

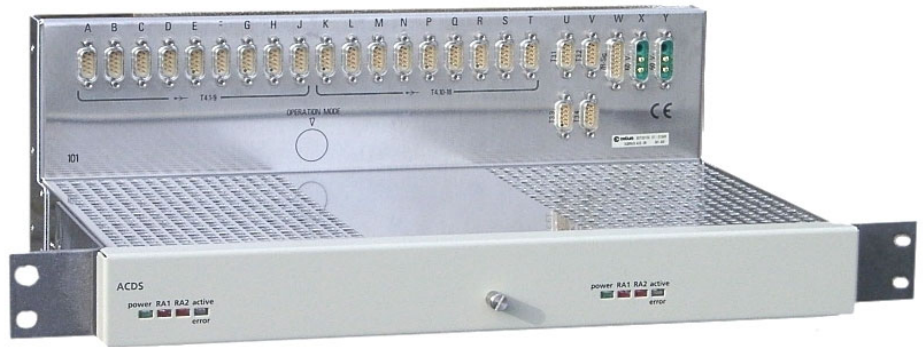
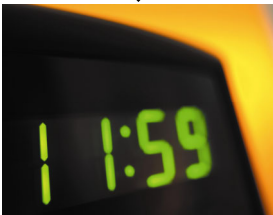
ACTIVE CLOCK DISTRIBUTION SYSTEM

USER GUIDE

Manual P/N: 60500075
Doc. No.: 001624AC
Published: August 2003

... applicable for

Active Clock Distributor (ACD) P/N 80730200
ACD – Sub-Rack (ACD – SR) P/N 80730100



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1. How to Use This Manual

1.1. Purpose of this Document

This User Guide provides necessary information for installation, configuration and operation of the Unit. Furthermore it contains maintenance procedures, troubleshooting instructions and procurement information.

1.2. Structure of this Document

This document contains the following sections and appendixes:

Chapter	Title of the Chapter	Description
1	How to Use This Manual	Contains a general overview of this document, the intended audience, the conventions used, and lists related documents available for the user.
2	Product Description and Functions	Provides an overview of the product, describes the major functions, and lists the technical data including the EC-Declaration of Performance.
3	Unpacking and Inspection	Contains procedures for unpacking and inspecting the unit.
4	Installation	Contains instructions for installing and configuring the unit.
5	Operation	Describes the power-up sequence and provides procedures for operating the equipment.
6	Maintenance and Troubleshooting	Contains cleaning and maintenance procedures including troubleshooting instructions for fault isolation.

Appendix	Title of the appendix	Description
A	Procurement Information	Order information for units, accessory and spare parts
B	Sample Forms	Provided as a convenient means to document equipment settings and connection Settings.

1.3. Who Should Read This Document

This publication is written for technical audiences. It describes instructions for installation, configuration, operation and maintenance as well as technical details primarily intended for qualified technical personnel.

The sections *Product Description and Functions* are written for non-technical audiences who need information about the product.

1.4. Related Documentation

Further documents related to the product described herein which are published at time of issue of this document are listed below. See our web-site www.symmetricom.com for a complete list of actual documentation.

Part Number	Document Number	Title
–	–	–

1.5. Conventions

1.5.1. Acronyms and Abbreviations

Terms are spelled out the first time they appear in text. Thereafter, the acronym or abbreviation is used. In addition, the glossary defines the acronyms and abbreviations.

1.5.2. Typographical Conventions

When text appears this way...	... it means:
Installation	The title of a document or the title of a chapter
... <u>not</u> ...	A word or term being emphasized.
Caution...	A word or term given special emphasis.

1.5.3. Warnings, Cautions, Recommendations and Notes

Warnings, Cautions, Recommendations and Notes attract attention to essential or critical information in this document. The types of information in each are explained in the following:



Warning

To avoid serious personal injury or death, do not disregard warnings. All warnings use this symbol. Warnings are installation, operation, or maintenance procedures, practices, or statements, that if not strictly observed, may result in serious personal injury or even death.



Caution

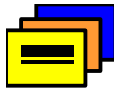
To avoid personal injury, do not disregard cautions. All cautions use this symbol. Cautions are installation, operation, or maintenance procedures, practices, conditions, or statements, that if not strictly observed, may result in damage to, or destruction of, the equipment. Cautions are also used to indicate a long-term health hazard.

**ESD Caution**

To avoid personal injury and electrostatic discharge (ESD) damage to equipment, do not disregard ESD cautions. All ESD cautions use this symbol. ESD cautions are installation, operation, or maintenance procedures, practices, conditions, or statements that if not strictly observed, may result in possible personal injury, electrostatic discharge damage to, or destruction of, static sensitive components of the equipment.

