on the 9-pin connector on the back of the **CP7317RS** according to the following table. A valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause an error as a feedback code.

Bit No.	Connector pin No.
1	1
2	6
3	2
4	7
5	3

Bit No.	Connector pin No.
6	8
7	4
8	9

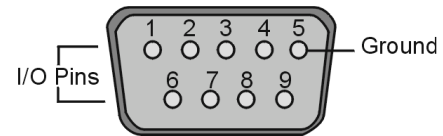


FIGURE 5: Input/Output Port Pin Configuration

- n** This letter designates the status of the pin on that particular port as either input or output.

when **n = 1** the pin is set as input

when **n = 0** the pin is set as output.

Example: **[SETI1, 6,1]** – this would set port 1, pin 6, to an input status.

[SETIp,b₁b₆b₂b₇b₃b₈b₄b₉]

This sets all the pins in an I/O port to either input or output status. It is a programming command and needs to be issued only once during the configuration of the **CP7317RS**. Once issued, it is stored in the non-volatile memory and is maintained during the "Power ON-OFF".

The factory preset for the **CP7317RS** is that all pins are set as output pins.

When the pin is set as the input, then an RS-232 code is produced whenever the pin changes from high to low or from low to high. When the pin is set as an output, then RS-232 commands sent to the RS-232 port can change a specified pin to high or low. (The RS-232 code cannot be produced when the pin is set to an output status and the pin set to an input status can not be set low with **[SETD]** command as all pins with input status are always high).

- p** This letter designates a port number. This is an ASCII character from 1 to 4 that matches the I/O port number on the rear panel of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause an error as a feedback code.

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- b** This letter defines the status of a pin, while its position in a string number corresponds to the pin number on the I/O Port of the **CP7317RS**. For example **b₄** represents the status of Pin 4 on the I/O connector. The valid pins on I/O port are from 1 to 9 except 5. A valid range for the **b** is either 1 or 0. Any other number will cause an error as a feedback code.

When **b** is 1, the corresponding pin is set as input.

When **b** is 0, the corresponding pin is set as output.

Example: Set pins 1 through 4 of port 2 as inputs, and 6 through 9 as outputs
[SETI2,10101010]

[BAUDn]

This command sets the baud rate for the **CP7317RS**. This command is a programming command and should be issued only once during the configuration of the **CP7317RS**.

Once issued it is stored in the non-volatile memory and is maintained during "Power ON-OFF".

The factory preset for the **CP7317RS** is n=4, which corresponds to the 2400 baud rate. When the **[RSTF]** command is issued the baud rate is set to 2400.

Do not set the baud rate to any other numbers except the ones specified below. The baud rate, n=7 is reserved for future use and is not active with the current version of this product.

- n** The baud rate number. This number ranges from 1 to 7 and sets the baud rate for RS-232 communication.

n	Baud rate
1	300
2	600
3	1200
4	2400
5	4800
6	9600
7	Custom baud rate

[RSTF]

Reset the **CP7317RS** to the factory settings. Re-initialize non-volatile memory to the factory presets. This command also resets the baud rate of the RS-232 communication port to 2400 baud.

This command also resets the unit ID to 1.

[SETPDp,b,n]

This command sets the "Power ON" status of each pin on the particular I/O port of the **CP7317RS**. This command determines whether port pins will be high or low during "Power up". It is a programming command and should be issued only once during the configuration of the **CP7317RS**. Once issued, this command is stored in the non-volatile memory and is maintained during the "Power ON/OFF" sequence.

The factory preset of the **CP7317RS** is that all pins in the I/O ports are set as output pins.

If it is required that the pin is set to low during power up, the pin status must be set as output. If a particular pin is set as the input then it can not be set low by this command during "Power up".

- p** This letter designates the port number. It is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The only acceptable values are 1, 2, 3 or 4. Do not use any other value for port number.
- b** Bit number. This bit number corresponds to the pin number on the 9-pin connector on the back of the **CP7317RS** according to following table. A valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause an error as a feedback code.

