



# ENERSAVE PARKING LOT CONTROLLER 'D' SERIES USER INFORMATION

The Valid Manufacturing family of Enersave Automatic Parking Lot Controllers are designed to provide energy savings in parking lot applications. The Enersave controller is capable of controlling the load contactor(s) and circuit panel(s) based on a range of user-configurable settings for starting set points, number of set points and duration of cycle. The range of control varies from simple alternating cycling at one set point to multiple set point levels providing maximum energy savings at warmer temperatures. The configuration of the output can be easily set up for either 50/50 load share or single load requirements. The enclosure is fabricated from steel construction and protected with our powder coat paint finish; these CSA Type 3R Enersave controllers have a durable weather proof design.

As preset temperature ranges are reached, the loads will be switched on and off. The controller is programmed to energize all load contactors at the same time. As the temperature drops below successive levels, the output ON times increase proportionately. The Hand position on the HOA selector will bypass the Enersave energy feature and activate the load contactors.

The following customer programmable set points are available on the Enersave 'D' Series Controller

## **Starting Temperature Set Point**

- This is the first (highest) temperature set point that will initiate the first cycle.
- Factory preset at -10 degrees Celsius.

## **Number of Set Points**

- The controller is programmable for one to four consecutive set points, each set point will decrease the incremental time the output is enabled.
- Factory preset to 4 set points.

## **Duration of Cycle**

- This is the overall length of the operating cycle. Can be set to 20, 30, 40 or 60 minutes.
- A longer duty cycle allows the block heaters to warm the engine thoroughly as the temperature decreases.
- Factory preset to 40 minutes.

## **Supervisory Enable Signal**

- Provides interlock control from a remote location.

## **Hand-Off-Auto Selector Switch (HOA)**

**Hand** - Manually activates all contactors to the closed position.

**Off** - Removes control signal from all contactors.

**Auto** - Enables the Enersave Controller to activate contactors as per user settings.



**The Valid Manufacturing Enersave Controller is programmed to control single load or 50/50 load share requirements. Factory default settings are as follows:**

**SINGLE LOAD REQUIREMENTS (Enersave Models DA,DB,DC\*,DE\*)**  
**FACTORY DEFAULT SETTINGS (40 minute duty cycle)**

TEMPERATURE RANGE	PERCENT ENERGIZED	TIME ON
Higher than -10°C	0%	Off
-10°C to -14°C	25%	10 minutes on/30 minutes off
-15°C to -19°C	50%	20 minutes on/20 minutes off
-20°C to -24°C	75%	30 minutes on/10 minutes off
Lower than -25°C	100%	Always on

**50/50 LOAD SHARE REQUIREMENTS (Enersave Models DC\*,DD,DE\*,DF)**  
**FACTORY DEFAULT SETTINGS (40 minute duty cycle)**

TEMPERATURE RANGE	PERCENT ENERGIZED	TIME ON
Higher than -10°C	0%	Off
-10°C to -14°C	25% (12.5% per side)	5 minutes on per side/30 minutes off
-15°C to -19°C	50% (25% per side)	10 minutes on per side/20 minutes off
-20°C to -24°C	75% (37.5% per side)	15 minutes on per side/10 minutes off
Lower than -25°C	100% (50% per side)	20 minutes on per side

\* Models DC and DE can be configured as single load or 50/50 load share

Additional features of the Enersave controller include customer interface troubleshooting information, including:

Pressing the ">" key on the front of the controller will display two status line of information.

**Analog Input** - The measured analog voltage at the input to the controller. It should measure in the range of 2-10VDC. If this reading is zero, the temperature probe might be damaged.

**Remote Enabled** - This message (just below the analog input) indicates that the signal from the remote location is available. See configuration method described above. If pressing the ">" key provides no readout, then the enable signal is not available.

Also, if the temperature drops below -30°C the enersave controller will default to 'always on' in single load requirements or 100% energized in 50/50 load share and will supersede any programmed set points.

Optional equipment include: time of day clock, energization indication, remote sensing thermostat as well as other metal composites for fabrication of the enclosure.



