

INSTALLATION & OPERATION

XCR-1830V LOAD CONTROL

An external 0-10 Volt DC signal is the input for these controls.

FEATURES

3 ADJUSTABLE SET POINTS

When power reaches your selected SET POINT a built-in Relay Output is activated (tripped). Relay stays tripped (latched). You choose when to reset. The characteristics of these Set Points can be changed.

ANALOG OUTPUT

Hook to the Load Meter for monitoring load, easy setup and adjustment.

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. The On Delay for Set 1 can be defeated.

RESET

The Control can be Reset

- Automatically — when the overload is gone.
- Remotely — with switch, relay or programmable controller
- Manually

TRIP INHIBIT

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

Also Available

Remote Set Point Adjustment



NEW ADDRESS

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SET POINT CHARACTERISTICS

REGULAR SET POINTS

The relays trip when a Set Point is reached. Set Points can be:

High Trip — Trips when the power goes above the Set Point

Low Trip — Trips when the power goes below the Set Point

All 3 Set Points can be Regular. Set 1 can be high or low.

COMPENSATOR™ SET POINTS

For machine tool applications such as grinder gap elimination or dull tool detection the drifts in idle or "BASELINE" power 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™ zeroes 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. Set 1 and Set 2 can be compensated.

Adjustment Ranges for Set Points

3%-50% — Expands the adjustment range to provide more sensitivity and precision at low loads (especially for COMPENSATED Set Points)

6%-100% — For General Use

On Delay — For Set 1, the Trip Delay can be removed from the circuit for maximum response speed - useful for grinder gap elimination.

CHANGING CHARACTERISTICS

The factory settings for the characteristics are marked on the Control adjacent to the Serial Number on the side. To change them, remove the cover (4 Phillips screws) and find the 6 Position DIP SWITCH.

SWITCH POSITIONS

Set 1	Set 2
COMPENSATED	Switch 2 OFF
Regular	2 ON
High Trip	3 OFF
Low Trip	3 ON
3%-50% Range	1 ON
6%-100% Range	1 OFF
Defeat On Delay	4 OFF
COMPENSATED	Switch 6 OFF
Regular	6 ON
3%-50% Range	5 & 6 ON
6%-100% Range	5 OFF

Set 3 is always Regular with 6%-100% Range.

INSTALLATION

MOUNTING

The Load Control should be mounted in a control cabinet or in a protected area. The four Phillips head screws on the Control should be removed and used for attaching the mounting brackets to the Control.

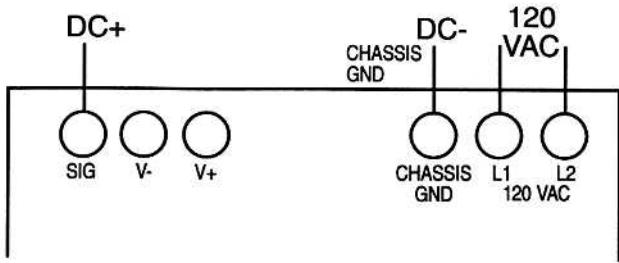
INPUT CONNECTIONS TO THE LOAD CONTROL

An external 10 Volt DC voltage provides the signal for these controls.

DC Plus to SIG Terminal
DC Common to CHASSIS GND Terminal
(No Connection on V- and V+ Terminals)

120 Volt Power

Connect to the 120VAC terminals on the Load Control. Ground the Load Control Chassis.



RELAY OUTPUTS (Terminals 7-12)

The PCR-1830 has 3 Relay Outputs

Set Point 1	Terminals 7 & 8
Set Point 2	Terminals 9 & 10
Set Point 3	Terminals 11 & 12

They can either:

- Open on Trip or Power Off
- Close on Trip or Power Off

The factory settings are marked on the Control. To Change - remove cover (4 Phillips screws) and locate the relay board.

There is a jumper for each relay.