**Electrical Shock Caution**

To avoid electrical shock and possible personal injury, do not disregard electrical shock cautions. All electrical shock cautions use this symbol. Electrical shock cautions are practices, procedures, or statements, that if not strictly observed, may result in possible personal injury, electrical shock damage to, or destruction of components of the equipment.

**Recommendation**

All recommendations use this symbol. Recommendations indicate manufacturer-tested methods or known functionality. Recommendations contain installation, operation, or maintenance procedures, practices, conditions, or statements, that provide important information for optimum performance results.

**Note**

All notes use this symbol. Notes contain installation, operation, or maintenance procedures, practices, conditions, or statements, that alert you to important information, which may make your task easier or increase your understanding.

1.6. Where to Find Answers to Product and Document Questions

For additional information about the products described in this guide, please contact your Symmetricom representative or our service office.

We appreciate your suggestions of ways to improve any part of this guide. Please make your suggestions on a copy of the concerned page and send it to us.

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2. Product Description and Functions

This chapter provides an overall description of the product including typical applications and the functional behavior. Illustrations of the unit and the section *Technical Data* serve as the main reference for other chapters with technical content (e.g. troubleshooting).

Additionally this chapter contains the *EC-Declaration of Conformity*.

2.1. Product Description

The **Active Clock Distribution System (ACDS)** comprises the following main sub-assemblies:

- ✓ one sub-rack called **Active Clock Distribution Sub-rack (ACD-SR)**
- ✓ one or two plug-in circuit card assemblies called **Active Clock Distributor (ACD)** which can be operated independently (independent mode) or redundantly as active and stand-by unit (twin mode)

The ACD-SR consists of the housing including the front panel with all connectors, a motherboard and two slots for the ACD plug-in cards. The mechanical design of the ACD-SR complies with ETSI specifications. All connections are accessible from the front. By using rack mount ears the ACDS can be installed in ETSI as well as in 19" racks.

The ACDs consist of the main circuitry for 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 optional automatic switchover in case of signal loss (input protection), a phase locked loop (PLL) and a low impedance output amplifier capable to drive one or two groups of outputs, each group consisting of nine outputs. Each group features its own output transformer to be used individually with 75 Ω (unbalanced) or 120 Ω (balanced).

