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Certified System Quality ISO 9001

EWP® & DUAL FAN CONTROLLER Part Number #8003 INSTALLATION INSTRUCTIONS

PLEASE READ ALL THESE INSTRUCTIONS THOROUGHLY BEFORE YOU START WORK.
DON'T RUSH - ENSURE YOU HAVE FULL UNDERSTANDING OF THE WORK AHEAD BEFORE YOU COMMENCE.

KIT COMPONENTS

- 1 – EWP® & Dual Fan Controller
- 1 – Inline Adapter
- 1 – 10 pin Wiring Harness w/ Fuses
- 1 – 3 Pin Wiring Harness
- 1 – Thermal Sensor
- 2 – Rubber Sleeve 3mm
- 2 – Hose Clamps
- 1 – 6mm Ring Terminal
- 1 – Self-Tapping Screw
- 1 – Mounting Plate
- 1 – Mounting U-Bracket
- 1 – Assorted Mounting Hardware

Optional Thermal Sensors

- **#18415** – ¼" NPT Thermal Sensor (supplied)
- **#18418** – ⅛" NPT Thermal Sensor
- **#18419** – M12 x 1.5 Thermal Sensor
- **#18460** – Thermal sensor probe

Optional Inline Adapters

- **#0416** – 38mm (1-1/2 in) Inline adapter
- **#0419** – 35mm (1-3/8 in) Inline adapter (supplied)

EWP® & Dual Fan Controller Mounting

- The Controller MUST be mounted inside the passenger compartment to minimise its ambient temperature and exposure to water.
- Locate a hole in the firewall (approx. 20mm in diameter) and pass the wiring harness through (including the sensor & pump T-connector) from the passenger cabin to the engine bay.
  - Ensure all wiring is protected from rubbing on bare metal or sharp edges.

Thermal Sensor wire MUST NOT be cut in ANY circumstances.

- Ensure the unit is mounted allowing easy access to the set buttons and to minimise exposure to direct sunlight.
- The Controller has 2 solid mounting options to assist with your installation.
  - U-Bracket – ideal for under dash mounting
  - Mounting plate – Ideal for mounting to dash or custom brackets

Thermal Sensor Installation Options

A Davies, Craig Thermal Sensor MUST be used. The use of any other sensor will result in errors and incorrect operation.

Option 1: Inline Adapter Installation

- Install the Thermal Sensor into the Inline Adapter, be sure not to over tighten or damage the sensor.
  - You may require some thread tape or sealant to achieve a watertight seal (Not Supplied).
- Remove top radiator hose and confirm the inside diameter (ID) of your hose prior to cutting.
  - Rubber sleeves may be required to accommodate larger ID hose sizes.
    - **Part #18510** – 3mm {1/8"} Rubber Sleeve increases adapter OD by 6mm (Not Supplied).
    - **Part #18511** – 6mm {1/4"} Rubber Sleeve increases adapter OD by 12mm (Not Supplied).
- If the parts supplied are suitable, cut approximately 20mm out of the top radiator hose and install the Inline Adapter Assembly and secure with the hose clamps.

Option 2: Threaded Port Installation

If you would prefer the Thermal Sensor may be installed into an existing port, such as the thermostat housing, Engine block, intake manifold, Radiator or Aftermarket hose adapters.

NOTE: The Thermal sensor should be installed in the **HOT** side of the cooling system

- Install the Thermal Sensor into the port, making sure not to over tighten or damage the Thermal Sensor.
  - Thread adapter fittings (not supplied) may be required when using existing ports.
  - You need to be mindful that the location of the Thermal Sensor can affect the temperature reading and adjustments may be needed when setting the target temperature.
  - When a port is not available, it is possible to drill and tap a hole for locating the Thermal Sensor.
  - You may require some thread tape or sealant to achieve a watertight seal.

