

# ACDS

## Active Clock Distribution System

### KEY FEATURES

- Cost-Effective ETSI-Compliant Clock Distribution System
- 18 outputs at 2048 kHz G.703/13
- Up to 4 inputs at 2048 kHz G.703/13
- Full redundancy with Hot Swap Capability

### INTRODUCTION

Symmetricom's Active Clock Distribution System (ACDS) is a cost effective distribution system extending the number of 2048 kHz clock signals for telecommunication and data networks. ACDS is comprised of the following sub-assemblies: one sub-rack called Active Clock Distribution Sub-rack (ACD-SR); and one or two plug-in circuit card assemblies called Active Clock Distributor (ACD).

The ACD-SR consists of the ETSI-compliant housing including the front panel with all connectors and two slots for the ACD plug-in cards. All connections are accessible from the front. The ACDS can be installed in ETSI or 19" racks.

The ACDs provide clock distribution and status indication. They are inserted horizontally in the sub-rack, covered by the removable front panel. An ACD provides two inputs with automatic switchover in case of signal loss (input protection), a phase locked loop (PLL) and a low impedance output amplifier capable to driving one or two

groups of nine outputs. Each group has an output transformer to be used individually for 75Ω (unbalanced) or 120Ω (balanced) signals.

### APPLICATIONS

The primary application of the ACDS is to extend the number of 2048 kHz clock outputs for telecommunication and data networks.

In large offices the ACDS can be used to extend the range of SSUs by regenerating and distributing clock signals to remote network elements. The ACDS can also be used to expand the number of 2048 kHz G.703/13 outputs and/or to combine two GPS systems into a fully redundant system.

Symmetricom's Balun Transformer is a bi-directional adapter for converting signals from 120Ω balanced (Sub-D9 interface) to 75Ω unbalanced (BNC interface) and vice versa. Therefore it enables the user to connect BNC signals to the inputs and to configure each single output to 75Ω BNC interface.



ACDS

## FUNCTIONAL FEATURES

Built-in test equipment monitors the power supply, PLL and output amplifier. Outputs are automatically muted if a failure occurs. Front panel LED indicators and relay outputs inform the user about the status of the unit.

If input protection is required the two inputs of an ACD can be prioritized by means of a jumper. Loss of signal (LOS) will lead to a switch-over to the backup input and will be indicated by a LED and alarmed by relay contacts. If operation without backup input is desired LOS indication and alarming can be disabled.

## MODES OF OPERATION

The CDS can be configured for different applications by means of jumpers:

- ACDS equipped with one ACD running in independent mode
- ACDS equipped with two ACDs, both running in independent mode
- ACDS equipped with two ACDs running in redundant mode

If the ACDS is equipped with only one ACD, one protected input will serve up to 18 unprotected outputs. Output options with one ACD include:

- 18 x 120Ω balanced or 18 x 75Ω unbalanced outputs
- 9 x 120Ω balanced and 9 x 75Ω unbalanced outputs

If the ACDS is equipped with two ACDs and running in the independent mode, two protected inputs will serve their corresponding 9 unprotected outputs. Thus a single fully equipped ACDS can be used to distribute two different signals. Output options for each ACD includes:

- 9 x 120Ω balanced outputs or
- 9 x 75Ω unbalanced outputs

To use the redundant mode, the ACDS must be equipped with two ACD. To provide input protection the input signals are fed to both ACDs, and internal signaling ensures hitless switching. To provide output protection each ACD drives all 18 outputs. Output options include:

- 18 x 120Ω balanced or 18 x 75Ω unbalanced outputs
- 9 x 120Ω balanced and 9 x 75Ω unbalanced outputs

## ACDS Specifications

### PHYSICAL SPECIFICATIONS

- Size (WxHxD): Maximum 440 x 149 x 279 mm (17.4 x 5.9 x 11.0 inch) (excluding rack mount ears)

### WEIGHT

- Maximum 3,1 kg (Sub-rack 2, 5 kg; ACD 0, 3 kg)

### REGULATIONS & STANDARDS

- EN 55022/08.94 category B
- EN 50082-1/01/92
- EN 60950/92 + A1/93 + A2/93 + A3/95 + A4/97

### ENVIRONMENTAL CONDITIONS

- Stationary use: ETS 300 019-1-3 class 3.1 (-5° C ... 45° C)
- Transportation: ETS 300 019-1-3 class 3.1 (-40° C ... 70° C)
- Storage: ETS 300 019-1-3 class 3.1 (-25° C ... 55° C)

### RELIABILITY

- MTBF: Independent mode: 200 years availability;
- Redundant mode: 1297 years availability
- MDT: Independent mode: 22 min/year; Redundant mode: 3.3 min/year

### POWER SUPPLY

- Voltage: -39 to -75 VDC (2 x)
- Current consumption: max.0.25
- Power consumption: typically 7.5 W (excluding alarm outputs)

### INPUTS

- Number: 1 to 4 according G.703/13; depending on ACDS configuration and operation mode
- Connectors: Sub-D9
- Nominal input impedance: 120Ω balanced or 75Ω unbalanced; (to be configured)
- Jitter and wander tolerance: ITU-T G.823
- Return loss: 15dB at 2048 kHz to ITU-T G.703

### OUTPUTS

- Number: 18 according G.703/13
- Connectors: Sub-D9
- Nominal load impedance: 120Ω balanced or 75Ω unbalanced
- Phase hit upon switch-over: 10 ns
- Return loss: 6dB

### STATUS INDICATION

- 2 x LED power status (1 for each CD)
- 4 x LED alarm status concerning input signal (2 for each CD)
- 2 x indication of active CD (1 for each CD)
- 4 x alarm relay contact if running in independent mode (minor/major for each CD)
- 3 x alarm relay contact if running in redundant mode (minor/major/critical)

### ORDERING INFORMATION

- Part number 80730100: Active Clock Distribution Sub-rack; includes 2 power connectors, ETSI and 19" flanges
- Part number 80730200: Active Clock Distributor (ACD)



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