

SHURE®

LEGENDARY
PERFORMANCE™

Conferencing and Discussion Systems

SZ 6104 DCS-LAN Switcher

USER GUIDE



Table of Contents

Table of Contents	2	Accessories	6
Important	3	General	7
Installation precautions	3	Operating instructions	8
Compliance	3	Local/Remote selector switch	8
Information to the user	3	Local/Remote Delay	9
Cleaning	3	A, B and AO switches	9
Repacking	3	Redundancy switching	10
Warranty	4	Use of patch panel in Operators Room	11
Your DCS 6000 Conference System	5	Technical Specifications	14
The DCS 6000 system	5	System Specification	14
System components	6	Connection Details	15
Central equipment etc.	6	Accessories	15
Interpreter equipment.....	6		
Conference units and Ch. selectors	6		

Important

Installation precautions

Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place exposed to direct sunlight, excessive dust or humidity, mechanical vibration or shock.

Compliance

The equipment is intended to be used in professional audio applications.

Note: This device is not intended to be connected directly to a public internet network.

EMC conformance to Environment E2: Commercial and Light Industrial.

Testing is based on the use of supplied and recommended cable types.

The use of other than shielded (screened) cable types may degrade EMC performance.

Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate this equipment.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Authorized under the verification provision of FCC Part 15B.

Please follow your regional recycling scheme for batteries, packaging, and electronic waste.

Information to the user

This equipment has been tested and found to comply with the limits for a Class B digital device,

Cleaning

To keep the cabinet in its original condition, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly

Repacking

Save the original shipping cardboard box and packing material; they will become handy if you ever have to ship the unit. For maximum protection,

To avoid moisture condensations do not install the unit where the temperature may rise rapidly.

pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

dampened with a mild detergent solution. Never use organic solvents such as thinners or abrasive cleaners since these will damage the cabinet.

re-pack the unit as originally packed from the factory.

Warranty

The individual units in the DCS 6000 system are minimum covered by 24 months warranty against defects in materials or workmanship.

Your DCS 6000 Conference System

The DCS 6000 system

DCS 6000 Digital Conference System is a system to be used at meetings, where a number of people are addressing the 'Floor' in a structured manner. The audio from the Conference units can be heard in the built in loudspeakers in the units.

The system does also allow for simultaneous interpretation for international conferences where multiple languages are used.

To enable all participants to understand the proceedings, interpreters can simultaneously translate the speaker's language as required. These interpretations are distributed through the connected Conference units and delegates can select the language of their choice and listen to it through headphones.

DCS 6000 Digital Conference System comprises of one CU 61xx Central Unit and a number of Conference Units, Gooseneck Microphones and other accessories depending on the system configuration.

The DCS 6000 system has the following main features:

- Fully digital
- Excellent sound quality
- "State of the Art" fully digital integrated interpretation, discussion and voting system offering interpretation, language distribution, conference microphone and voting facilities with attendance check with Chip Card™
- Digital transmission of audio from/to the Conference unit to/from the central unit using a unique digital DATA and AUDIO bus named DCS-LAN
- Control of up to 3800 conference units. This number does not include Channel Selectors, Repeaters etc. In practical use there are no limits for the number of Channel Selectors in a system
- Delegate and Interpreter units are powered and controlled by the CU 61xx Central Unit, which drives up to app. 50 units with the PS CU power supply
- EX 6010 Extension Unit or PS 6001 DCS-LAN Power Kit is available if more units are required

- Delayed switching on of power to the two DCS-LAN chains, to minimize the total 'in-rush' current on the Mains supply
- Designed for 31 interpretation channels and 8 open microphones
- Audio scrambling of the audio to avoid eavesdropping
- Designed in a standard 1HE 19" cabinet
- TCP/IP connection on CU 61xx for external operation of the system using a PC or control system such as AMX® or Crestron®
- Functionality on the CU 61xx depends on the Feature License uploaded into the unit
- Firmware in Delegate units, Interpreter Units, Central Units etc. is upgradeable
- Operated either stand alone or from a PC using the CU browser or using SW 6000 software
- Added functionality and comprehensive features provided by SW 6000 software package running on PC

The SW 6000 is an optional software package, which expands the functionality of the DCS 6000 system. The software runs on standard computer technology (Standard PC with Windows 7, Server 2008 etc.).

Main features of the SW 6000 are:

- Microphone management
- Mimic panel operation
- Interpretation management
- Voting management
- Message handling
- Agenda handling
- Data stored on SQL data base
- Web service interface available for easy links to external applications
- Multi language user interfaces
- Supports different User types with different priorities, user interfaces and control possibilities

System components

Central equipment etc.