EWP® & Dual Fan Controller Wiring

- Connect the **RED** **'Battery +VE'** wire to battery positive (+).
- Connect the **BROWN** **'Earth'** wire to the chassis using the self-tapping screw.
  - Ensure there is a good connection between the ring connector and chassis.
- Connect the **YELLOW** **'Ignition'** wire to an ignition controlled +12V/24V source. If necessary, the **'Ignition'** wire may be spliced and soldered.
  - The ignition source must be a constant +12V/24V when the key is in the **ON** position. A manually switched +12V/24V source can also be used.
  - **DO NOT** connect the **'Ignition'** wire to the ECU or the ignition coils as this can cause operational issues with the Controller or damage to the ECU.
- To wire the controller to control Single or Twin Fans.

NOTE: The Controller will earth the 'Fan Relay' wire, it does not power it.

  - Fan 1 Relay Pin 85 – connects to the **BLUE** **'Fan 1 Relay'** wire.
  - Fan 2 Relay Pin 85 – connects to the **ORANGE** **'Fan 2 Relay'** wire.
- Mount the **'Remote Test Light'** in a location where it will be easily visible.
  - The **'Remote Test Light'** may be fitted by inserting through a 4.6mm diameter hole.
  - The **'Remote Test Light'** has **RED** and **BLACK** pin connectors that MUST be connected to the same-coloured pin connectors on the wiring harness.
- Plug the **'Temperature Sensor'** wiring into the installed Thermal Sensor.
- Connect the T-connector from the EWP® to the '**Pump'** T-Connector from the Controller wiring.
- Plug the wiring harness into the socket of the Digital Controller.

Fan Relay Wiring

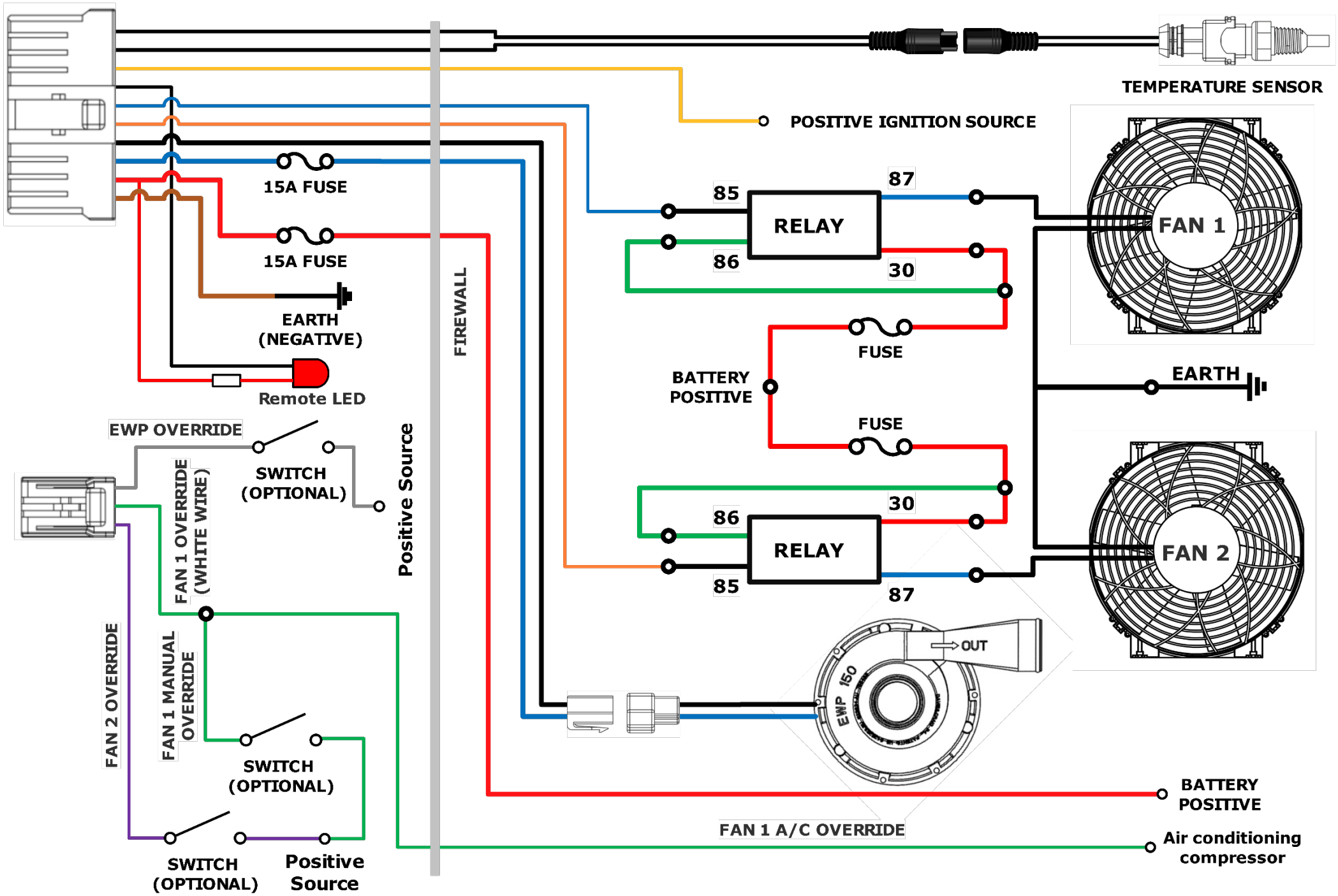
When using the Davies, Craig fan wiring harness from Part #1000, #1001, #1002 or #1003 the ring terminal on the **BLACK** wire connecting to Relay Pin 85 must be removed.