2.2. Product Views

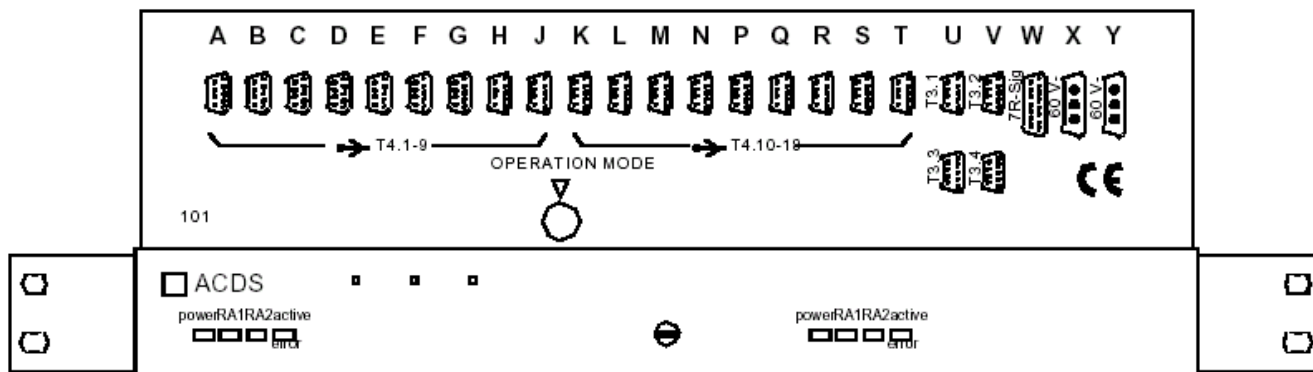


Figure 2-1 – Sub Rack

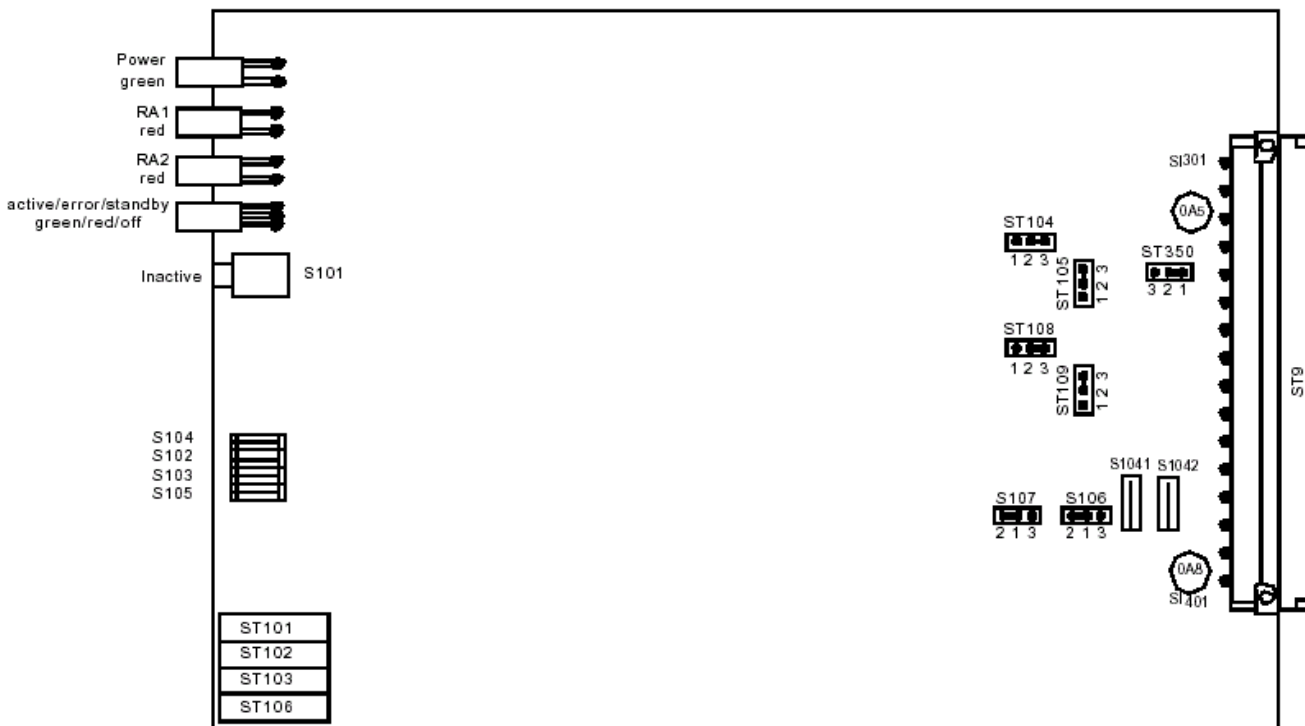


Figure 2-2 – Active Clock Distributor

2.3. Functions

The cards can be operated in two basic modes, independent mode and twin mode.

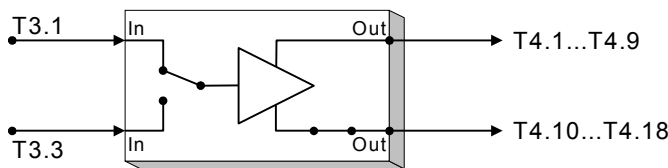


Note

For additional information to Jumper settings for mode configuration see chapter 4.

2.3.1. Independent Mode

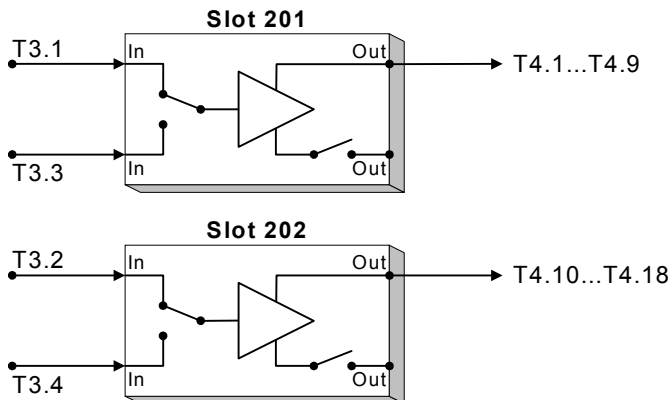
The ACDS can be populated with only one card. In this mode the card can be set to drive all 18 outputs.



Output options:

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

The ACDS can also be populated with two cards, each one driven from its individual set of inputs and feeding its own group of nine outputs each. Thus a single fully populated ACDS can be used to distribute two different signals.



