



BOOLEAN ENGINEERING PTY. LTD.
Electronics Technology Consultants
✉ robin@booleanengineering.com

APPLICATION NOTE

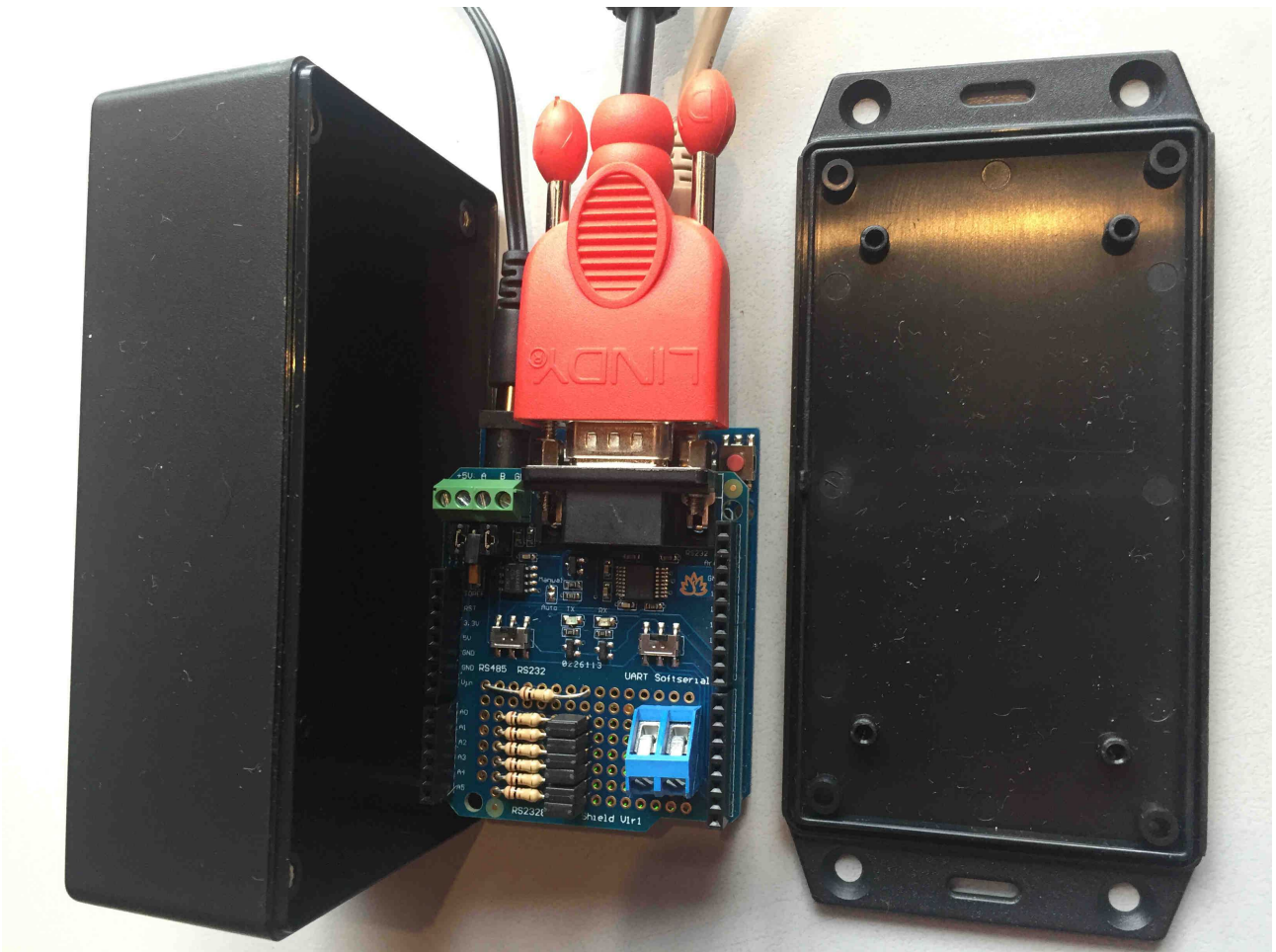
AN-57

OVERVIEW of the EASYcomms EC - 3

This note describes the operation of the EASYcomms EC – 3 serial communications device for remote relay control.