85	**ORANGE** or **BLUE** **'Fan Relay' wire**
86	**Battery Positive or Pin 30**
30	**Fused Battery Positive** a fuse and holder may need installing
87	**Fan wire**

EWP® & Fan Override Wiring (Optional)

The controller has 3 optional override wires to manually force EWP® and fans to turn on and run continuously.

- For Air Conditioner overrides, wire the '**Fan 1 Override'** and/or '**Fan 2 Override'** wires to a positive source controlled by the A/C system.
- For manual overrides, wire the EWP®, Fan1 and Fan2 overrides to switches (Not Supplied) located in the vehicle cabin.
  - These switches need to supply the override wire with positive 12V/24V


TEMPERATURE SENSOR
POSITIVE IGNITION SOURCE
15A FUSE
15A FUSE
EARTH
(NEGATIVE)
Remote LED
FIREWALL
85
87
RELAY
86
30
FUSE
BATTERY
POSITIVE
FUSE
FAN 1
EARTH
FAN 2
86
30
RELAY
85
87
EWP OVERRIDE
SWITCH
(OPTIONAL)
Positive Source
FAN 1 OVERRIDE
(WHITE WIRE)
FAN 2 OVERRIDE
FAN 1 MANUAL
OVERRIDE
SWITCH
(OPTIONAL)
SWITCH
(OPTIONAL)
Positive
Source
OUT
EWP 150
BATTERY
POSITIVE
FAN 1 A/C OVERRIDE
Air conditioning
compressor

Programming The EWP® & Dual Fan Controller

Changing Temperature Units

- Use the **'°C/°F'** switch to select desired unit **°C (Celsius)** and **°F (Fahrenheit)**

Setting Pump Target Temperature

Factory set to 85°C/185°F

We recommend setting the target temperature to at least 5°C/9°F more than the rated temperature of the factory thermostat.

Method 1

- Push the **'+ Button'** or **'- Button'** once to indicate the present temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
  - Hold the **'+ Button'** or **'- Button'** to continuously increment the setting Up (+) or down (-)
- Once the desired target temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Method 2

- Push the **'Select Button'** once to indicate the present temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
- Once the desired target temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting

For Fan only applications the Pump temperature can be set to 'OFF'. When set to off the controller will not provide power to the pump or report any errors. When the Pump is turned off the Fan 1 and Fan 2 settings will become independent set temperatures

Adjusting The Screen Brightness

- Push the **'LIGHT'** to scroll between the 5 different brightness levels.

Audible Alarm

- Us the **'ALARM'** switch to turn the audible alarm buzzer on and off

Setting FAN 1 Activation Temperature

Factory set to +3°C/5°F of Pump target setting.

