

# Multi-zone PID Control & Data Acquisition Modular Controller



Protocol conversion | Control and communication | Web server  
Data logging | Crimson® 3.0 Software

# Platform flexibility for PID Control and data acquisition



## Multi-zone process control with dedicated PID modules.

Integrating multi-zone PID control into PC, PLC and DCS-based systems now takes only a few minutes with Red Lion's Modular Controllers. By lifting the burden of PID control from the controller, expensive I/O cards are avoided and valuable PLC memory and processing power are freed for other tasks.

The Modular Controller is comprised of a master module and up to 16 PID modules. With two PID loops per module, a single master can accommodate up to 32 loops, saving space and greatly reducing total comms scan time compared to discrete node solutions. The master communicates PID module data to the external PC, PLC or DCS simply by selecting and downloading the proper device driver, allowing the Modular Controller to communicate in your device's native language. Drag and drop controller data to PLC registers in seconds using point-and-click data mapping from the extensive menu of built-in serial and Ethernet drivers. It's complete integration— without writing a single rung of tedious PLC code.

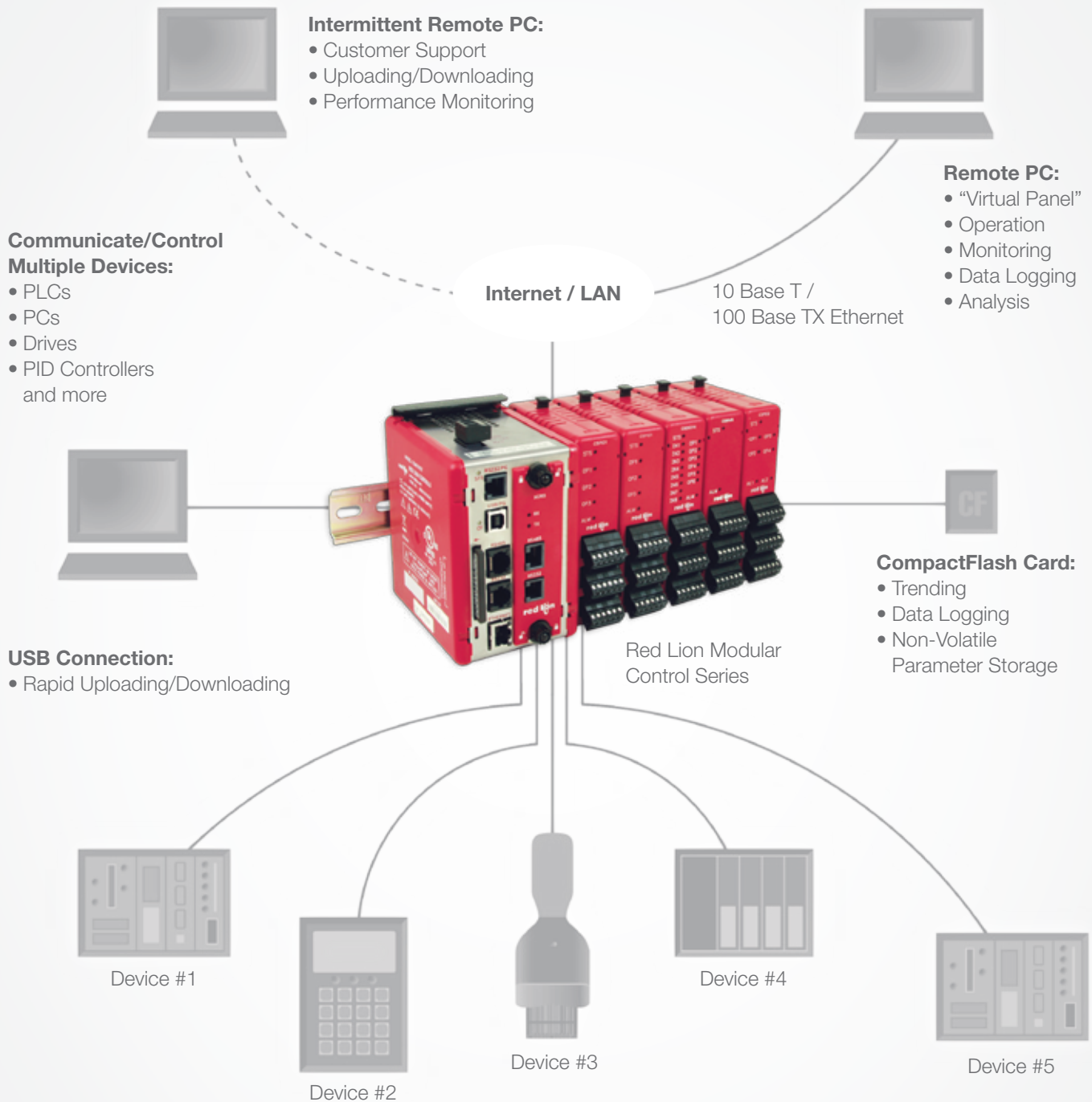
With its RS-232/485 and 10/100Base-T Ethernet ports, the master can be connected to almost any device. Hot-swap design and storage of each module's configuration and firmware data automatically programs a replaced module. With the Modular Controllers, not only are programming costs slashed, you can eliminate costly add-on I/O and analog cards and solve applications simply using an inexpensive brick PLC.