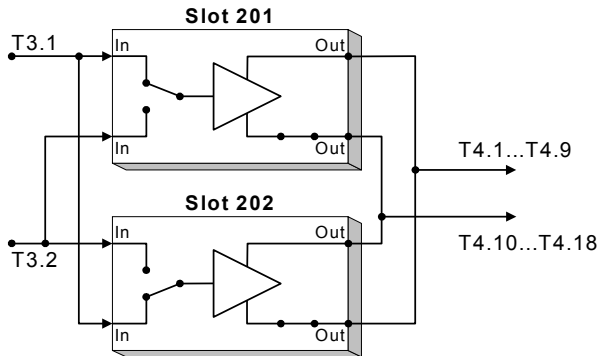
Output options for each ACD:

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

In either case the two inputs are prioritized and monitored for loss of signal (LOS). LOS will be indicated by a front panel light emitting diode (LED) and alarmed by relay contacts. If the main signal fails the ACD switches automatically to the backup input. Priority can be assigned to either input by means of a jumper. If operation without backup input is desired LOS indication and alarming can be disabled.

2.3.2. Twin mode

In this mode the ACDS must be populated with two cards. Either card will be set to drive all 18 outputs thus providing output protection. Both cards share signals from the same set of inputs to provide input protection. Internal signaling will ensure simultaneous switching to provide seamless outputs. Priority can be assigned to either input by means of a jumper. If operation without backup input is desired LOS indication and alarming can be disabled. Cards can be disabled by pressing a pushbutton. Disabled cards can be hot swapped without output signal interruption.



Output options:

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

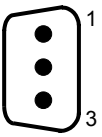
2.4. Technical Data

Physical Data	
Maximum Size (WxHxD)	440 x 149 x 279 mm 17.4x 5.9x 11.0 inch (excluding rack mount ears)
Maximum Weight	max. 3,1 kg (Sub-rack 2,5 kg ; ACD 0,3 kg)
Environmental Conditions	
Stationary use	EN 300 019-1-3 class 3.2 (-5° ...45°C)
Transportation	EN 300 019-1-2 class 2.3 (-40° ...70°C)
Storage	EN 300 019-1-1 class 1.2 (-25° ...55°C)
Regulations and Standards	
EN 55022/08.94 category B	
EN 50082-1/01/92	
EN 60950/92 + A1/93 + A2/93 + A3/95 + A4/97	
Reliability	
MTBF	Independent mode: 200 years availability Twin mode: 1297 years availability
MDT	Independent mode: 22 min/year Twin mode: 3.3 min/year

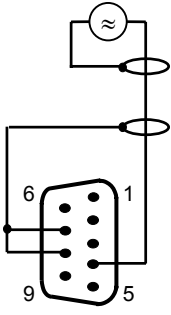
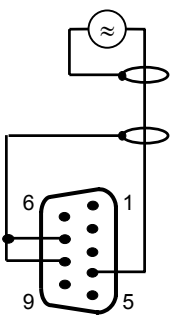
Power Supply	
Voltage	-39 to -75 VDC (2x) reverse polarity protected electrically isolated from case and signal potential
Current Consumption	max. 0,25 A
Power Consumption	typically 7.5 W (excluding alarm outputs)

Inputs		
Setting	120 Ω (balanced)	75 Ω (unbalanced) ¹⁾
Input resistance R _i	170 Ω	106 Ω
Input level	0.49 ... 6.18 V _{pp}	0.39 ... 4.9 V _{pp}
Alarm threshold	0.1 ... 0.25 V _{pp}	0.078 ... 0.19 V _{pp}
Level at test socket ²⁾	Input Level -20 dB	
Outputs		
Load	120 Ω (balanced)	75 Ω (unbalanced) ¹⁾
Output level	2.0 ... 3.7 V _{pp}	1.5 ... 3.0 V _{pp}
Alarm threshold	1.55 ... 0.96 V _{pp})	1.3 ... 0.75 V _{pp}
Level at test socket ²⁾	Output Level -20 dB	
¹⁾ T4 b-wire applied externally to ground ²⁾ at 150 Ω, Output Level -21 dB at 120 Ω. All peak-to-peak values refer to the fundamental wave.		

2.4.1. Pin Allocation – Power

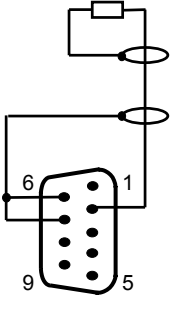
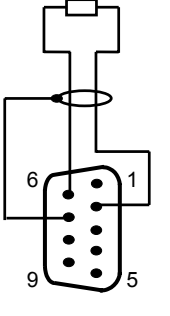
Pin	Signal name	
1	nc	
2	negative	
3	positive	
2 x connectors type SubD 3W3 male separately for: slot 201 (position X) slot 202 (position Y)		

2.4.2. Pin Allocation – Input T3.1 – T3.4

Pin	Signal name	75 Ω	120 Ω
1	GND		
2	reserved		
3	GND		
4	T3(a)		
5	nc		
6	reserved		
7	GND		
8	T3(b)		
9	Nc		

