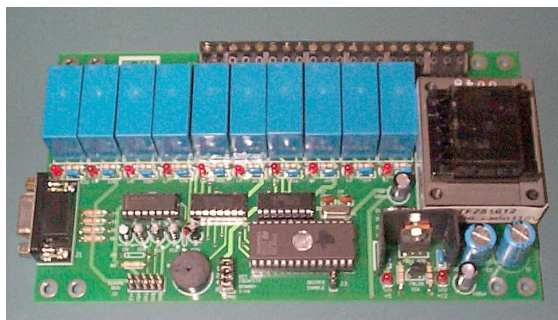




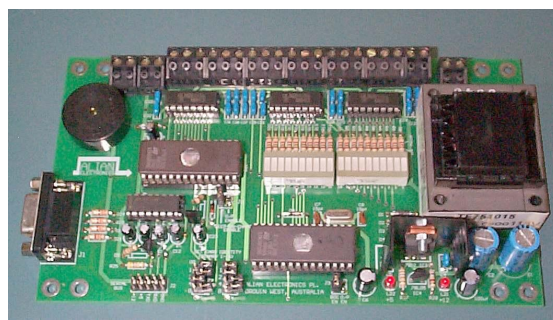
SM131-132 UNIVERSAL SERIAL INTERFACE CONTROLLER SET

INFORMATION BRIEF Release 1.1, JUNE 2008

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SM131... Ten x 10 AMP OUTPUT RELAYS



SM132...20 x INPUTS or 20 x OUTPUTS

GENERAL DESCRIPTION

The SM131, SM132 card set has been produced as a generic method of controlling or monitoring a large number of devices via a single conventional RS232 PC interface. A 10 way ribbon cable bus between modules allow many modules to share a common PC interface. Any combination of inputs and outputs (in blocks of 10) may be connected to the common serial bus, totalling up to 160 ports.

The **SM131** has ten 10 Amp relays on board for switching 10 outputs to a common AC or DC rail.

The **SM132-O** has twenty independent 'Open Collector' outputs for the control of external relays & devices

The **SM132-I** has twenty independent 8-bit inputs for monitoring analog or digital devices (sensors or switches)

After a simple null-modem DB9 cable is attached from a PC to any of the boards, then all of the ports on all modules are accessible by a simple command set at 1200 baud that may be generated by a dumb terminal or a customised windows based application. A simple Visual Basic demonstration program is available to show how a large number of devices may be monitored or controlled from within a 'Windows' PC environment.

FEATURES

- **EACH MODULE MAY OPERATE FROM ITS OWN 240V SUPPLY, OR AN EXTERNAL 12V DC (where multiple modules are used, only one needs to be connected to a power source)**
- **MODULES MAY BE STACKED FOR COMPACT INSTALLATION (L:178 W:101 H: 42mm)**
- **ALL OUTPUT PORT CONDITIONS ARE STORED IN NON-VOLATILE MEMORY (In the event of power interruption, previous output states are remembered at power up)**
- **ON-BOARD LED INDICATORS SHOW THE PRESENT STATE OF ALL OUTPUTS**
- **MODULES MAY BE CONNECTED DIRECT TO A PC, OR VIA MODEM (As the data transmission speeds are low, this may even happen via cell-phone modem)**

The command language resembles the old Hayes 'AT' modem command set. For example, sending the text string '**AE03+**' would access a 10 port group strapped to address '**0**', then activate output '**3**'. Sending '**AE03-**' would turn it off. All successful commands trigger an '**OK**' confirmation response from the selected module.

Other commands may reset an entire 10 port output group, check the present state of an output group or perform a simple 'Echo' test to prove that communications to a particular module are open.

Inputs in any 10 port group are checked by sending a **AEnIP** command (where '**n**' is a **0** to **F** card address) A reply such as **AEn0001001001OK** will indicate which switched inputs are on or off. If the DIG-ON jumper is removed in a 10 port block, the reply will contain an 8bit (**0-255**) decimal value to represent the analogue value on each channel. Every input has a switchable '10K pullup' resistor available to tie un-terminated inputs to 'logic 1'.

SM131 / SM132 SUPPORTED COMMANDS

- Terminal protocol is **1200 baud, N,8,1** Characters are not echoed back to the host, so the user must turn on 'Local Echo' on their terminal to view any characters sent.
- All commands must be in **UPPER CASE**. Backspace characters are not supported.
- Letter 'n' in the table below represents one of sixteen card addresses (**0-9,ABCDEF**) as selected by the four 'Card Identity' jumpers for each group of 10 inputs or outputs.

COMMAND SAMPLES:

COMMAND	FUNCTION	TYPICAL RESPONSE
AEn <enter>	Check for presence of module 'n' on serial bus	OK <CR> <LF>
AEn4+ <enter>	Activate module n, Output 4	OK <CR> <LF>
AEn4- <enter>	Deactivate module n, Output 4	OK <CR> <LF>
AEn7# <enter>	Invert the state of output 7,module n (0 to1 or 1 to 0)	OK <CR> <LF>
AEnOP <enter>	Check state of all outputs, module n	AEn0000100100OK (1=grounded)
AEnIP <enter>	Check state of all Inputs, module n (Digital mode)	AEn0001101100OK (48 or 49)
AEnIP <enter>	Check state of all Inputs, module n (Analog mode)	AEnφη Κ ρη ΣΔσδOK (Junk characters shown indicate raw ASCII values from 0 to 255)
AEnIC <enter>	Check state of all Inputs, module n, continuously	AEn0001101100OK (every sec)
AEnZ <enter>	Reset all outputs on module n to OFF	OK <CR> <LF>
AEnID <enter>	Interrogate port type for module block n. (whether any block of 10 inputs are configured as analog or digital, is selected by a jumper labelled 'DIG READ ENABLE' on each SM132 module)	xOK <CR> <LF> if x=1 module has Outputs if x=2 module has Digital Inputs if x=3 module has Analog Inputs

Cable connection is via a straight wire-to-wire DB9 Male to DB9 Female patch.
(like the commonly available Mouse extension cable)