CU 6105	Central Unit
CU 6110	Central Unit
EX 6010	Extension Unit
PS 6001	DCS-LAN Power Kit consisting of one PS CU and one PI 6000
PS CU	Power Supply
PI 6000	DCS-LAN Power Inserter
RC 6000	Redundancy Controller
AO 6004	Audio Output Unit
AO 6008	Audio Output Unit
RP 6004	Repeater for four chains
JB 6104	Junction Box with 4 outputs
SZ 6104	DCS-LAN Switcher

Interpreter equipment

IS 6132 P	Interpreter Unit
LS 6132 P	Interpreter Loudspeaker

Conference units and Ch. selectors

DC 6990 P	Conference Unit (portable) with touch screen with two built-in channel selector, Chip-card and 5 voting buttons, configurable as Delegate, Dual Delegate or Chairman.
DC 6120 P	Conference Unit (portable)
DC 6190 P	Conference Unit (portable) with two built-in channel selectors
DM 6680 P	Conference Unit (portable) with voting
CM/DM 6080 F	Conference Unit (flush mounted) with built-in channel selectors

DM 6620 F	Conference Unit (flush mounted) with, Chip-card and 5 voting buttons
CM/DM 6680 F	Conference Unit (flush mounted) with one built-in channel selector, Chip-card and 5 voting buttons
MU 6040 C/D	Microphone Unit for use with FD/FC front plate with Loudspeaker, Microphone and Buttons. Available in Delegate (D) and Chairman (C) version
MU 6042 D	Dual Microphone Unit for use with FD/FC front plate with Loudspeaker, Microphone and two delegate Buttons
DV 6501 F	Voting Unit
AM 6040	Ambient Microphone Unit
CS 6340 FV/FH	Channel Selector (flush mounted)

Accessories

In addition to the unit a number of accessories are available like:

- Storage Boxes
- GM 6523 Gooseneck Microphone, 40 cm
- GM 6524 Gooseneck Microphone, 50 cm
- GM 6525 Gooseneck Microphone, 63 cm
- DH 6021 Delegate Headphone
- DH 6223 Stethoscope Headphone
- DH 6225 Ear Clip Headphone

For detailed instruction in how to use the above units, please refer to the User Manuals for the relevant products.

General

The SZ 6104 is designed to be used in DCS 6000 system utilizing DCS-LAN bus for connecting units

The SZ 6104 Switcher is designed for use in installations with several rooms where room linking is needed. Options of running the rooms in different modes (e.g. master, slave, stand alone, secret) is also integrated. A 9-pole D-Sub connector is provided for external control (e.g. with an AMX-system) of the switch settings. A DIP-switch panel on the front can also be used to set switches and control features. The unit can also be used for installations where a redundancy switching between

a master and spare central unit is demanded. The unit has one selector for Local/Remote central unit switching and 3 on/off chain switches.

The unit comes in a black metal box with brackets for fixing screws. It can also be rack mounted (1 height unit) using an optional bracket kit. The front panel has a power indicator and indicators for the Local/Remote selector and the 3 on/off switches as well as the DIP-switches. The back panel has all the chain connectors and the control connector.

Operating instructions

Local/Remote selector switch

This is a 2 inputs to 1 output selector. It has two RJ-45 connectors for connection to the local room central unit and the remote room central unit and one RJ-45 connector for connection to the local room system units.

DC power (nominal +48V) on either of the two input connectors "From Local CU" and "From Remote CU" will power the whole SZ 6104 plus all units connected to the SZ 6104 "To Local System". Both serial data signals and DC-power will be switched. Selection of Local or Remote can be made with DIP switch 1 (On: Local selected) and switch 2 (On: Remote selected).

Note: All the DIP switches on the front panel are in parallel with the D-Sub control connector. Also note the truth table for these two control inputs/switches. Note that in case both are ON only the Local will be selected.

Normally an EX 6010 Extension power supply is used as the first unit after the Local/Remote switch. The DC power supplied to the SZ 6104 from the local or remote central unit shall supply all units connected to the two switched outputs. If there is a long distance to e.g. the remote central unit there might be a significant voltage loss in the cable if many units are connected to the switcher.

Truth table for Local/Remote:

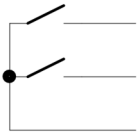
Pin 1 LOCAL ON	Pin 2 REMOTE ON	DIP SW 1 LOCAL	DIP SW 2 REMOTE	Local CU	Remote CU
Closed	Open	ON	OFF	Selected	Disconnected
Open	Closed	OFF	ON	Disconnected	Selected
Open	Open	OFF	OFF	Disconnected	Disconnected
Closed	Closed	ON	ON	Selected	Disconnected

Note: The signals on the control connector are inverted and active when pulled low (to 0V). Let the pin float when H.