## Data acquisition system with built-in SCADA functionality.

Red Lion's Modular Controllers are the industry's only data-acquisition system with built-in SCADA-like functionality. With its onboard CompactFlash® card, the Master can store any or all data in CSV format, allowing common office applications such as MS Excel to open and chart the data.

With its built-in web server, you have remote access to the data files, as well as an innovative "virtual HMI". Create intuitive user interface screens as if an HMI were connected and control the process from any networked PC with a standard Internet browser. This alone could save you over \$5,000 in SCADA software!

Monitor 16 modules with up to 14 points each—224 I/O with a single master. Mix and match analog or digital; even dedicated PID modules.



**Communicate with up to five different types of serial devices simultaneously. Access, monitor and control these devices from across your network or around the globe.**

# An unprecedented value

## The Red Lion Modular Controller

**Single-node system.** Our design allows all 16 modules to appear as a single node on the customer's network. This provides data-throughput times that are drastically faster than many of our competitors.

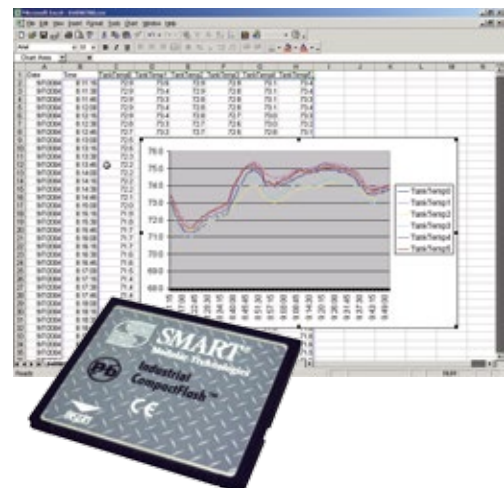
**Hot-swap design** allows module replacement to occur while powered up, but more importantly, the Master automatically re-programs the new module without use of a laptop PC, cables or other external devices. Downtime for module replacement is drastically reduced.

**DIN-rail mounted** means no panel cutouts and less wiring than panel-mounted controllers. Integration is easier and the redundant panel-mounted displays inherent in applications that include an HMI are eliminated.

**Data logging** capabilities allow users to collect PID loop or performance data, display and store it on CompactFlash for evaluation — either live or remotely. And instead of using expensive third-party software to poll and store the data on a PC, values are stored in CSV (comma separated variable) files that can be opened with commercial applications such as Microsoft Excel.

**Faster data transfer and downloading with an integral USB port.** With newer PCs lacking serial ports, the Modular Controller also features a convenient USB port for faster downloads of applications and configuration files from a PC, as well as facilitate trending and data logging uploads to your PC for analysis.

