

# COMPENSATOR™ Motor Load Controls

## For Machine Tool Applications

- Dull Tool Detection
- Broken Tool Detection
- Grinder Gap Elimination
- Tool Touching Workpiece
- Misplaced Workpiece Detection
- Overload Protection
- Crash Avoidance
- Wear Compensation



### COMPENSATOR™ LOAD CONTROLS ARE

- Sensitive - 10 times more sensitive since they monitor power rather than just sensing amps - Good at both high and low loads
- Fast - 20 times faster than typical watt or horsepower sensors
- Self Adjusting - No need for fine tuning

## ADJUSTABLE SET POINTS

When power reaches your selected Set Point a Relay Output is activated (tripped).

## VERSATILE

You can choose

- 1, 2 or 3 Set Point Models
- High Set Point - Trips on increasing load
- Low Set Point - Trips on decreasing load
- Compensated - Set Point is relative to baseline or idle power for machine tool applications
- Standard - Set Point is relative to zero power

## EASY SETUP WITH SET READ SWITCHES

Press the SET READ switch and the Set Point for that channel is displayed on the Load Meter.

- You know where the Set Point is
- Easily verify proper operation

## BUILT-IN START UP TIMER

Adjustable timer eliminates false trips while the motor is starting.

## FILTER OUT NUISANCE TRIPS

Adjustable On-Delay Timer - Trip won't activate until the selected delay time is exceeded.

## TRIP INHIBIT

The control can be remotely bypassed during any part of the cycle when not required.

## RESET

When the control trips, the relays latch. You can choose when to reset.

- Automatically - When the overload is gone
- Remotely - With switch, relay or programmable controller
- Manually

## LARGE CAPACITY

Up to 1000 Horsepower

## MAXIMUM SENSITIVITY

The capacity can be easily changed to match the load.

## TWO METER CHOICES

### PLM Analog Meter

- Economical, easy to read, 3 1/2" meter
- Shows trends easily
- Shows percent load

### DM-100 Digital Meter

- Shows load in Horsepower, KW or Percent
- Fast reactions for quickly changing load
- Unique peak emphasis shows peak load longer than other values to minimize dancing digits
- Easy to read 7/8" LED display

