

# RCC1410 DATASHEET

## 14 Digital Inputs, 10 Digital Outputs



### 1 TECHNICAL SPECIFICATIONS

#### 1.1 General

Required Pwr. (steady state)	120mA at 24VDC
Required Pwr. (inrush)	25A for 1mS at 24VDC switched
Primary Pwr. Range	10-32 VDC
Real-Time Clock	Yes
Clock Accuracy	+/- 8 seconds/month at 25° C
Relative Humidity	5-95% non-condensing
Operating Temp.	-10° C to +60° C
Storage Temp.	-10° C to +60° C
Battery	Li-Ion Polymer Battery Charging Range 0-50° C
Weight	10 oz / 283.5 g
Mounting	35mm DIN Rail or Panel Surface
Housing Type	Plastic (UL 50 rated, flame retardant, UV resistant)
Certifications (CE)	USA: <a href="http://www.heapg.com/content/21-certifications">http://www.heapg.com/content/21-certifications</a> Europe: <a href="http://www.horner-apg.com/en/support/certifications.aspx">http://www.horner-apg.com/en/support/certifications.aspx</a>

#### 1.2 Control & Logic

Control Lang. Support	Advanced Ladder Logic Full IEC 61131-3 Languages
Logic Size & Scan Rate	128kb, 0.013 mS/K
Online Programming Changes	Supported in Advanced Ladder
PID Support	Up to 6
Digital Inputs (%I)	2048
Digital Outputs (%Q)	2048
Analog Inputs (%AI)	512
Analog Outputs (%AQ)	512
Gen. Purpose 16-bit Registers (%R)	4096 Retentive
Gen. Purpose 1-bit Registers (%T)	2048 Non-Retentive
Gen. Purpose 1-bit Registers (%M)	2048 Retentive

#### 1.3 Digital DC Inputs

Inputs per Module	14	
Commons per Module	1	
Addressing	%I1 - %I14	
Input Voltage Range	0VDC or 0-30VDC	
Absolute Max. Voltage	35 VDC Max.	
Input Impedance	10 kΩ	
Input Current	Pos. Logic	Neg. Logic
Min. "On" Current	0.8 mA	-1.6 mA
Max. "Off" Current	0.3 mA	-2.1 mA
Min. "On" Input	8 VDC	
Max. "Off" Input	3 VDC	
OFF to ON Response	100 μS min*	
ON to OFF Response	100 μS min*	
Galvanic Isolation	None	
Logic Polarity	Pos. or Neg. Based on configuration	
I/O Indication	LED	
High Speed Counter (HSC)	None	
Connector Type	5.08 mm & 3.5 mm Pluggable Cage Clamp	

#### 1.4 Connectivity

Serial	2 (1xRS232, 1x2-wire RS485)
CAN	1 x 125kbps - 1Mbps
Ethernet	1 x 10Mbps/100Mbps
microSD	1 x SD, SDHC, SDXC in FAT32 format
USB	No
Communication Support	WebMI
	Web Portal
	Outgoing Email w/ Attachments
	TCP/IP and Modbus TCP/IP
	FTP
	Data Logging

#### 1.5 Digital DC Outputs

Outputs per Module	10
Commons per Module	1
Addressing	%Q1 - %Q10
Output Type	Sourcing
Absolute Max. Voltage	30 VDC Max.
Output Protection	Short Circuit & Overvoltage
Max. Output Current per Point	0.5 A
Max. Total Current	2 A Total Current
Max. Output Supply	30 VDC
Min. Output Supply	10 VDC
Max. Voltage Drop at Rated Current	0.25 VDC
Min. Load	None
I/O Indication	LED
Galvanic Isolation	None
OFF to ON Response	500 nS min*
ON to OFF Response	500 nS min*
PWM Out	None
Output Characteristics	Current Sourcing (Pos. Logic)

