dontek
ELECTRONIC MANUFACTURING

Manufacturers of Electronic Equipment
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AS7 REMOTE COMMANDS

Recommended software:
Indigo Terminal Emulator – for connecting a pc to the controller & create a daily log file. (http://www.shadeblue.com)
Realterm – as above does not split a log file by date but its free of charge. (http://realterm.sourceforge.net/)
LiveGraph – will display graphs from a text file and is free of charge. (http://www.live-graph.org)
Serial Port on a PC is required; alternatively a Serial to USB converter is supplied (Unitek Y-105) another option is to use a Serial to Ethernet converter (Xport or Xport PRO) and use a telnet connection to a PC.
Move ASCII data to and from Modbus RTU Master - 460MRSA (http://techstep.com.au)

DATA RATES ARE AT 9600 BAUD, 1 START BIT, 8 BITS, NO PARITY, 1 STOP BIT. COM PORT SETTINGS ARE PC DEPENDANT
COMMANDS SENT SHOULD CONTAIN 6 CHARACTERS FOLLOWED BY A CARRIAGE RETURN <CR> THEN A LINE FEED <LF> {0Dh, 0Ah}

DATALOGGING OUTPUT:
Every 10 seconds the controller sends the following data to the serial port*NOTE.
DATE, TIME, TEMPRATURE(S), PUMP(S)STATUS, FLOW SWITCH STATUS, AUXILIARY RELAYS STATUS, OPERATING MODE, SENSOR FAULTS, PUMP FLOW FAULTS.
i.e. 2013/07/11,11:03:20,T1,0021.00,T2,0020.81,SP,0,AP,1,FS,1,AR,0,VR,0,OM,00,SF,00,FF,00<CR><LF>
T1 is pipe temperature sensor in degrees Celsius
T2 is monitoring temperature sensor in degrees Celsius
SP,0 Indicates the solar pump is OFF
SP,1 Indicates the solar pump is ON
AP,0 Indicates the auxiliary pump is OFF
AP,1 Indicates the auxiliary pump is ON
FS,0 Indicates the flow switch is OFF (No Flow)
FS,1 Indicates the flow switch is ON
AR,0 Indicates the auxiliary relay is OFF (HEATER)
AR,1 Indicates the auxiliary relay is ON (HEATER)
VR,0 Indicates the valve relay is OFF (if used)
VR,1 Indicates the valve relay is ON (if used)
OM,00 Indicates normal automatic operating mode
OM,07 Indicates manual mode
SF,00 Indicates no temperature sensor faults
SF,01 Indicates the pipe temperature sensor is disconnected
SF,02 Indicates the monitoring temperature sensor is disconnected
SF,09 Indicates the pipe temperature sensor cable is damaged
SF,0A Indicates the monitoring temperature sensor cable is damaged
SF,10 Indicates the pipe temperature sensor is wired incorrectly (reversed polarity or short circuit)
SF,20 Indicates the monitoring temperature sensor is wired incorrectly (reversed polarity or short circuit)
SF,90 Indicates the pipe temperature sensor reading is corrupted (excessive interference)
SF,A0 Indicates the monitoring temperature sensor reading is corrupted (excessive interference)
FF,00 Indicates no pump faults
FF,01 Indicates a solar pump fault
FF,02 Indicates an auxiliary pump fault

*NOTE: DATALOGGING IS TO BE TURNED ON BY WRITING FFFF1L, ONCE WRITTEN IT WILL DEFAULT TO OUTPUT LOGGING DATA.

DATALOGGING SETTINGS;
033080 – OUTPUT EVERY 5 SECONDS
033081 – OUTPUT EVERY 10 SECONDS
033083 – OUTPUT EVERY 30 SECONDS
033086 – OUTPUT EVERY 60 SECONDS
After typing the above follow with FFFF1E (Save settings).

Dontek Electronics Pty Ltd
www.dontek.com.au
19 Melrich Road, PO Box 239, Bayswater VIC 3153 Australia
Phone: +613 9762 8800 Fax: +613 9762 8874 Email: sales@dontek.com.au

ABN 60 147 554 943

FUNCTIONS (EXTERNAL COMMANDS):

COMMANDS SENT SHOULD CONTAIN 6 CHARACTERS FOLLOWED BY A CARRIAGE RETURN <CR> THEN A LINE FEED <LF> {0Dh, 0Ah}
Entering an address word of FFFF followed by a 1 or 0 and a command letter allows the execution of the following functions;

