

# LOAD CONTROL MODULE IME-LCM6



## Operation Manual (Revision 1.0)

**Description**

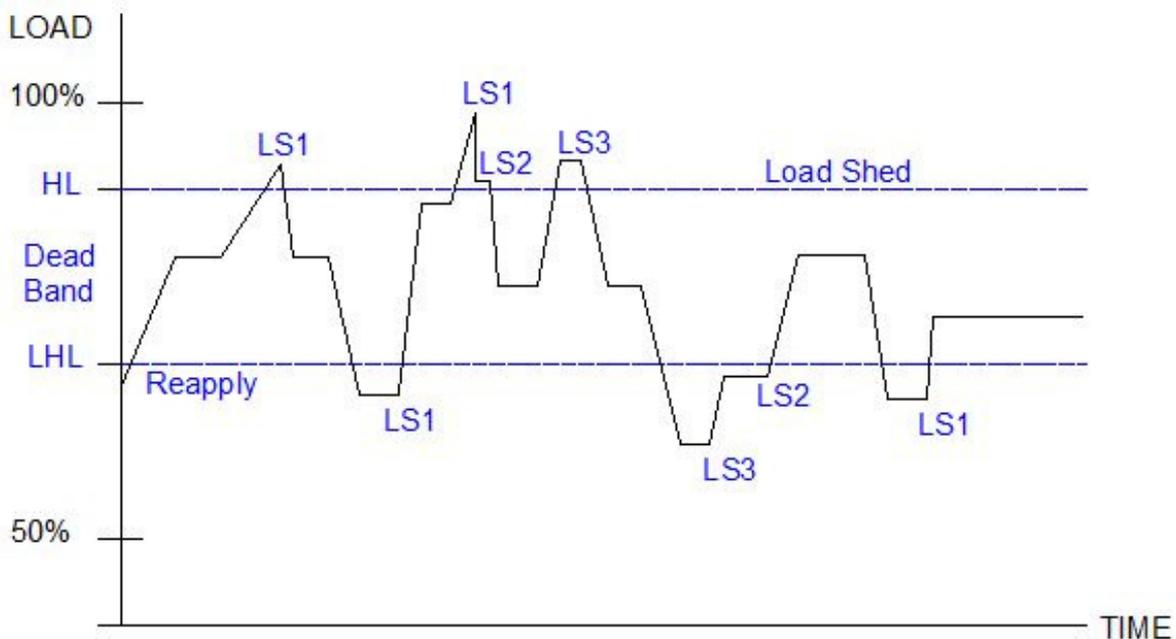
The IMED Load control Module (LCM6) monitors electrical system load and turns consumers on/ off as required to prevent or minimise risk of overload. There are six load control outputs and two alarm/aux control outputs.

With stand alone generators, Island power systems and ships this load control system can maintain a better, more even average load reducing generator issues like glazing and premature smoking etc. In some cases smaller generation plants can be utilised and sized closer to the average loading instead of peak.

The main electrical system sends load information to the IME-LCM6, this input signal is compared to user determined presets and will turn loads off in high demand situations and then reinstate these when power demand is low.

Other controls and indications are also supplied for user configuration, these are detailed below.

**Load control operation**



*Above HL (set point) shed loads and below LHL (set point) re-applies load sheds creating the hysteresis or dead band we need to prevent short cycling. The hysteresis between the two set points should be greater than the load being switched off.*

**Load control operation - cont.**

When load exceeds the upper set point (High Load) then the first load step is activated and then additional load steps will activate at 1 sec intervals until the load is below HL level at which time the unit waits. The level between HL and LHL is the dead band, no load changes are made in this zone. If the load increases above HL again the next load sheds are activated. If all four load steps are active then an alarm output is activated which can be used to alert personal and/or trip other load devices.

If load reduces below LHL then load sheds are reinstated at an interval of 5 min, unless the load raises above LHL (dead band) at which time the system waits or HL at which time load shed is activated.

Another condition if enabled is time based. If a load shed is active for more than 30min an output is activated, this can be used for a variety of things, i.e. alert personal, start additional generators.

**Input /Output allocation**

Inputs		Outputs	
0.00	HL - Load shed initiate	100.00	Load shed 1
0.01	LHL - Load shed reinstate	100.01	Load shed 2
0.02	Enable single DI control *	100.02	Load shed 3
0.03	Force shed all outputs on	100.03	Load shed 4
0.04	Force all outputs off	100.04	Load shed 5
0.05		100.05	Load shed 6
0.06		100.06	Overload alarm
0.07		100.07	Load shed >t (Note 2)
0.08			
0.09			
0.10			
0.11			
V1	Load signal (0-10V) *		
V2	Set point *		
V3	Hysteresis *		

\* if enabled or ordered with unit

- Part Number ... **xx6D 0.0, 0.1 active**
- xx6DD 0.0, 0.1, 0.2 active**
- xx6DA analogue inputs active**

## **Inputs Controls**

The electrical system load level is monitored by an analogue input or digital signals, either system can be used. these and other control and configuration inputs are detailed below

### **Analogue (V1)**

An analogue signal (0-10v) representing the electrical system load supplies the IME-LCM4 with System loading information. This is compared to set point and hysteresis values setup by the user either via the onboard LCD screen or adjustment potentiometers .