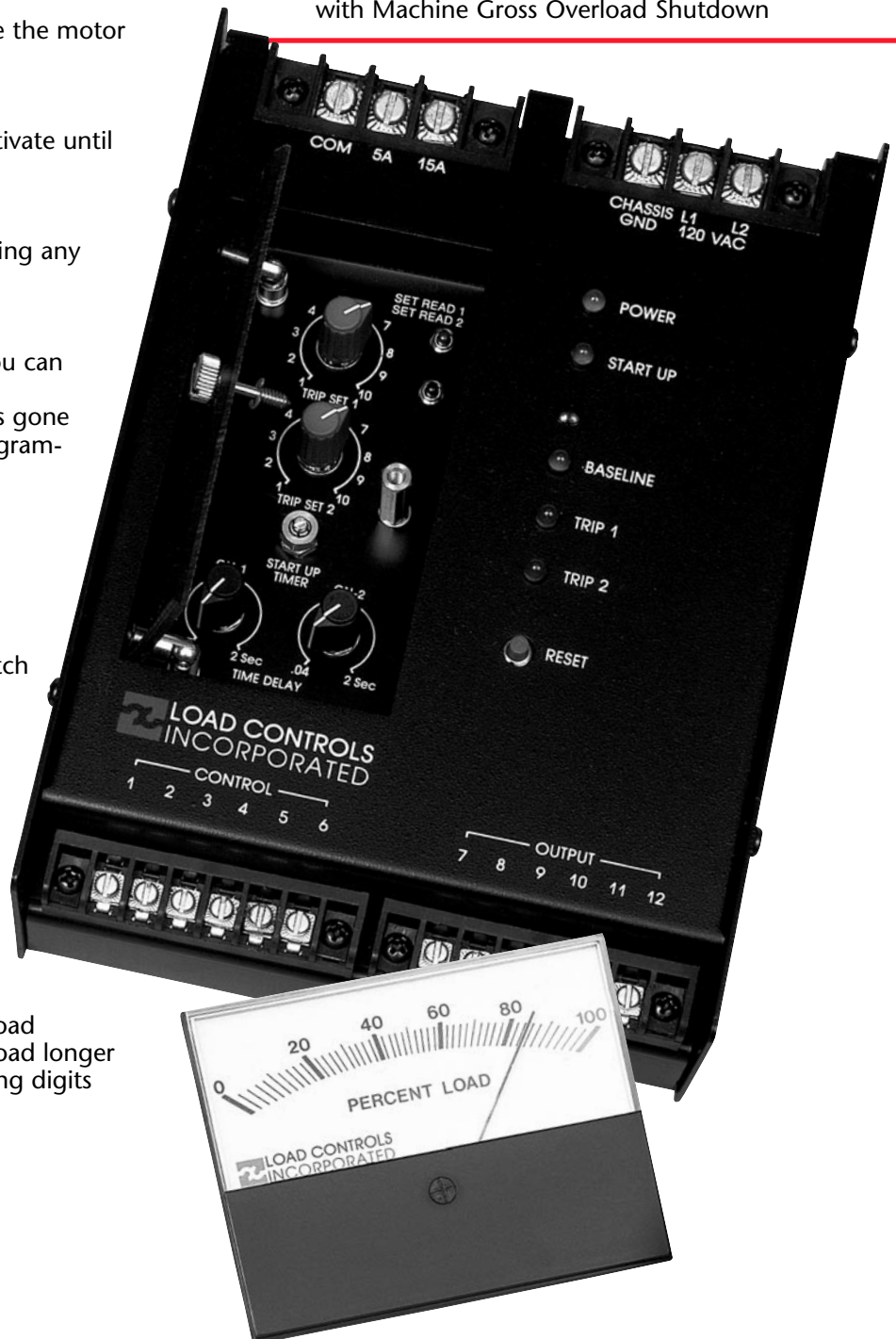
## COMPENSATOR™ MODEL NUMBERS

### PCR-1800 COMPENSATOR™

- Single Set Point above the compensating baseline
- Relay Output plus Analog Output
- Startup Timer, On Delay Timer, and Set Read switch
  - Dull Tool Detector
  - Broken Tool Detector
  - Misplaced Workpiece
  - Grinder Gap Eliminator

### PCR-1810 COMPENSATOR™

- Two Set Points, one compensating, one standard
- Two Relay Outputs plus Analog Output
- Startup Timer, two On Delay Timers, and two Set Read switches
  - Combine the applications of the PCR-1800 with Machine Gross Overload Shutdown



### PCR-1820 COMPENSATOR™

- Two Set Points. Both compensating
- Two Relay Outputs plus Analog Output
- Startup Timer, two On Delay Timers, and two Set Read switches
  - Broken Tool/Dull Tool Detection

### PCR-1830 COMPENSATOR™

- Three Set Points
  - Choose compensated, standard, high or low
- Three Relay outputs plus Analog Output
- Startup Timer, three On Delay Timers, and three Set Read switches

### Also Available

- Remote Set Point Adjustment for all models

## FOR MACHINE TOOL APPLICATIONS COMPENSATOR™ LOAD CONTROLS

The idle or "baseline" power of a machine tool drifts because of changes in:

- Temperature
- Lubricant Viscosity
- Mechanical Clearance
- Idle Speed

For accurate dull or broken tool detection and grinder gap elimination, this drift should be zeroed out.

- A limit switch or programmable controller signal tells the COMPENSATOR™ each time the machine is in the idle or baseline position.
- The COMPENSATOR™ samples this power level and retains it as a reference.
- The SET POINTS are related to this baseline.

In other words, the COMPENSATOR™ zeros out the baseline power for each cycle. The absolute trip point changes as conditions change but always remains a fixed amount away from the baseline. This means no constant fine tuning. It adjusts itself.

*(See pages 4, 9 and 10 of "Application Notes - Power Sensors and Load Controls" for technical details.)*

### FIXED FREQUENCY POWER

For fixed frequency power (50-60 Hz) the Power Sensing Transducer is built into the Load Control - No External transducer is needed.

### VARIABLE FREQUENCY POWER

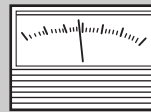
Power from variable frequency AC or DC drives are special cases since the normal waveform is distorted (or is DC). The unique Power Cell is used together with a modified Load Control for sensing variable frequency or DC. These modified controls are designated by a suffix "V".