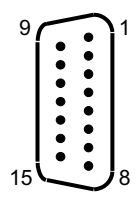
4 x connectors type SubD 9 male (position T3.1 – T3.4)

2.4.3. Pin Allocation – Output T4.1 – T4.18

Pin	Signal name	75 Ω	120 Ω
1	GND		
2	T4(a)		
3	GND		
4	reserved		
5	nc		
6	T4(b)		
7	GND		
8	reserved		
9	Nc		

18 x connectors type SubD 9 male (position A - T)

2.4.4. Pin Allocation – Alarm 7R-Sig.

Pin	Signal name	
1...3	+S	
4,5	nc	
6	ZA(A)1	
7	ZA(A)2	
8	GND	
9...11	-S	
13	ZA(B)1	
14	ZA(B)2	
15	nc	
1 x connector type SubD15 male (position W)		

2.4.5. LED Indicators

Designation	State	Description
power	green	card receives power
	off	no power to card
RA 1	red	loss of signal (LOS) at In 1
	off	In 1 OK
RA 2	red	loss of signal (LOS) at In 2
	off	In 2 OK
active error	green	card active
	red	card faulty
	off	card disabled

2.5. EC-Declaration of Conformity



Declaration of Conformity

Supplier's name Symmetricom GmbH
Suppliers address Fichtenstraße 25
D - 85649 Hofolding

declares,
that the product Active Clock Distribution System
Product name ACDS
Model number 80730100 Subrack ACD-SR
80730200 Active Clock Distributor ACD

conforms to the standards of the following European Directives
Number/title 89/336/EEC Electromagnetic Compatibility Directive
73/23/EEC Low-Voltage Directive

The conformity is evidenced by strictly meeting the following standards:
Harmonized European Standards:

EN 55022/08.94 Class B
EN 50082-1/01/92
EN 60950/92 + A1/93 + A1/93 + A3/94

Place, date Hofolding ..2003-08-13.....

Name Gerhard Hübner (General Manager)

Legally binding signatures



This declaration includes no warranty of properties.
The safety instructions specified in the product documentation delivered must be observed.

Doc.-No. 001938AA

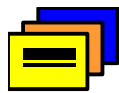
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3. Unpacking and Inspection

This chapter contains recommended procedures for unpacking the new equipment. It also lists instructions for inspection the delivered items for correct condition and completeness.

3.1. Unpacking

- (1) Open the package on the top labeled with the unit identification.
- (2) Remove the upper protection material
- (3) Remove the equipment together with associated parts. Check the shipping container for loose parts.



Recommendation

Keep all packaging materials in the event the equipment or components must be returned or shipped to another location.

3.2. Inspection

- (1) Check the equipment against packing list.
- (2) Inspect the unit for shipping damage, including bent or loose parts, broken connectors, or other visible defects.
- (3) Notify Symmetricom GmbH and the carrier who delivered the equipment if you suspect that it was damaged in transit.

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4. Installation

This chapter provides procedures to be performed prior first power up of the unit. It also contains instructions to configure the ACD and to connect input and output signals. The illustrations outlined in the section *Product Views* may support you.

The chapter *Maintenance* and *Troubleshooting* require that the instructions outlined herein are correctly performed.

4.1. Configuration of the ACD



Note

Factory setting is shown in **bold**.

4.1.1. Mode Setting

Set the jumper for your mode as described in the following table. In independent mode switch setting can be different on either card. In twin mode corresponding switches must be set identically on both cards.

Designation	Independent mode		Twin mode	
	Position	Description	Position	Description
S101	n/a	No function	push	Disables card
S102	open	No redundancy	closed	Redundant system
S103	open	Slot 201: enables T3.3 Slot 202: enables T3.4	open	Enables T3.2
	closed	Slot 201: disables T3.3 ³⁾ Slot 202: disables T3.4 ³⁾	closed	Disables T3.2 ³⁾
S105	open	Slot 201: T3.1 takes priority Slot 202: T3.2 takes priority	open	Slots 201 and 202: T3.1 takes priority
	closed	Slot 201: T3.3 takes priority Slot 202: T3.4 takes priority	closed	Slots 201 and 202: T3.2 takes priority
S106 S107 ¹⁾	1-3	Slot 201: In 2=T3.3 Slot 202: In 2=T3.4	1-2	Slot 201: In 2=T3.2 Slot 202: In 2=T3.1
S1041 S1042 ¹⁾	open	Slot 201 drives T4.1 through T4.9 Slot 202 drives T4.10 through T4.18	closed	Slots 201 and 202 drive T4.1 through T4.18
	closed ²⁾	Slot 201 drives T4.1 through T4.18		