**Dedicated PID modules** provide reliable, accurate control regardless of the state of the PLC or PC. PCs crash, so they can't be trusted with many temperature applications. PLCs are better suited for discrete control and are either difficult to program, too expensive or weak in analog control. Our solution gives you the reliability and performance of stand-alone controllers, with unprecedented ease of integration.



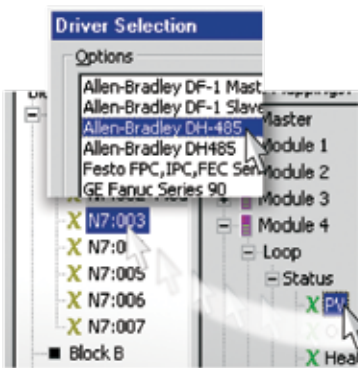


# Crimson<sup>®</sup> 3.0 Software



## The easiest and most flexible software. And it's free.

Crimson<sup>®</sup> 3.0 software hosts a powerful set of drag-and-drop configuration, display, control and data logging tools designed specifically to take full advantage of the Modular Controller architecture. The majority of simple applications can be quickly set up using a step-by-step process to configure communications protocols and define the data tags to be accessed. An extensive menu of built-in, point-and-click serial and Ethernet drivers map controller data to PLC registers in seconds.



Click. Click. Control.

Built-in communications drivers inherently know how to talk to PLCs, PCs or SCADA systems—so no code is required to establish communication. Best of all, Crimson software is free. As are software updates, support, cabling instructions and communication drivers.

## Integrated protocol converter has them all talking.

The Master's integrated serial and Ethernet ports provide the function of a gateway and with its built-in communications drivers, it also serves as a protocol converter. Imagine, any devices you connect to the Master can communicate with each other, can have their data logged and are remotely accessible via Ethernet.

## Built-in web server offers remote access and control.

The Modular Controller's web server not only provides a means of accessing data log files, it also allows remote viewing and control from anywhere in the world. During configuration, you can program a web-based HMI to be accessed via any Internet browser, negating the need for expensive SCADA software. Plus, the web-based HMI offers all of the features you'd expect in a real HMI, such as password protection to prevent entry by unauthorized users.

The Modular Controller can also store and serve custom web pages, meaning you can tailor the interface to your exact process requirements.



Web-based HMI

## Expansion Slot

The enhanced Master provides an expansion slot for more complex applications. GSM/GPRS cellular modem cards, RS-232/RS-485, DeviceNet<sup>™</sup>, CANopen, J1939, PROFIBUS DP and extra serial ports allow even more connectivity.

