

MC-6K OPERATING MANUAL

The MC-6K engine management system can monitor up to 6 parameters commonly found on internal combustion engines. This unit has been designed for industrial use and can be used for both stationary and mobile equipment. An occurring failure is memorized and is indicated by an LED for quick diagnoses. The MC-6K is preprogrammed at the factory to the most commonly used parameters which can be easily changed by LOFA Industries, Inc. or the customer by making soldered jumpers on the back side of each unit. The MC-6K installs easily and quickly into standard 2-1/16" panel openings and requires minimal wiring.

All inputs are controlled via ground with the engine control mode being either "Energized To Run" (ETR) or "Energized To Stop" (ETS). Turning the key to run position starts the automatic self test which is indicated by all LEDs blinking 3 times. After the self test the MC-6K's LEDs will then indicate all switched contacts (normally closed). Activating the system is accomplished by turning the key to start position. After 8 seconds from initial start the MC-6K will begin to monitor all installed parameters (IN-1, IN-2, IN-3, IN-4, IN-5 & GEN). This shutdown delay eliminates the need for pushing an override switch commonly required during start-up. During normal engine operation the green LED will glow indicating that everything is in good working order. Once a switch has been activated via a ground contact the MC-6K memorizes the failure and shuts down the engine or will indicate a warning light depending on how the unit is programmed. In addition to the LED the MC-6K has a output called "SIG" which allows the customer to install an audible alarm or flasher light for extra failure indication. During shutdown or warning mode the "OFF/STOP" button can be pushed once to turn off audible alarm out-put. Pressing the "OFF/STOP" again will erase memorized signal. During normal operation the "OFF/STOP" button can be pushed once at any time to shut down the engine.

INSTALLATION

-1- Before installing the MC-6K into 2-1/16" panel opening make sure your engine is equipped with a shutdown solenoid and has correct switches i.e. "Normally Open" / "Normally Closed" contacts. The MC-6K is preprogrammed from the factory with the following configuration:

- Energized to run solenoid
- Normally Closed Oil Pressure Switch
- Normally Open Temperature Switch
- Normally Open Auxiliary Switch
- Normally Open V-belt Breakage Switch
- Normally Open Air Filter Contamination
- Normally Closed Battery Charge

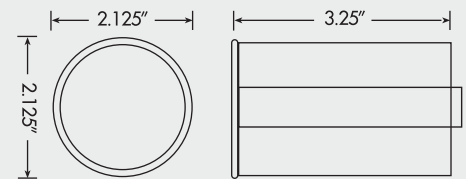
Should your engine specification not meet the above criteria you will need to reprogram the MC-6K accordingly (see programming the MC-6K).

-2- The maximum allowable amperage draw on the MC-6K is 6 AMPS. Applications requiring more than 6 AMPS should use a relay in combination with the MC-6K. Please contact the solenoid manufacturer if you are unsure on the exact amperage draw of your solenoid. Applications using a three wire shutdown solenoid must install the high amperage pull lead directly to the starter motor. Note: Applications using the three wire shutdown system under excessive vibration may experience unintentional shutdown due to the relay on the MC-6K becoming briefly unlatched. When installing the MC-6K in an excessive vibration condition please use fine tuned isolation mounts to take out the shock.



MC-6K

DIMENSIONS



Some of the programmable features of the MC-6K include:

- Auxiliary
- Operating temperature (e.g. air, water)
- Oil pressure
- V-belt, pump, etc.
- Air filter, oil temperature, hydraulic oil, etc.
- Charging battery

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-3- LOFA Industries recommends using 14 AWG wire for wire lengths up to 4 feet for the Bat + (15), Ground (KI.31), Starter (KI.50) and Solenoid (MAG) terminals. All other wires on the unit can be 16 AWG wire. Supplied with each MC-6K are two 6 position quick connect housings with terminals. The MC-6K is wire fuse protected (10 AMP) however it is recommend that a 8 AMP fuse is used for the entire system.

-4- When selecting a ignition switch make sure that Battery + (15) terminal stays closed during start operation. If the MC-6K loses battery + current during start-up the engine will shutdown.

-5- Operating temperature on the MC-6K is -22°F to 185°F. Avoid installing the unit in areas which accumulates excessive heat.

