PDM 32

All names in this document have the type in capitals as the last characters in the name.

CabinFanDI is a Digital Input.

GPSSpeed is a GPS data packet.

EngineTempAI is an Analogue Input, a temperature sensor on the coolant pipework.

RadFanO is an Output.

SafeIgnition is an internal variable which =1 when the dash is on otherwise =0

FAN

There are a number of fans in a car and a number of ways to cause them to operate and to stop.

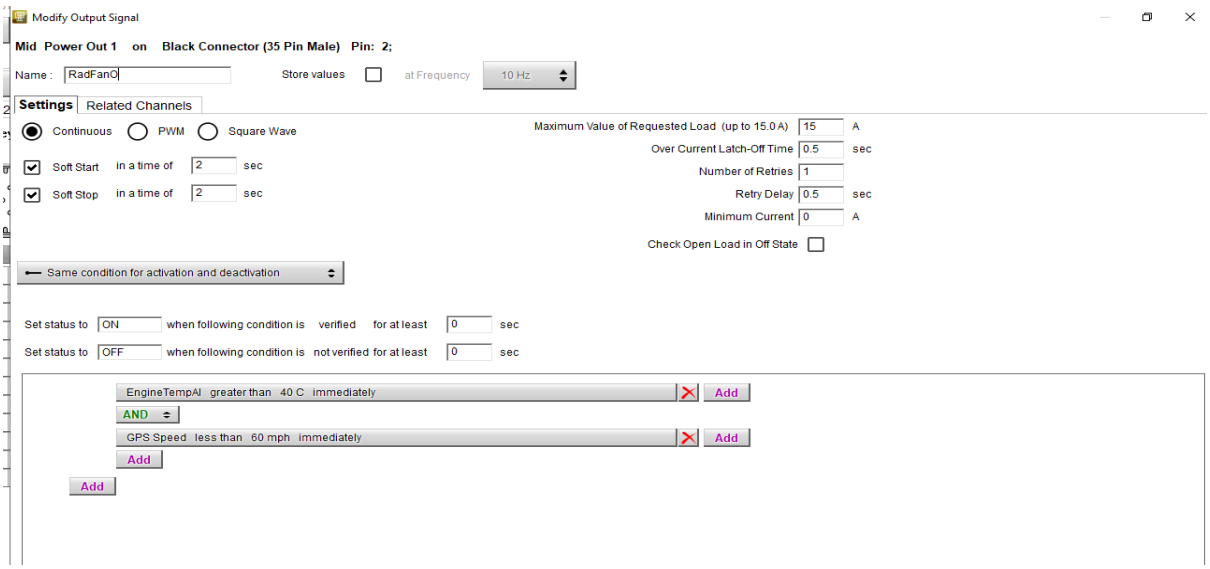
All fans are inductive loads and the speed of turn on and off is not critical , the inrush and back emf caused by sudden starting and stopping can cause component failure and for that reason it is recommended that a fan be started and stopped using the soft start and soft stop of 2 seconds or more.

Radiator FAN

First, we will look at implementing a radiator cooling fan. The fan is only needed if the temperature of the coolant exceeds 40°C. It is not needed to be on if the vehicle speed is 60 mph or more as at that speed the fan is adding to the drag of the vehicle if it isn't moving faster than the incoming air. If it is not powered, it will windmill at the incoming air speed.