\* all values updated 1x per scan

## 2 WIRING & JUMPERS

## wiring & jumpers continued...

### 2.1 - Port Connectors

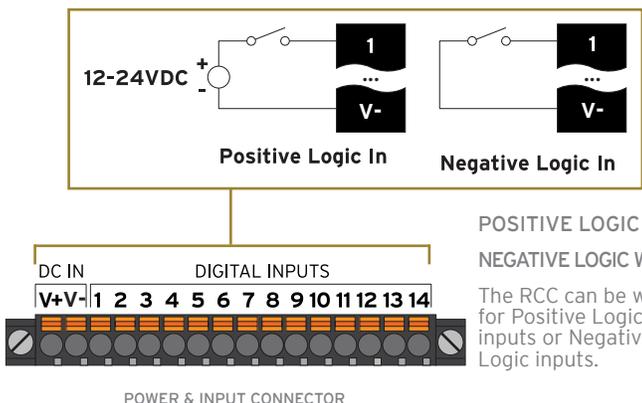


- 1. Power & Input Connector
- 2. Output Connector
- 3. CAN Port & External Power
- 4. Serial Port
- 5. Ethernet Port
- 6. microSD Slot
- 7. Status LEDs
- 8. Buttons

### 2.2 - Power Wiring

To power up the RCC1410, supply 10-32VDC to the V+ and C connections on the Power & Input connector.

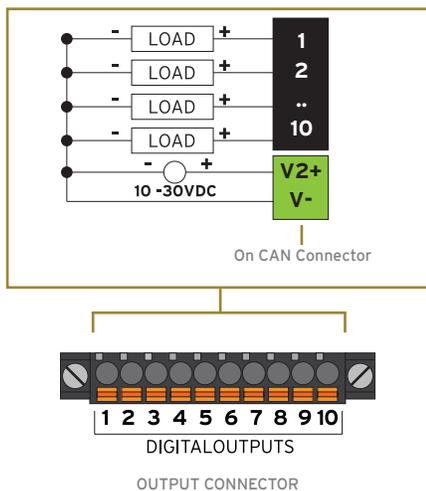
### 2.3 - Digital Input Wiring



### Digital Input Wiring continued...

Digital inputs may be wired in either a Positive Logic or Negative Logic fashion as shown. The setting in the Cscape Hardware Configuration for the Digital Inputs must match the wiring used in order for the correct input states to be registered. The state of the input is reflected in registers %I1 - %I14.

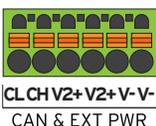
### 2.4 - Digital Output Wiring



Digital outputs are Positive Logic. If an output is turned on, the voltage supplied at the Vext terminal is applied to that output. When used as normal inputs, the state of the output may be controlled using the registers %Q1, %Q2, %Q3, %Q4 ... %Q9, and %Q10.

## 3 COMMUNICATIONS

### 3.1 - CAN Communications



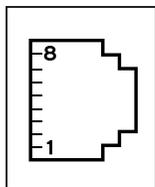
is provided via three connections on the CAN & connector: CAN\_LOW (CL), CAN\_HIGH (CH), and V- (C). It may be used to communicate with the other OCS products using Horner's CsCAN protocol. Additionally, remote expansion I/O, such as SmartRail, SmartBlock, and SmartStix may be implemented using the CsCAN protocol. If CsCAN expansion I/O is to be used, a 24VDC power source will be required on the CsCAN bus in order to power the expansion I/O modules. This connector also houses the connections for Digital Output source power.

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### 3.2 - Serial Communications



1.8 MJ1 PINS		MJ2 PINS		
PIN	SIGNAL	DIRECTION	SIGNAL	DIRECTION
8	TXD	OUT	-	-
7	RXD	IN	-	-
6	0V	GROUND	0V	GROUND
5	+5V at 60mA	OUT	+5V at 60mA	OUT
4	-	-	-	-
3	-	-	-	-
2	-	-	RX-/TX-	IN/OUT
1	-	-	RX+/TX+	IN/OUT

#### MJ1/2 SERIAL PORTS

**MJ1:** RS-232 w/full handshaking

**MJ2:** RS-485 half-duplex

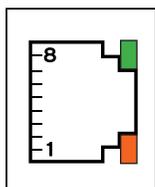
Both serial ports are in one modular jack. To break pins out to terminals, use HE200MJ2TRM accessory

**note:** refer to connector pinout

Two serial ports are provided via the single 8-position modular jack labeled "MJ1/2". MJ1 defaults to one of several methods available to program the controller. It may instead be specified for RS-232 communications, such as for Modbus Master/Slave, or to communicate to devices such as bar code scanners.

MJ2 may only be used as half-duplex (2-wire) RS-485. The most common use is for Modbus communications, either as a Modbus Master or Modbus Slave, though other options are also available.

### 3.3 - Ethernet Communications



Link Indicator  
Activity Indicator

A 10/100 Ethernet port with automatic MDI-X (crossover detection) is provided via the single 8-position modular jack labeled "LAN".

