

# MiniPak Welding Controller WK-MPS-01

By

**WESTKEN Electronics Division**

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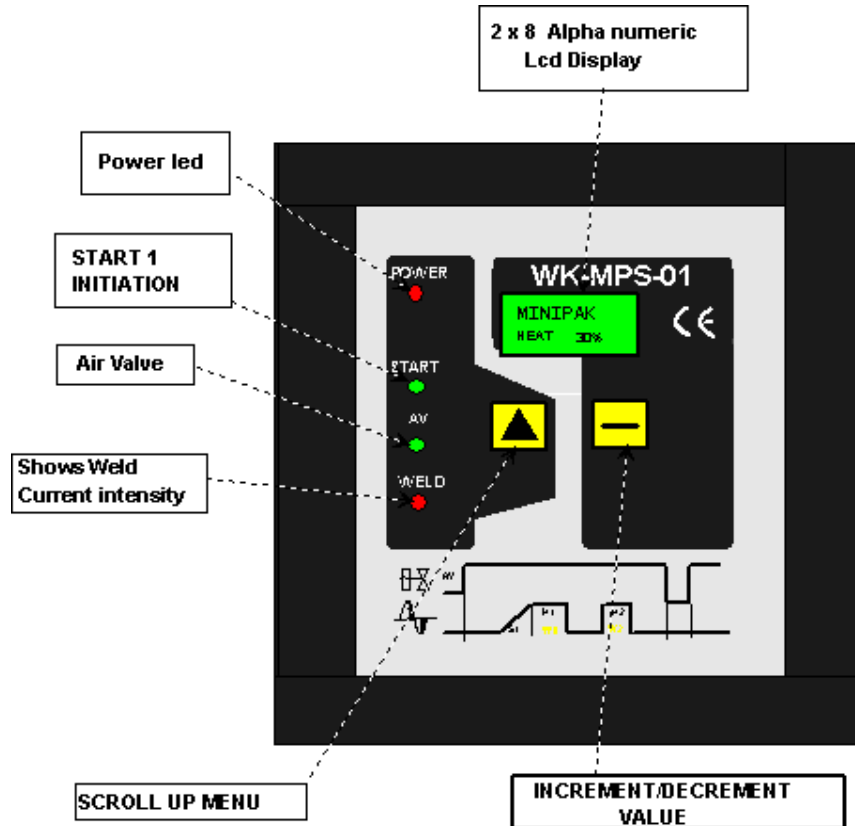
## Features

- Latest state of the art ATMEL 8 bit microprocessor technology
- Synchronous digital welding control allows absolute precision
- Simple to use pushbutton keys
- All inputs optically isolated using +24V DC activation
- All outputs isolated
- Memory retention after power-down or mains failure
- No Batteries needed
- 2 lines x 8 characters alpha-numeric LCD display
- Front panel LED's for inputs, outputs & control operations
- Relay contacts for **air valve** switching – AC or DC .
- Zero crossing switching for relay contacts
- Polycarbonate overlay with colour graphics for long life and easy usage.
- Footpedal operation

