User's Manual Computerized Observatory Controller Pro

(Model RC-COSC-PRO)

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User's Manual

for the

Astro-Smart

(Model RC-COSC-PRO)

Contents

(Model RC-COSC-PRO)

A. Overview

The COSC-PRO can be setup with your home observatory for trouble-free operation controlled by the user supplied computer interface.

Astro-Smart is the innovator of this elegant and convenient *solution to your Automated Observatory needs* . The **Computerized Observatory System Controller Pro (Model: COSC-PRO)** is a economical yet superior Automation solution made available to the amateur or professional Astronomer. The **Computerized Observatory System Controller Pro (Model: COSC-PRO)** is designed to be used with any make or model observatory motor driven roll off or dome observatory.

The **COSC-PRO** systems incorporates three channels for observatory automation with rain sensor support and remote control operation via USB connection. The intent of the **COSC-PRO** is to be used standalone or in conjunction with **CDAP-PRO** devices**.** Other forms of this product are under way combining DEW and Observatory control into one product. But, if you want standalone operation at an economical entry point or want to use Observatory control with your **CDAP** units already purchased, this unit is for you.
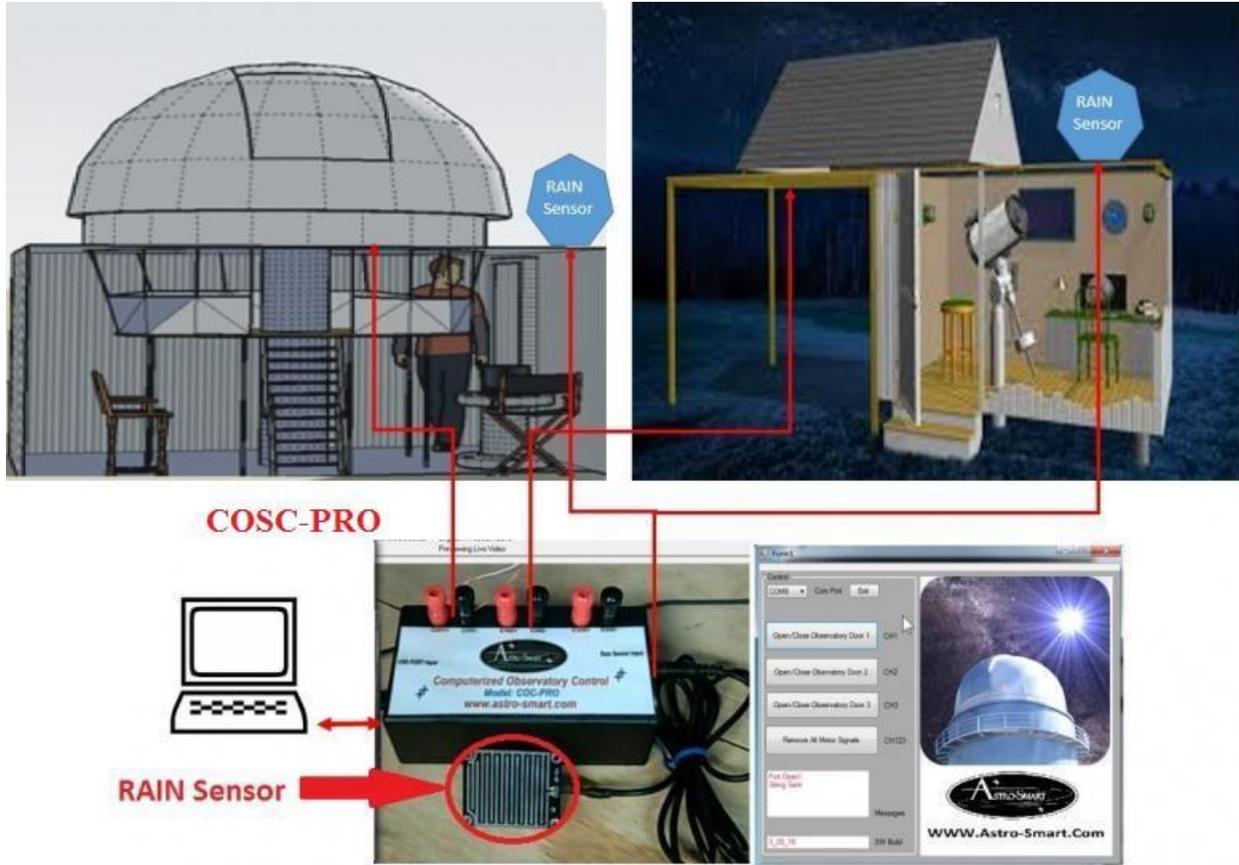
In the following picture above you can see the **COSC-PRO** system with common 3 Observatory Control channels using terminal lug style interface for easy installation, USB interface and GUI Software, Rain sensor interface.

