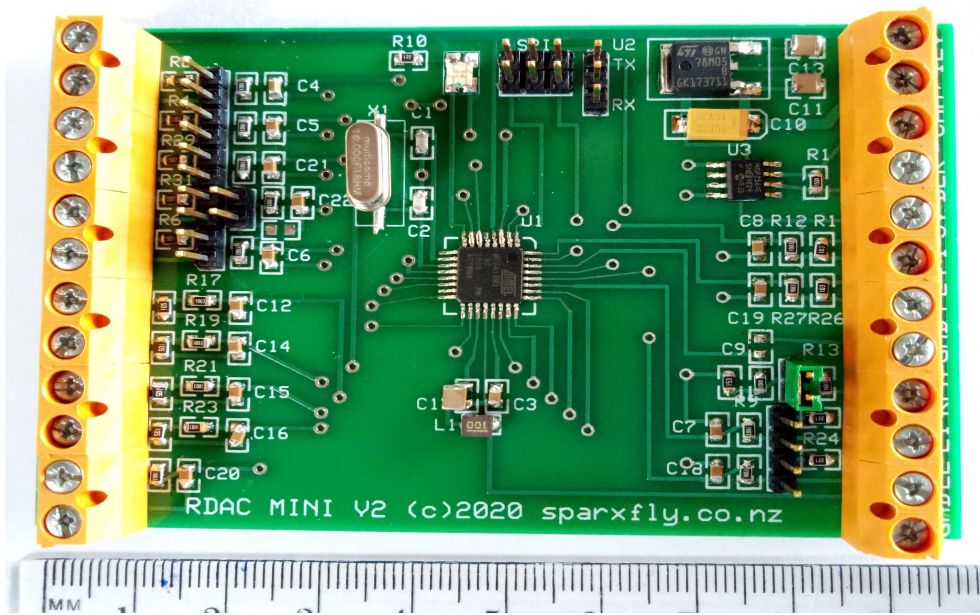


RDAC MINI V2



The RDAC Mini is a minimum configuration RDAC for use with MGL instruments, particularly as a companion to the the **Vega** and **Blaze** singles, **Xtreme EFIS/EMS**, **iEFIS Lite** and iBOX based **iEFIS** systems. It emulates a standard MGL RDAC but with some limitations on inputs and input resolution.

It is intended for 2-cylinder 2-stroke water-cooled engines (eg Rotax 582, etc) and 4-cylinder 4-stroke engine (eg Rotax 912UL, etc).

The design, size and terminations are intended to simplify installation. No need for soldering, terminal strips, bus terminations- just a screwdriver to connect to senders and an EFIS.

Inputs/Outputs/Options

Name	Input type	Options	Maps to...in EFIS
T1	J or K thermocouple input		TC1 (also TC5 and TC9)
T2	J or K thermocouple input		TC2 (also TC6 and TC10)
X1	0-5V analog input	+5V pull-up	AUX1 (CHT1 in 912 mode)
X2	0-5V analog input	+5V pull-up	AUX2 (CHT2 in 912 mode)
OT	0-5V analog input	+5V pull-up	OIL.T
OP	0-5V analog input or 4-20mA input	+5V pull-up 100E pull-down	OIL.P
H2O	0-5V analog input	+5V pull-up	COOLANT (n/a in Xtreme) also maps to FUEL.P
AMP	0-5V analog input		CURRENT

Name	Input type	Options	Maps to...in EFIS
L1	0-5V analog input	+5Vpull-up	FUEL.L1
L2	0-5V analog input	+5Vpull-up	FUEL.L2
F1	0-5V pulse input internal +5V pull-up		FUEL.F1 turbine sender
F2	0-5V pulse input internal +5V pull-up		FUEL.F2 turbine sender also maps to RPM2
RPM	0-5V pulse input 0-40V pulse input	hi sensitivity	RPM1
CAN+/CAN-	CAN output Internal 120ohm termination		RDAC1
12V	+12V supply input		
5V	+5V output for flow senders		
BLK	GND to engine block Internally connected to GND		
GND	GND for senders Internally connected to BLK		

Dual mapping

Two infrequently used inputs are mapped to alternative channels to provide some flexibility of use.

