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KSM720 series

Micro-processor based Key-start Module

The KSM720 series provide manual start and fault protection in a wide range of engine applications. They are housed in custom designed 72mmsq DIN standard modules that can be easily mounted into almost any switch box or control panel. Dedicated fault channels are provided for Low Oil Pressure (LOP) and Cooling Fault (TEMP) and Overspeed (OS). An auxiliary channel (AUX) is user programmable and has a slide-in label. The fuel control output provides engine shutdown and alarm functions, via an external relay. KSM720H shown opposite >

Operation

Turn the key from OFF (**O**) to RUN (**I**) to power the module, energise the fuel solenoid and start the Protection Delay timer. Turning the key from RUN to START (**II**) energises the start solenoid to crank the engine and activates the Excitation output. As soon as the engine 'fires', release the key to the RUN position (Crank-Cut). Both the Protection Delay and Excitation Timers are now running. If the engine does not 'fire' after 10 sec's cranking, return the key to the OFF position and allow the engine to rest for 10 sec's before attempting a re-start. If the engine is not running after two re-starts, return the key to the OFF position and consult the engine manufacturer's handbook.

Features

The Fault channels are normally enabled at power on or when the protection delay has elapsed. This delay allows the engine parameters to stabilise. Please refer to the *Customer Specific Programming* label on the side of the controller. A typical example of this (CCL001) is shown below .

If the label is un-readable or missing, please email the unit Serial Number for assistance.

The **Low Oil Pressure Safety Circuit** inhibits cranking without a low oil pressure input.

Both the **Protection Delay** and **Excitation Timer** are held at reset while the Keyswitch is in position **II** (cranking) so that the timers effectively run from when the engine fires, that is when the key is returned to the RUN position. The top LED flashes green to indicate the unit is powered and turns full on when the Protection delay has elapsed.

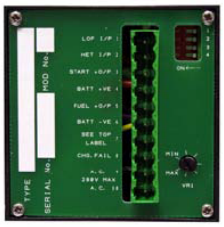
The **Excitation** output is to excite the Charging Alternator. It is enabled on first crank and times out from Crank-Cut.

First-up interlock ensures that only the first shutdown fault will be displayed.

The **Slide-in Label** allows last minute changes to the wording of the auxiliary channel and could be hand written on-site, if required.

Fuel, Starter and Aux outputs have protected drivers. Term.7 **Aux Input / Aux Output** can be used as an Input, Output or as a bi-directional I/O line with an EXM720 Expansion Module to add up to Six additional fault channels.

Rear Controls



Rear view with connector removed

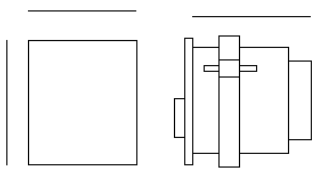
Switches S1 - S4 allow in-field programming without the need for specialist tools. The single turn potentiometer **VR1** is typically used for the Pre-Heat timing option but can also be used in other applications. Please refer to side label.

CUSTOMER SPECIFIC PROGRAMMING - CCL001

Ch	Function	Select	Prot' Delay	Input Rev'	Shut-Down	LED Colour
1	Protection Delay	---	---	---	---	Green
2	Charge Fail	---	---	---	No	Red
3	Low Oil Press.	---	Yes	S1 on	Yes	Red
4	Cooling Fault	---	Yes	S2 on	Yes	Red
5	Auxiliary	---	S3 on	---	Yes	Red
6	Over-Crank	---	---	---	Yes	Red
6	57Hz Overspeed 68Hz Overspeed	S4 off S4 on	---	---	Yes	Red

Input Response = 100mS	Protection Delay = 15 s	Over-Crank = 12 s
OS Response = 16 cycles	VR1 not used	Excitation = 10 s