Bit No.	Connector pins No.
1	1
2	6
3	2
4	7
5	3
6	8
7	4
8	9

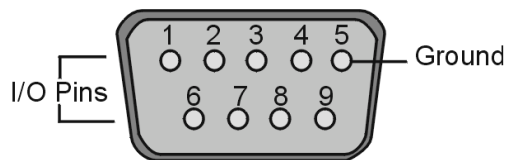


FIGURE 6: Input/Output Port Pin Configuration

n This letter designates the status of the pin as either high or low during “Power up” of the unit.

when **n = 1** the pin is set as high

when **n = 0** the pin is set as low

Example: Set pin 1 of port 3 as low during POWER ON. **[SETPD3,1,0]**

[SETPDp,b₁b₆b₂b₇b₃b₈b₄b₉]

This command sets the “Power ON” status of all the pins on the particular port of the unit. This command determines whether port pins will be high or low during “Power up”. It is a programming command and should be issued only once during the configuration of the **CP7317RS**. Once issued, this command is stored in the non-volatile memory and is maintained during Power “ON/OFF”.

The factory preset of the **CP7317RS** is that all pins in all ports are set as output pins.

If it is required that the pin is set to low during power up. The pin status must be set as output. If a particular pin is set as the input then it can not be set low by this command during “Power up”.

p This letter designates the port number. It is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1, 2, 3 or 4. Any other value will cause an error as a feedback code.

b This letter designates the pin number. The position of this number corresponds to the number on the 9 pin connector on the back of the **CP7317RS**. For example, **b₄** is the fourth pin on the connector. A valid range

for **b** is 1 or 0. Any other numbers will cause an error as a feedback code.

Example: Set pins 1 through 3 on port 2 as high; set pins 4, 6, 7 and 8 as low and pin 9 as high. **[SETPD2,1010001]**

[SETPRp,b,n]

This command sets the “Power ON” status of each relay on a particular port of the unit. This command determines whether a relay will be open or closed during “Power up”. This command is a programming command and should be issued only once during the configuration of the **CP7317RS**. Once issued, this command is stored in the non-volatile memory and is maintained during “Power ON/OFF”.

The factory preset of the **CP7317RS** is that all relays are set to open.

p This letter represents the port number. This is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1, 2, 3 or 4. Any other value will cause an error as a feedback code.

b This letter represents the relay number. This number corresponds to the number on the terminal block connector of the **CP7317RS** as shown on the diagram below. A valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause an error as a feedback code.

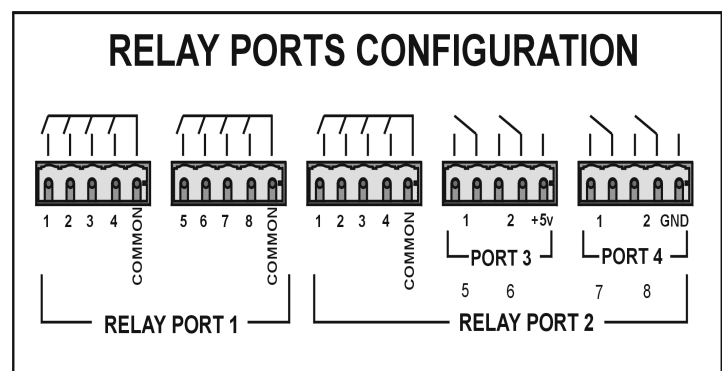


FIGURE 7

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- n** This letter designates the status of the relay during "Power up".
n=1 relay is open
n=0 relay is closed

Example: Set relay 6 of port 2 to be open at power up. **[SETPR2,6,1]**
Set relay 2 of port 4 to be closed at power up. **[SETPR4,2,0]**

[SETPRp,b₁b₂b₃b₄b₅b₆b₇b₈]

This command sets the "Power ON" status of all relays on the particular port of the unit. This command determines whether the port relays will be set to high or low during "Power up". This command is a programming command and should be issued only once during the configuration of the **CP7317RS**. Once issued, this command is stored in the non-volatile memory and is maintained during "Power ON/OFF".

The factory preset of the **CP7317RS** is that all relays are set open.

- p** This letter designates the port number. It is an ASCII character from 1 to 2 that matches the port number on the back of the **CP7317RS** or as shown above. The acceptable values are 1 or 2. Since Port 3 and 4 are only extensions of Port 2. The settings of Port 3 and Port 4 are accomplished as part of Port 2 settings.
- b** This letter designates the relay number. The position of this number corresponds to the number shown on the diagram of the terminal block connector layout on the back of the **CP7317RS** (See figure 7). For example **b₅** is a fifth relay on the connector. Valid range for b is 1 or 0. Any other numbers will cause error as a feedback code.

[SETIDn]

This command sets unit ID number (**n=1** to 9, A to Z, and a to z). Total of up to 61 units, using ASCII code, can be controlled simultaneously. Additional units can be controlled using Hex code.