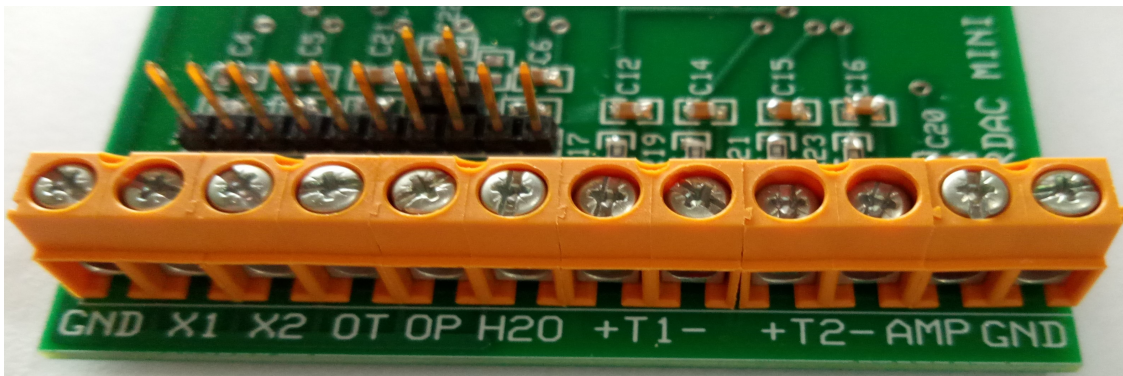
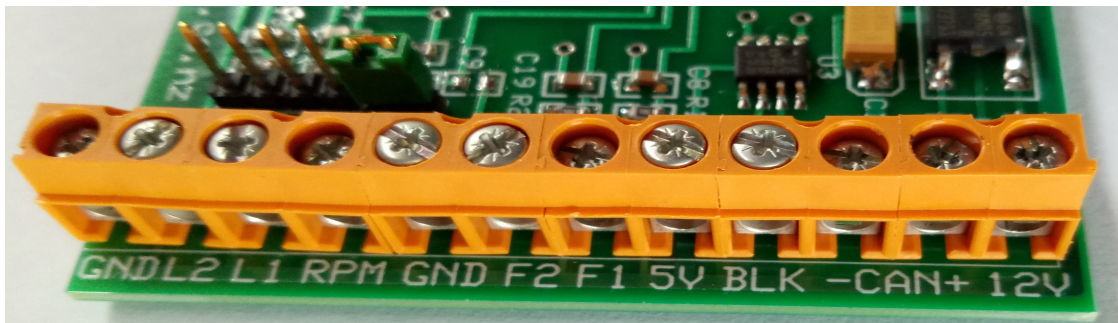
- The H2O input maps to COOLANT and FUEL.P channels. If coolant monitoring is not required it can be used as a fuel pressure input.
- The FF2 input maps to FUEL.F2 and RPM2 channels. If a second fuel flow in not required it can be used as an RPM input- eg for rotorcraft rotor rpm