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## MINIPAK FRONT PANEL

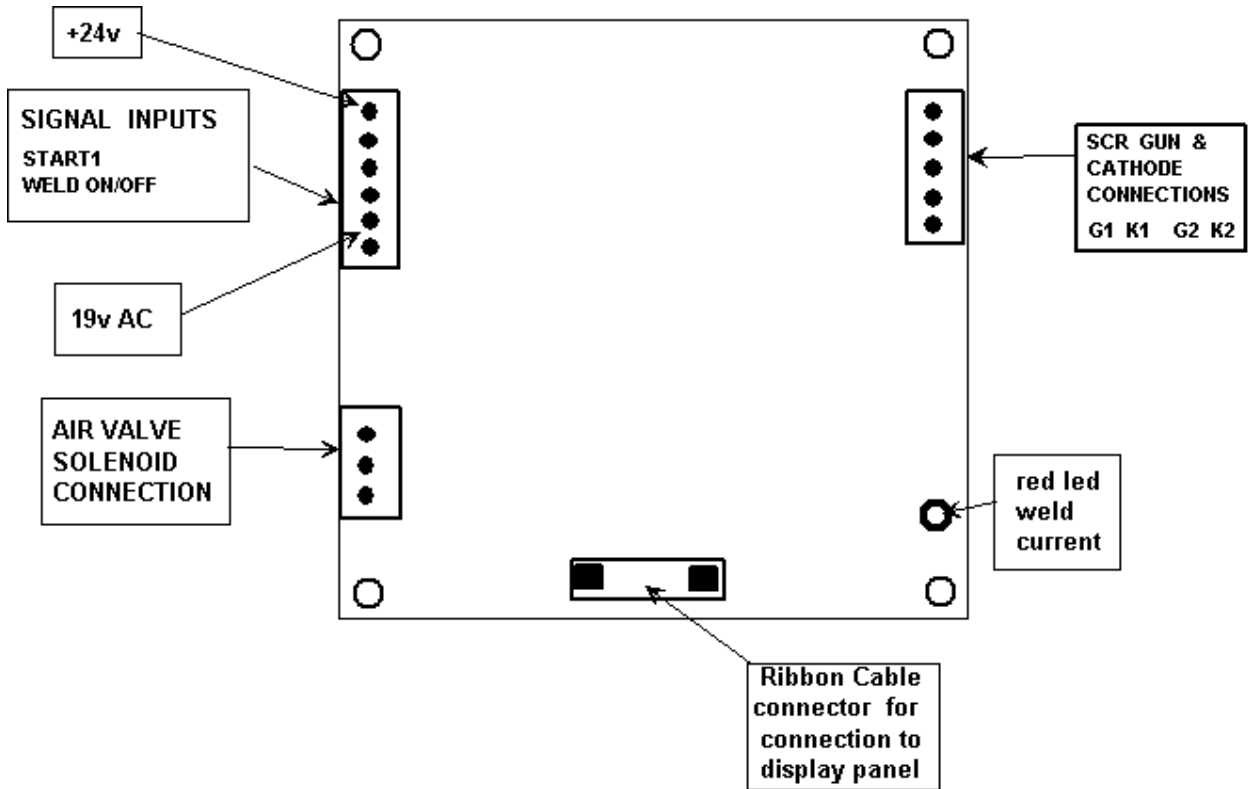


- 1. Power Led (red) :-** This shows when there is power +12v coming to the Display board.
- 2. Initiation(green) :- Start1 .** This is used to initiate welding . **Start1** will enable the airvalve and allow the welding to start.
- 3. Air Valve Relay (green):-**  
This led is turned on when the Air valve relay is turned on.
- 4. Weld Current (red):-**  
This led shows the weld current intensity. The brighter led is the greater the weld current.
- 5. Scroll Up Key :-** This key is used to scroll up through the menu's on the Lcd screen.
- 6. Minus Key (-):-** This key is used to increment values or decrement the values shown on the Lcd screen. If the key pressed repeatedly the key will act as an I incrementer – if the key is held down the key will act as a decrementer.
- 7. LCD Display :-** This is a 2 x 8 alpha numeric lcd display with backlighting. This is used to display all the parameter setting information allowing them to be altered to the required settings.

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## RELAY BOARD



1. **Ribbon cable socket** :- 10 way ribbon cable.
2. **Scr firing connections** :- This is the SCR firing pulses that control the current . These pins are for the gate and cathode of scr1 & scr2. A mov or transorb can be fitted to provide extra protection for the SCR's .
3. **Ac supply input** :- This is a 19v @ 19VA AC supply .
4. **Solenoids Connection**:- These are the connections for the Air valve solenoid.
5. **Signal Inputs** :- These are signal inputs +24v is on and 0v is off. The signal +24v is available on the connector. This is weld on/off and start1.

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## MiniPak Specifications

The WK-MPS-01 welding controller has a single program and is designed for use with single-stage two-stage initiated projection & spot welding stations.

