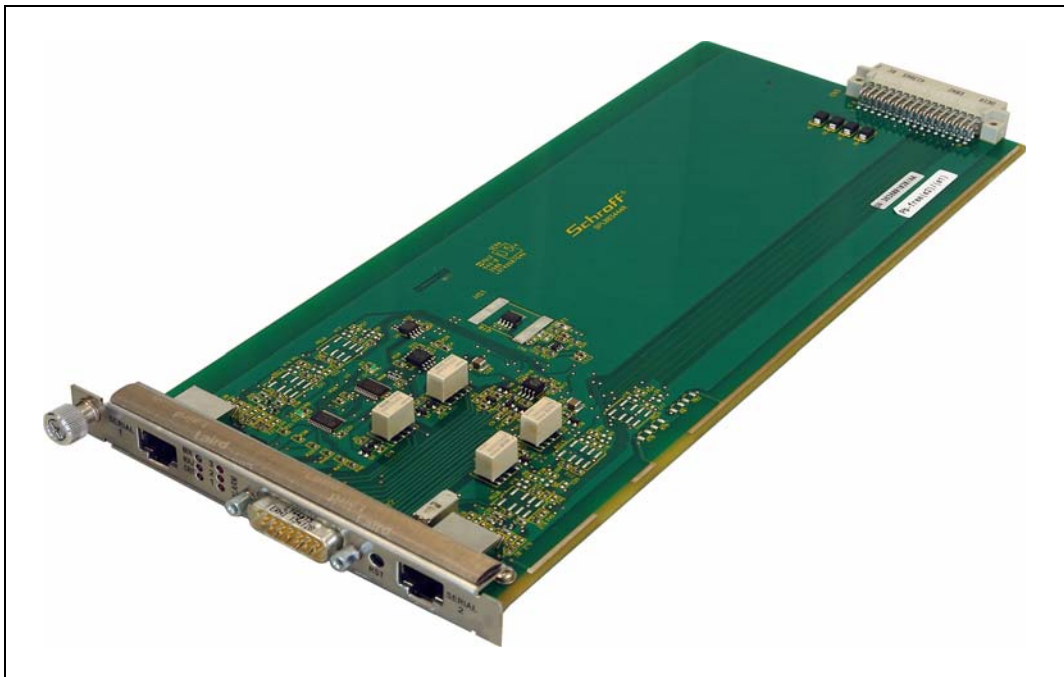


# Shelf Alarm Panel (SAP)

## User's Manual



**Product Number:**  
**21596-077**

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Rev.	Date updated	Change
R1.0	February 05, 2008	Initial Release

Impressum:

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D-75334 Straubenhardt, Germany

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**Schroff Shelf Alarm Panel (SAP)**

21596-077

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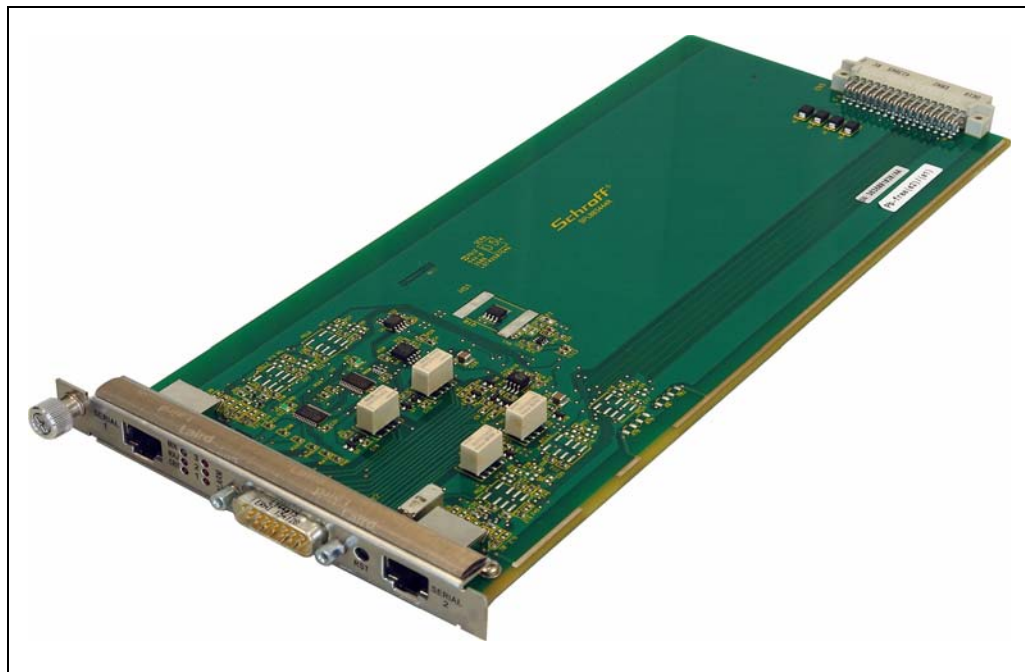
## 1 Introduction

