

Clutch Control Unit - CCU Model ZM022-3

Introduction:

The Shiftec CCU was introduced for the successful Formula 2 race series in 2009 to allow the use of a two pedal race car where clutch control is effected from paddles on the steering wheel.

Since then it has been used in many top single seater race series including IRL, World Series by Renault and Super Formula in Japan. The units have also found their way into rallycross and GT3 racing amongst other series.

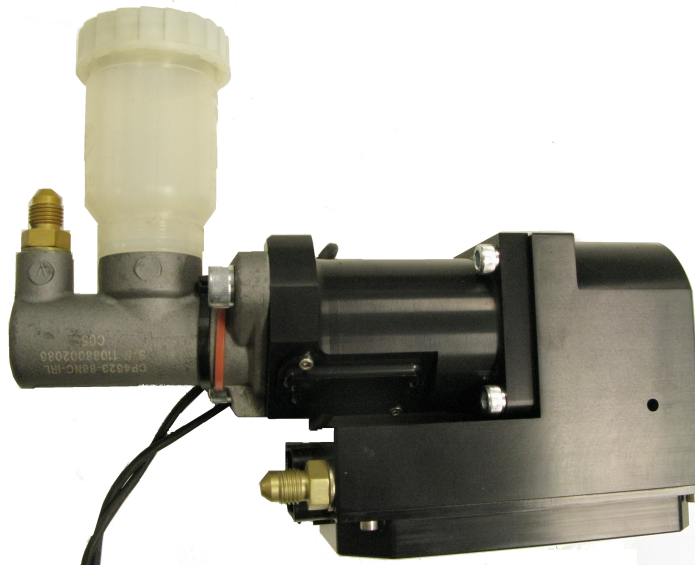
The CCU enables full closed loop fly by wire clutch follow control from one or two steering wheel mounted paddles. It is compatible with standard master and slave cylinder installations. No slave cylinder position sensor installation is required.

There is a full user defined CAN interface and sophisticated failure detection and system diagnostics aid ease of use. The protectively anodised body is CNC machined from aluminium billet and has tappings for anti vibration mounts.

The body design allows several different mounting alignments with the master cylinder being clocked around.

Initial set up at Shiftec with the customers clutch assembly allows perfect matching of master cylinders to provide the correct force and travel from the CCU. Bite point can be optimised with a clutch position to paddle demand calibration table allowing full control over the paddle map.

Advanced features such as anti stall options are possible when combined with suitable engine control.



Summary:

- Enables conversion to 2 pedal car set up
- Full clutch control from steering wheel paddles
- Low current consumption
- Low air consumption
- High accuracy of control
- Fast response
- Lightweight
- Emergency neutral facility
- Anti stall strategy options
- Easy bleeding
- Simple vehicle installation
- Dash 4 JIC air feed fitting
- Proven durability in 24hr races

System requirements:

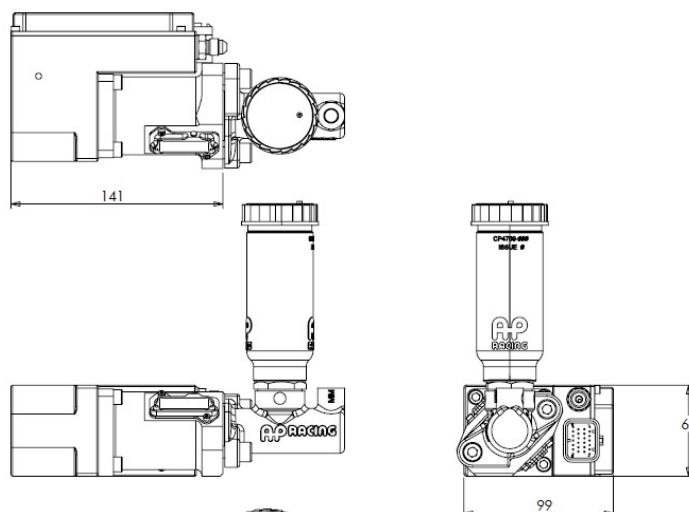
Air supply	8 - 9.5 bar
Ambient working temperature	-10 to +70 °C
Voltage range	10-16 V
Maximum current	4.5 A at 12v, 20°C
Installation notes	See Appendix 1

Technical data:

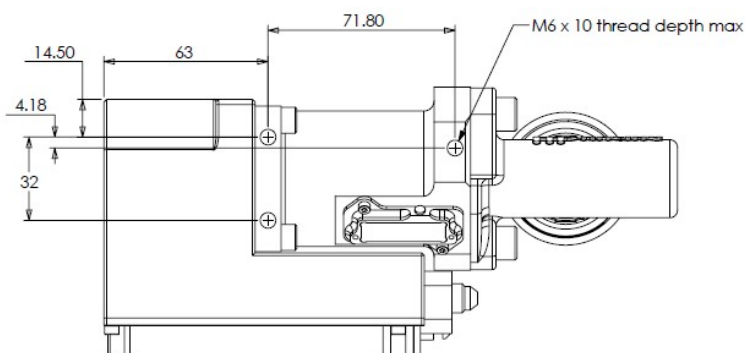
Maximum operating pressure	10 bar
Minimum operating pressure	7.5 bar dependent on clutch used
Fitting air in	Dash 4 JIC male
AV mounting holes	3 x M6

Dimensions:

Length	141 mm
Width	61 mm
Height	99 mm
Weight	1120 g (all excluding master cyl)



Mounting details:



Ordering information:

Description	Part number
Clutch Control Unit CCU	ZM022-3
Clutch Control Paddle single	ZB015-2

Appendix 1

Installation notes

- Requires clean, filtered (40 micron) dry air supply
- Install away from direct heat sources.
- Use copperslip when attaching hose fittings – not Loctite or PTFE tape.
- Use only aluminium or stainless steel hose fittings
- Keep vent hole clean of dirt and debris.
- Mount with AV isolation mounts.
- Service interval of 30hrs or 6000km.

Appendix 2

Wiring details

Connector fitted on CCU 26 way TE Superseal
 Connector required for car loom TE Superseal p/n 3-1437290-7

Pin No.	Function	Destination	Notes
1	Emergency neutral +	NC	
2	Emergency neutral -	NC	
3	A4	steering wheel paddle 1	
4	A3	steering wheel paddle 2	
5	A6	NC	
6		NC	
7		NC	
8	CAN lo	CAN bus lo	
9	CAN hi	CAN bus hi	
10	A2	CCU external sensor 2	DTM on external wires - 6 pin
11	A1	CCU external sensor 1	DTM on external wires - 6 pin
12	Relay	NC	Option for compressor switching
13		NC	
14	Serial Rx	CCU coms plug Rx	
15	Serial Tx	CCU coms plug Tx	
16	A5 -ve	NC	
17	A6 -ve	NC	
18	GND	CCU coms plug 0v	
19	AN +5V	CCU external sensor 1 & 2	DTM on external wires - 6 pin
20	AN 0V ref	CCU external sensor 1 & 2	DTM on external wires - 6 pin
21	GP out	NC	
22	A5	NC	
23	Spd 2	NC	
24	Spd 1	NC	
25	Power GND	Main power battery -ve	
26	Power 12v	Main power switched battery +-ve	

Note:

Paddle demand can be supplied over CAN