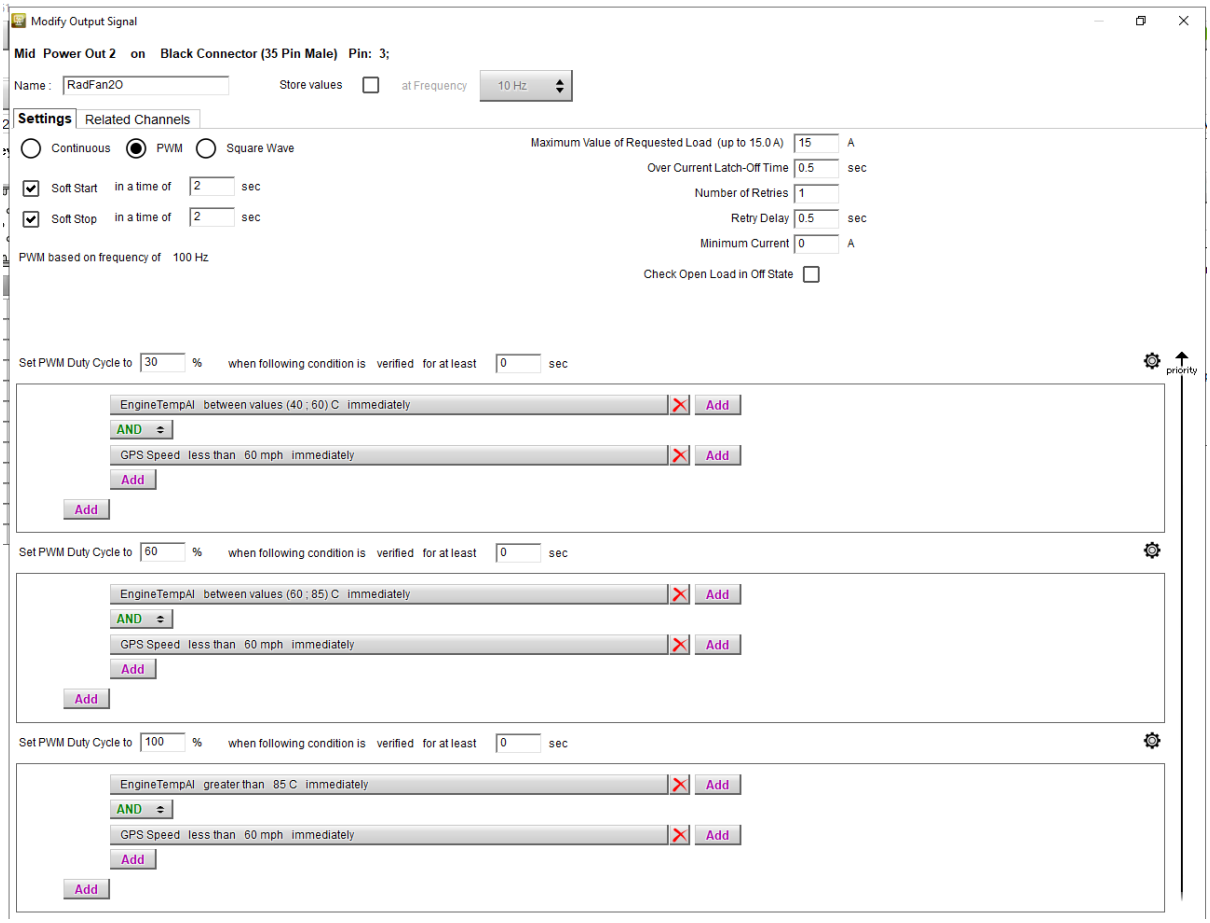
I will choose a medium power output for the fan as the current is expected to be about 15A max in continuous operation. If your fan needs more current you should use a high power output. Some cars have multiple fans and they can be powered on different outputs to come on at different temperatures.

This is the implementation of a start stop fan with those conditions.



It is also possible to have the fan controlled by a PWM (pulse with modulation) output which for example could start at 40C with 30% of power and have 60% power at 60C and go to 100% power at 85C. In all these cases the fan will lose power if the car is traveling in excess of 60mph.