PROGRAMMING THE MC-6K

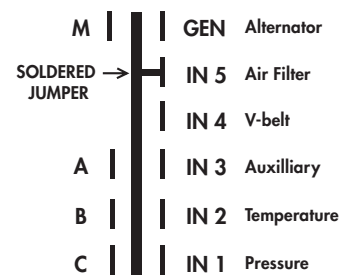
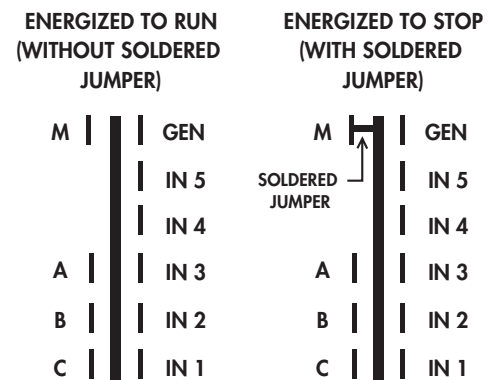
The MC-6K was designed to be extremely versatile and can be programmed by soldering jumpers on the circuit board located on the back side of each unit. The MC-6K enables the customer to change: (1) engine control mode (ETR or ETS), (2) Shutdown or warning only on all 6 LEDs and (3) a combinations of 8 switch modes "Normally Open" or "Normally Closed".

-1- The shutdown mode on the MC-6K can be programmed "Energized To Run" (ETR) or "Energized To Stop" (ETS). Changing the shutdown mode is accomplished by soldering a small jumper from position (M) to the jumper bar. Factory setting is "Energized To Run"

When the MC-6K is programmed for "ETR" and if the engine does not start within the first 12 seconds the shutdown solenoid will deactivate in order to save electrical current. This optimizes the start capability even at low battery condition.

-2 The MC-6K can also be programmed to indicate a failure by an LED only (without shutdown). A good example of a failure which does not require engine shutdown is air filter contamination. Depending on how the unit was preprogrammed at the factory one can solder a jumper from IN 5 to the jumper bar to change air filter contamination from engine shutdown to warning only. This procedure can be done on all 6 LEDs. Usually the MC-6K is preprogrammed at the factory to shut down the engine for all 6 LEDs however test your system before soldering any jumpers.

When soldering jumpers make sure that the solder does not run into other contacts. After you have programmed your system you can test the system by touching the switch wire to ground. This simulates a failure and, depending on how the unit is programmed, will shut the engine down or will indicate failure LED only. When ordering the MC-6K indicate how the unit should be programmed and LOFA Industries will programming the unit free of charge.

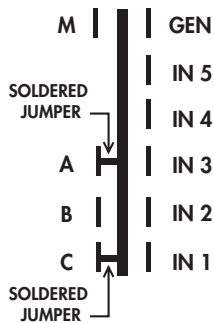


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-3- The MC-6K can be programmed to use 8 combinations of "Normally Open" and "Normally Closed" switches. Refer to the following jumper guide for all 8 possibilities. Factory Setting is position #1.

	1	2	3	4	5	6	7	8
JUMPER A	NONE	JUMPER	NONE	JUMPER	NONE	JUMPER	NONE	JUMPER
JUMPER B	NONE	NONE	JUMPER	JUMPER	NONE	NONE	JUMPER	JUMPER
JUMPER C	NONE	NONE	NONE	NONE	JUMPER	JUMPER	JUMPER	JUMPER
IN 1 PRESSURE	NC	NO	NO	NO	NO	NO	NC	NC
IN 2 TEMP	NO	NO	NC	NC	NC	NC	NO	NO
IN 3 AUX	NO	NO	NO	NC	NC	NC	NC	NC
IN 4 V-BELT	NO	NO	NO	NO	NC	NC	NC	NO
IN 5 AIR FILTER	NO	NO	NO	NO	NO	NC	NC	NC
GEN BAT. CHARGE	NC	NC	NC	NC	NC	NC	NC	NC

NC= NORMALLY CLOSED CONTACTS NO= NORMALLY OPEN CONTACTS



EXAMPLE OF #6

Making a solder jumper on "A" and "C" to the jumper bar changes the switch contacts to the following:

- 1- Oil pressure "Normally Open"
- 2- Temperature "Normally Closed"
- 3- Auxiliary "Normally Closed"
- 4- V-belt "Normally Closed"
- 5- Air filter "Normally Closed"
- 6- Alternator "Normally Closed"

