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**typical systems**

WS4000 combination



WS4010 combination



WS4002 cabinet on stand



# WS40xx series welding controls

data sheet



## Evolution from automation

The demanding environment of the automotive industry has brought about a wide range of innovations in resistance welding control. Many of the features found in the WS40xx series have evolved from high-level automation installations, and this has produced a control system which is flexible and versatile, lending itself to most resistance welding applications. The WS40xx series has an extensive range of welding features and a number of communication networks can be supported through options and accessory adapters. Programming is via a network system, pendant programmer or notebook computer, and flash memory technology allows easy firmware upgrades.

features	benefits
independent control of one or two welding guns	flexible
welding programs can be arranged as 1x192 or 2x64	versatile
three-interval welding sequence	suitable for coated materials
constant current or phase angle control modes	quality welding
compatible with BF ENTRON medium frequency inverter	reduced weld times, smaller transformers
24 electrode programs with stepping and counting + 8 tip dress programs	quality welding
network or local programming	for large or small installations
proportional valve control	can be calibrated in kN or lbf
hardwired/fieldbus I/O	compatible with your plant standard
extensive monitoring and diagnostics	pinpoint most welding problems
options	

WS98-4000 PC software for programming and monitoring

Profibus FMS/DP, ControlNet, Ethernet, DeviceNet, Interbus network adapters

### configurations

WS40xx, cabinet and SCR combinations are shown in document 91-10-00-00-16

# WS40xx series welding controls

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## WS40xx series

All WS40xx controls have an RS232 communications port and hardwired inputs and outputs. WS401x controls do not have a built-in programming pendant.

the following features are plug-in upgrades unless stated otherwise

feature	WS40x0	WS40x2	WS40x4
proportional valve i/o	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>1</sup>
Profibus FMS adapter	✓		
Interbus S adapter	✓	✓ <sup>1</sup>	
Profibus DP adapter	✓ <sup>2</sup>	✓	✓
DeviceNet adapter	✓	✓	✓ <sup>1</sup>
ControlNet adapter	✓	✓	✓
Ethernet adapter	✓	✓	✓ <sup>1</sup>
Interbus PCP	✓	✓	✓
<sup>1</sup> standard			
<sup>2</sup> build option			

## welding programs

1 x 192 (single gun) or 2 x 64 (dual gun)

3-interval weld sequence with phase angle/constant current control  
spot/repeat and standard/extended weld sequences  
enhanced gun/retract timing  
slope control  
inhibit function  
load balancing  
proportional valve control  
current/force offsets

## monitoring programs

1 x 192 (single gun) or 2 x 64 (dual gun)

low/pre/high limits for each weld interval  
heat/force limit  
fail counter

## electrode programs

1 x 24 (single gun) or 2 x 8 (dual gun)

phase angle/constant current curves for each interval + force  
secondary/primary feedback  
SCR allocation  
stepping, dressing and counting  
proportional valve/toroid calibration

## tip dressing programs 8

electrode/duration/force

## status

40-program datalog, electrode status, body cycle log, i/o status

## configuration program

hardwired/bus inputs and outputs  
standard/medium frequency/multitweld operation  
retract mode/gun control  
end-of-sequence and contactor timing  
network addressing  
gun options  
sequence blocking

## environmental

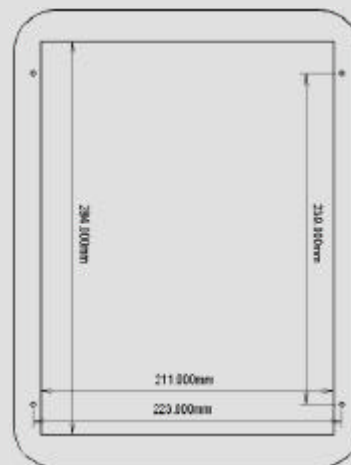
temperature  
- operating 0° to +60°C  
- storage -25° to +70°C  
humidity  
- operating up to 80% (relative)  
- storage 10% to 90%

## dimensions WS400x/WS401x

height 330/318 mm  
width 250/208 mm  
depth 38/40 mm or 56/58 mm expanded

## mounting WS400x

aperture and fixing centres



## power/synchronisation requirements

maximum input current 1A @ 24 V dc ±20%  
line frequency 50/60 Hz ±1Hz

## i/o ratings

2 outputs 500 mA @ 24 V dc each  
6 outputs 100 mA @ 24 V dc each  
12 inputs 10 mA @ 24 V dc each (max)

Information in the document is subject to change without notice.

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