FFFF0A	41	RELAY OFF - AUXILIARY PUMP - MANUAL MODE - WARMBOOT
FFFF1A	41	RELAY ON - AUXILIARY PUMP - MANUAL MODE – WARMBOOT
FFFF0C	43	UPDATE MEMORY LOCATIONS FOR TIME FROM THE RTC DEVICE
FFFF1C	43	WRITE MEMORY LOCATIONS FOR TIME TO THE RTC DEVICE
FFFF0D	44	CALCULATES CRC8 OF EEPROM AREA AND STORE VALUE IN LAST EEPROM LOCATION TO BE WRITTEN
FFFF0E	45	COPIES EEPROM TO STORABLE RAM LOCATIONS (IS FOLLOWED BY A WARM REBOOT)
FFFF1E	45	COPIES STORABLE RAM LOCATIONS INTO EEPROM (IS FOLLOWED BY A WARM REBOOT)
FFFF1I	49	FROM SLAVE TO MASTER, TELLS MASTER TO RETRIEVE AND SAVE SETTINGS FROM THE SLAVE
FFFF0L	4E	STOP DATALOGGING OUTPUT (added 19/08/2013)
FFFF1L	4E	STARTS DATALOGGING OUTPUT (added 19/08/2013)
FFFF0M	4D	TRANSMITS SETTINGS (AAAADD<CR><LF>) WHERE 'A' IS ADDRESS AND 'D' IS DATA (ONLY SENDS USED RAM &EEPROM LOCATIONS)
FFFF1M	4D	LISTS THE MEMORY REGISTERS IN A FORMAT COMPARABLE TO THE COMPILER
FFFF0P	50	PAUSE (PUTS UNIT INTO 1 HOUR WAIT, THEN WILL PERFORM A COLD REBOOT)
FFFF1P	50	PROGRAMMING MODE {ADDED 09/04/2013 – NOT OPERATIONAL}
FFFF0R	52	RELAY OFF - AUX HEATPUMP - MANUAL MODE - WARMBOOT
FFFF1R	52	RELAY ON - AUX HEATPUMP - MANUAL MODE - WARMBOOT
FFFF0S	53	RELAY OFF - SOLAR PUMP - MANUAL MODE - WARMBOOT
FFFF1S	53	RELAY ON - SOLAR PUMP - MANUAL MODE – WARMBOOT
FFFF0T	54	STARTS A TEMPERATURE CONVERSION, UPDATE RTC & TRANSMIT STRING TO SERIAL PORT*
FFFF1T	54	STARTS A TEMPERATURE CONVERSION (ALLOW 1 SECOND FOR THE CONVERSION TO COMPLETE)
FFFF0V	56	RELAY OFF - VALVE (SOLAR) - MANUAL MODE - WARMBOOT
FFFF1V	56	RELAY ON - VALVE (SOLAR) - MANUAL MODE - WARMBOOT
FFFF0X	58	RESUME AUTOMATIC OPERATION
FFFF1X	58	COLD REBOOT (TURNS EVERYTHING OFF, CLEARS ALL MEMORY, THEN RETRIEVES EEPROM CONTENTS)

*SEE DATALOGGING OUTPUT ON PAGE 1

WRITING TO THE CONTROLLER REGISTERS:

COMMANDS SENT SHOULD CONTAIN 6 CHARACTERS FOLLOWED BY A CARRIAGE RETURN <CR> THEN A LINE FEED <LF> {0Dh, 0Ah}
To write a value to a register; enter the register address word followed by the data byte;

010000 FIRST ADDRESS LOCATION 0100 WRITES 00
06FFA5 LAST ADDRESS LOCATION 06FF WRITES A5
0000xx TO 00FFxx IS RESERVED FOR I/O
0700xx TO 08FFxx IS RESERVED FOR STACK