Several features are available for use over Ethernet, such as WebMI, Modbus TCP/IP,

Ethernet/IP, SMTP (E-mail), expansion I/O to SmartRail, and more.

Ethernet configuration is done via the Cscape Hardware Configuration.

For more information on Ethernet, available features and protocols, refer to the Ethernet Supplement document (SUP0740).

### 3.4 - microSD Slot

A MicroSD card may be used for data and alarm logging, historic trending, program loading, firmware updates, and many other features. Supported

types of MicroSD cards are SD, SDHC, and SDXC as long as the format of the card file system is FAT32.

### 3.5 - Status LEDs



Three LEDs provide general status of the RCC:

#### LED - Normal Functionality

LED TYPE	WHEN OFF	WHEN ON	WHEN FLASHING (1Hz)
PWR	No power applied	10-30VDC applied	N/A
OK	Self-test fail	Self-test pass	I/O forcing enabled
RUN	Stop mode	Run mode	Do I/O Mode

#### LED - DIAGNOSTIC FUNCTIONALITY

When the OK and RUN are flashing alternately, a download is in progress. When the flashing stops, the download is complete and the unit reboots (allow 30 seconds). When flashing together, the download has failed, and the number of flashes indicates the error. There will be a two second gap and the pattern will be repeated. The number of flashes and the associated error are as follows:

- 2 Flashes - The MAC ID is empty.
- 3 Flashes - The internal MAC file is corrupt. 4 Flashes - The MAC ID TXT file is invalid.
- 5 Flashes - The MAC ID file is not found or the microSD card is empty or missing system files.

### 3.6 - Buttons



Two recessed buttons provide control of several RCC modes. A paperclip may be used as the buttons are far enough recessed that a pen or pencil is not able to activate them.

#### LOAD SWITCH

- Pressing the LOAD switch during power-up boots from the microSD card. This starts a Firmware Load if the microSD is bootable and valid firmware files are found on it.
- After boot-up, pressing the LOAD switch for 3 seconds either starts

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a Firmware Load or an Application Load depending upon what files are found on the microSD card. If firmware files are found, a Firmware Load is performed. If firmware files are not found and the DEFAULT.PGM file is found, an Application Load is performed.

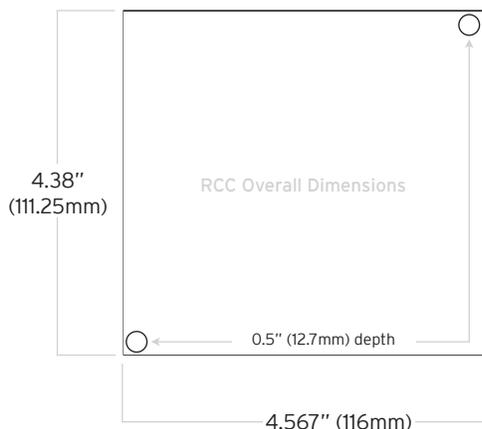
### RUN/STOP SWITCH

- After boot-up, pressing the RUN/STOP switch for 3 seconds toggles the RCC between RUN and STOP modes.

### ERASE PROGRAM FUNCTION

- After boot-up, pressing both Load and RUN/Stop switches for 3 seconds performs an "Erase All" function, which deletes all application programs.

## 4 INSTALLATION DIMENSIONS



## 5 SAFETY

### 5.1 - WARNINGS

- To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.
- To reduce the risk of fire, electrical shock, or physical injury, it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.
- Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.
- In the event of repeated failure, do NOT replace the fuse again as repeated failure indicates a defective condition that will NOT clear by replacing the fuse.
- Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

### 5.2 - FCC COMPLIANCE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation

### 5.3 - PRECAUTIONS

All applicable codes and standards need to be followed in the installation of this product. Adhere to the following safety precautions whenever any type of connection is made to the module:

- Connect the safety (earth) ground on the power connector first before making any other connections.
- When connecting to the electric circuits or pulse-initiating equipment, open their related breakers.
- Do NOT make connection to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals.
- Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.
- Use copper conductors in Field Wiring only, 60/75° C.

## 6 TECHNICAL SUPPORT

For assistance and manual updates, contact Technical Support at the following locations:

**North America**  
+1 (317) 916-4274  
www.hornerautomation.com  
techspt@heapg.com

**Europe**  
+353 (21) 4321-266  
www.horner-apg.com  
technical.support@horner-apg.com