

# UNIVERSAL SWITCH PLATFORM



## Introduction

The USP-010 provides all the functionality needed to implement a fully functional packaged RTU.

It is based on a hardware and software suite derived from the existing Microsol Xcell product but incorporating the latest advances in technology.

The USP-010 supports multiple industry standard protocols, including DNP3 and IEC870-5-101 and is capable of working in stand alone locations such as pole tops or street-side cabinets.

## Features

- 16 Digital Inputs (expansion to 80 Inputs)
- 3 Serial Ports as standard  
RS232 Compatible
- 8 Outputs (expansion to 40 Inputs)
- I/O expansion bus
- IED integration
- Flash Memory
- 10ms time-tagging on all digital inputs
- Control security using check back before operate.
- LED status indicators on all digital I/O and serial interfaces.
- Integrated Control Isolate switch.
- Various communications media supported -  
Radio, Modems, Fibre, PLC,  
Microwave, Cellular, etc.

**Contact:**  
sales@microsol.com  
www.microsol.com

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# General Characteristics

## Serial Communications

The USP-010 host board provides three independent serial ports. Two of these serial ports can be configured with standard industry protocols. A dedicated serial interface is available for diagnostic and configuration purposes.

## Plant Interface

### Digital Inputs

16 opto-isolated digital inputs configured as voltage-inputs in groups of four channels, are provided as standard. Each input channel group consists of a common signal and four individual channel inputs. The USP-010 provides 10ms time-tagging on all plant digital inputs. LEDs are provided on all inputs to indicate status.

### Digital Outputs

8 outputs provide a single-pole relay capable of switching 5A at 30V DC / 250V AC.

Each relay is individually driven by the processor and provides a single-pole volt-free output.

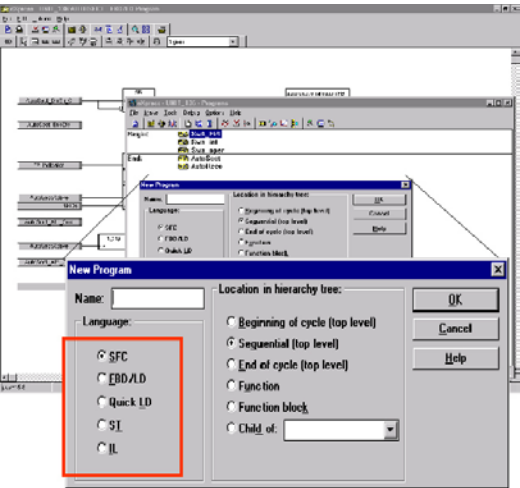
An on-board Execute Relay is provided to control the supply of power to the coil of the channel relays. Each channel relay has a status signal which may be monitored by the processor to ensure it has energised the correct Channel relay before energising the Master / Execute relay.

### Local / Remote Operation

The power to the output relays is provided through a master relay and also a Local/Remote switch. If either the switch is in Local or the master relay is disabled, the unit will not provide any relay closures. The local/remote switch has an LED indication and a software indication.

## Application Development

Automation applications are defined using a PC based application development tool, compliant to the IEC61131 standard. This allows the user to develop automation application in a variety of graphical and test based languages.



## Diagnostics

The USP-010 provides onboard LEDs on all Digital Input and Output Channels, in addition to the serial port activity LEDs. Microsoft's PC based diagnostic tools are available to provide a user interface for fault finding.

## Realtime Clock

The USP-010 can be provided with an optional high accuracy real-time clock, which maintains clock drift under 2ppm.

## Expansion

The USP-010 can be configured to operate as an I/O Expansion module to a master USP-010. Up to 4 expansion modules can be connected to a USP-010 allowing expansion up to 80 digital inputs and 40 digital outputs.