### POWER CELL



For Variable Frequency or DC

### ANALOG OUTPUT ON ALL CONTROLS



LOAD METER

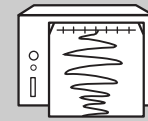


CHART RECORDER



PROGRAMMABLE CONTROLLER

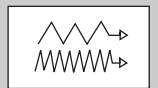
### RELAY OUTPUTS



SOUND ALARM



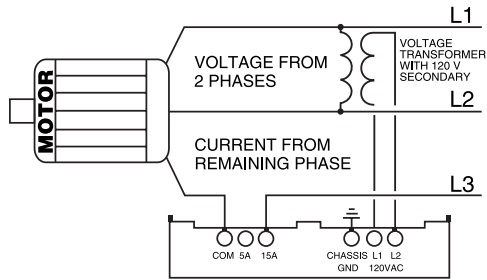
STOP PROCESS



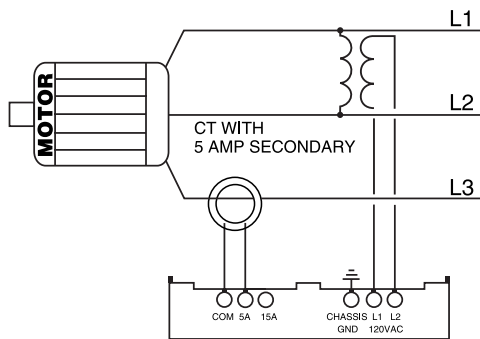
ADJUST FEED RATE

## SIMPLE HOOK UP

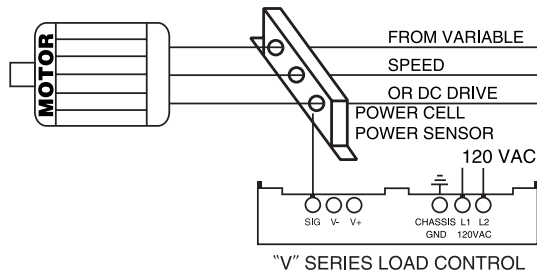
Up to 15 Amps directly through control



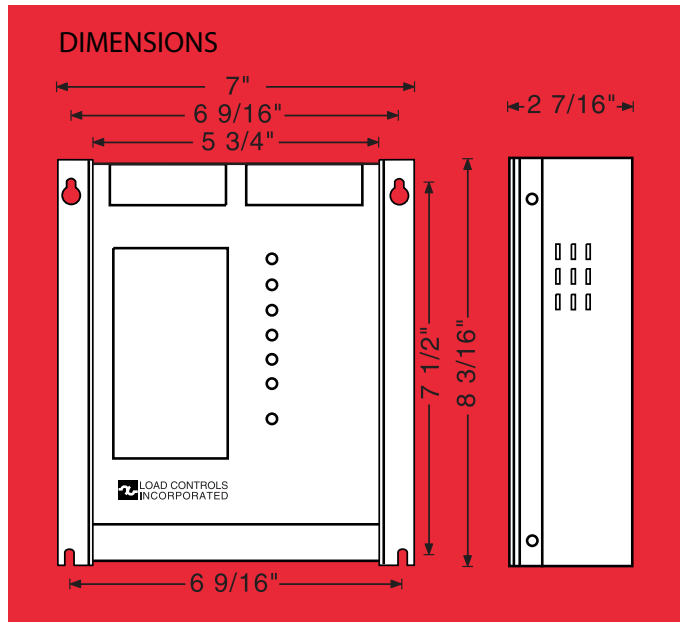
Over 15 Amps use External Current Transformer



For Variable Frequency or DC power use Power Cell Power Sensor and "V" Series Load Control



## SPECIFICATIONS



Capacity  
Up to 1000 Horsepower

Power Consumption  
35 V A, 120 V olts

Outputs

- Relay - .01 Amp to 3 Amp at 120 V olts AC, 1/20 HP
- Analog - 0-1 milliamp (0-10 V olt of 4-20 milliamp optional)

Response Time  
25 milliseconds

Temperature  
0° C - 55° C

Timers

- Start Up - (1-12 seconds) Bypasses control during start up
- On Delay - (.04-2 seconds) Relay output will not operate until delay time is exceeded