¹⁾ Switch setting must be identical

²⁾ not permitted if slot 202 is populated

³⁾ Also disables LED indication and relay alarm

4.1.2. Bandwidth Setting

Designation	Position	Description
S104	open	G.823 jitter tolerance (45 Hz BW)
	closed	G.812 jitter tolerance (600 Hz BW)

4.1.3. Alarms Setting

Designation	Position	Description
ST350	1-2	Signal contacts to +S
	2-3	Signal contacts to GND

4.1.4. Input Impedance

Independent mode						
Input	Impedance		Slot 201		Slot 202 ¹	
	rated	actual	ST104/ST105 ²⁾	ST108/ST109 ²⁾	ST104/ST105 ²⁾	ST108/ST109 ²⁾
T3.1	120 Ω	170 Ω	1-2			
	75 Ω	106 Ω	2-3			
T3.2	120 Ω	170 Ω			1-2	
	75 Ω	106 Ω			2-3	
T3.3	120 Ω	170 Ω		1-2 ³⁾		
	75 Ω	106 Ω		2-3³⁾		
T3.4	120 Ω	170 Ω				1-2 ³⁾
	75 Ω	106 Ω				2-3³⁾

¹⁾ Not applicable if slot is empty

²⁾ Switch setting must be identical

³⁾ Don't care if backup input is disabled

Twin mode						
Input	Impedance		Slot 201		Slot 202	
	rated	actual	ST104/ST105 ¹⁾	ST108/ST109 ¹⁾	ST104/ST105 ¹⁾	ST108/ST109 ¹⁾
T3.1	120 Ω	85 Ω	1-2			1-2
	75 Ω	53 Ω	2-3			2-3
T3.2	120 Ω	85 Ω		1-2	1-2	
	75 Ω	53 Ω		2-3	2-3	

¹⁾ Switch setting must be identical

4.2. Assembly of the Unit

- (1) Remove the screw at the front panel.
- (2) Remove the front panel from the sub rack.
- (3) Slide the cards into the slots.
- (4) Put the front panel on the sub rack and fasten the integrated screw.
- (5) Fasten the mounting angles for ETSI or 19" installation both sides with two screws on the sub rack.

4.3. Installation Location

- (1) Install the unit only in an environment that meets the requirements of the section *Technical Data*.



Caution

To avoid excessive heat build-up resulting in equipment damage, provide proper ventilation and cooling of the equipment.

- (2) Fasten the unit with four screws on the rack.

4.4. Connection of Input and Output Signals

- (1) Connect the signal lines for the inputs according to configuration on the Connectors T3.1 – T3.4.
- (2) Connect the signal lines for the output signal distribution according to configuration on the Connectors T4.1 – T4.18 (A – T).
- (3) Connect the unit cover (protection conductor) with earth potential.
- (4) Secure not used connectors with protecting cap against electrostatic discharge.

4.5. Connection of Power

- (1) Connect the power line on connector X for the card in slot 201.
- (2) Connect the power line on connector Y for the card in slot 202.



Recommendation

Separate signal and power lines.

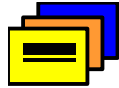
Use shielded cables only and ensure that the shielding is connected with the connector housing.

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5. Operation

This chapter describes all modes of operation of the product. Ensure that the unit is correctly installed as outlined in the *Installation* chapter.

If the equipment does not perform as described below follow the instructions in the *Maintenance and Troubleshooting* chapter.



Recommendation

To achieve highest precision do not subject the unit to adverse conditions such as:

- strong magnetic fields, e.g. mobile phones
- shocks
- temperature differences
- direct solar radiation

For a reference of the signals and LED's refer to the illustrations outlined in the section *Product Views and Technical Data*.

5.1. Acclimatization

In the case that water has condensed on the unit during transport, or storage, the equipment must be allowed to acclimatize for approximately two hours before operation.



Caution

Condensed water may damage the unit.

5.2. Power Up

**Warning**

To avoid personal injury do not operate the equipment when the housing is opened.

**Warning**

To avoid personal injury do not operate the equipment while there is danger of explosion.

**Caution**

The equipment may not be operated while there are high atmospheric humidity, high dust level, and aggressive chemical influence.

- (1) When power is applied the *power* LED illuminates.
- (2) If no failure is present and the installed cards are enabled the *active error* LED illuminates green indicating that the unit is in normal operation mode and provides output signals.

5.3. Operating

During operation no further handling is necessary.

6. Maintenance and Troubleshooting

This chapter contains cleaning and maintenance procedures. Troubleshooting instructions allow faulty isolation of the unit including associated equipment. These instructions refer to the *Technical Data* section as the main reference for the technical specification. Before starting with troubleshooting ensure that the unit is correctly installed.