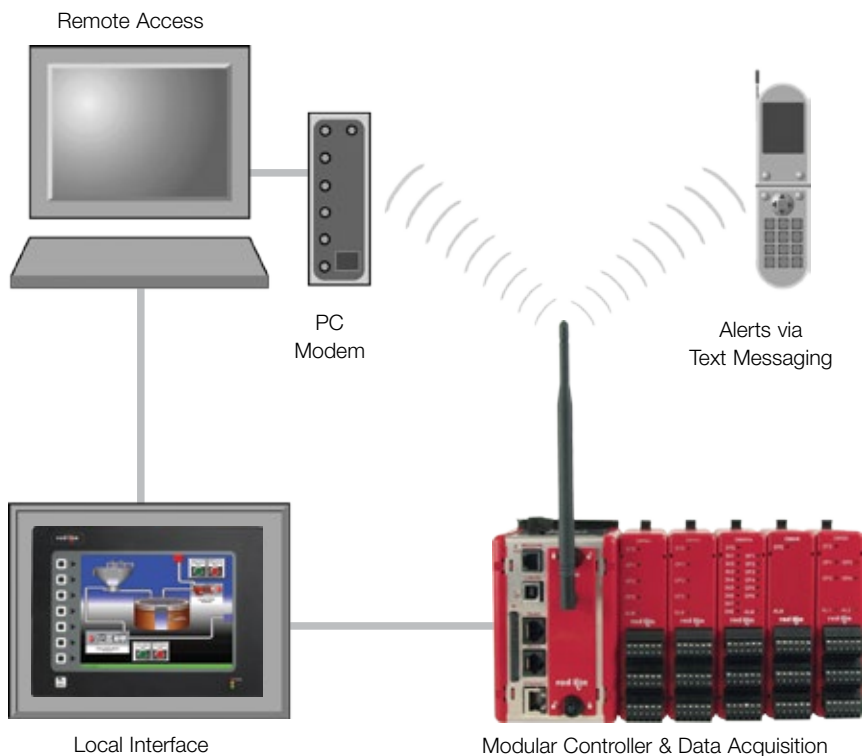
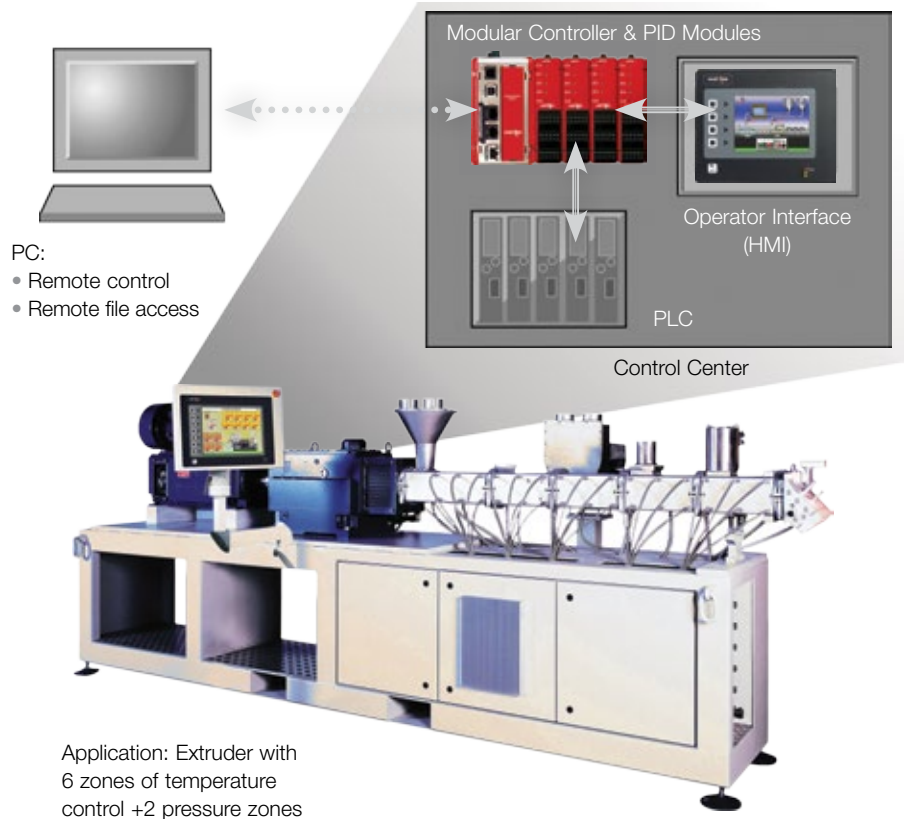
## Learn more at [www.redlion.net/Controller](http://www.redlion.net/Controller)

The power, flexibility, ease of use and value offered by Red Lion Modular Controllers is unparalleled. Learn how you can add multi-zone dedicated PID control, data acquisition, remote access and more to your process quickly and easily. Call **+1 (717) 767-6511** to speak to a representative.

# The single platform solution

## Loop Control

Lifting the burden of temperature control from the PLC is a wise choice. But integrating real-time PID controllers used to mean hours and hours of custom PLC protocol development with costly and complex standalone controllers. Now, with the Red Lion Modular Controller's drag-and-drop configuration and built-in drivers, you can configure a high-density 32-zone system and integrate it in only minutes.



## Data Acquisition

Advanced data acquisition and management is easy with Red Lion's powerful, affordable Modular Controller. Monitor up to 14 points per module for up to 224 I/O with a single master controller. Log data and access the files remotely through any Internet browser. Enable remote alerts and receive alarms via email or cellular text messages.