Some I/O functionalities of the Schroff ACB-IV Shelf Manager have been moved to a separate board called Shelf Alarm Panel (SAP). The Shelf Alarm Panel is a FRU and provides:

- 3 Telco Alarm LEDs (MINOR, MAJOR, CRITICAL)
- 3 User definable LEDs
- The Telco Alarm connector (DB15-male)
- The Alarm Silence Push Button
- Serial console interfaces for Schroff Shelf Managers (RJ45 connectors)
- Temperature sensor (LM75)
- SEEPROM for FRU information

The SAP is connected to the Schroff ACB-IV Shelf Manager by a I<sup>2</sup>C connection, the signals from the serial connectors are routed directly to serial console interface on the Shelf Manager.

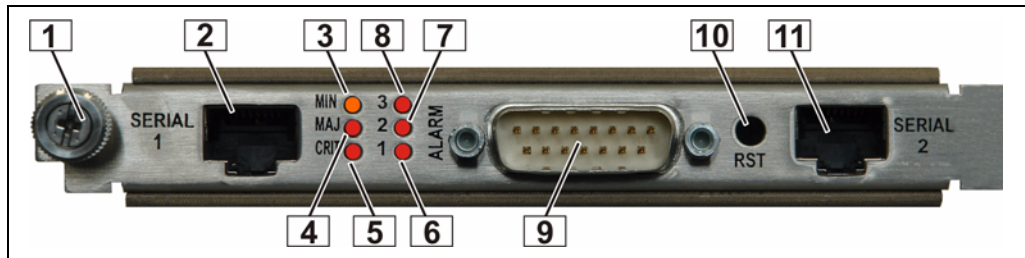
Figure 1: SAP



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## 2 SAP Front Panel

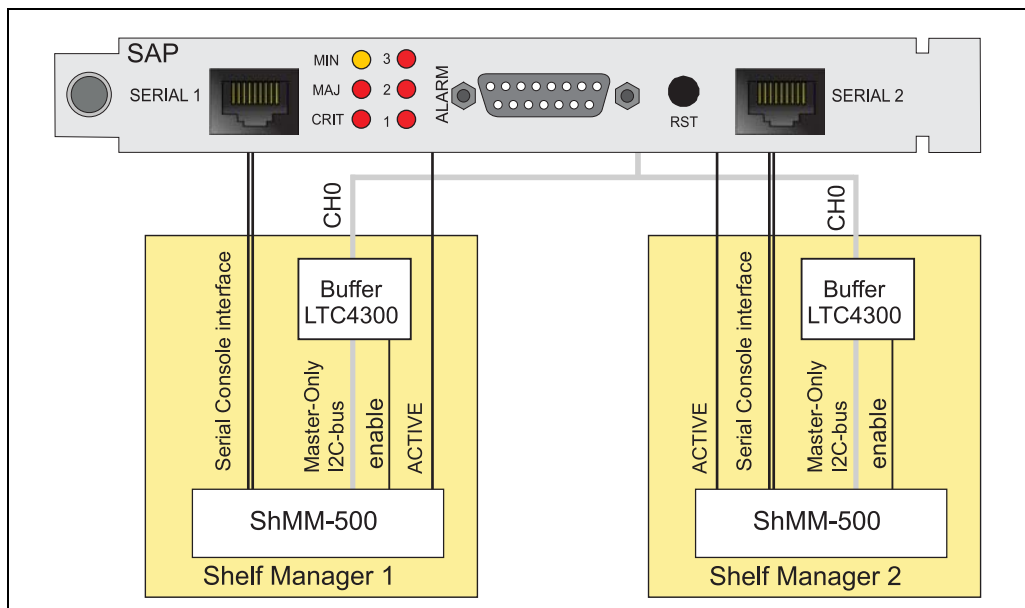
Figure 2: Front Panel SAP



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- |  |   |
|--|---|
| 1 Fixing screw                         | 7 LED USER 2                            |
| 2 Serial Interface for Shelf Manager 1 | 8 LED USER 3                            |
| 3 LED Minor Alarm (red)                | 9 Telco Alarm Connector                 |
| 4 LED Major Alarm (red)                | 10 Alarm Silence button                 |
| 5 LED Critical Alarm (amber)           | 11 Serial Interface for Shelf Manager 2 |
| 6 LED USER 1                           |   |