- n** This letter represents unit ID number. It could be any number ASCII or Hex. The 0 and 1 are used for special purpose controlling as described in greater detail under **[UIDn]** command.

- 1 enables all units regardless of the unit ID
0 disables all units regardless of the unit ID

The factory default of the **CP7317RS** is set to Unit ID = ASCII "1"

4.8 CONTROL COMMANDS

The following codes are for controlling of the **CP7317RS** controller. These commands are not permanent and will be lost when power is removed from the unit. These commands are used during the normal operation of the **CP7317RS**.

[SETDp,b,n]

SET each pin on the particular port of the unit. This command switches pins high or low during normal operation of the unit. The pin must be set as output if it needs to be low during the execution of this command. If particular pin is set as input then it can not be set low by this command.

- p** Port number. This is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1, 2, 3 or 4. Any other value will cause an error as a feedback code.
- B** Bit number. This bit number corresponds to the pin number on the 9-pin connector on the back of the **CP7317RS** according to following table. A valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause error as a feedback code. Use **b=0** if you want to set all pins high or low on this port.

Bit No.	Connector Pin No.
1	1
2	6
3	2
4	7
5	3
6	8

CONTROLLERS

Bit No.	Connector Pin No.
7	4
8	9

n Data that defines the status of the pin n=1 or n=0.

[SETDp, b₁b₆b₂b₇b₃b₈b₄b₉]

SET all pins on the particular I/O port of the unit. This command defines if I/O port pins will be high or low. The pin must be set as output if it needs to be set low. If particular pin is set as input then it can not be set low by this command.

- p** Port number, this is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause error as a feedback code.
- b** Bit or pin number. The position of this number corresponds to the number on the 9 pin connector on the back of the **CP7317RS**. For example b₈ is a eighth pin on the connector. Valid range for b is 1 or 0. Any other numbers will be ignored and status of the port pin will not be changed.

[SETRp,b,n]

SET each relay on the particular port of the unit. This command defines if relay will be open or closed.

- p** Port number, this is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause error as a feedback code.
- b** Relay number. This number corresponds to the number on terminal block connector on the back of the **CP7317RS** from left to right. Valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause error as a feedback code. Use b=0 id you want to set all pins high or low on this port.

n= Data that defines the status of the relay.
n=1 relay is open or n=0 relay is closed.

[SETRp,b₁b₂b₃b₄b₅b₆b₇b₈]

SET all relays on the particular port of the unit. This command defines if port relays will be high or low.

- p** Port number, this is an ASCII character from 1 to 2 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1or 2. Any other value will cause error as a feedback code.
- b** Relay number. The position of this number corresponds to the number on the terminal block connector on the back of the **CP7317RS**. For example b₅ is a fifth relay on the connector. Valid range for b is 1 or 0. Any other numbers will cause error as a feedback code.

[RSET]

Reset unit to the same condition as power on .

[READDp,b]

Read Digital status of a particular pin on the digital I/O port. The feedback is in the following format [1] if pin is high or [0] if pin is low.

- p** Port number, this is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause error as a feedback code.
- b** Bit number. This bit number corresponds to the pin number on the 9-pin connector on the back of the **CP7317RS** according to following table. Valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause error as a feedback code. Use b=0 id you want to set all pins high or low on this port.

Bit No.	Connector pin No.
1	1
2	6
3	2
4	7
5	3
6	8
7	4
8	9

[READDp]

Read Digital status of a particular port. The feedback is in the following format [10011100] 1 is for high 0 is for low. The feedback provides status of all pins. Left most character is a bit pin number 1.

p Port number, this is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause error as a feedback code.

[READRp,b]

Read Relay status of a particular relay on the relay ports. The feedback is in the following format [1] if relay is closed or [0] if relay is open.

p Port number. This is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause error as a feedback code.

b Relay number. This number corresponds to the number on terminal block on the back of the **CP7317RS** from left to right. Valid range of numbers is from 1 to 8, inclusive. Any other numbers will cause error as a feedback code.

[READRp]

Read Relay status of all relays on the particular port. The feedback is that in the following format [10011100] 1 is for closed relay 0 is for open relay. The feedback provides status of all relays.

p Port number. This is an ASCII character from 1 to 4 that matches the port number on the back of the **CP7317RS**. The acceptable values are 1,2,3 or 4. Any other value will cause error as a feedback code.