6.1. Cleaning

Should it become necessary to clean the unit, wipe the housing with a cleaning cloth moistened with methylated spirits.



Caution

To avoid damage to the unit, always switch off and disconnect the power before cleaning the unit. Avoid exposing the unit to liquid.

6.2. Preventive Maintenance

The unit does not require any preventive maintenance.



Note

Make sure that the equipment is not endangered by strong magnetic fields, hard shocks, extreme humidity and extreme temperature differences, which may be detrimental to frequency accuracy.

6.3. Troubleshooting and Fault Isolation

Front panel indicators

Designation	State	Description	Details		
power	green	card receives power	normal operation		
	off	no power to card	PWR alarm ⁴⁾		
RA 1	red	loss of signal (LOS) at In 1		twin mode	indep. mode
			slot 201	LOS ¹⁾ at T3.1	LOS ¹⁾ at T3.1
			slot 202	LOS ¹⁾ at T3.2	LOS ¹⁾ at T3.2
	off	In 1 OK	normal operation		
RA 2	red	loss of signal (LOS) at In 2		twin mode	indep. mode
			slot 201	LOS ¹⁾ at T3.2	LOS ¹⁾ at T3.3
			slot 202	LOS ¹⁾ at T3.1	LOS ¹⁾ at T3.4
	off	In 2 OK	normal operation		
active error	green	card active	normal operation, card provides output signal		
	red	card faulty	PLL alarm ²⁾ or AMP alarm ³⁾		
	off	card disabled	power LED is on	power LED is off	
			card does not provide output signal	PWR alarm ⁴⁾	

¹⁾ LOS: loss of reference input signal (signal below alarm threshold)

²⁾ PLL alarm: phase locked loop fault, includes reference frequency out of hold-in range

³⁾ AMP alarm: output amplifier fault

⁴⁾ PWR alarm: external or internal power supply fault, external fuse blown

Alarm contacts

Twin mode					
Minor 1	Major 1	Minor 2	Major 2	Description	Details
open	open	open	open	no alarm	normal operation
closed	open	open	open	minor alarm	LOS ¹⁾ at T3.1 or LOS ¹⁾ at T3.2 ⁵⁾ or PLL alarm ²⁾ in single card or AMP alarm ³⁾ in single card or PWR alarm ⁴⁾ in single card
closed	closed	open	open	major alarm, no output signal	LOS ¹⁾ at T3.1 and LOS ¹⁾ at T3.2 ⁵⁾ or PLL alarm ²⁾ in both cards or AMP alarm ³⁾ in both cards
open	closed	open	closed	critical alarm	PWR alarm ⁴⁾ in both cards

Independent mode					
Minor 1	Major 1	Minor 2	Major 2	Description	Details
open	open	open	open	no alarms	normal operation
closed	open			minor alarm	LOS ¹⁾ at T3.1 or LOS ¹⁾ at T3.3 ⁵⁾
closed	closed			major alarm	LOS ¹⁾ at T3.1 and LOS ¹⁾ at T3.3 ⁵⁾ or PLL alarm ²⁾ in slot 201 or AMP alarm ³⁾ in slot 201
open	closed			critical alarm	PWR alarm ⁴⁾ in slot 201
don't care	don't care	closed	open	minor alarm	LOS ¹⁾ at T3.2 or LOS ¹⁾ at T3.4 ⁵⁾
don't care	don't care	closed	closed	major alarm	LOS ¹⁾ at T3.2 and LOS ¹⁾ at T3.4 ⁵⁾ or PLL alarm ²⁾ in slot 202 or AMP alarm ³⁾ in slot 202
don't care	don't care	open	closed	critical alarm	PWR alarm ⁴⁾ in slot 202
open	closed	open	closed	critical alarm	PWR alarm ⁴⁾ in both cards

¹⁾ LOS: loss of reference input signal (signal below alarm threshold)

²⁾ PLL alarm: phase locked loop fault, includes reference frequency out of hold-in range

³⁾ AMP alarm: output amplifier fault

⁴⁾ PWR alarm: external or internal power supply fault, external fuse blown

⁵⁾ only if alarm is enabled (S 103 open)

6.4. Return Procedure

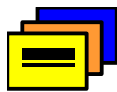
To return the unit to the manufacturer for repair, use the following instructions:

- (1) Contact the service department of Symmetricom GmbH (see back cover of this document) to announce the repair/service case before returning the product.
- (2) Follow the procedure provided by the service department.

6.5. Repacking

The unit is portable and may be carried unpacked at normal environmental conditions.

Use standard packing procedures to protect the unit during shipment. Custom foam packing material is preferred because it conforms to the shape of the instrument.