Since, the inception of this unique product at Astro-Smart, the **COSC-PRO** was many years in the making, over long periods in astronomy using existing products on the market identifying their weaknesses and limitations making the product you see before you. The **COSC-PRO** is finally here!!! The Astro-Smart **Computerized Obervatory System Controller Pro** (Model **COSC-PRO** designed to be user friendly, serviceable, elegant and reliable and include the following features shown below:

B. Features

The Astro-Smart **Computerized Observatory Pro (Model - RC-COSC-PRO)** has these

innovative and unique features:

1. *<u>Worry Free Warranty Program For Life Of Product Sale.</u>*
2. *Full Computerized Observatory Control Solution.*
   3 Automated or Manual Controlled Motor Contact Switch Output Contacts rated upto
   120V/10Amps. Typical use is 12/24/32V at 10Amp maximum.
3. *Terminal Lug Style Control Wiring Interface for easy installation.*
4. *Support for Rain Sensors for channel automatic closure of Observatory when RAIN is detected.*
   2.5mm jack style interface. Variable length of sensor cable is available. Standard Length 6 feet.
5. *Saftey Protection Logic for Dome Closure Lockout when Rain Detected.*
6. *USB interface and Power with GUI Control Software Interface.*
7. *High quality design employs multi-layer PCB form factor and only the best quality components*
   with conformal coatings for outdoor use.
8. *Price point set below development cost for such a system while providing more features.*

The Astro-Smart Computerized SQM Pro (RC-COSC-PRO) was designed with the same Astro-Smart
USER-Friendly design philosophy as all our other products:
- Usable
- Serviceable
- Elegant
- Reliable
- Build with burn in time testing before ship.
... USER-Friendly

C. Contents Of Box

1. CD with **RC-COSC-PRO** SW, manual and video tutorials.

2. **RC-COSC-PRO**   Controller Module.

3. One USB to serial interface Cable.

D. Design Features

The Astro-Smart integrated Differential Dew Heater Module, **RC-COSC-PRO** , has these innovative and unique features:

- High quality components and construction utilizing multi-layer board designs with conformal coatings to aid in corrosion prevention in the elements.
- Astro-Smart uses only the best quality components and engineering practices in design, construction and fabrication.
- It can keep optical surfaces free of moisture in many different circumstances. RC-COSC-PRO Front Panel And Connector Diagram:

E. RC-COSC-PRO Front Panel And Connector Diagram

➤ **Computerized Observatory Pro (Model- RC-COSC-PRO)** Configuration . See Figure below.

Figure 1 RC-COSC-PRO Overview Model (2016).
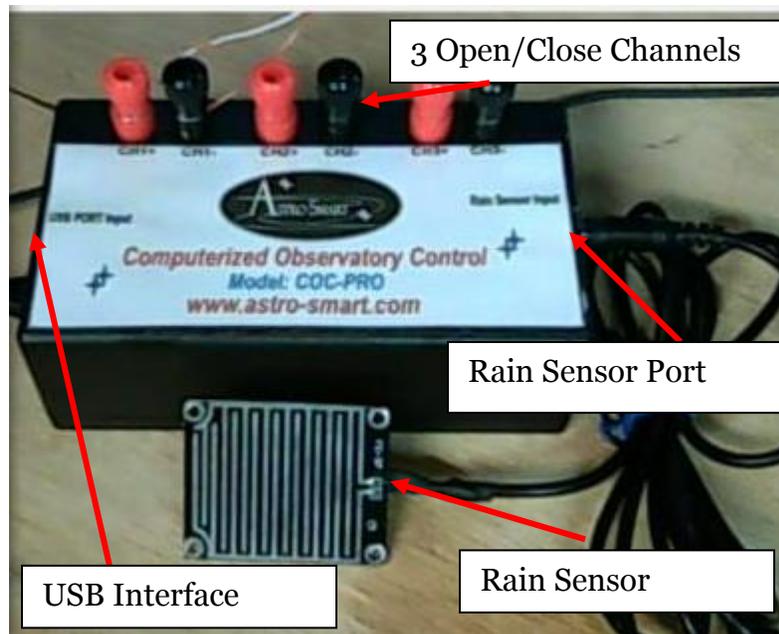
An online video demo of operation can be found on our website at :
**http://www.astro-smart.com/index.php?p=1_24**

F. PC Dew Control Remote User Interface Summary

Your RC-COSC-PRO can be monitored or controlled from your computer. Just connect the serial to USB cable and in the device manager of your operating system, you must know what port is used when connected. The settings will be automatic and the host PC install program provided will list all available serial ports to connect. You just pick the correct one. A video tutorial is listed in the support page of our website to go thru the basic operations of this feature. Some basic features are listed below.

