

## Model 5600ACO2

The 5600ACO2 Automatic Changeover is intended for use with two 5600MSC Master Clock / Sync Generators. The 5600ACO2 system uses latching relays to ensure maximum reliability and minimal disruption in the event of any failure. The complete system provides the highest level of security for television station video and time synchronization systems. Two power supplies are scrutinized as a standard feature, to alleviate any single point of failure concerns.

The front panel has three switches, recessed into the panel for added security. There is an AUTO / MANUAL switch, a GPI / FRONT PANEL switch and an A / B select switch for manual changeover. In automatic mode, all signals from both 5600MSCs are scrutinized to detect any abnormal signals. For example if a level, pulse width, phase, time code error or other abnormality is detected, the 5600ACO2 circuitry will trigger and the entire bank of signals will be switched to the backup 5600MSC. In manual mode the changeover can be operated from a GPI or from the front panel switch. Fifty-six LEDs provide status information as to the health of the two 5600MSCs, together with indication as to which one is active. In addition two GPO outputs indicate which master is active and when the inputs from both masters are not the same.

The 5600ACO2 offers connections for 6 colour black, (or bi-level or tri-level sync signals), 4 HD SDI test signals, 4 SD-SDI test signals, 1 analog video test signal, 10MHz, DARS, AES, analog audio, and two linear time codes (LTC) to each of the two Master 5600MSCs. Each 5600MSC Master offers two LTC outputs that may be used for different time codes. All four LTC signals are fed to the 5600ACO2 on two 'D' connectors, one for each Master. The LTC outputs from the selected master are available on two XLR connectors.

Each 5600MSC is equipped with 2 GPI inputs and 2 GPO outputs. To facilitate installation, these connections are connected through to a 2 x 6 pin terminal block on the 5600ACO2. The outputs from the 5600MSCs are passed straight through the 5600ACO2. The inputs to the 5600MSCs are internally split by a 'Y' connector, to ensure that both 5600MSCs receive the same GPI contact closures.

In the event of a changeover occurrence, it is necessary that all outputs on one 5600MSC have the same timing as those on the other. Identical timing for both 5600MSCs is assured by locking both to the same frequency and phase source (e.g. GPS or by gen-locking one 5600MSC to the other). Identical phasing of the independent black outputs is assured by implementing the Syncro mode in the 5600MSCs. To use this mode, both 5600MSC communication ports are connected together using the link cable supplied with the 5600ACO2. With both 5600MSCs operating in Syncro mode, timing adjustments made to one 5600MSC will be automatically applied to both. The link cable is connected permanently, so that any system re-timing will be applied to both 5600MSC units.

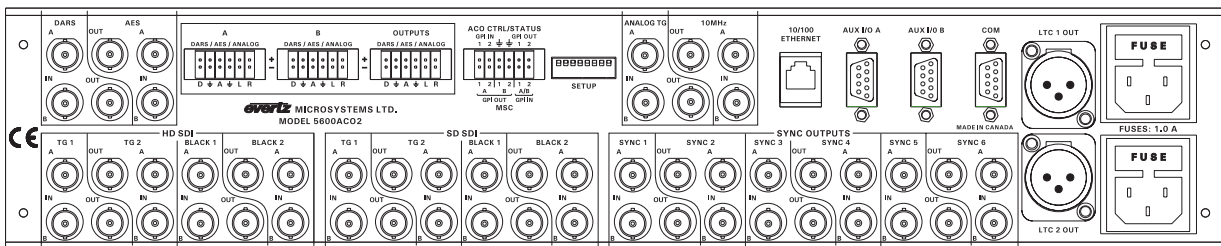
## Features

- Relay switches for all the system critical outputs from two 5600MSC units
  - 6 video/sync outputs
  - 4 HD SDI test signal outputs
  - 4 SDI test signal outputs
  - 1 Analog video test signal outputs
  - 10MHz frequency reference output
  - Balanced and unbalanced DARS and AES outputs.
  - Balanced analog audio output
  - Linear time code outputs
- Automatic changeover is a voting system based on which source has the most valid signals and that the good signals on the present master are also on the backup.
- Three front panel switches select automatic, front panel or GPI activation of changeover
- Front panel switches are recessed to prevent accidental operation
- 42 Front panel status LEDs show the health of each of the inputs
- 14 Front panel status LEDs show the operational modes of the changeover
- Redundant power supply standard