# Modular Controller Specifications



## Model CSMSTR-V2

### Modular Controller Master

- Configured via free Windows compatible Crimson software
- Supports up to 16 Modular Controller modules
- Provides power and communications to modules through backplane connector
- Stores module configuration information and automatically reprograms replaced modules
- Auto module identification and addressing minimizes configuration time
- Fully isolated design provides reliable operation
- Two (2) RS-232 and one (1) RS-422/485 communications ports on board
- Extensive built-in serial driver list allows easy data mapping to PLCs, PCs and DCSs
- 10 Base-T Ethernet connection provides networking capability
- USB Port to download the unit's configuration from a PC

## Model CSMSTR-LE/SX/GT/ZR

### Enhanced Modular Controller Master

- Configured via free Windows compatible Crimson software
- USB Port to download the unit's configuration from a PC
- Two (2) RS-232 and one (1) RS-422/485 communications ports on board
- 10 Base-T/100 Base-TX Ethernet connection provides networking capability
- Webserver provides access to custom web pages, virtual HMI and data-logger (SX/GT)
- Built-in data-logger (SX/GT)
- CompactFlash socket for increased memory capacity
- Web-based HMI provides remote monitoring and control. Up to QVGA size for SX and VGA size for GT
- Optional card adds fieldbus connectivity, extra serials ports, etc.
- Sync data logo to FTP and Microsoft SQL<sup>®</sup> server (ZR)
- USB capability (ZR)

## Model CSPID / CSPID2

### Single and Dual Loop PID Control Modules

- Performs Heat (reverse), Cool (direct), or Heat/Cool (reverse/direct)
- Universal inputs accept B, C, E, J, K, N, R, S and T type thermocouples, 100 ohm 385/392 and 120 ohm 672 type RTDs 0-10V and 0/4-20mA signals
- Hot-swappable replacement reduces downtime
- Auto addressing minimizes configuration time
- Fully isolated design provides reliable operation
- PID control with reduced overshoot
- On demand auto-tuning of PID settings
- Discrete outputs available in relay, triac or SSR
- DC analog output (optional, CSPID1 only)
- Heater current input (optional) ensures detection of heater circuit failure

## Model CSTC8/CSRTD6

### Dedicated High-Density Temperature Input Modules

- Models available for thermocouple or RTD inputs
- Unused inputs can be disabled to increase overall reading rate
- Programmable slope and offset correction to remove sensor error
- Ideal for data-acquisition applications
- Auto addressing minimizes configuration time

## Model CSIN18 / CSINV8, CSIN18L / CSINV8L

### Dedicated High-Density Analog Input Modules

- Accept up to eight  $\pm 10V$  or 0/4-20 mA inputs per module
- "L" Series modules offer 100 linearization points per input
- Unused inputs can be disabled to increase overall reading rate
- Ideal for data-acquisition applications
- Auto addressing minimizes configuration time

## Model CSDIO14

### Digital I/O Module with Logic Engine

- 8 input / 6 output digital module
- Inputs isolated from outputs
- Inputs independently switch selectable for sink or source signals
- Inputs independently configurable for high or low active state
- Inputs independently switch selectable for high or low frequency signals
- Relay or NFET output models available

## Model CSOUT

### Analog Output Module

- Four isolated analog outputs
- Can be individually configured and scaled to generate output ranges of 0 to 5 V, 0 to 10 V,  $\pm 10 V$ , 0 to 20 mA or 4-20 mA
- Auto addressing minimizes configuration time

## Model CSSG

### Strain Gage PID Control Module

- Performs Reverse, Direct or Reverse/Direct control
- Input accepts 20mV, 33mV or 200mV strain gage signals
- Secondary input for calculation of difference, sum, average, etc.
- Selectable 5 or 10 Volt excitation
- Three alarm outputs per module
- Fully isolated design provides reliable operation
- PID control with reduced overshoot
- On demand auto-tuning of PID settings
- Discrete outputs available in relay or SSR
- DC analog output optional

Specifications are subject to change. Visit [www.redlion.net](http://www.redlion.net) for more information.

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