

ARB Pressure Control Module, 181002A, ECU specification

Overview

The ARB Pressure Control Module (PCM) is a system for controlling the ARB Pressure Regulating Valve (PRV) and an ARB Compressor, mostly for the purpose of tyre inflation and deflation. The system is composed of two parts: an electronic control unit (ECU), and a smart phone app. The ECU will control the compressor and the PRV with wired connections to achieve a target pressure, while the smart phone app will provide the user with a graphical interface to perform functions like turn the compressor on and off, set the target pressure, and display a live pressure readout. The communication between the smart phone app and the ECU is Bluetooth.

The ARB Air Suspension Control Module (ASCM) is a system for controlling vehicle air suspension pressure through the ARB Pressure Regulating Valve (PRV) and ARB Air Suspension Isolating Valves. The system is composed of two parts: an electronic control unit (ECU), and a smart phone app. Using wires connected, the ECU will activate the isolating valves to select the air suspension component and control the PRV to achieve a target pressure. While the smart phone app will provide the user with a graphical interface to perform functions like setting the target pressures, and displaying a live pressure and voltage readout. The communication between the smart phone app and the ECU is via Bluetooth® Low Energy (BLE).

Scope

This covers the design of the ARB Pressure Control Module ECU and gives specific technical requirements and implementation details.

Electrical General Specifications

This covers the electrical specifications that apply to the unit as a whole.

Item	Specification
Input battery voltage range	12VDC for normal operation
Load dump	Load dump tolerant
Cranking voltage	Crank voltage of 6VDC for 1 second with no reset to the MCU. Tablet and output load dropout is acceptable.
Reversed battery	The system is tolerant of a reversed battery for a period of 1 minute. Load activation during reversed battery is allowable.
Short Circuit	All inputs and outputs shall not be damaged by either short circuit to battery or ground with the exception being ground pins being shorted to battery.
Quiescent current	There is no requirement for a specific quiescent current.

Loose battery terminals	Momentary interruption in power supply (loose battery terminal). The module shall not reset for battery dropouts less than 50ms no more frequent than every 2 seconds.
Fusing	The unit is not fused. It relies on upstream fusing.
Battery connections	6.3mm spade terminals
Total current	<2A

Digital Outputs

Item	Specification
Output count	3
Load maximum power	5W per output
Load inductive energy	6mJ maximum It is assumed that the outputs primarily drive relays.
Inrush current handling	Not required
Fault diagnostics	Not required
Short circuit handling	Tolerant of short circuit to ground
Short to battery	This can back feed through and power the unit

Analogue Input (pressure transducer)

Item	Specification
Analogue input count	1
Analogue input range	0-5VDC
Analogue input power feed	0.5A maximum
Dedicated 5V power pin	1
Dedicated ground pin	1

Communications

Item	Specification
RF	Bluetooth V4.0 compliant, SSP profile, client/slave

Environment

Item	Specification
Temperature range	-20C to +85C
Water proofing	IP65
Conformal coating	yes
Enclosure	Custom plastic injected moulding
EMC susceptibility	Automotive transients present on power supply, inputs and

Certifications

Item	Specification
Bluetooth module	Must have type test and on board antenna
EMC	RCM, CE and FCC for sales in Australia, Europe, North and South America, Middle East, Africa

Material

Item	Specification
SoC compliant	Must comply to RoHS, ARB specification S01-106

NOTE:

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undersired operation.

FCC Caution: You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.