[UIDn]

Communicate with Unit ID number (n=0 to 9, A to Z, and a to z) Up to 62 units can be controlled together.

n Unit ID number. if **n=0** then all units with different ID numbers will be disabled. Unit

will respond only to another **[UIDn]** command. If **n=1** then all units will be enable regardless of their Unit ID number. Additional **[UIDn]** commands will enable units that have the corresponding UID number. **[UIDn]** command is additive. This means that as you issue additional UID commands, the corresponding **CP7317RS** units will become active on the line. To reset everything, issue **[UID0]** command followed by the required **[UIDn]** command.

4.9 BINARY COMMUNICATION PROTOCOL

In Binary Communication Protocol (BCP) there are basically two commands that control all of the functions of **CP7317RS** Controller.

[BRxyy]

Binary Read command

x – I/O port /Memory in ASCII

yy - sub-register address in ASCII hex One Hex byte is returned for each **[BRxyy]** command, which contains data, and followed by [OK]

[x] [OK]
_____ hex byte

[BWxyydd]

Binary Write command

x – I/O port / Memory number in ASCII
yy - sub-register address in ASCII hex
dd - data to be written into sub-register
yy in ASCII hex format

4.10 REGISTER DEFINITIONS

Memory registers:

There are 4 memories available in the **CP7317RS**. Three of these memories are dedicated to the operation of the **CP7317RS** and one is a general purpose memory for user applications. Each memory contains 256 locations each 8 bits long. That means that each memory can store up to 256 characters or 256 bytes of information.

4.10.1. MEMORY 1

I/O port/memory is A
Sub-Register address is from 00 to 255

Sub-Register definitions

- 00 This location should be set to FFh if memory initialization is required. During the power up sequence this location is checked for software revision. If FFh is encountered then all memories are reset to factory condition. User memory is not affected during initialization. Normally you should not write into this location. You can read this location without affecting the **CP7317RS**.
- 01 I/O definition for digital port 1. Define if pin is Input or Output. If bit is set to 1 then this pin is Input if bit is set to 0 then this pin is output.
- 02 I/O definition for digital port 2. Define if pin is Input or Output. If bit is set to 1 then this pin is Input if bit is set to 0 then this pin is output.
- 03 I/O definition for digital port 3. Define if pin is Input or Output. If bit is set to 1 then this pin is the input if the bit is set to 0 then this pin is the output.
- 04 I/O definition for digital port 4. Define if pin is Input or Output. If the bit is set to 1 then this pin is the input if the bit is set to 0 then this pin is output.
- 05 Set baud rate for RS-232 communication.
- | | |
|---|------------------|
| 1 | 300 |
| 2 | 600 |
| 3 | 1200 |
| 4 | 2400 |
| 5 | 4800 |
| 6 | 9600 |
| 7 | Custom baud rate |
- 06 Custom baud rate setup. Sub-registers 6 and 7 are used to define custom baud rate. This is usually not required however if it is absolutely necessary to set up non-standard

- 07 Custom baud rate setup.
- 08 Not available/ Do not read or write into this location.
- 09 Not available/ Do not read or write into this location.
- 10 Unit id number. Any number from 1 to 255. This id number is used during control of multiple **CP7317RS** units. If the id number is set to 1 then unit will respond to all commands. Id number is factory set to 1
- 11 Not available / Do not read or write into this location.
- 12 Not available / Do not read or write into this location.
- 13 Not available / Do not read or write into this location.
- 14 Not available / Do not read or write into this location.
- 15 Not available / Do not read or write into this location.
- 16 These 8 locations are used to store feedback codes for commands that are properly executed. Factory default is "OK". To disable feedback set sub-register 16 to FFh.
- .
- 23 End of feedback code for OK
- 24 These 8 locations are used to store feedback code for command that was not properly executed. Factory setting is "ERR". To disable feedback set sub-register 16 to FFh.
- .
- 31 End of feedback code for ERR
- 32 Power up status of relays on port 1. If bit is set to 0 then relay will be closed on power up. If bit is set to 1 then relay will be open on power up.