Typical sender allocations and mapping

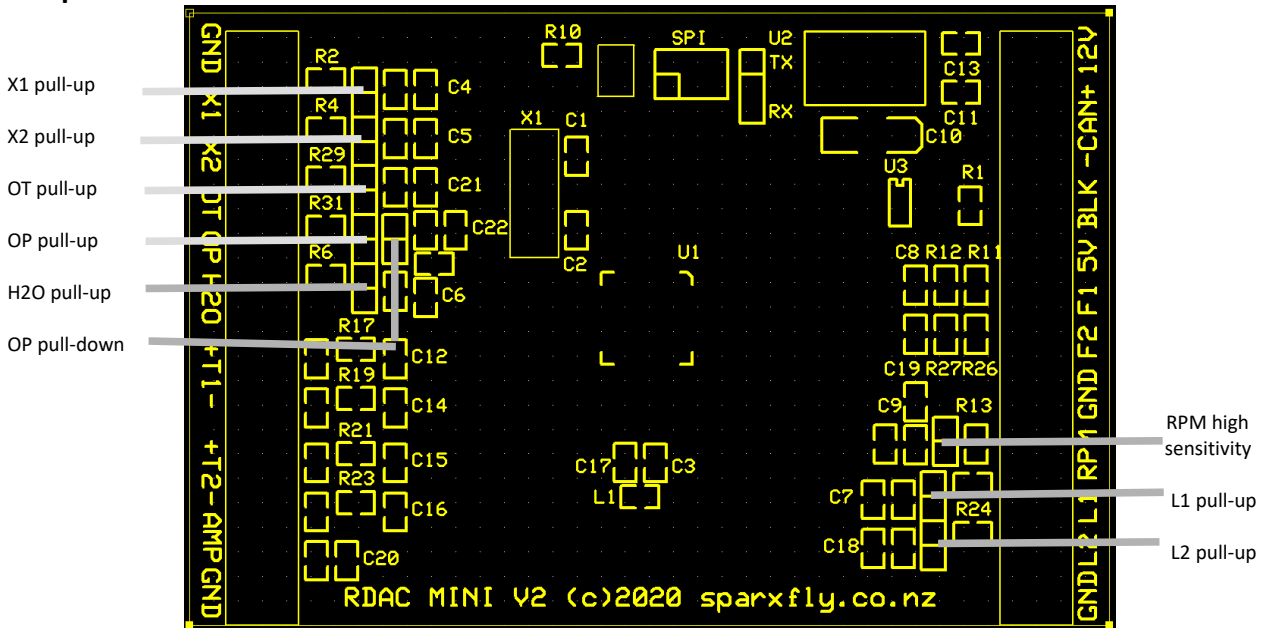
2 cylinder 2-stroke		
T1	EGT1	K thermocouple sender
T2	EGT2	K thermocouple sender
X1	CHT1	NTC or LM335 sender (water cooled only)
X2	CHT2	NTC or LM335 sender (water cooled only)
H2O	COOLANT	Not displayed on Xtreme EFIS/EMS
L1	FUEL.L1	Resistive/0-5V sender
F1	FUEL.F1	Turbine sender (not injector)
RPM	RPM1	From ignition module

4 cylinder 4-stroke		
T1	EGT1	K thermocouple sender
T2	EGT2	K thermocouple sender
X1	CHT1	NTC (912) sender
X2	CHT2	NTC (912) sender
OT	OIL.T	NTC or LM335 sender
OP	OIL.P	Resistive/0-5V/4-20mA sender
L1	FUEL.L1	Resistive/active sender
L2	FUEL.L2	Resistive/active sender (if 2 tanks)
H2O	COOLANT or FUEL.P	NTC/active sender Resistive/active sender (if coolant not needed)
F1	FUEL.FLOW1	Turbine sender (not injector)
F2	FUEL.FLOW2 or RPM2	Turbine sender (not injector) (if return flow) Rotor RPM sender
RPM	RPM1	From ignition module/P lead
AMP	CURRENT	Magnetic current sender

Connections



Jumpers



Inputs in detail

X1 & X2

- 0-5V, 10 bit (4.9mV) resolution, 0-4095 in steps of 4
- sampled and transmitted every 500ms on AUX1 / AUX2 channels
- optional 1K5 pull-up to +5V
- for resistive senders set pull-up jumper CLOSED
- for 0-5V active senders set pull-up jumper OPEN

OT

- 0-5V, 10 bit (4.9mV) resolution, 0-4095 in steps of 4
- sampled and transmitted every 500ms on OIL.T channel
- optional 1K5 pull-up to +5V
- for NTC or LM335 precision senders set pull-up jumper CLOSED
- for 0-5V active senders set pull-up jumper OPEN