SW GUI versions are available for the Observatory Controller Pro include the Integrated In CDAP package and standalone model GUI SW snapshots shown below. Unique to the Observatory Controller Pro is the "As it happens advisor" dialog screens to let the user know if a condition occurs that would close the observatory for instance like the rain sensor detecting rain or states of each controller switch which can be controlled by the user or autonomously controlled by its sensors for safety of equipment.

Shown below is the software interface available for the integrated observatory control with dew control as used with the RCOC-CDAP-PRO.
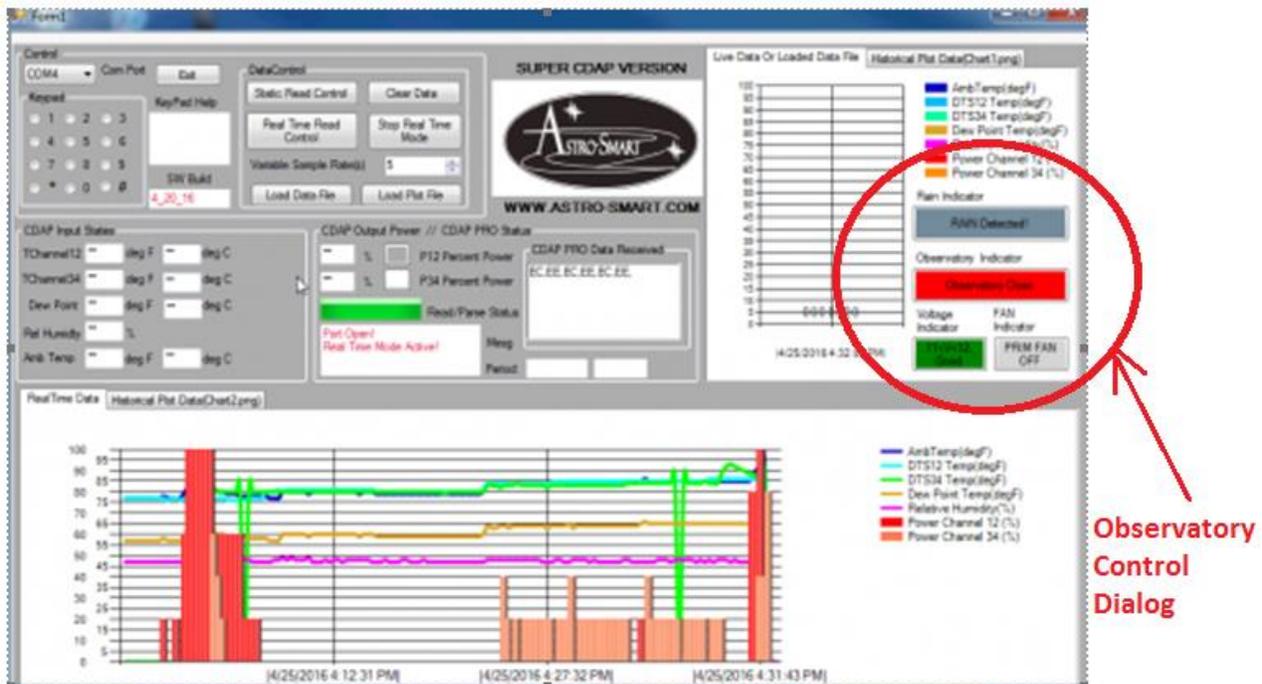
Observatory
Control
Dialog

Shown below is standard Observatory interface which controls upto 3 Open/Close Channels with USB com interface.

The PC SW remote interface snap shot main screen is shown to the left. Its a USB-Serial connection to the COSC Pro tested across multiple PC operating system platforms.

As part of the COSC pro package, new COSC-PRO purchases will get the standard PC SW remote platform for free.

The simplicity of operation can be seen in the following figure below.