This table is also shown on the back of the unit as well as the control connections.

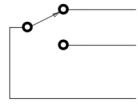


The switching using the control connector can be used in different ways:



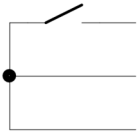
Using 2 switches:

- Pin 1: LOCAL ON
- Pin 2: REMOTE ON
- Pin 9: 0V



Using 1 selector:

- Pin 1: LOCAL ON
- Pin 2: REMOTE ON
- Pin 9: 0V



Using 1 switch:

- Pin 1: LOCAL ON
- Pin 2: REMOTE ON
- Pin 9: 0V

Local/Remote Delay

In case the switch is operated from Local to Remote or vice versa with active operating systems it is necessary to put in a delay so the connected system first is switched off for a short while before the new central unit is selected. This is in order to be sure that the new connected units will restart and report in to the newly selected central unit.

So whenever switching from one central unit to another is done with system running, the DIP switch 3 LOC/REM DELAY shall be set to ON. You can also place a connection between pin 8 (DELAY ON) and pin 9 (0V) on the control connector.

A, B and AO switches

These three switches are ON/OFF switches for chains. They are identical. Both serial data signals and DC-power will be switched. The DC power to each input will supply the corresponding output. There must be power on one of the two switched inputs "To Local CU" and/or "To Remote CU" for the SZ 6104 to function. These three switches are meant to be used for one A-chain, one B-chain and connection to a remote audio output box(es) (AO 6008, AO 6004) from the local central unit. The switches can then be used to switch off the signals

from the room going to a remote patch panel or room in order to prevent remote listening to the local room.

In systems where more than 16 languages are used you may need both A and B-channels remotely (It is only possible to have up to 16 language booths on either an A or B channel.). The Audio Output box is meant to be placed in a central operator's room with the patch panel for the rooms and a bank of audio recorders.

DIP SW 4 A	Pin 3 A	
OFF	Open	A disconnected
ON	Closed	A connected

DIP SW 5 B	Pin 4 B	
OFF	Open	B disconnected
ON	Closed	B connected

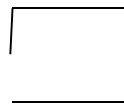
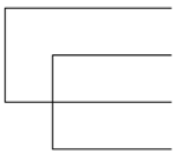
DIP SW 6 AO	Pin 5 AO	
OFF	Open	AO disconnected

ON	Close	AO connected
----	-------	--------------

Redundancy switching

SZ 6104 can also be used for switching between a master central unit and a spare in case the master fails. The Local/Remote switch is used for this purpose and the other three switches are not used. The switching can either be done manually using the DIP switches 7: LOC. AUTO ON and 8: REM. AUTO ON can be sat on. This can also be done by making jumpers in the control connector.

See below. Also set LOC/REM DELAY on (other switches off). Can also be connected to 0V in control connector. The master central unit is connected to LOCAL CU and the spare central unit is connected to REMOTE CU. In case the master unit is switched off (the DC-power fails) then the spare is selected (must be powered) after a short delay.



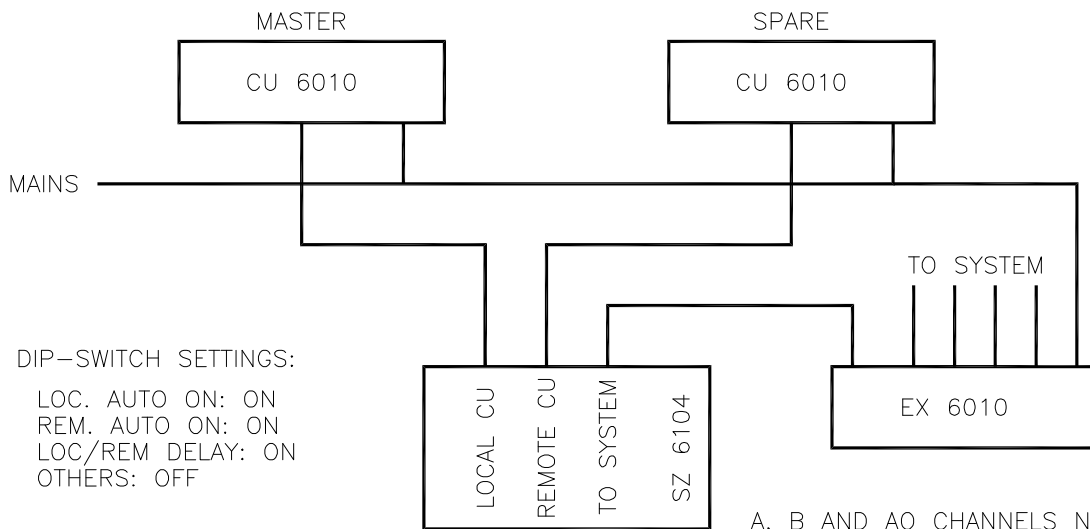
- Pin 1: LOCAL ON
- Pin 2: $\overline{\text{REMOTE ON}}$
- Pin 6: $\overline{\text{LOC.POW.ON}}$
- Pin 7: $\overline{\text{REM.POW.ON}}$
- Pin 8: $\overline{\text{DELAY ON}}$
- Pin 9: 0V