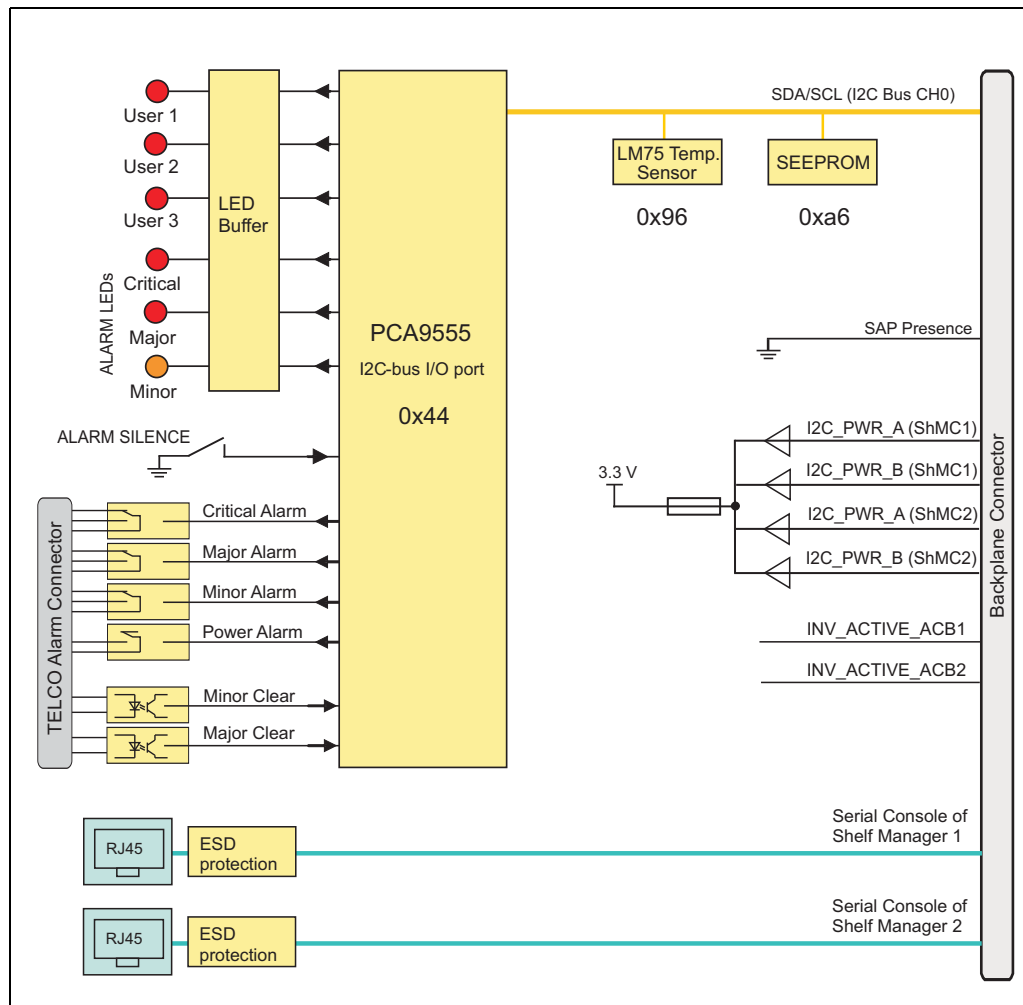
Figure 3: Connection between Shelf Manager and SAP



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### 3 SAP Block Diagram

Figure 4: SAP Block Diagram



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### 4 SAP SEEPROM

The SAP SEEPROM is connected to the Master-Only I<sup>2</sup>C-bus and is a Microchip 24LC256 device.

### 5 SAP Temperature Sensor

The LM75 temperature sensor measuring the board temperature is located on the SAP PCB. The temperature sensor is connected to the Master-Only I<sup>2</sup>C-bus.

## 6 SAP PCA9555

The PCA9555 device:

- controls the status of the LEDs
- reads the status of the Telco Alarm Cutoff push button (CLEAR)
- controls the Telco Alarm relays

**Table 1: SAP PCA9555 Device Function**

PCA9555 I/O pins	Function	State
0.0	Power Alarm to telco relays output	1 = relays powered
0.1	Minor Alarm to telco relays output	1 = relays powered
0.2	Major Alarm to telco relays output	1 = relays powered
0.3	Critical Alarm to telco relays output	1 = relays powered
0.4	N/C	Pulled High
0.5	LED_MIN (Minor alarm LED) output	1 = On
0.6	LED_MAJ (Major alarm LED) output	1 = On
0.7	LED_CRIT (Critical alarm LED) output	1 = On
1.0	Alarm cutoff push button input	0 = push button pushed
1.1	Minor Clear input	0 = voltage applied to input pins
1.2	Major Clear input	0 = voltage applied to input pins
1.3	N/C	Pulled High
1.4	N/C	Pulled High
1.5	LED_USER3 output	1 = On
1.6	LED_USER2 output	1 = On
1.7	LED_USER1 output	1 = On

