# ControlWave Control & Communication Redundancy

The ControlWave redundant process control and communication system provides dual CPUs, dual power supplies, dual communication paths, and automatic switching between redundant components without any data loss.

It contains two CPUs: a primary CPU and a backup CPU. In the event of a primary CPU failure, the system automatically switches to the backup CPU. All process control and communication functions automatically switch to the backup CPU. A Dual-Redundant internal power supply option is available for even higher system reliability.

**CWREDCPU** **(PC 850)**

| MODEL & SEG | SPEC SHEET | DESCRIPTION | APPROVAL | SELECT |
|---|---|---|---|---|
| **A** | | **Internal Power Supply Sequencer Module** | | **A** |
| 10 | | PSSM - 24V<br>Single Power Supply module | UL | 3 |
| | | PSSM - 24V<br>Dual Power Supply module | UL | 4 |
| **BC** | | **Dual Redundant CPUs / Comm Port Configurations** | | **BC** |
| 20 | | CPU / (2) RS 232, (1) Ethernet | UL | 01 |
| | | CPU / (2) RS 232, (2) RS-485, (3) Ethernet | UL | 12 |
| **D** | | **Chassis & Switcher Assembly** | | **D** |
| 30 | | With Cables, Rack Mount<br>(2) RS-232, (2) RS-485 | UL | 1 |
| | | With Cables, Panel Mount<br>(2) RS-232, (2) RS-485 | UL | 2 |
| **E** | | **Conformal Coating** | | **E** |
| 40 | | Without Conformal Coating | UL | 0 |
| | | With Conformal Coating | UL | 1 |

***Model Number: CWREDCPU - A - B C - D - E***

**Note 1:** Redundant unit includes: Chassis, 2-PSSM, 2-CPU, Redundancy Switch Panel and serial communication cables from the CPUs to the Switch Panel. I/O is located in the Expansion Rack.

# ControlWave PAC Redundant I/O System

The ControlWave redundant I/O system provides the highest level of system reliability. The system includes two identical ControlWave PAC units, with identical I/O and an I/O switch panel providing automatic switching between the two ControlWave units to provide redundant control, communication and I/O without any data loss. Analog and Digital outputs with unique read back circuitry ensure the backup system I/O is capable of assuming reliable control in the event of a primary on-line system failure.

**CWREDIO** **(PC 850)**

| MODEL & SEG | SPEC SHEET | DESCRIPTION | | APPROVAL | SELECT |
|---|---|---|---|---|---|
| **A** | | **Chassis, PS & CPU Switcher Assembly (Note 1) (NOT C1, D2)** | | | **A** |
| 10 | CWPAC:RDN | None | Select for I/O switch spares | UL | 0 |
| | | Switch Assy | (2) RS232 & (2) RS485 ports | UL | 3 |
| **BC - PQ** | | **I/O Switcher (Slot 1 - 8) (Note 2 & 3)** | | | **BC - PQ** |
| 20 - 90 | CWPAC:RDN | None | Empty Slot | UL | 00 |
| | | None | Empty slot with blank | UL | 20 |
| | | **Local Terminations** | **Includes cables from I/O module to switcher** | | |
| | CWPAC:RDN | Digital Input | Internally or Externally | UL | 01 |
| | | Analog Input | 4-20 mA input **(Note 4)** | UL | 02 |
| | | Digital Output | | UL | 04 |
| | | Analog Output | 4-20 mA | UL | 05 |
| | | Analog Output With Read back | 4-20 mA | UL | 12 |
| | | Digital Output With Read back | | UL | 15 |
| | | **Remote Terminations** | **Includes cables from I/O module to switcher** | | |
| | CWPAC:RDN | Digital Input | Internally or Externally | UL | 06 |
| | | Analog Input | 4-20 mA input **(Note 4)** | UL | 07 |
| | | Digital Output | | UL | 09 |
| | | Analog Output | 4-20 mA | UL | 10 |
| | | Analog Output With Read back | | UL | 14 |
| | | Digital Output With Read back | | UL | 13 |

***Model Number: CWREDIO - A - B C - D E - F G - H I - J K - L M - N O - P Q – R***

Redundant unit includes: Chassis, 2-PSSM, Redundancy Switch Panel and serial communication cables from the CPUs to the Switch Panel.

**Note 1:** Only 8 slot base chassis are supported. Do not use 4 slot ControlWave chassis with I/O redundant systems.

**Note 2:** Use ONLY Remote Termination I/O modules in the ControlWave base controllers and I/O Expansion Racks.

**Note 3:** All I/O switchers support the double density I/O modules.

**Note 4:** Select 1 - 5V AI modules when ordering ControlWave I/O modules. Even the 4 - 20mA switch modules use 1 - 5V AI modules in the base controller chassis. Only the 4 - 20 mA inputs are externally sourced.

The AI modules in the ControlWave chassis must be a 1 - 5 V input modules for either the 1 - 5 V or 4 - 20 mA switchers. This means that field inputs can be either 1 - 5 V or 4 - 20 mA external sourced inputs, however the redundant switcher always provides a 1 - 5 V signal to the I/O card in the ControlWave Chassis.

# ControlWave PAC Redundant I/O System (Cont.)

**CWREDIO** **(PC 850)**

| MODEL & SEG | SPEC SHEET | DESCRIPTION | APPROVAL | SELECT |
|---|---|---|---|---|
| **R** | | **Conformal Coating** | | **R** |
| 100 | CWPAC:RDN | Without Conformal Coating | UL | 0 |
| | | With Conformal Coating | UL | 1 |
| | | Blanking Plate 396498-03-5 | UL | |

***Model Number: CWREDIO - A - B C - D E - F G - H I - J K - L M - N O - P Q – R***

Redundant unit includes: Chassis, 2-PSSM, Redundancy Switch Panel and serial communication cables from the CPUs to the Switch Panel.

**Note 1:** Only 8 slot base chassis are supported. Do not use 4 slot ControlWave chassis with I/O redundant systems.

**Note 2:** Use ONLY Remote Termination I/O modules in the ControlWave base controllers and I/O Expansion Racks.

**Note 3:** All I/O switchers support the double density I/O modules.

**Note 4:** Select 1 - 5V AI modules when ordering ControlWave I/O modules. Even the 4 - 20mA switch modules use 1 - 5V AI modules in the base controller chassis. Only the 4 - 20 mA inputs are externally sourced.

The AI modules in the ControlWave chassis must be a 1 - 5 V input modules for either the 1 - 5 V or 4 - 20 mA switchers. This means that field inputs can be either 1 - 5 V or 4 - 20 mA external sourced inputs, however the redundant switcher always provides a 1 - 5 V signal to the I/O card in the ControlWave Chassis.