33	Power up status of relays on port 2,3,4. If bit is set to 0 then relay will be closed on power up. If bit is set to 1 then relay will be open on power up.
34	Left bracket for beginning command code. Factory set to “[“.
35	Right bracket for ending command code. Factory set to “]“.
36	Power on default status of digital port 1
37	Power on default status of digital port 2
38	Power on default status of digital port 3
39	Power on default status of digital port 4
40	Not available / Do not read or write into this location.
.	.
.	.
127	Not available / Do not read or write into this location.
128	User programmable
.	.
.	.
255	User programmable

4.10.2. MEMORY 2

I/O port / memory is **B**
Sub-Register address is from 00 to 255

Sub-Register definitions

00	User Programmable
.	.
.	.
.	.
255	User programmable

4.10.3. MEMORY 3

I/O port /memory is **C**
Sub-Register address is from 00 to 255
These registers are used to feed back code for transition of input I/O pins from 1 to 0. If any of the I/O pins are designated as inputs then these pins will produce RS-232 code when shorted to ground and another code when they transition from 0 to 5 volts. The maximum feedback code

length is 8 bytes. Each pin is assigned to a location of the memory.

Sub-Register definitions

00	00-7 locations for return code for port 1 pin 1 for transition from 0 to 1. This return code should include any necessary brackets.
.	.
.	.
.	.
07	end of return code
08	00-07 locations for return code for port 1 pin 2 for transition from 1 to 0. This return code should include any necessary brackets.
.	.
.	.
.	.
15	end of return code

Default return code is in the following format
[Px.yd]
x port number 1, 2, 3, 4
y pin number 1, 2, 3, 4, 5, 6, 7, 8
d direction U for 0->1 or D for 1->0 transition

4.10.4. MEMORY 4

I/O port / memory is **D**
Sub-Register address is from 00 to 255
These registers are used to feed back code for transition of input I/O pins from 0 to 1. If any of the I/O pins are designated as inputs then these pins will produce RS-232 code when shorted to ground and another code when they transition from 0 to 5 volts. The maximum feedback code length is 8 bytes. Each pin is assigned to a location of the memory.

Sub-Register definitions

00	00-07 locations for return code for port 1 pin 1 for transition from 1 to 0. This return code should include any necessary brackets.
.	.
07	end of return code

08	00-07 locations for return code for port 1 pin 2 for transition from 0 to 1. This return code should include any necessary brackets.
.	.
.	.
15	end of return code

Default return code is in the following format
[Px.yd]
x port number 1, 2, 3, 4
y pin number 1, 2, 3, 4, 5, 6, 7, 8
d direction U for 0->1 or D for 1->0 transition

4.11 I/O PORT REGISTERS

These registers are used to control I/O ports directly. Writing into these registers will affect status of the I/O ports immediately. Writing 0 into each bit position will set the output of this pin to 0, writing 1 will set output high. If I/O pin is configured as Input pin, then writing into this bit position will not affect output. Keep in mind that default factory setting is that all I/O pins are inputs. Make sure to define pins as outputs before writing into them. Use memory registers to define pins as outputs.

4.11.1. I/O PORT 1

Register number is **E**
Sub-Register number -not used
When writing into this port, any character can be inserted into Sub-register position. The software on the **CP7317RS** will ignore this information. Also make sure that the pin that you are trying to control is set as output through memory registers.

4.11.2. I/O PORT 2

Register number is **F**
Sub-Register number -not used
When writing into this port, any character can be inserted into Sub-register position. The software on the **CP7317RS** will ignore this information. Also make sure that the pin that you are trying to control is set as output through memory registers.

4.11.3. I/O PORT 3

Register number is **G**
Sub-Register number -not used
When writing into this port, any character can be inserted into Sub-register position. The software on **CP7317RS** will ignore this information. Also make sure that the pin that you are trying to control is set as output through memory registers.

4.11.4. I/O PORT 4

Register number is **H**
Sub-Register number -not used
When writing into this port, any character can be inserted into Sub-register position. The software on the **CP7317RS** will ignore this information. Also make sure that the pin that you are trying to control is set as output through memory registers.

4.12 RELAY PORT REGISTERS

These registers are used to control Relay ports directly. Writing into these registers will affect status of the Relay ports immediately. Writing 0 into each bit position will set the relay open, writing 1 will set the relay closed.

4.12.1. RELAY PORT 1

Register number is **I**
Sub-Register number -not used
When writing into this port, any character can be inserted into Sub-register position. The software on the **CP7317RS** will ignore this information.

4.12.2. RELAY PORT 2,3,4

Register number is **J**
Sub-Register number -not used
When writing into this port, any character can be inserted into Sub-register position. The software on the **CP7317RS** will ignore this information.

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5.3 CONTACT INFORMATION

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