Here is how to implement that scenario

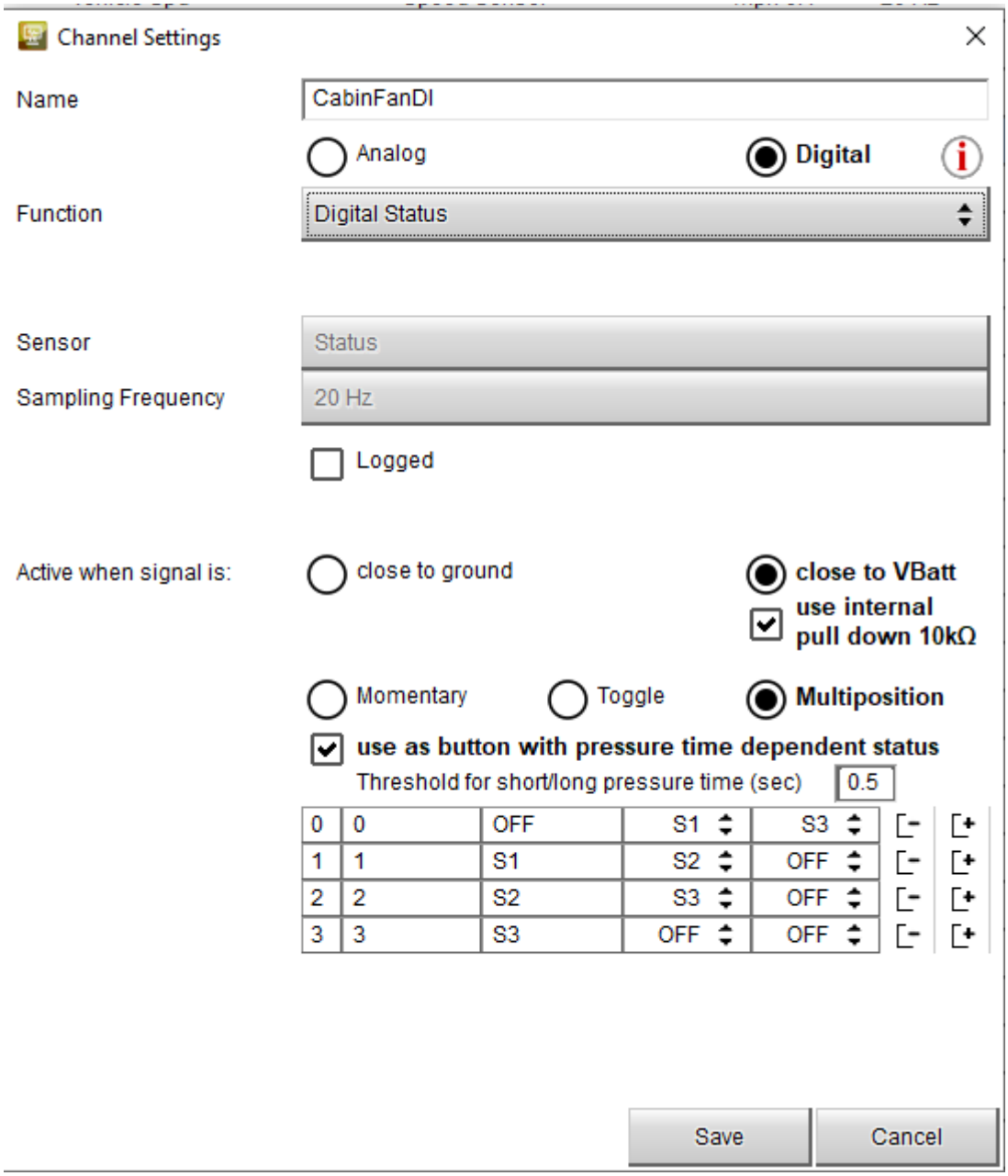


Cabin Air Circulation FAN

Another widely used fan is the cabin fan and the air directed to windscreen, face and feet.