# ENERSAVE PARKING LOT CONTROLLER 'D' SERIES TECHNICAL INFORMATION

**Inputs:**

- I1** Jumper to +24V to adjust starting temperature set point (bit 0) -5, -10, -15 or -20°C
- I2** Jumper to +24V to adjust starting temperature set point (bit 1) -5, -10, -15 or -20°C
- I3** Jumper to +24V to adjust number of set points (bit 0) 1, 2, 3 or 4
- I4** Jumper to +24V to adjust number of set points (bit 1) 1, 2, 3 or 4
- I5** Jumper to +24V to adjust overall cycle duration (bit 0) 20, 30, 40 or 60 minutes
- I6** Jumper to +24V to adjust overall cycle duration (bit 1) 20, 30, 40 or 60 minutes
- I7 & I8** Unused in this configuration
- I9** Jumper to +24V to inverse the operation of the Supervisory Enable Signal
- IA - ID** Unused in this configuration
- IE** Signal (24VDC) from Auto switch on front panel
- IF** Signal (24VDC) from interposing relay. Externally supplied (120VAC) Enable.
- IG** Analog signal from temperature probe mounted outside enclosure

The first six inputs configure the following parameters:

**Starting Temperature Set point** - the first (highest) temperature set point to initiate the first cycle

Temp	I2	I1
-5°C	0V	0V
-10°C	0V*	+24V*
-15°C	+24V	0V
-20°C	+24V	+24V

**Ex. A:** If both I1 and I2 are connected to 0V, output 1 of the controller will first turn on at -5°C.

**Ex. B:** If I1 is connected to 0V and I2 is connected to +24V, output 1 will first turn on at -15°C.

**Number of Set points** - the controller can operate with one to four subsequent set points

No.	I4	I3
1	0V	0V
2	0V	+24V
3	+24V	0V
4	+24V*	+24V*

**Ex. C:** If both I3 and I4 are connected to 0V, the controller outputs will operate around the one temperature set above in Starting Temperature Set point only.

**Ex. D:** If I3 is connected to 0V and I4 is connected to +24V, three set points will be set up. Using Ex. A above, the set points will be at -5, -10 and -15°C.

**Duration of Cycle** - the overall length of operating cycle

Time	I6	I5
20 min	0V	0V
30 min	0V	+24V
40 min	+24V*	0V*
60 min	+24V	+24V

**Ex. E:** If both I5 and I6 are connected to 0V, the controller will repeat the timing cycle every 20 minutes.

**Ex. F:** If I5 is connected to 0V and I6 is connected to +24V, the controller will repeat the timing cycle every 40 minutes.

\* denote factory settings



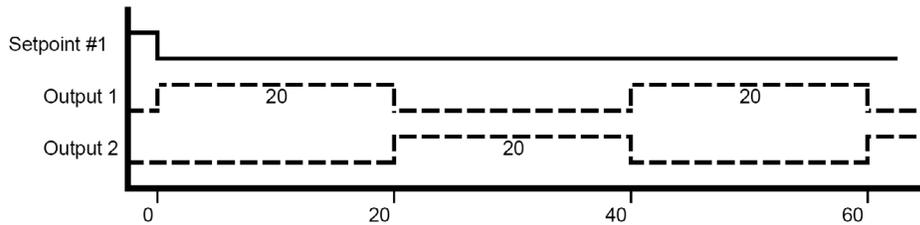
**Supervisory Enable Signal** - provides interlock control from a remote location

Mode	I9
Signal	0V*
Inverse	+24V

A 120VAC signal to relay R0 will **disable** the controller operation.  
 A 120VAC signal to relay R0 is required to **enable** the controller.

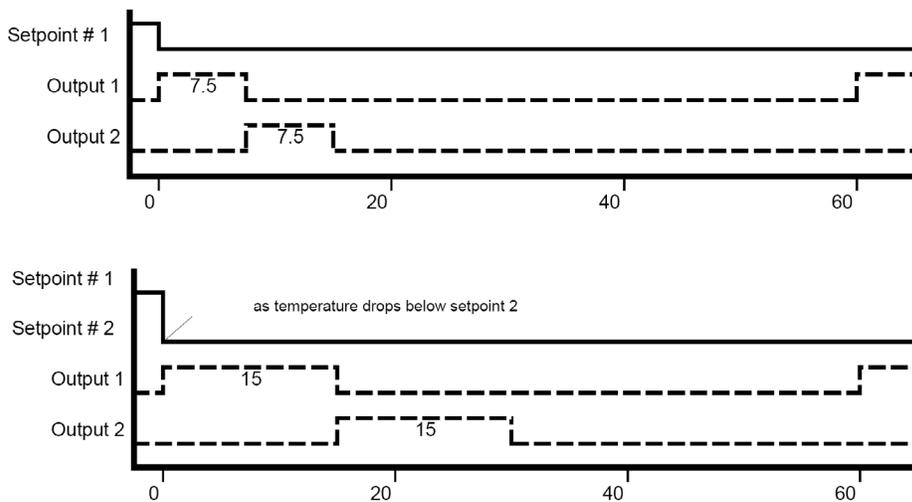
The energy saving feature of this controller is made active by selecting multiple temperature set points. If only one set point is selected, the controller will equally share timing between each zone providing half of the cycle to each output.