### Function: MWK-MPS-01 (Projection/Spot)

Name	Minimum	Maximum	Resolution
Pre-squeeze	0	99	1 Cycle
Squeeze	0	99	1 Cycle
Weld 1	0	99	1 Cycle
% Heat 1	10%	99%	1%
Cool	0	99	1 Cycle
Weld 2	0	99	1 Cycle
% Heat 2	10%	99%	1%
Hold	0	99	1 Cycle
Off	0	99	1 Cycle
Upslope	0	10	1 Cycle

**NB Repeat is enabled when Off is set to greater than 0**

#### Global settings for General Use

WELD ON/OFF	-	-	On/Off
HALF CYCLES	-	-	On/Off
HI LIFT LATCH	-	-	On/Off

#### Global settings – Technician only

Name	Minimum	Maximum	Resolution
Power Factor	0	0.99	0.01

The above parameters are all fully programmable via the push button front panel keys and displayed in English on the 16 character x 2 line LCD display. **To select Power Factor press backward & forward keys together.**

#### Half Cycle :-

This counts the weld cycles in half cycles rather than the normal cycle.

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Other languages can be accommodated.

### Push Button Keys Functions

Key	Function
FORWARD ^	Scrolls forward through the parameter settings
BACKWARD v	Scrolls backward through the parameter settings
INCR +	Increments the selected parameter setting
DECR -	Decrements the selected parameter setting

### Programming the WeldPak Welding Controllers

**Weld1** : This the number of welding cycles of 10msec duration . Therefore this determines the time duration of the first weld.

**% Heat1** : This is amount of current going through the weld for weld 1

**Weld2** : This the number of welding cycles for weld2

**% Heat2** : This is amount of current going through the weld for weld 2

**Upslope** :- This is the before weld1 and is a gradual slope from 0% heat to the heat chosen for weld1. The graduation of the slope is determined by the number of upslope cycles for 1 – 10.

**Delays** :- These are delays used to space the welding and to allow time for the welding head to come down and clamp the metals together that are to be welded. Spot welding uses resistance welding so the metals need to be clamped together to reduce the resistance and to make sure the material is welded properly.

Pre-squeeze

Squeeze

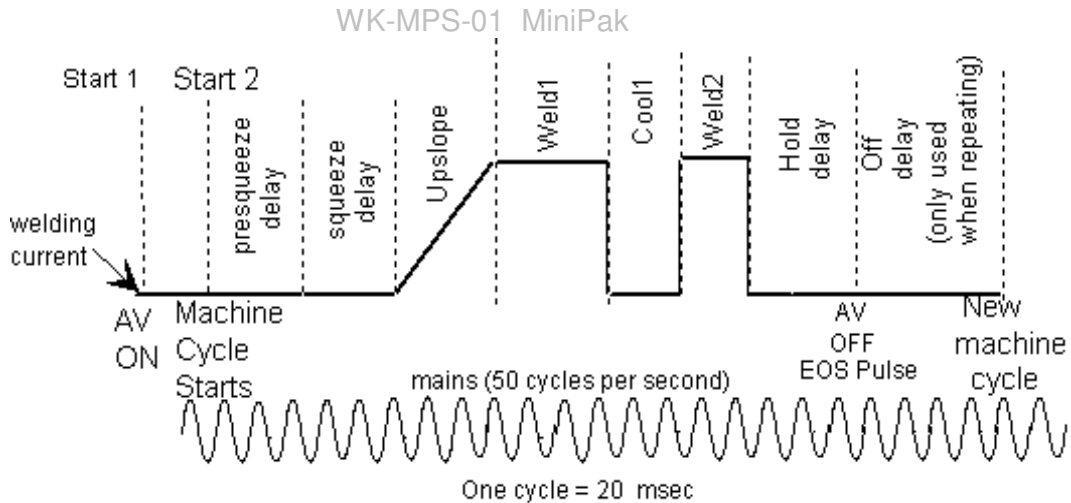
Cool

Hold

Off only used when repeating

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## MiniPak Specifications

The WK-MPS-01 welding controller is designed for use with single-stage projection & spot welding stations.