Dimensions

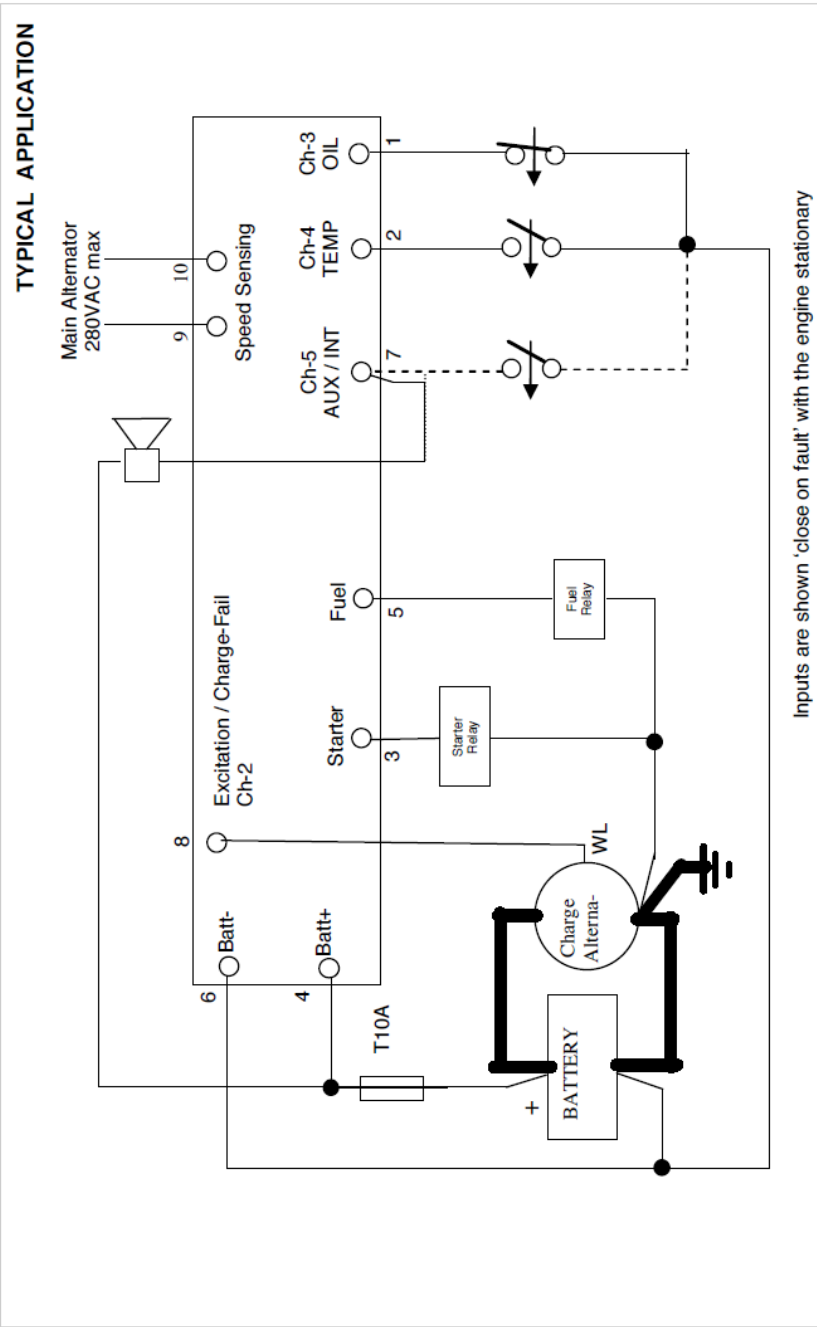


View with Key removed

Front Face = 72mm sq
Panel cut-out = 68mm sq
Depth behind panel = 90mm

Supplied complete with mounting sleeve, connector and two keys.

TYPICAL APPLICATION



Term.7 Aux / INT
Channel-5 can be configured as an Input, Output or both.
As an Input it can be immediate or subject to Protection Delay.
As an Output it could be Alarm, Preheat, Pulse, Load-Enable, etc
As a Bi-Directional I/O line it can link to an EXM720 Expansion Module to provide up to six additional fault channels.

Build Options

KSM720 : Standard Build
KSM720H : as above + Hours Counter
KSM720_B : key with protective 'Boot'

Customer specific software is available to order

SPECIFICATION			
Nominal Supply	9V to 30Vdc	Speed Sense	40VAC min 280VAC max (390V peak)
Maximum Supply	36Vdc	Burden = 50mA at 12Vdc	
Minimum Supply	<8Vdc	Ambient Temperature	-20°C to +55°C Operating
			-40°C to +70°C Storage
Input response	100 ms (or as specified)	Excitation time-out	10 s (or as specified)
Over Crank time-out	12 s (or as specified)	Protection Delay	15 s (or as specified)
FUEL + Output	700mA Source, current limited to 1.1A to drive an external relay.		
START + Output	700mA Source, current limited to 1.1A to drive an external relay.		
Term.7 - Output	700mA Sink, current limited to 1.1A to drive an external relay.		