### 6.1 SAP I<sup>2</sup>C Addresses

**Table 2: SAP I<sup>2</sup>C Addresses**

LM75	SEEPROM	PCA9555
0x96/0x4b	0xa6/0x53	0x44/0x22

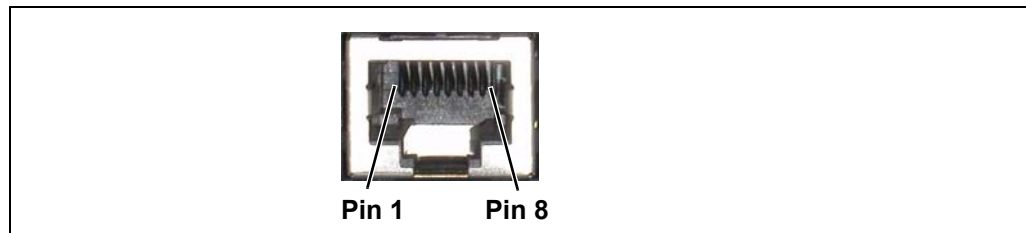
### 6.2 User definable LEDs

The LEDs USER (1, 2, 3) are user definable and connected to the I<sup>2</sup>C-bus I/O port of the PCA 9555 on the SAP.



## 7 RS-232 Serial Console Interfaces on SAP

Figure 5: RS-232 Serial Console Interface on Shelf Alarm Display



12705811

The SAP provides two RS-232 serial console connector (SERIAL 1 and 2) for Shelf Manager 1 and 2. The connectors are 8-pin RJ45 modular receptacles.

A full set of RS-232 signals, including modem control, is provided. The serial interface is implemented on the Schroff Shelf Manager.



The serial console default configuration is:

- 115200 baud
- no parity
- 8 data bits
- 1 stop bit

Table 3: RS-232 Serial Console Interface Pin assignment

RJ45 Pin	RS-232 Signal	ShMM-500 Signal	Type	Description
1	RTS	RTS	Out	Request To Send
2	DTR	DTR	Out	Data Terminal Ready
3	TxD	TXD0	Out	Transmit Data
4	GND	GND	---	Logic Ground
5	GND	GND	---	Logic Ground
6	RxD	RXD0	In	Receive Data
7	DSR	DSR	In	Data Set Ready
8	CTS	CTS	In	Clear To Send

### 7.1 SAP Console Cable for the Shelf Manger Serial Interface

Figure 6: RJ45 to DB9 Serial Console Cable



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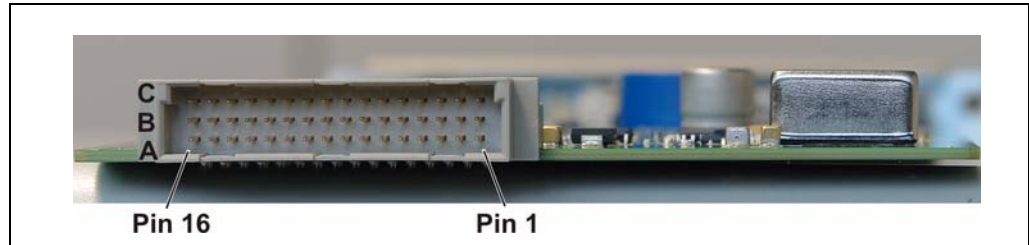
The connectors are shown with the cables pointing away.



Serial Console Cable sold separately, Schroff Catalog-No: 23204-187

## 8 Shelf Alarm Panel Backplane Connector

Figure 7: Shelf Alarm Panel Backplane Connector



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Table 4: Shelf Alarm Panel Backplane Connector Pin Assignment