The EC – 3 device is a normally open solid state relay that is operated via any of the industry standard communications protocols, either RS232 RS485 or USB.

Each unit is address selectable and has various operating modes for maximum user flexibility via a simple 10 character ASCII command set.

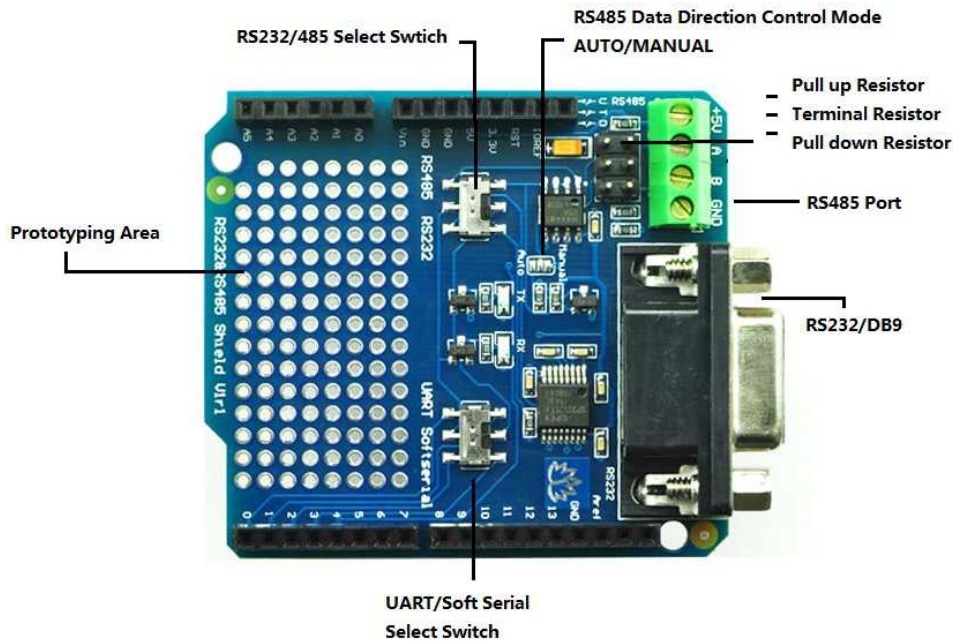


SAME ENCLOSURE AS OUR EASYswitch ES 240-110

CONFIGURATION

Address selection is by shorting links labelled A0 – A5 for a range of 00 – 3F hexadecimal. Fitting a link sets an address bit and removing a link is a zero bit, so all links in is address 3F hexadecimal (63) and all links out is address 00 hexadecimal.

Address 00 is global and over rides any link selected address and will operate all devices connected to the same network.



To use the RS485 port slide SW2 to the RS485 side and slide SW1 to the UART side.
To use the RS232 port slide SW2 to the RS232 side and slide SW1 to the UART side.
To use the USB port slide SW2 to the RS232 side and slide SW1 to SOFT SERIAL side.

CONNECTIONS

EC – 3 connections can be made by removing the enclosure lid with a Philips head screwdriver with internal wiring requiring a 3 mm flat screwdriver.
The solid state normally open relay output is accessed from the 2 pin blue terminal post.

The RS232 is connected via a female DB9 socket wired as follows:

RS232 TX = pin 2
RS232 RX = pin 3
RS232 GND = pin 5

The RS485 connections are to the green 4 way terminal labelled GND, A, B, +5V.

USB access is via the USB type B socket on the lower PCB

Power is supplied from the DC socket, on the lower PCB, from a 12 VDC 500 ma *regulated* supply with a *centre positive* 2.1 mm connector.

COMMANDS

Operating commands are sent to the EC – 3 with a serial data protocol of 9600 baud, 8 data bits, no parity and 1 stop bit.

