ARX-1 Operation Guide

Basic Hook up

Connect a 12VDC power supply to the 2.1x5.5mm power jack. Center pin positive. If you want to connect two boards together with one as a master and another as a slave then connect the two boards together using a 10 pin ribbon cable. Make sure pin 1 on board 1 goes to pin 1 on board 2. Master Board 1 must have DIP 4 turned off and Slave board 2 must have DIP 4 turned on. All RS-232 and IR commands will be received on board 1 and delivered to board 2 by the ribbon cable. Power will also be passed to board 2. The discreet inputs for each board will operate only the relays on that board. There is a yellow LED next to each relay showing if it is on or off. A central common point ground hole is next to the power jack. This should be connected to ground through a metal mounting spacer to allow noise and spikes to be shunted to ground.

Contact Closure Inputs

Each board has 8 contact closure type inputs to turn relays on and 8 to turn them off. The "+" input is used to turn the relay on and the "-" input is used to turn it off. An additional header with 4 ground connections is provided.

Pair Mode

If DIP-1 is turned on, the Contact Closure inputs are used to control 4 sets of relay pairs. The odd input (Inputs 1,3,5 and 7) is used for control. For example: Input 1+ when closed once will turn on K1 and turn K2 off if it was on. If it is pressed again K1 will turn off. Input 1- when closed once will turn on K2 and K1 off if it was on. If it pressed again K2 will turn off.

Pair mode works the same with IR control when DIP-1 is on. With the commands for relay 1 on/off controlling K1 and K2 as described above for the contact closure inputs. Relay 3 commands control pair 2; K3 and K4, Relay 5 commands controls pair 3; K5 and K6 and Relay 7 commands controls pair 4; K7 and K8

RS-232 Commands

RS-232 9600, 8, N, 1 with no hand shaking. Relay commands:
@urc(CR)
@=Start character for RS-232 relay command
u=Unit Number 1 or 2
r=Relay number 1-8, 0/9=special multi relay command
c=Command
Command List:
*=Relay on
#=Relay off
0=Relay toggle
?=Poll Relay states

Example: @14*(cr)

@=start character
1=Board 1
4=Relay 4
*=Turn on

When r=0 special command: Relays 1-4 off when c=#
When r=9 special command: Relays 5-8 off when c=#

Example: @19#(cr) turn off relays 5-8

All commands are 4 digits long terminated by a CR (0x0D) Carriage Return. List of valid commands:

Master Board 1 Relays

Relay	Command	Operation	Command	Opertaion	Command	Operation
1	@11*	On	@11#	Off	@110	Toggle
2	@12*	On	@12#	Off	@120	Toggle
3	@13*	On	@13#	Off	@130	Toggle
4	@14*	On	@14#	Off	@140	Toggle
5	@15*	On	@15#	Off	@150	Toggle
6	@16*	On	@16#	Off	@160	Toggle
7	@17*	On	@17#	Off	@170	Toggle
8	@18*	On	@18#	Off	@180	Toggle
1-4			@10#	Off		
5-9			@19#	Off		

All @11? Polls all Board 1 relays. Response: (K8) (K7) (K6) (K5) (K4) (K3) (K2) (K1) represented by 0 and 1 where 0=Off and 1=On. Example: K7 and K4 are on all other relays off: 01001000

Slave Board 2 Relays

Relay	Command	Operation	Command	Opertaion	Command	Operation
1	@21*	On	@21#	Off	@210	Toggle
2	@22*	On	@22#	Off	@220	Toggle
3	@23*	On	@23#	Off	@230	Toggle
4	@24*	On	@24#	Off	@240	Toggle
5	@25*	On	@25#	Off	@250	Toggle
6	@26*	On	@26#	Off	@260	Toggle
7	@27*	On	@27#	Off	@270	Toggle
8	@28*	On	@28#	Off	@280	Toggle
1-4			@20#	Off		
5-9			@29#	Off		

All @21? Polls all Board 2 relays. Same as example above

Data can either be machine generated in short bursts or entered by hand using a terminal program. A ten second inter-digit time period is allowed. If the next character is not received within ten seconds the command will be ignored. Once the carriage return is received the command will be executed. Be careful when polling to allow enough time for a response from the slave board before polling again or you can have a data collision and the response will not be received. The response

should be received within 200ms. If no response is received after one second an error message will be generated.

IR Control

All of the IR command codes can be generated using RS-232 for the purpose of a learning remote control to be able to capture and "learn" the code used for that function. To generate a relay command over the IR transmitting LED send a $ followed by the relay command from the table above. For example, to generate the command for turning on relay 1 send $11*(CR). The Green LED will begin flashing as the IR LED transmits the command every 100ms. To stop transmission send any character and the Green LED will stop flashing along with the IR transmission. This can also be used to test the IR receiver on another board. When you are generating $11* on one board, Relay 1 on another Master board will turn on when it sees it.