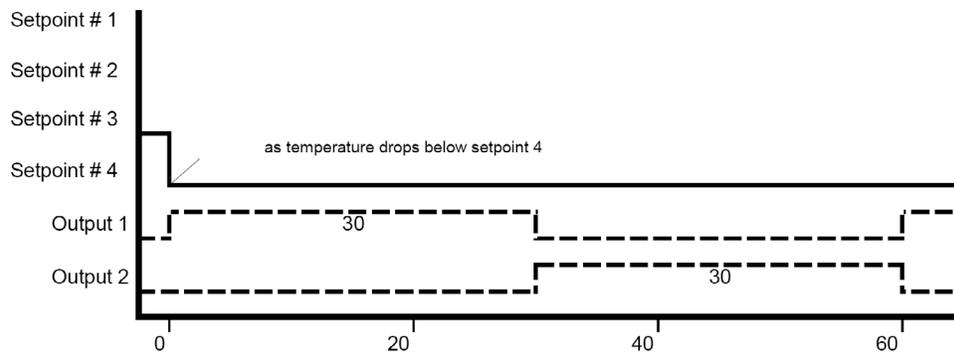
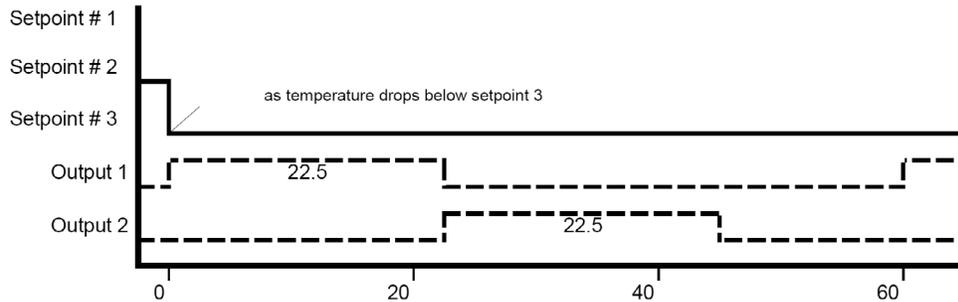
**Ex. G:** Using the settings from previous examples C and F, the controller will regulate with an operating cycle of 40 minutes. Once the first set point is reached, output 1 will first turn on for 20 minutes. Once 20 minutes have elapsed, the first output will turn off and the second one will turn on. This cycle will repeat until the outside temperature rises above the set point.



Note: The above cycle repeats every 40 minutes. Energy is being consumed at all times

**Ex. H:** If the outputs I3, I4, I5 and I6 are all tied to +24V, the controller will be configured to operate with four set points and a total cycle time of 60 minutes.





Note: As the temperature drops below successive levels, the output ON times increase proportionately. In all configurations, the lowest enabled set point will generate 50% alternating ON times. In each of the above four stages of example H, the cycle completely repeats every 60 minutes.

**Hand-Off-Auto Selector Switch:**

- Hand** - Manually activates all contactors closed
- Off** - Removes control signal from all contactors. (Not to be used as a lockout means)
- Auto** - Enables Enersave Controller to activate contactors as per settings. Input IE

**Resistive Thermal Device** - provides analog signal to input IG of controller.

Note: Pressing the ">" key on the front of the controller will display two status lines of information

Analog input - The measured analog voltage at the input to the controller. It should measure in the range of 2 - 10VDC. If this reading is 0, the temperature probe might be damaged.

Remote Enabled - This message (just below the analog input) indicates that the signal from the remote location is available. See configuration method described above.  
If pressing the ">" key provides no readout, then the enable signal is not available.