If Fan 1 is not being used Fan 1 activation temperature should be set to 'Off'.

- Push the **'Select Button'** twice to indicate the present activation temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
- Once the desired activation temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Setting Fan 1 Deactivation Temperature

Factory set to -5°C/-9°F of Fan 1 activation setting.

- Push the **'Select Button'** Three times to indicate the present deactivation temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
- Once the desired deactivation temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Setting Fan 2 Activation Temperature

Factory set to +5°C/9°F of Pump target setting.

If Fan 2 is not being used Fan 2 activation temperature should be set to 'Off'.

- Push the **'Select Button'** four times to indicate the present activation temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
- Once the desired activation temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Setting Fan 2 Deactivation Temperature

Factory set to -5°C/-9°F of Fan 2 activation setting.

- Push the **'Select Button'** five times to indicate the present deactivation temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
- Once the desired deactivation temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Setting Shutdown Temperature

Factory set to -10°C/-18°F of Pump target setting.

- Push the **'Select Button'** six times to indicate the present shutdown temperature setting.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
- Once the desired shutdown temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Adjust the Temperature Sensor Offset

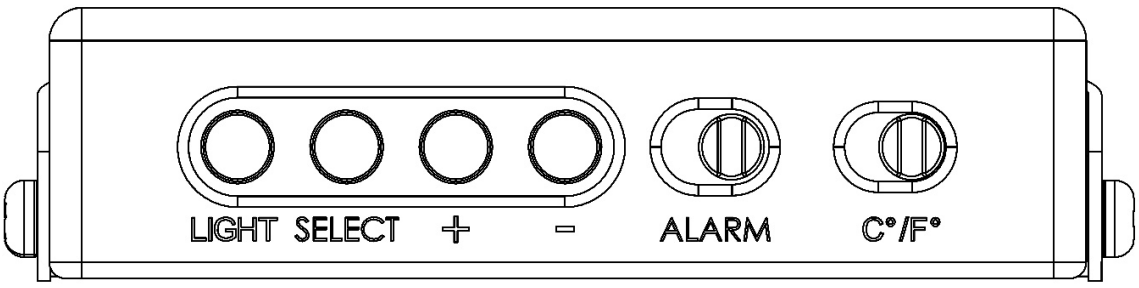
A temperature offset (+/- 5°C/9°F) to allow calibration of the senor to match the OEM/other sensors in the system.

- Push and hold the **'Select Button'**.
- Push the **'+ Button'** or **'- Button'** again to increment the setting up (+) or down (-) one degree.
  - Once the desired offset temperature is reached, your setting will be saved to memory after three (3) seconds if no buttons are pressed.
  - Push the **'Select Button'** at any point to cancel the setting.

Factory Reset

Resets all settings back to default value.

- Press and hold the **'LIGHT' and 'Select'** buttons simultaneously for 10 seconds.
  - Entire display will flash 3 times to indicate all setting have been reset to default.



EWP® & Dual Fan Digital Controller Operation

EWP® Symbol

- Flashing = EWP® operating in pulse mode.
- Illuminated = EWP® running continuously.
- Blacked out = EWP® set to "OFF"

Fan Symbol

- Illuminated = Fan deactivated
- Rotating = fan activated.
- Blacked out = Fan set to "OFF"

Override Mode

- When an override wire receives positive power, the Controller will operate your selected EWP® and/or fan/s continually until the override wire is disconnected from positive power.
- When in Override mode the "**Override Mode**" indicator will light up **green** and the EWP® indicator will be illuminated and/or the Fan/s symbol will be rotating.

Shutdown Mode

- The controller will continue to operate your EWP® and fan/s for three (3) minutes unless the coolant temperature has reduced by the shutdown temperature setting below your EWP set temperature.
  - When in shutdown mode the "**Shutdown Mode**" indicator will light up **green** and a 180s countdown is displayed.