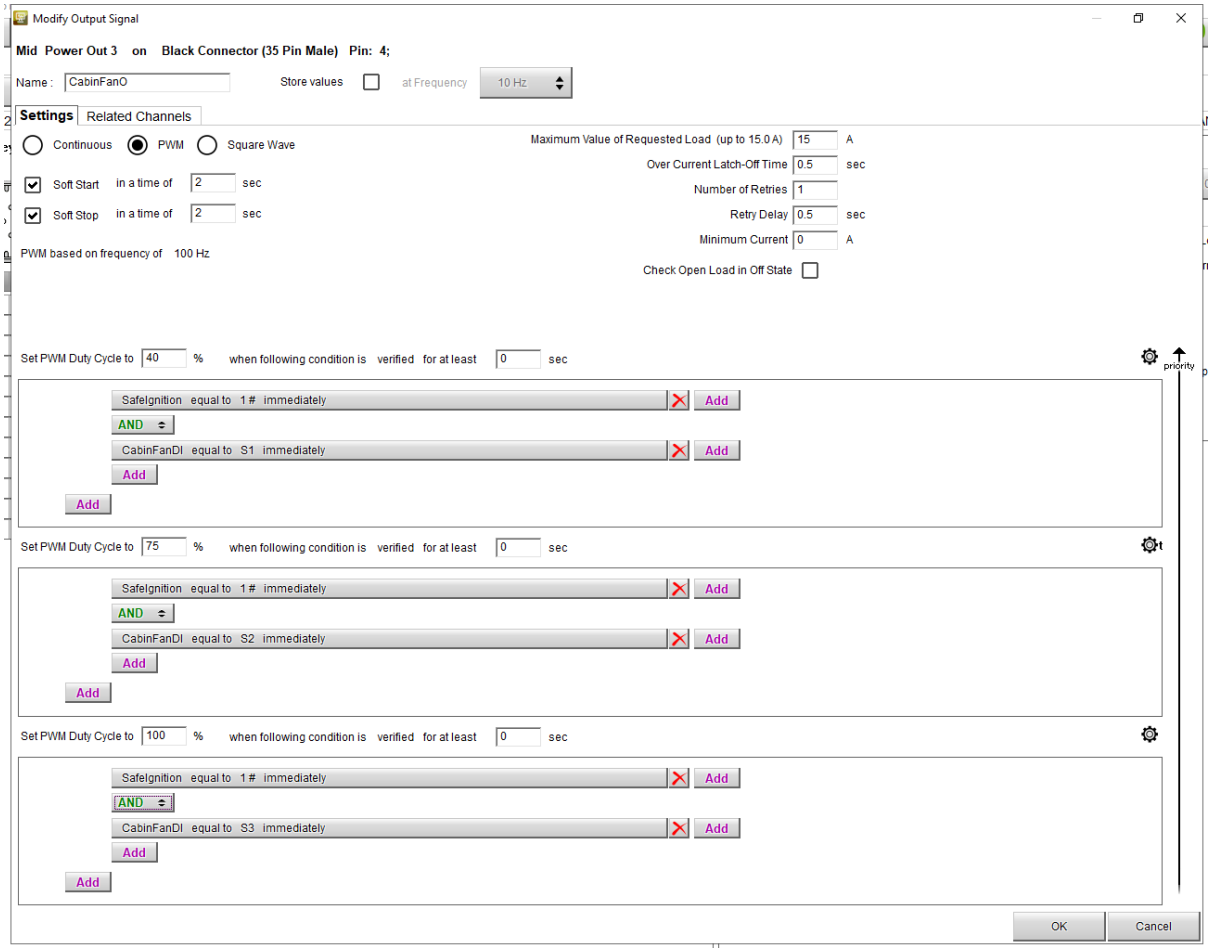
In this instance I am not concerning myself with the heating ,direction, recirculation and ducting but only how the fan is turned on for different speeds and turned off.

Here I am introducing a multi position button with a pressed time different function.



The user can go immediately to high speed from off if they press the fan button for longer than half a second. Short presses advance from 0 to 3 and back to 0.

Implementing an output for this scenario is like this;


Modify Output Signal
Mid Power Out 3 on Black Connector (35 Pin Male) Pin: 4;
Name : CabinFanO
Store values
at Frequency
10 Hz
Settings
Related Channels
Continuous
PWM
Square Wave
Soft Start in a time of 2 sec
Soft Stop in a time of 2 sec
PWM based on frequency of 100 Hz
Maximum Value of Requested Load (up to 15.0 A) 15 A
Over Current Latch-Off Time 0.5 sec
Number of Retries 1
Retry Delay 0.5 sec
Minimum Current 0 A
Check Open Load in Off State
Set PWM Duty Cycle to 40 % when following condition is verified for at least 0 sec
priority
SafeIgnition equal to 1 # immediately
AND
CabinFanDI equal to S1 immediately
Add
Set PWM Duty Cycle to 75 % when following condition is verified for at least 0 sec
SafeIgnition equal to 1 # immediately
AND
CabinFanDI equal to S2 immediately
Add
Set PWM Duty Cycle to 100 % when following condition is verified for at least 0 sec
SafeIgnition equal to 1 # immediately
AND
CabinFanDI equal to S3 immediately
Add
OK
Cancel