Pins 6 and 7 are logic outputs active low indicating power on local or remote chains.

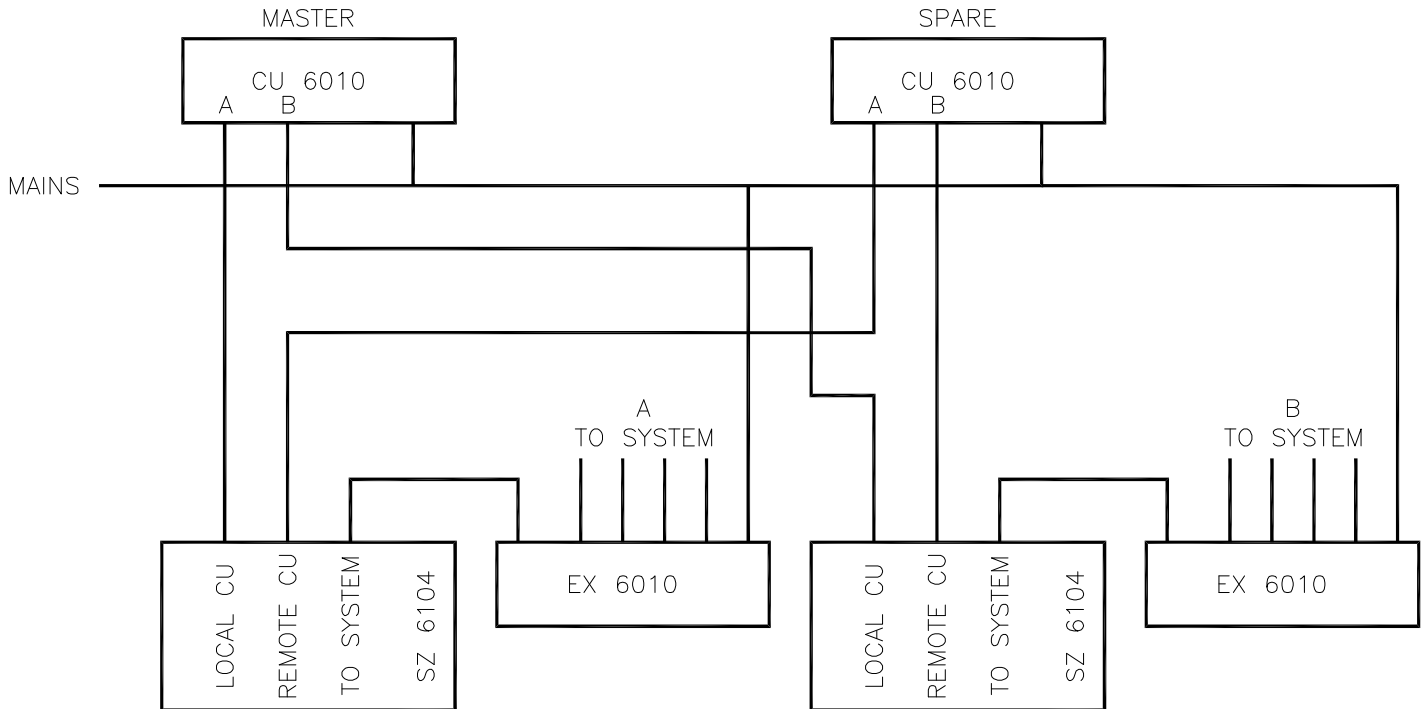
16 languages you need both an A and B-chain (either of the two A and B chain can be used, but use A1 and B1). You then need to use two SZ 6104's with the control connectors in parallel connected as above in order to switch both chains.

In case you have 16 or less languages you only need one chain (either one of the four chains of the central unit can be used, but select A1 to have the fastest start up) to be switched between the master and spare unit. But if you have more than

Redundancy switching with up to 16 languages:



Redundancy switching with more than 16 languages:



A, B AND A0 CHANNELS NOT USED.