## Inputs and Outputs

	INPUT	OUTPUT
SYNC	12 BNC	6 BNC
10MHz	2 BNC	1 BNC
DARS/AES	4 BNC	2 BNC
LTC	2 DB9	2 MALE XLR
GPIO	2 DB9	Terminal Strip
Balanced DARS AES & Analog Audio	2 Terminal Strips	Terminal Strip
HD SDI	8 BNC	4 BNC
SD SDI	8 BNC	4 BNC
Analog TG	2 BNC	1 BNC

## 5600ACO2 Rear Panel



## Specifications:

### LTC Outputs:

**Standard:** SMPTE 12M frame rate set by 5600MSC  
**Number of outputs:** 2  
**Connectors:** 3 pin male XLR type output, Female DB9 input  
**Signal Level:** Set in 5600MSC

### Coaxial Inputs and Outputs:

**Type:** Depends on signal connected from 5600MSC  
 HD SDI, SD SDI, DARS, bi-level or tri-level sync, colour black, 10 MHz  
**Number:** 8 groups each consisting of two inputs and one output  
**Connector:** BNC per IEC 60169-8 Amendment 2

### ACO General Purpose Inputs and Outputs:

#### Inputs:

#### Front Panel Single GPI Control Mode (DIP switches 1 and 2 Off)

**GPI1:** Master select in Manual GPI control mode  
 Low: Selects Master A  
 High: Selects Master B

**GPI2:** Future use

#### Front Panel Dual GPI Control Mode (DIP switches 1 Off and 2 On)

Master select in Manual GPI control mode

**GPI1:** Low: Selects Master A  
**GPI2:** Low: Selects Master B

#### Outputs:

**GPO1:** Low: Master A is selected (default when the 5600ACO2 has no power)  
 High: Master B is selected

**GPO2:** Low: Master A & Master B differ or PSU failure  
 High: Master A and B have equivalent signals

#### Type:

**Inputs:** Opto-isolated input with internal pull-up to + 5volts.

**Outputs:** Normally closed relay to ground. 10K internal pull-up to + 5volts when relay is in active position.

**Connector:** 4 pins plus 2 ground pins on 12 pin removable terminal block

**Signal Level:** +5V nominal

### MSC General Purpose Inputs and Output:

**Inputs:** 2 GPI inputs connected to both Master A and Master B  
**Outputs:** 2 GPI outputs connected from Master A through AUX I/O A  
 2 GPI outputs connected from Master B through AUX I/O B  
**Connector:** 6 pins on 12 pin removable terminal block  
**Signal Level:** As specified in 5600MSC manual

### Changeover conditions:

Changeover is a voting system based on which source has the most valid signals and that the good signals on the current master are also present on the backup master.

The input signals are considered good according to the following criteria:

**Video:** Level below 70 IRE  
**Sync:** H timing detect  
**SDI:** Valid TRS ID  
**10MHz:** 3dB level below 0.3Vp-p  
**DARS:** Sync word error  
**LTC:** Level below 0.3Vp-p  
 Incorrect sync word

### Electrical:

**Power:** Autoranging 100 - 240 Volts AC, 50/60 Hz, 30 VA  
**Configuration:** Dual redundant supplies  
**Fuse Rating:** 250 V, 1 amp, time delay  
**Safety:** ETL Listed, complies with EU safety directives  
 Complies with FCC Part 15 Class A  
**EMI/RFI:** Complies with EU EMC directive

### Physical:

**Dimensions:** 19" W x 3.5" H x 18.75" D.  
 (483mm W x 90mm H x 477mm D)  
**Weight:** 16 lbs. (7.0Kg)

### Ordering Information:

#### 5600ACO2

Automatic Changeover System complete with 2 power supplies, 2 power cords and 3 DB9 cables (BNC cables not included)