**Function: MWK-MPS-01 (Projection/Spot) AIR VALVE**

Name	Minimum	Maximum	Resolution
Pre-squeeze	0	99	1 Cycle
Squeeze	0	99	1 Cycle
Weld 1	0	99	1 Cycle
% Heat 1	10%	99%	1%
Cool	0	99	1 Cycle
Weld 2	0	99	1 Cycle
% Heat 2	10%	99%	1%
Hold	0	99	1 Cycle
Off	0	99	1 Cycle
Upslope	0	10	1 Cycle

**NB Repeat is enabled when Off is set to greater than 0**

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**Function: MWK-MPS-01 (Projection/Spot) FOOT PEDAL**

Name	Minimum	Maximum	Resolution
Squeeze	0	99	1 Cycle
Weld 1	0	99	1 Cycle
% Heat 1	10%	99%	1%
Cool	0	99	1 Cycle
Weld 2	0	99	1 Cycle
% Heat 2	10%	99%	1%
Upslope	0	10	1 Cycle

Global settings for General Use

WELD ON/OFF	-	-	On/Off
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*Global settings – Technician only*

Name	Minimum	Maximum	Resolution
Power Factor	0	0.99	0.01

The above parameters are all fully programmable via the push button front panel keys and displayed in English on the 8character x 2 line LCD display. **To select Power Factor press backward & forward keys together.**

Other languages can be accommodated.

**Push Button Keys Functions**

Key	Function
FORWARD ^ BACKWARD	Scrolls forward or backward through the parameter settings
INCR/DECR	Increments /Decrements the parameters

*To scroll **backwards** or to **decr** hold the key down .*

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To scroll **forwards** or to **incr** press the key repeatedly (release quickly)

THE MINIPAK CONTROLLER CAN BE CONFIGURED FOR EITHER  
**AIRVALVE OPERATION** OR FOR **FOOTPEDAL OPERATION** (jumper on lcd pcb)

**AIR VALVE OPERATION** MIDDLE PIN & JUMPER A  
**FOOTPEDAL OPERATION** MIDDLE PIN & JUMPER B

## Programming the MiniPak Welding Controllers

### On Power Up

The message MINIPAK will be displayed. And depending on which jumper has been selected the message **Airvalve** or **Footpedal** will appear. Provided the KEY ENABLE is enabled and the controller is not welding the Forward/Backward key will allow scrolling through the parameter settings. Using the Increment/Decrement key the parameters can be changed. Once the new value is seen on the LCD screen the value is updated and will be remembered.

## **AIR VALVE OPERATION**

The following is an example of a typical **Air valve** welding controller program and what could be expected to be seen on the LCD:-

<b>Function</b>	<b>Cycles</b>	
Pre-Squeeze	20	
Squeeze	20	
Weld 1	10	
Heat 1	50%	
Cool	05	
Weld 2	30	
Heat 2	50%	
Hold	10	
off	00	(Single step)
Upslope	3	

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## Default Values

The default values are loaded in at production and will stay at these value until they have been changed. Once they have been altered they will have the new value.

### Default MiniPak Air valve Parameters

Function	Prom/Spot
Pre-Squeeze	25 Cycles
Squeeze	25 Cycles
Weld 1	15 Cycles
% Heat 1	20%
Cool	0 Cycles
Weld 2	0 Cycles
% Heat 2	10%
Hold	10 Cycles
Off	00 Cycles
Power factor	0.65
WELD/ON	ON

See customer connections.

## FOOTPEDAL OPERATION

*The Footpedal operates with no airvalve*

The following is an example of a typical **Footpedal** welding controller program and what could be expected to be seen on the LCD:-

Function	Cycles
Squeeze	20
Weld 1	10

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WK-MPS-01 MiniPak

Heat 1 50%  
Cool 05  
Weld 2 30  
Heat 2 50%  
Upslope 3

**Default Values**

The default values are loaded in at production and will stay at these value until they have been changed. Once they have been altered they will have the new value.