OP

- 0-5V, 10 bit (4.9mV) resolution, 0-4095 in steps of 4
- sampled and transmitted every 500ms on OIL.P channel
- optional 1K5 pull-up to +5V
- optional 100E pull-down to GND
- for resistive senders set pull-up jumper CLOSED, pull-down jumper OPEN
- for 0-5V active senders set pull-up jumper OPEN, pull-down jumper OPEN
- for 4-20mA active senders pull-up jumper OPEN, pull-down jumper CLOSED

H2O (also mapped as FUEL.P)

- 0-5V, 10 bit (4.9mV) resolution, 0-4095 in steps of 4
- sampled and transmitted every 500ms on COOLANT and FUEL.P channel
- optional 1K5 pull-up to +5V

- for NTC, resistive or LM335 precision senders set pull-up jumper CLOSED
- for 0-5V active senders set pull-up jumper OPEN

T1 & T2

- J or K thermocouple inputs
- 8 bit (10mV) resolution, 0-800C in steps of 3C
- sampled and transmitted every 500ms on TC1 / TC2 channels
- cold junction temperature sampled and transmitted every 500ms

F1 & F2 (F2 also mapped as RPM2)

- 0-5V pulse input, internal 10K pull-up to +5V
- +5V output and ground available for powering senders
- accumulated and transmitted every 4s on FUEL.F1 and FUEL.F2 channels
- F2 also accumulated over immediate past second in 5x200ms counters and transmitted every 200ms on RPM2 channel as revs/minute in steps of 60

RPM

- 0-40V or 0-5V pulse input
- accumulated over immediate past second in 5x200ms counters and transmitted every 200ms on RPM1 channel as revs/minute in steps of 60
- for low level senders (eg magnetic, Hall effect, digital, optical) set high sensitivity jumper CLOSED

L1 & L2

- 0-5V, 10 bit (4.9mV) resolution, 0-4095 in steps of 4
- sampled and transmitted every 500ms on FUEL.L1 / FUEL.L2 channels
- optional 220E pull-up to +5V
- for resistive senders set pull-up jumper CLOSED
- for 0-5V active senders set pull-up jumper OPEN

AMP

- 0-5V, 10 bit (4.9mV) resolution, 0-4095 in steps of 4
- sampled and transmitted every 200ms on AMP channel

Limitations

- Hard coded as RDAC 1. Not intended for multiple RDAC installations.
- Internal CAN bus termination. It must be installed at the end of a CAN bus.
- No support for fuel injectors. Turbine flow senders only.
- Analog inputs have ¼ resolution of standard MGL RDACs.
- Thermocouple inputs range and resolution limited to 800C in 3C steps.
- RPM resolution limited to 60rpm steps.

LED status indications

- GREEN LED 1Hz flash, RED LED 4s flash- OK

Specifications

- **Physical**
 - 120x70mm plastic case with tabs for surface mounting
- **Environmental**
 - -40C to +85C absolute max
 - 0C to 40C recommended
 - protect from radiated heat (exhaust, etc) and all fluids
- **Electrical**
 - 7.5V to 35V
 - 60mA
- **CAN bus**
 - Emulates RDAC1 MGL protocol
 - Fixed internal 120 ohm termination
- **Thermocouple inputs**
 - 8 bit (5C) resolution
 - Suitable for J or K type thermocouples
- **RPM input**
 - 0-5V (high sensitivity) or 0-40V pulse input
- **0-5V analog inputs**
 - 10 bit (2.5mV) resolution
 - Jumper selectable pull-ups to +5V (1K5; 220 ohm for L1,L2)
 - Suitable for 0-5V active or 200 ohm resistive senders
- **4-20mA input**
 - Jumper selectable 100 ohm pull-down
- **Fuel flow inputs**
 - 0-5V pulse input, internal pull-up

Notes

- For detailed installation information, particularly regarding sender choice, connections and configuration, refer to the MGL RDAC-XF or XG manuals. The RDAC Mini is similar, just with reduced input resources and resolution.

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