Commands are sent as a 10 character ASCII packet and all ten characters are required to generate a valid message in the form:

< addrhi addrlo , cmnd , timhi timmi timlo >

No control characters (CR LF etc.) are required

< = start of packet

addrhi = high order of device address and must match A4 – A5 (0 – 3 hexadecimal) links

addrlo = low order of device address and must match A0 – A4 (0 – F hexadecimal) links

, = comma separator

cmnd = 1 character device operation command – **see below**

, = comma separator

timhi = high order value of timing function (0 – 9)

timmi = middle order value of timing function (0 – 9)

timlo = low order value of timing function (0 – 9)

> = end of packet

cmnd – instant on/off– delayed on/off – on/off duration

0 = *instant* opening of relay contacts, no timing functions

e.g. global = <00,0,000> or addressed device 1C instant opening = <1C,0,000>.

1 = *instant* closing of relay contacts, no timing functions

e.g. global = <00,1,000> or addressed device 27 instant closing = <27,1,000>

2 = *delayed* opening of contacts for the value of timing characters (000 – 999) seconds

e.g. global = <00,2,005> all common connected devices open after 5 seconds.

or address matched = <1C,2,067> addressed device 1C open after 67 seconds

3 = *delayed* closing of contacts for the value of timing characters (000 – 999) seconds

e.g. global = <00,3,245> all common connected devices close *after* 245 seconds.

or address matched = <2A,3,001> addressed device 2A closes *after* 1 second.

4 = opening of contacts for the *duration* of timing characters (000 – 999) seconds

e.g. global = <00,4,689> all common connected devices open *for* 689 seconds.

or address matched = <09,4,001> addressed device 9 opens *for* 1 second.

5 = closing of contacts for the *duration* of timing characters (000 – 999) seconds

e.g. global = <00,5,038> all common connected devices close for 38 seconds.

or address matched = <3E,5,999> addressed device 3E closes for 999 seconds.

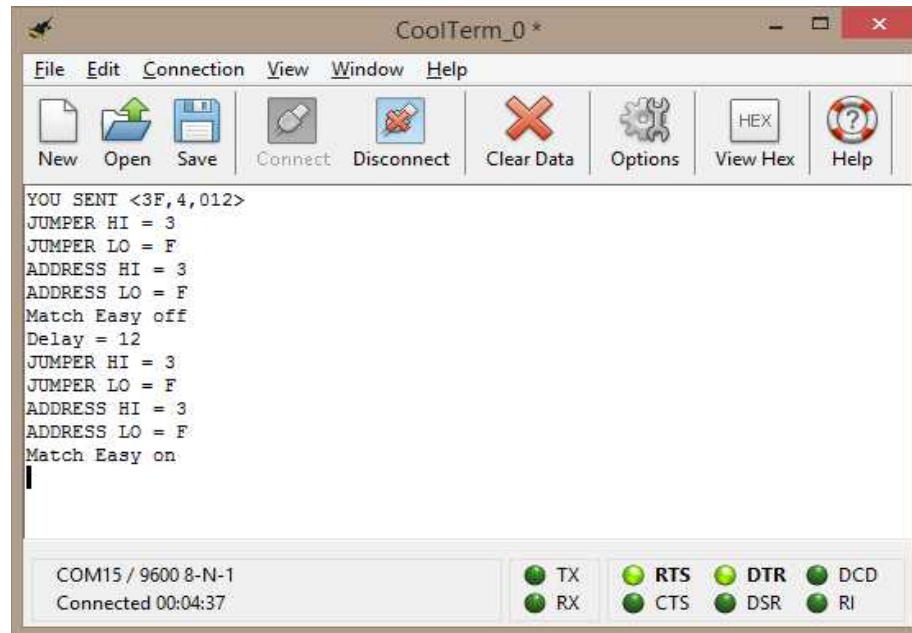
Diagnostic report echo back after every operation for logging and control.

Screenshot from a RS232 terminal handler (CoolTerm) of a command

<3F,4,012>

This is opening of contacts on addressed device – 3 F for a duration of 12 seconds and then the closing of contacts.

Report shows an addressed command sent, address jumper links, received address, command result, delay of 12 seconds then an automatic closing of contacts.



RELAY

The on board user controlled, solid state relay has Form A, Normally Open voltage free contacts that are accessed by the blue 2 terminal screw connector.

The contacts are rated as follows:

Peak Load Voltage = 350 volt AC/DC

Continuous Load Current = 100 ma.

Typical ON Resistance = 17 ohm

Typical Maximum Switching Speed = 0.2 ms.