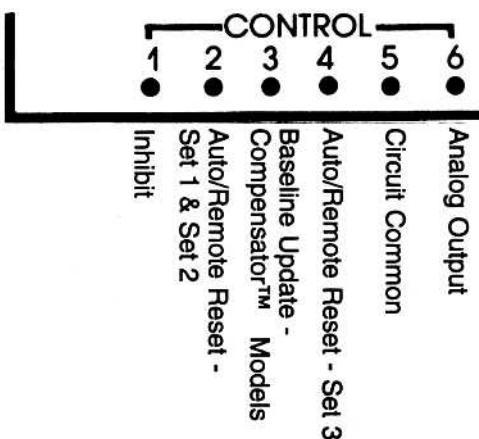
Move all 3 Jumpers • Specifications: .01 Amps to 3 Amps at 120
OOT = Open on Trip Volts AC 1/20 HP at 120
COT = Close on Trip Volts AC

HOOKING UP RESET, INHIBIT AND BASELINE

The terminals for BASELINE, RESET and INHIBIT generate a small amount of current (8-12 millamps). To activate one of these functions you just need to connect the terminal to the circuit common (Terminal 5).

The switches or relays that you use must be suitable for low current. (Gold flashed contacts, Reed Relays, Mercury Switches, Open Collectors.)

A voltage signal from a programmable controller can also be used but it must be a sink or source/sink (30 Volt max., 12 Volt min.) When in doubt, use a reed relay.



Don't put 120 volts on Terminals 1-6! It will destroy the control.

RESET

Control can be reset 3 ways:

- Manually with the Reset button on the Control.
- Remotely with a remotely located Reset button.
- Automatically by jumpering the Reset Terminal. The Control will then automatically reset itself when the trip condition goes away.

HOOKUP

Remote Reset —

Momentarily Connect Terminal 2 to Terminal 5 for Set 1 & Set 2

Momentarily Connect Terminal 4 to Terminal 5 for Set 3

Automatic Reset —

Jumper Terminal 2 to Terminal 5 for Set 1 & Set 2

Jumper Terminal 4 to Terminal 5 for Set 3

INHIBIT

The Control can be inhibited or bypassed with the INHIBIT. This lets you ignore the Control during certain parts of the machine cycle, if you desire.

HOOKUP

Terminal 1 to Terminal 5

BASELINE

A COMPENSATED Set point needs a zero reference. This is done 2 ways:

The first way is with a limit switch or programmable controller on the machine. Usually, an existing switch or controller is used as long as it is electrically compatible. The BASELINE signal should last at least 250 milliseconds but can be as long as you want. The COMPENSATOR™ remembers the last value before the BASELINE contact opens.

Secondly, the control also automatically establishes a Baseline when the Start-up timer goes off. If each machine cycle includes starting the motor, an external BASELINE is not needed.

You need a BASELINE update for each machine cycle. The green Baseline LED is on DURING the update.

HOOKUP

Momentarily connect Terminal 3 to Terminal 5.

Check the Load Meter as the Baseline LED goes out. This is the value that the COMPENSATOR™ remembers. It should be the idle load of the machine.

MANUAL BASELINE UPDATE

During machine setup it is sometimes helpful to manually update the BASELINE. Do this by momentarily jumpering Terminal 3 to Terminal 5.

ANALOG OUTPUT AND SET READ SWITCHES

Always use a Load Meter! It greatly simplifies setup, adjustment and trouble shooting.

The ANALOG OUTPUT (0-1 milliamp) proportional to the external signal is on Terminal 6 (Positive) and Terminal 5 (Common). The Percent Load Meter is connected to this output.

- The Meter shows the Motor Load.
 - When the Set Read switches are pressed, the Set Point is displayed.
- The ANALOG OUTPUT can also be used to drive a chart recorder or as an input to a computer or controller.

The output can be factory modified for a 0-10V or 4-20 milliamp output. To convert the 0-1 milliamp output in the field to 0-10 volts, use a 10K ohm 1% resistor across Terminals 5 and 6.

HOOKUP

Terminal 6 Positive

Terminal 5 Common

Use #18 AWG or larger. For lengths of 10-100 feet, used shielded cable with the shield grounded at the Control, but not at the Meter.

ADJUSTMENTS

TRIP SET AND SET READ SWITCHES

The TRIP SET knobs set the power level at which the Load Control will trip. The SET READ switches show the trip point on the Percent Load Meter. Press the SET READ switch to read the set point.