Low temperature Operation

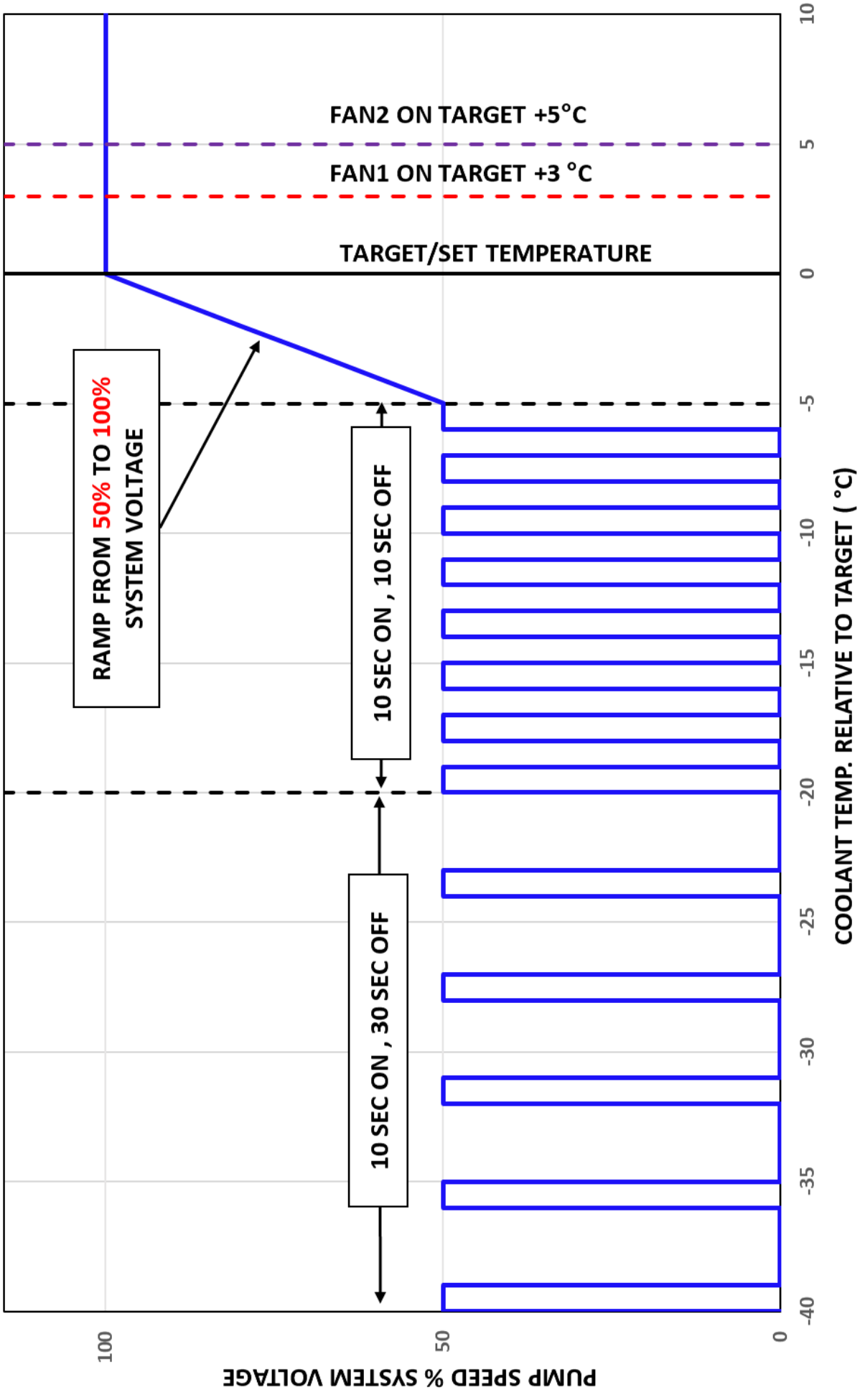
- The controller will enter low temperature operation mode under the following conditions
  - If Temperature measurement is less the 40°C/104°F after 5 minutes
    - the controller will run the EWP at full speed
  - If Temperature measurement is still less the 40°C/104°F after 10 minutes
    - the controller will run the EWP at full speed and activate the fans.
- The low temperature operation mode can be "snoozed" at any time by pressing any button.
  - The Snooze function will return the controller to normal operation and reset the timer.