* WRITING TO REGISTERS IS NOT RECOMMENDED, CONTACT US IF YOU WOULD LIKE REGISTER DETAILS *

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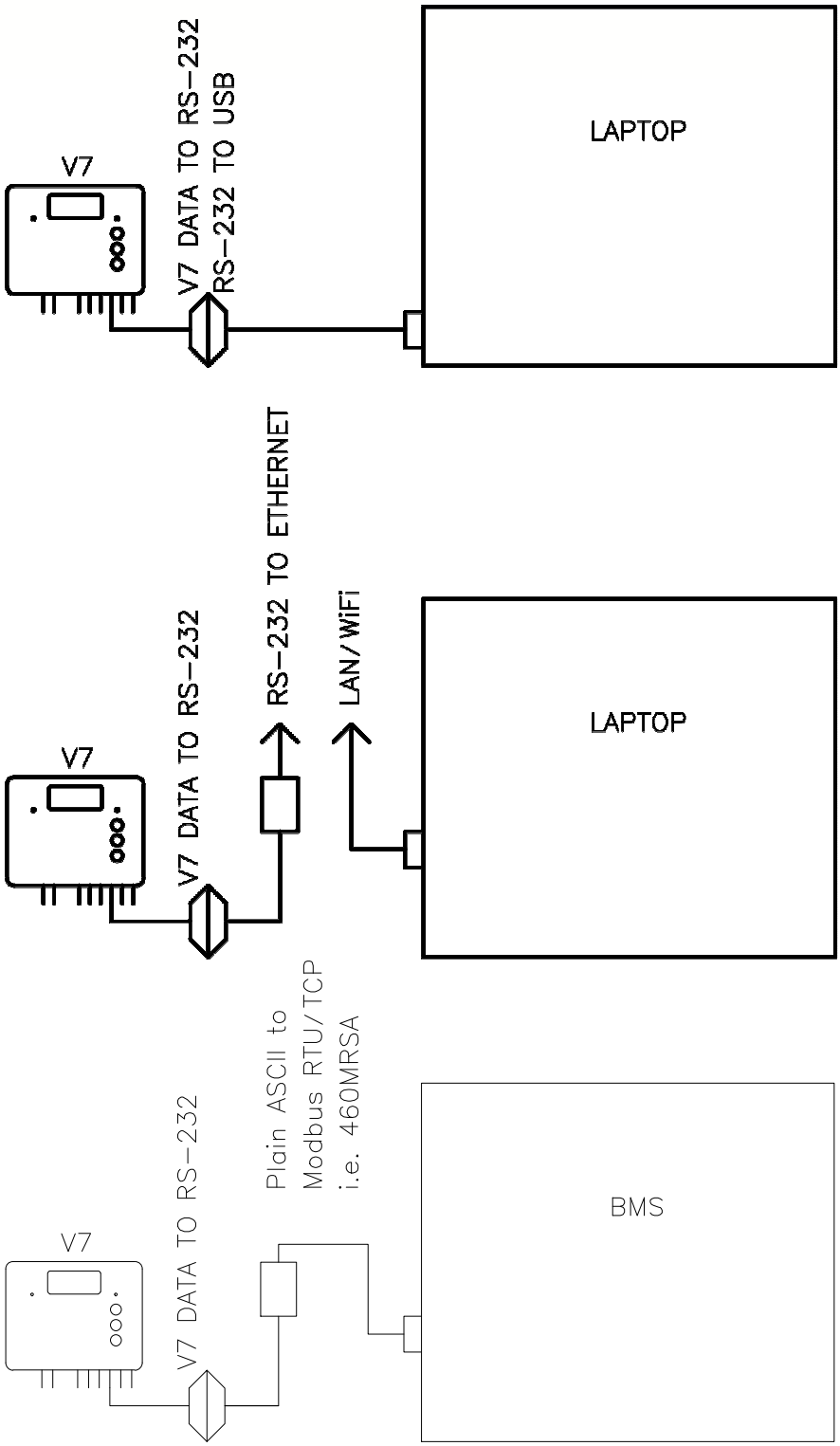

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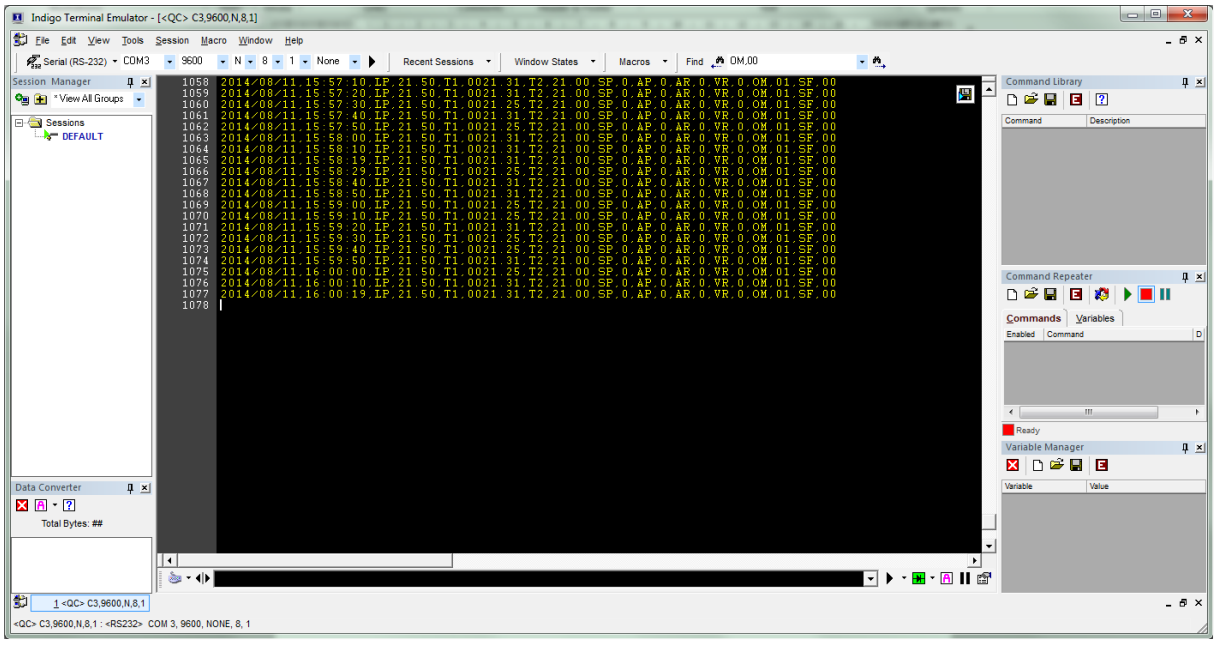
Logging Data:

The controller does not have any memory to log data so an external datalogging device needs to be used.
A laptop with a USB port is ideal as it allready has a battery backup in the event of a power failure.
The laptop need to have its power settings altered so that it cannot turn itself off.

HP Pavillion 10-F009AU 10.1" Notebook ($300)



Indigo Terminal Emulator.

Any terminal emulator can be used, but Indigo provides the ability to split log files according to date, it costs around $40 (US $).
The USB to Serial converter will be assigned a COM port number (In the above example its COM3), set Indigo to connect to the com port at 9600,N,8,1,NONE.
To log data click on the icon to the right of the pause symbol (bottom right of the black screen) and select as follows;

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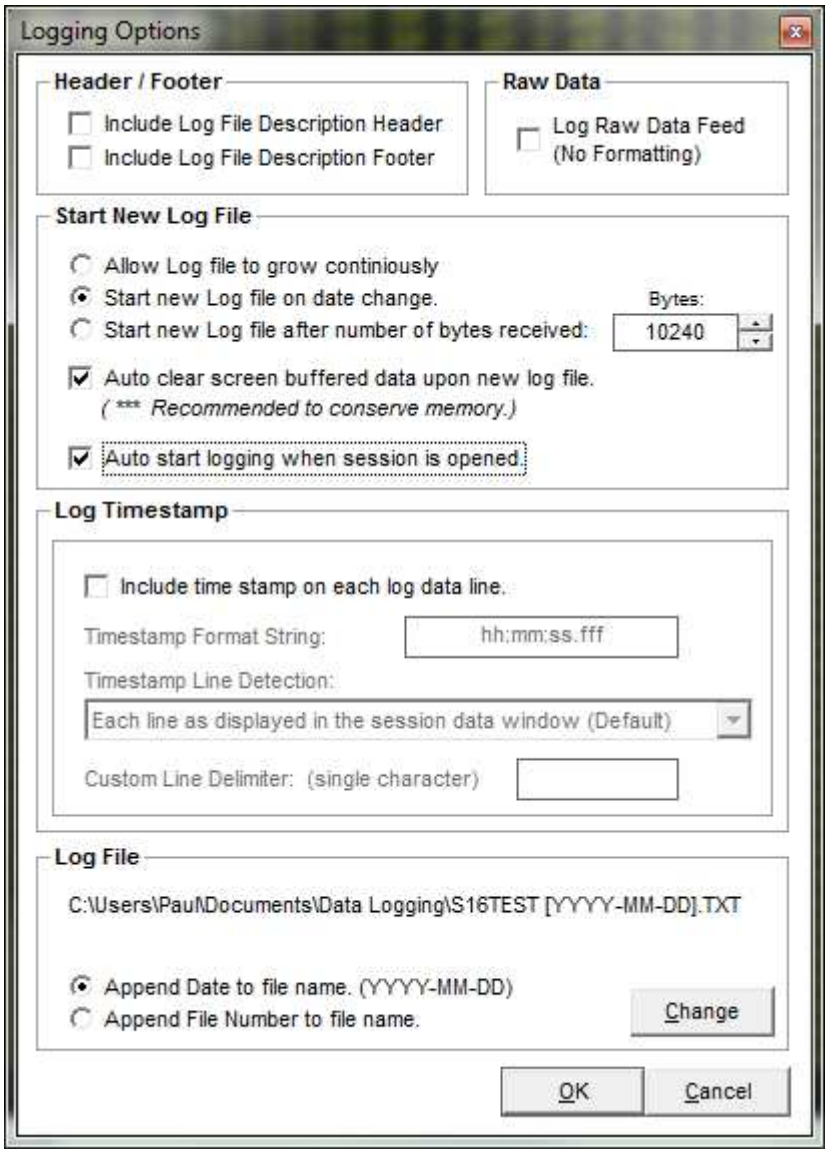

Then save session as (session)
Then edit/program preferences/session and select open last session at program start.

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