SAP ATCA Backplane Connector						
Pin	A	Description	B	Description	C	Description
1	-48V_A	-48 V Feed A	-48V_B	-48 V Feed B		
2					VRTN_A	Voltage return Feed A
3					VRTN_B	Voltage return Feed B
4						
5			I2C_PWR_A	3.6 V from Shelf Manager	I2C_PWR_B	3.6 V from Shelf Manager
6	GND	Ground	GND	Ground		
7	SDA_CH0	Data I <sup>2</sup> C-bus Channel 0	GND	Ground		
8	SCL_CH0	Clock I <sup>2</sup> C-bus Channel 0	INT		GND	
9			RXD0_ACB1	Receive Data Shelf Manager		
10	DSR_ACB1	Data Set Ready Shelf Manager	DTR_ACB1	Data Terminal Ready Shelf Manager		
11					CD_ACB1	Carrier Detect Shelf Manager
12	CTS_ACB1	Clear To Send Shelf Manager			RTS_ACB1	Request To Send Shelf Manager
13			TXD0_ACB1	Transmit Data Shelf Manager		
14						
15	SAP_PRES	SAP Presence signal to Shelf Manager	SCL_A			
16	INV_ACTIVE_A CB1	Active signal from Shelf Manager			SHELF_GND	Shelf Ground

## 9 SAP Telco Alarms

### 9.1 Telco Alarm Interface

The SAP provides a Telco Alarm interface on the DB15-male connector. Three relay outputs are used for remote alarm distribution, reflecting the state of the three Alarm LEDs. The relays are capable of carrying 72 VDC or 1 A with a max. rating of 30 VA.

### 9.2 Telco Alarm LEDs

The Shelf Alarm Panel provides the Telco Alarm LEDs. These LEDs indicate presence of Critical, Major and Minor alarms as follows:

Table 5: Telco Alarm LEDs

State	Description
Off	No alarm active
On	Alarm active
Flashing	Alarm active, but silenced

### 9.3 Alarm Silence Push Button

The Alarm Silence push button on the Shelf Alarm Panel faceplate deactivates the alarm relays. During the time Alarm Silence is activated, the Alarm LEDs flash. By pressing the Alarm Silence push button a second time, the alarm relays are reactivated and the Alarm LEDs are solid.



*The **Alarm Silence** push button only activates the Alarm Silence state, but does not reset the alarms. If the silence interval (default 600 s) is exceeded without resolving the alarms, the alarms will be re-initiated.*

## 9.4 Alarm Reset

### Hardware Reset:

Two relay inputs at the DB15 connector are used to reset the Minor and Major alarm state.

The reset inputs accept timed pulse inputs for clearing Minor and Major alarm states. Reset is accomplished by asserting a voltage differential from 3.3 VDC to 72 VDC for between 200 ms and 300 ms. The acceptance voltage range is from 0 to 48 VDC continuous (handles up to 60 VDC at a 50% duty cycle). The current drawn by a reset input does not exceed 12 mA.



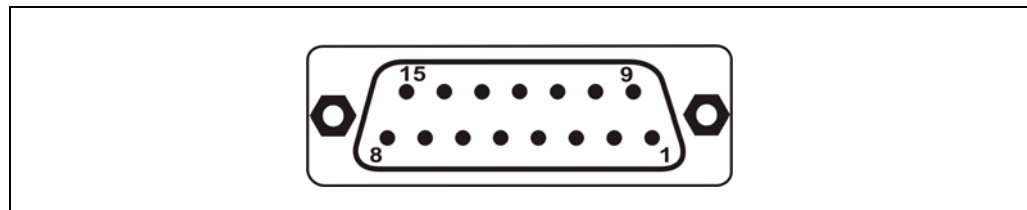
*There is no hardware reset (reset input) for the Critical Alarm state.*

### Software Reset:

The RMCP and CLI functions can be used to set and reset the Telco Alarms (incl. Critical Alarm). See the Pigeon Point Shelf Manager External Interface Reference for more information.

### 9.4.1 Telco Alarm Connector (DB15-male)

Figure 8: Telco Alarm Connector (DB15-male)



12705896

Table 6: Telco Alarm Connector Pin Assignment

Pin	Name	Description
1	AMIR+	MinorReset+
2	AMIR-	MinorReset-
3	AMAR+	MajorReset+
4	AMAR-	MajorReset-
5	ACNO	CriticalAlarm - NO
6	ACNC	CriticalAlarm - NC
7	ACCOM	CriticalAlarm - COM
8	AMINO	MinorAlarm - NO
9	AMINC	MinorAlarm - NC
10	AMINCOM	MinorAlarm - COM
11	AMANO	MajorAlarm - NO
12	AMANC	MajorAlarm - NC
13	AMACOM	MajorAlarm - COM
14	APRCO	PwrAlarm - NO
15	APRCOM	PwrAlarm - COM
Shield	Shelf-GND	Shelf Ground



**SCHROFF GMBH**

**[www.schroff.biz](http://www.schroff.biz)**

**Langenalberstr. 96-100  
D-75334 Straubenhardt**

**Tel.: + 49 (0) 7082 794-0**

**Fax: +49 (0) 7082 794-200**