Errors and warnings

If a warning or error has been triggered. **'Remote test light'** (RED LED) will flash and fault or warning indicator will light up **RED**.

Warnings	Condition	Controller Response
High coolant Temperature	Temperature is 5°C/9°F Above highest temperature setting	High coolant temp light on,
	Temperature is 10°C/18°F Above highest temperature setting	High coolant temp light on, Temperature flash and alarm sounds
Low coolant Temperature	Temperature is less the 40°C/104°F after 5 minutes	Pump runs at full speed continuously
	Temperature is still less the 40°C/104°F after 10 minutes	Pump and Fan/s run continuously
Low Voltage	Internal low voltage < 9V – for 12V applications Internal low voltage < 21.5V – for 24 V applications	If in shutdown mode, shutdown immediately. Otherwise continues normal operation.
Over voltage	internal high voltage > 18.5V – for 12V applications internal high voltage > 31.5V – for 24V applications	Pump and Fan/s run continuously
Sensor Short Circuit	Short circuit detected on Temperature sensor circuit	Pump and Fan/s run continuously
Sensor Open Circuit	Short circuit detected on Temperature sensor circuit	Pump and Fan/s run continuously
Pump Fault	Open circuit detected on pump circuit	Pump and Fan/s run continuously
Fan1 Error	High relay coil current draw detected on Fan 1 circuit	Fan1 circuit is shut down / turned off
Fan2 Error	High relay coil current draw detected on Fan 2 circuit	Fan2 circuit is shut down / turned off

EWP® & Dual fan Controller Operation Chart



Controller Specification	
Operating Voltage Range – 12V system	9V – 18V
Operating Voltage Range – 24V system	22V to 31V
Rated Continuous Pump Current Draw	10A (12A MAX)
Temperature Setting Ranges	
Pump Temperature	Off - 40°C to 110°C (104°F to 230°F)
Fan activation Temperature	Off - 0°C to +20°C (0°F to +36°F) of EWP Setting
Fan deactivation Temperature	0°C to -20°C (0°F to -36°F) of Fan Activation Setting
Shutdown Temperature	0°C to -20°C (0°F to -36°F) of EWP Setting

WARNINGS

- **Engine temperature must be monitored closely at all times, especially, immediately after EWP® installation and until the EWP® operation and capability have been confirmed.**
- **The ignition source needs to be a constant and stable positive 12-29 volts DC, connecting the ignition directly to the coils or other high load components can cause errors.**
- **Do not use the vehicle's engine management system or wiring connected to the vehicle's engine management system as an ignition source because it may cause failure of the management system and/or the electrical system.**
- **DO NOT ATTEMPT to tamper with the Digital controller including loosening or removing any screws as this will void any warranty. If you suspect there is a fault or defective product please contact Davies, Craig IMMEDIATELY.**

These installation instructions will suit most applications but there are circumstances surrounding some engine designs, environments, and the nature of the system involved, which may require other installation arrangements not outlined here. Frequently Asked Questions (FAQ) are listed on our website www.daviescraig.com.au Emails can be directed to info@daviescraig.com.au or Telephone +61 (0) 3 9369 1234 during business hours.

WARRANTY

3 YEAR WARRANTY

Davies, Craig Pty Ltd warrants for a period of three years or 2000 hours continuous running (whichever is the lesser) from the date of purchase. Davies, Craig shall carry out, free of cost, any repairs that are reasonably necessary to correct any fault in the operation of your Davies, Craig product provided that such a fault is directly attributable to a defect in the workmanship or materials used in the manufacture of the part(s). This warranty is void if the product is misused, altered, tampered with or is installed or used in a manner that is inconsistent with Davies, Craig's written recommendations and/or installation instructions. Labour and consequential costs are excluded. **DAVIES, CRAIG PTY. LTD.**

To make a warranty claim, go to: daviescraig.com.au/warranty