**Default MiniPak Footpedal Parameters**

<b>Function</b>	<b>Prom/Spot</b>
Squeeze	25 Cycles
Weld 1	15 Cycles
% Heat 1	20%
Cool	0 Cycles
Weld 2	0 Cycles
% Heat 2	10%
WELD/ON	ON

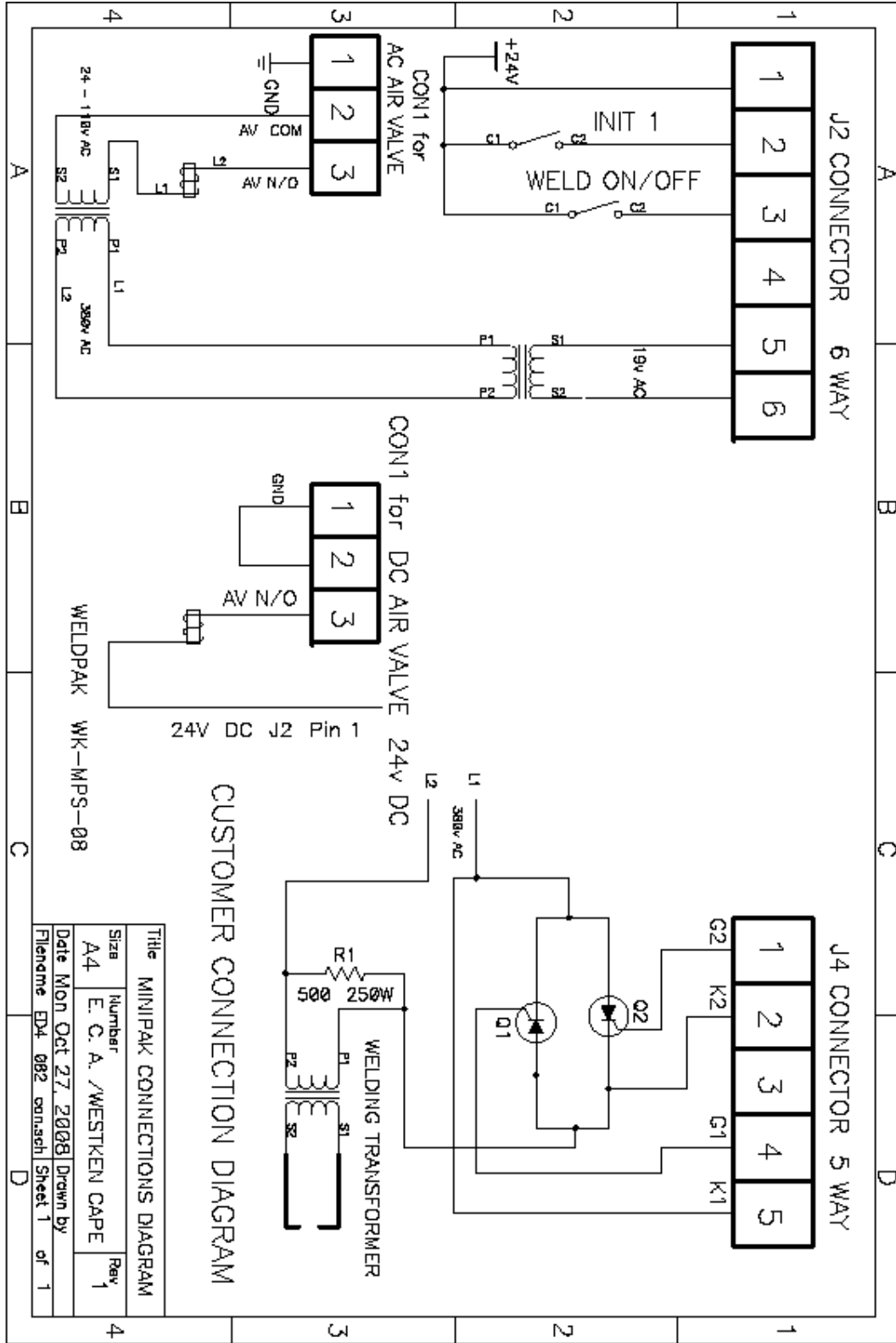
**AC TRANSFORMER :**

The AC supply transformer for the Minipak must be 22v  $\pm$  10% secondary. The transformer should be between 50 – 100 VA.

**See customer connections**

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