### **Digital (0.0,0.1,0.2)**

The electrical system may provide digital (potential free) signals for the setpoints, either single set point (HL) or preferably and for better results dual set points (HL and LHL) creating a defined dead band. Generally outputs could come from a KW meter, PLC or similar device in its simplest form.

- *Single set point input(HL)* - Single digital input supplying the set point only provides limited control, all load sheds are shed and reapplied in fixed periods of time, ie when the set point (HL) signal is active the load shed cycles through shedding loads, when HL is open the IME-LCM4 reapplies a load shed every 5 minutes. (this requires input 0.2 to be active)
- *Dual set point inputs (HL & LHL)* - The user supplies both setpoints creating the dead band creating the ideal load shed control

### **Force all (0.3,0.4)**

- *Force all on (0.3)*- all four load shed outputs are immediately activated, this can be used for major load shed or testing.
- *Force all off (0.4)* - All four load shed and alarm contacts are inhibited.

## **Output controls**

All output are normally open unless otherwise requested, refer to general specification below for current ratings and

### **Load sheds (100.00 - 100.05)**

The four load shed outputs have a single common and are all N.O. contacts that close to shed load, this means they can also be used for indication. Prior to ordering these can be reversed if required however then a backup system may also be required for essential items if power to the unit fails.

The load shed system is a last on - first off, stack type setup with the order of operation being fixed. Load shed 1 (100.04) being the first load to be shed, then Load shed 2, 3 and 4

*If possible load control unseen(hot water, heating) loads initially and loads that do not need resetting for obvious reasons.*

### **Overload alarm (100.06)**

This output activates if all load sheds outputs are active and load is greater than the set point HL. This output is inhibited when the force signal inputs are used

**Load shed > t (100.07)**

This output activates if a load shed output has been activated for greater than 30min. If the LCD input screen is available then time (t) can be re-configured by user. This output is inhibited when the force signal inputs are used.

**General Specifications**

CPU power supply	24 VDC
Operating voltage range	20.4 to 26.4 VDC
Power consumption	13W
Power holding time	10 ms min. 2 ms min.
Vibration resistance	Conforms to JIS C0040. 10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s <sup>2</sup> in X, Y, and Z directions for 80 minutes each. Sweep time: 8 minutes × 10 sweeps = total time of 80 minutes)
Noise immunity	Conforms to IEC 61000-4-4. 2 kV (power supply line)
Shock resistance	Conforms to JIS C0041. 147 m/s <sup>2</sup> three times each in X, Y, and Z directions
Ambient operating temperature	0 to 55°C
Ambient humidity	10% to 90% (with no condensation)

**Input specifications**

Input voltage	24VDC (+10%/-15%)
Input current	7.5mA Typical
Input impedance	3.0kOhm
Input On Voltage (min)	17.0V
Input off voltage/current	1mA max. at 5.0 VDC

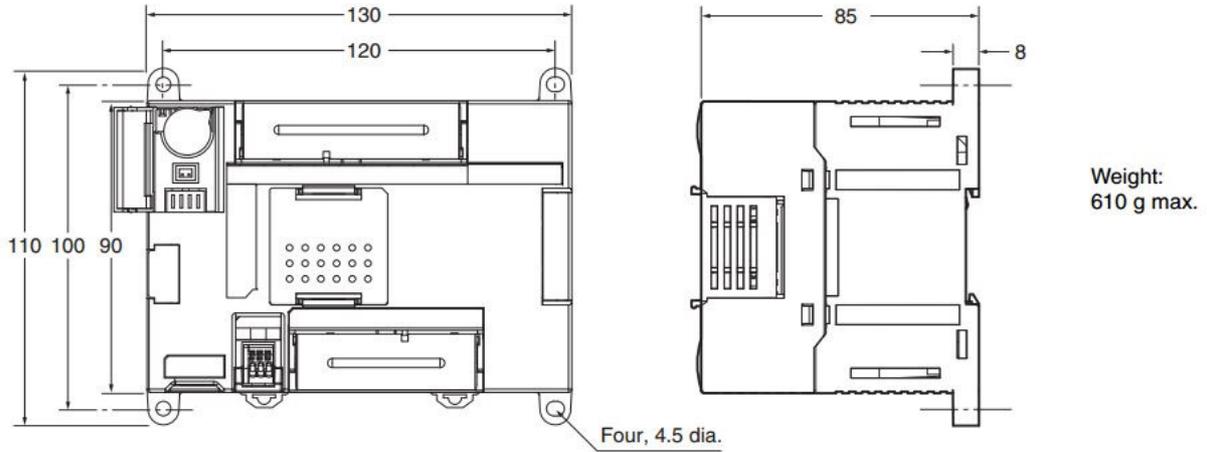
**Output Specifications**

Relay outputs (Max. Switching capacity)	2 A, 250 VAC (cosφ = 1), 2 A, 24 VDC 4 A/common)
Relay outputs (Min. Switching capacity)	5 VDC, 10 mA

**Analogue Input Specifications**

Analogue input 1	(Resolution: 1/256, Input range: 0 to 10 V).
Max input voltage	15V
External input impedance	100KΩ min

**Dimensions**



**Wiring and terminal configuration**