## Technical Characteristics

<b>Status Inputs</b>	<ul style="list-style-type: none"> <li>• 16 Digital Event Inputs</li> <li>• Voltage Input</li> <li>• Input range 18-30 volts</li> <li>• Optical Isolation 2KV AC RMS for 1 minute.</li> <li>• Ability to group Digital Inputs in pairs for Breaker Status Monitoring *</li> <li>• Ability to Automatically and Manually suppress Alarm Inputs</li> </ul>
<b>Control Outputs</b>	<ul style="list-style-type: none"> <li>• 8 Digital Outputs</li> <li>• Volt-free Contact type with 5A 250V AC/30V DC single pole contacts</li> <li>• 2.5kV Output Isolation</li> <li>• Digital Output channel hardware status can be read back in software</li> </ul>
<b>Communications Functionality</b>	<ul style="list-style-type: none"> <li>• 3 Configurable Communications Ports</li> <li>• Support of electrical standards – RS232</li> <li>• May be used to integrate third-party equipment such as Meters and Relays</li> <li>• Various Communications Media supported – Radio, Modems, Fibre, PLC, Microwave, Cellular, etc.</li> <li>• Standard Protocols IEC 870.5 T101, DNP, Modbus (others on request)</li> </ul>
<b>User Interface Functionality</b>	<ul style="list-style-type: none"> <li>• Configuration using a portable PC running USP Configuration Tool</li> <li>• Automation functions using IEC 61131 tool can be configured and downloaded.</li> </ul>
<b>Electrical Noise Immunity</b> <ul style="list-style-type: none"> <li>• High Frequency disturbance</li> <li>• Fast Transient disturbance</li> <li>• Electrostatic Discharge</li> <li>• RFI Susceptibility</li> <li>• EMC Compliance</li> <li>• UK National Grid Company NGTS 2.13</li> </ul>	<ul style="list-style-type: none"> <li>• IEC 60255-22- 1 Class 3 and C37.90.1</li> <li>• IEC 61000-4-4 Class 4 and C37.90.1</li> <li>• IEC 61000-4-2</li> <li>• IEC 61000-4-3 CISPR 22</li> <li>• IEC 60255-22-3, EN50082-2</li> <li>• Class Z</li> </ul>
<b>Environmental Conditions</b> <p>Temperature</p> <p>Continuous Operation</p> <p>Transportation and storage</p> <p>Relative Humidity</p> <p>Vibration</p> <p>Drop &amp; Topple</p>	<ul style="list-style-type: none"> <li>• -20° to +60° C</li> <li>• -40° to +70° C</li> <li>• IEC 60068-2-1 &amp; IEC 60068-2-2</li> <li>• 0 to 95% non-condensing</li> <li>• IEC 60068-2-3 &amp; IEC 60068-2-30</li> <li>• IEC 60068-2-6</li> <li>• IEC 60068-2-31</li> </ul>
<b>Power Supply</b> <p>Protection Class</p>	<ul style="list-style-type: none"> <li>• Input Voltage Range 18 to 36 Volts DC</li> <li>• Isolation 1.5KV DC</li> </ul>

Note \* : available only of supported by the SCADA protocol.

## Ordering Information

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Model	Description	Part Number
Standard Model – 24Vdc	Universal Switch Platform	USP-010
Options		
Conformal Coating	Universal Switch Platform	USP-010-C
Real-Time Clock	Universal Switch Platform	USP-010-R

Example :

Description	Order Code
USP-010 Supplied with Conformal Coating and Real-Time Clock (+/-2ppm)	USP-010-C-R

## Corporate Information

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### Corporate Office

Microsol Limited,  
The Centre for Monitoring  
and Control,  
Enterprise Complex,  
Pearse Street, Dublin 2,  
Ireland

Tel: +353 1 415 3700  
Fax: +353 1 671 6343

### USA Corporate Office

Microsol Inc.,  
349B Christian Street,  
Oxford,  
CT 06478,  
USA

Tel: +1 203 267 1902  
Fax: +1 203 267 6597

### USA Office

Microsol Inc.,  
West Park Plaza,  
Suite 130,  
2415 Annapolis Lane,  
Plymouth, MN 55441,  
USA

Tel: +1 763 383 0594  
Fax: +1 763 383 0597

### UK Office

Microsol UK Limited,  
Unit F,  
Network Business Centre,  
Jarrow, Tyne & Wear,  
NE31 1SF,  
UK

Tel: +44 191 425 5200  
Fax: +44 191 425 5202

### Australian Office

Microsol (Aust) Pty Ltd.,  
Suite 4, Enterprise Unit 3,  
11 Brodie Hall Drive,  
Technology Park,  
Bentley, W.A. 6102,  
Australia

Tel: +61 8 9473 6600  
Fax: +61 8 9473 6699

Email: [sales@microsol.com](mailto:sales@microsol.com) Web: [www.microsol.com](http://www.microsol.com)

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