The HW/SW requirements for the RC-COSC-PRO to work in PC remote mode are the following:

1. Connect serial to USB cable provided by Astro-Smart.

2. Plug in your Rain Sensor in the rain sensor Jack and connect switch wire to the ch+/- terminals. Choices are channels 1 to 3. Where channel 1 is tied to rain sensor activity and can be manually controlled or with operate automatically based on rain sensor activity. Channels 2 and 3 are manually controlled only and are not tied to rain sensor input.

3. Install the RC-COSC-PRO SW on your computer(Win XP, Win 7 or Win 8).

4. Turn on the RC-COSC-PRO, then run the device manager on your PC OS to determine which port the RC-COSC-PRO is attached to. Then run the RC-COSC-PRO SW. For compatibility select XP compatibility and Admin control for Win 7 and 8 after installed before running if required.

5. While in RC-COSC-PRO PC interface, select the serial port RC-COSC-PRO is attached to.

6. Press the Open/Close button that control wires are attached to when desired. Make sure to verify directivity of switch positions of your equipment. Ie. The software control buttons will activate a relay to open and or close equipment it is connected to. It's the user's responsibility to place the equipment in the correct state desired before activating the software button. The COSC-Pro assumes all switches are in the closed positions on start up before they can be activated to open a door and or switch.

7. Other features of the GUI and examples can be seen by demonstration on our website
     to browse support pages, video tutorials of this product and others.
        i. http://www.astro-smart.com/index.php?p=1_49_Video-Overviews

8. Enhancements to the software will be made based on user input on a continual basis and can
     be uploaded from our site for your convenience.

G. External SQM Sensor Hints:

Install the Rain Sensor such that the sensor is pointing up at the night sky. The rain sensor is a standard 6 foot in length but can be made to any size based on user requirements. The sensor can be mounted inside or outside your observatory or mount configuration.

H. Accessories

Optional accessory that Astro-Smart offers is the Rain Sensor used for automatic output channel control to shut observatory door when rain detected. Placement of sensor can be inside observatory when the door is open and sensor is exposed to night sky.

Another convenient accessory that Astro-Smart offers is a Ethernet interface specifically designed for the **Computerized COSC PRO family**. You just plug the supplied RS-232-USB connector that comes with your **Computerized COSC PRO family** into the female USB to Ethernet converter. Now, plug in the desired length of ethernet CAT-5 to your remote control computer location to the other CAT-5 termination and simply plug in the USB connector to your computer(ETHER-DM).

Visit Astro-Smart for more astronomical products, services, and training at www.astro-smart.com .

I. Warranty, Policies, Copyright Notice:

Life Time Warranty

All products are guaranteed to the original purchaser to be free from defects in material and workmanship for the life of the product from the date of original purchase. Simply put, once you buy a Astro-Smart product we make sure it works for as long as you keep the product for free upgrades of software and firmware for the product. Warranty coverage excludes normal wear and tear, or damage caused by improper installation, any modification, abuse, misuse, improper maintenance, and unauthorized repairs or modifications to the original product. Shipper is responsible for proper packaging, shipping and insurance on applicable upgrades or repair items. . Upon receipt of returned product, Astro-Smart will assess the item/s to determine if they comply with the conditions of our warranty. Astro-Smart is not responsible for damage caused by the freight carrier, i.e.: USPS, UPS, FED EX, etc., to our product. A claim to repair or replace the product must be initiated by the recipient. In no event shall Astro-Smart be liable for any claim for incidental or consequential damage arising out of or in connection, manufacture, delivery or use of any product offered on this website or by information received by US mail, E-mail, data files or fax.

Return Policy

Merchandise must be returned in new (mint) condition within 30 days of receipt for exchange/refund which may be subject to 20% restocking charge (Shipper is responsible for proper packaging, shipping, and insurance.). We must receive the returned merchandise within 30 days of the date you received it. All items must be in new (mint) condition. Returned items cannot show evidence of use or wear, dirt, or blemishes of any kind. Merchandise must be returned in its original packaging and should include all supplied materials, instructions, original accessories, hardware, and any CD software disks provided. Software purchases via email or download since released are non-refundable. Astro-Smart is not responsible for lost or damaged packages. Return shipping costs are the responsibility of the customer. Any returned items must be in "as new" condition. We ask that you open and

inspect your order upon receipt. No insurance or damage claims will be accepted more than 3 days after delivery. All customers MUST email Astro-Smart before returning products for warranty or repair to get an RMA#(Return Merchandise_Authorization).

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