For COMPENSATING Set Points, the set point is the level **ABOVE THE BASELINE** at which the Load Control will trip. With the power on but motor not running, the SET READ switch will show the **INCREASE** in load needed to trip. With the motor running, the SET READ switch shows the combined Baseline and Setting.

This means that the total Set Point for the COMPENSATING Controls will change as the Baseline or idle power changes during the day. But, the **INCREASE** always stays the same.

STARTUP TIMER

The STARTUP TIMER bypasses the control during motor startup to avoid false trips because of current inrush. For convenience, **THE TIMING BEGINS WHEN THE MOTOR STARTS**. The STARTUP LED stays lit until the Startup period is over.

Adjust the STARTUP time with the locking pot on the Load Control. Clockwise for more time. The Startup time should be:

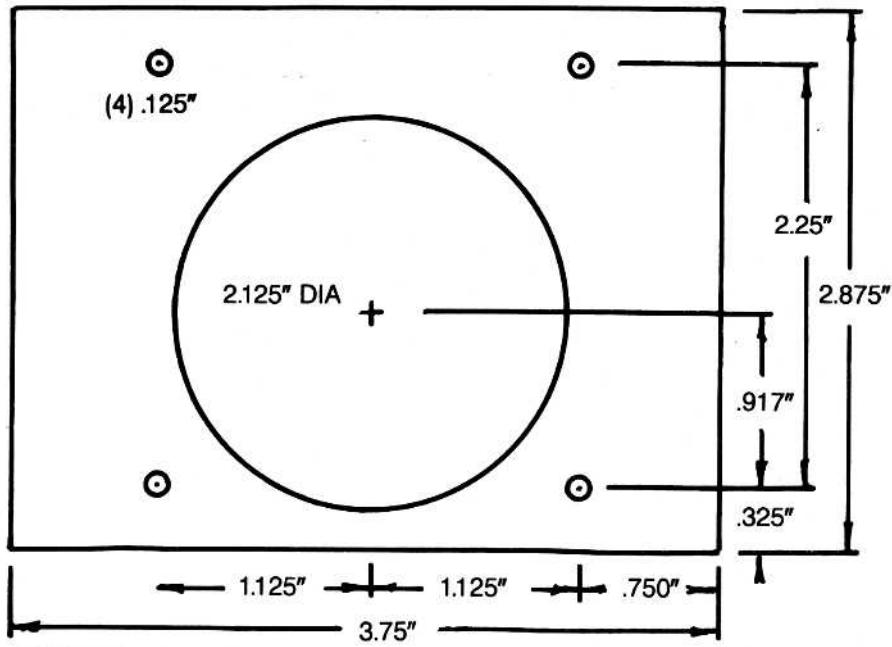
- Long enough so that the load has stabilized. The Percent Load Meter should stabilize before the STARTUP LED goes out.
- Short enough so that the machine does not start a work cycle before the LED goes out.

ON-DELAY TIMERS

To avoid nuisance trips from short overloads, ON-DELAY TIMERS bypass the Control for the selected time. The relays won't trip until the time is exceeded. If the trip condition goes away before the time is up, the timer resets to zero.

- Always start with minimum ON-DELAY (full counterclockwise). If you are getting trips where you don't want them (as the tool is entering the workpiece for example) increase the ON-DELAY time.

PLM LOAD METER MOUNTING TEMPLATE



.5" FRONT CLEARANCE REQUIRED

2" REAR CLEARANCE REQUIRED

SPECIFICATIONS FOR MOTOR LOAD CONTROLS

CAPACITY — to 1000 Horsepower

POWER CONSUMPTION — 35 VA, 120 Volts

OUTPUTS: RELAY — .01 Amp to 3 Amp at 120 Volts AC, 1/20 HP

ANALOG — 0-1 milliamp (0-10 Volt or 4-20 milliamp optional)

RESPONSE TIME — 25 milliseconds

TEMPERATURE — 0°C-55°C

TIMERS: STARTUP — 1-12 seconds: Bypasses control during startup.

ON-DELAY — .04-2 seconds: Relay output will not operate until delay time is exceeded.