Recommendation

Use transport case and original packing materials in the event the unit must be returned or shipped to another location.

A. Procurement Information

This appendix provides information needed to procure Symmetricom’s ACDS model including associated parts.

For further information than outline herein and for ordering please contact Marketing/Sales of Symmetricom GmbH.

Symmetricom GmbH

Marketing/Sales
Fichtenstrasse 25

D-85649 Hofolding / Munich
Germany

Phone: +49 – 8104-6624-29

Fax: +49 – 8104-6624-28

e-mail: sales@symmetricom.de

web: www.symmetricom.com/

Please provide the parts name together with the part number when ordering.

Name of the Component	Part Number
Active Clock Distribution – Sub-Rack (ACD-SR)	80730100
Active Clock Distributor (ACD)	80730200
Power-Kit (plug + 3 m cable) ¹⁾	45403500
Power-Kit (plug + 10 m cable) ¹⁾	45403510
Balun Transformer (for inputs and outputs) ²⁾	80719011
Sub-D15 connector female (including shell) ³⁾	13041060

¹⁾ The delivery package of the ACDS includes power plugs, but without cable. The Power-Kit provides a plug with a pre-assembled cable.

²⁾ The Balun Transformer is a bi-directional adapter for frequency and traffic interfaces converting signals from 120 Ω balanced (Sub-D9 interface) to 75 Ω unbalanced (BNC interface) and vice versa.

³⁾ The Sub-D15 connector will be used to monitor alarm status available from connector 7R-Sig (position W at the sub-rack).

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B. Sample Forms

The following pages are provided as a convenient means to document chosen equipment settings and connections Settings.

B.1. Operation Mode

Mode	installed ACD	Input/Output behaviour	Input Applicability
Independent	slot 201	<input type="checkbox"/> inputs T3.1/T3.3 to outputs T4.1 to T4.18	<input type="checkbox"/> T3.3 disabled
Independent	slot 201	<input type="checkbox"/> inputs T3.1/T3.3 to outputs T4.1 to T4.9	<input type="checkbox"/> T3.3 disabled
	slot 202	<input type="checkbox"/> inputs T3.2/T3.4 to outputs T4.10 to T4.18	<input type="checkbox"/> T3.4 disabled
Twin	Slot 201	<input type="checkbox"/> inputs T3.1/T3.2 to outputs T4.1 to T4.18	<input type="checkbox"/> T3.2 disabled
	Slot 202		

B.2. Input Impedance

Connector	Impedance	
T3.1	<input type="checkbox"/> 75 Ω	<input type="checkbox"/> 120 Ω
T3.2	<input type="checkbox"/> 75 Ω	<input type="checkbox"/> 120 Ω
T3.3	<input type="checkbox"/> 75 Ω	<input type="checkbox"/> 120 Ω
T3.4	<input type="checkbox"/> 75 Ω	<input type="checkbox"/> 120 Ω

B.3. Miscellaneous

Item	Setting	
Bandwidth	<input type="checkbox"/> 45 Hz	<input type="checkbox"/> 400 Hz
Alarms	<input type="checkbox"/> +S	<input type="checkbox"/> GND

B.4. Connections

Inputs

Connector	From (signal source)
T3.1	
T3.2	
T3.3	
T3.4	

Outputs

Connector	To (signal sink)
T4.1	
T4.2	
T4.3	
T4.4	
T4.5	
T4.5	
T4.6	
T4.7	
T4.8	
T4.9	
T4.10	
T4.11	
T4.12	
T4.13	
T4.14	
T4.15	
T4.16	
T4.17	
T4.18	

GLOSSARY

(ONLY NON-STANDARD ABBREVIATIONS ARE LISTED)

ACD	<i>Active Clock Distributor</i>
ACDS	<i>Active Clock Distribution System</i>
EC	<i>European Council</i>
EN	<i>European Norm</i>
ESD	<i>Electro Static Discharge</i>
ETSI	<i>European Telecommunications Standards Institute</i>
GND	<i>Ground</i>
LED	<i>Light Emitting Diode</i>
LOS	<i>Loss Of Signal</i>
MTBF	<i>Mean Time Between Failure</i>
PLL	<i>Phase Locked Loop</i>
RA	<i>Reference alarm</i>
Ref.	<i>Reference</i>
SR	<i>Sub-Rack</i>
T3	<i>Input clock</i>
T4	<i>Output clock</i>
VDC	<i>Volts, Direct Current</i> The unit of electromotive force
ZA(A)	<i>Central alarm (central indication), fault alarm A priority</i>
ZA(B)	<i>Central alarm (central indication), fault alarm B priority</i>

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