DIP-SWITCH SETTINGS:

LOC. AUTO ON: ON
 REM. AUTO ON: ON
 LOC/REM DELAY: ON
 OTHERS: OFF

DIP-SWITCH SETTINGS:

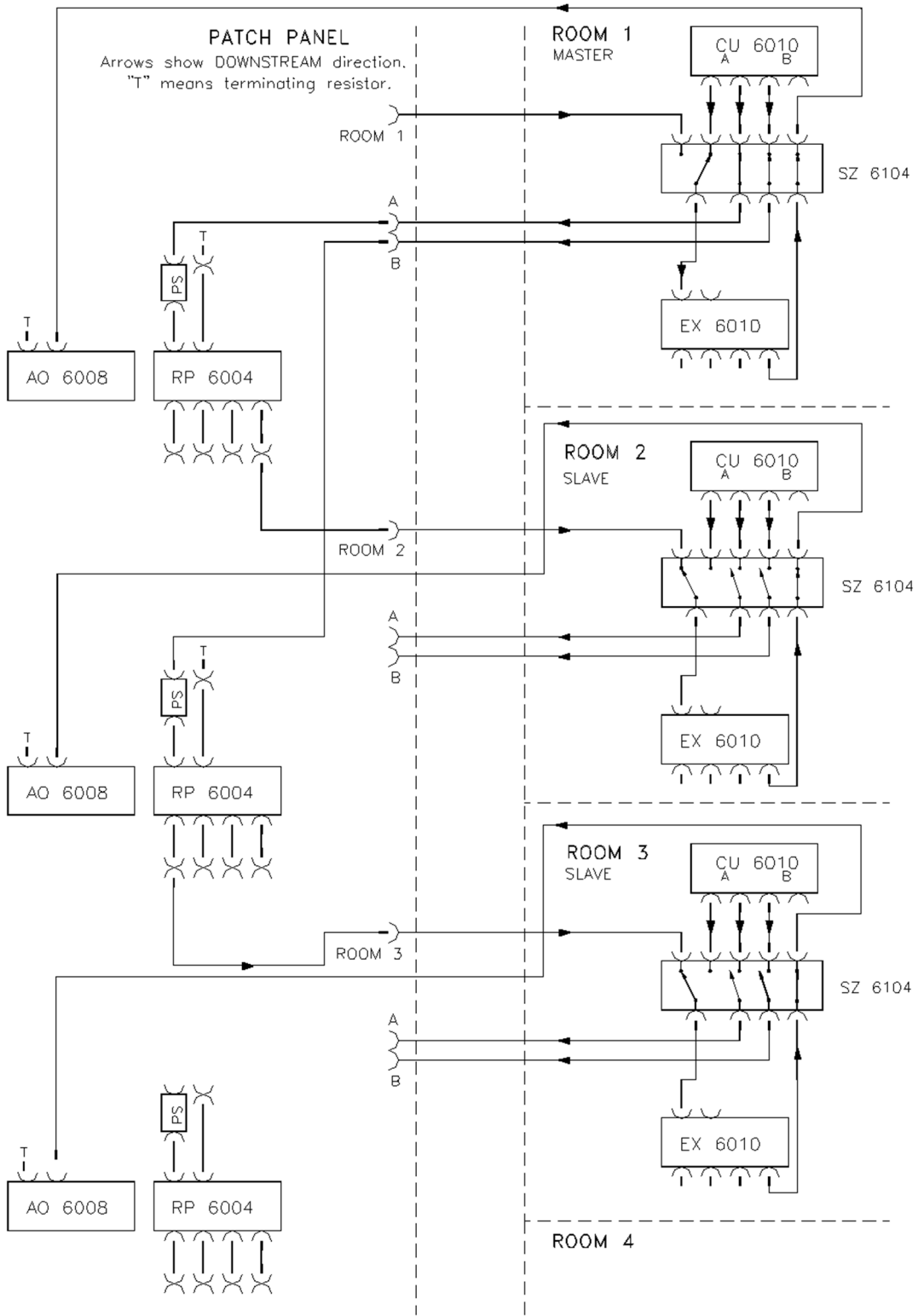
LOC. AUTO ON: ON
 REM. AUTO ON: ON
 LOC/REM DELAY: ON
 OTHERS: OFF

Use of patch panel in Operators Room

On next page is a set-up with 3 meeting rooms (several is possible) using a patch panel in a central operators room for selecting the room connections and audio output boxes for recording.

Note: Take care that screens of all patch connectors are isolated from ground and each

other as faulty ground connections may cause ground loops which again can result in corrupted data communication of the chains. So use isolated patch panels where the screens are isolated from ground (plate and rack) and each other.

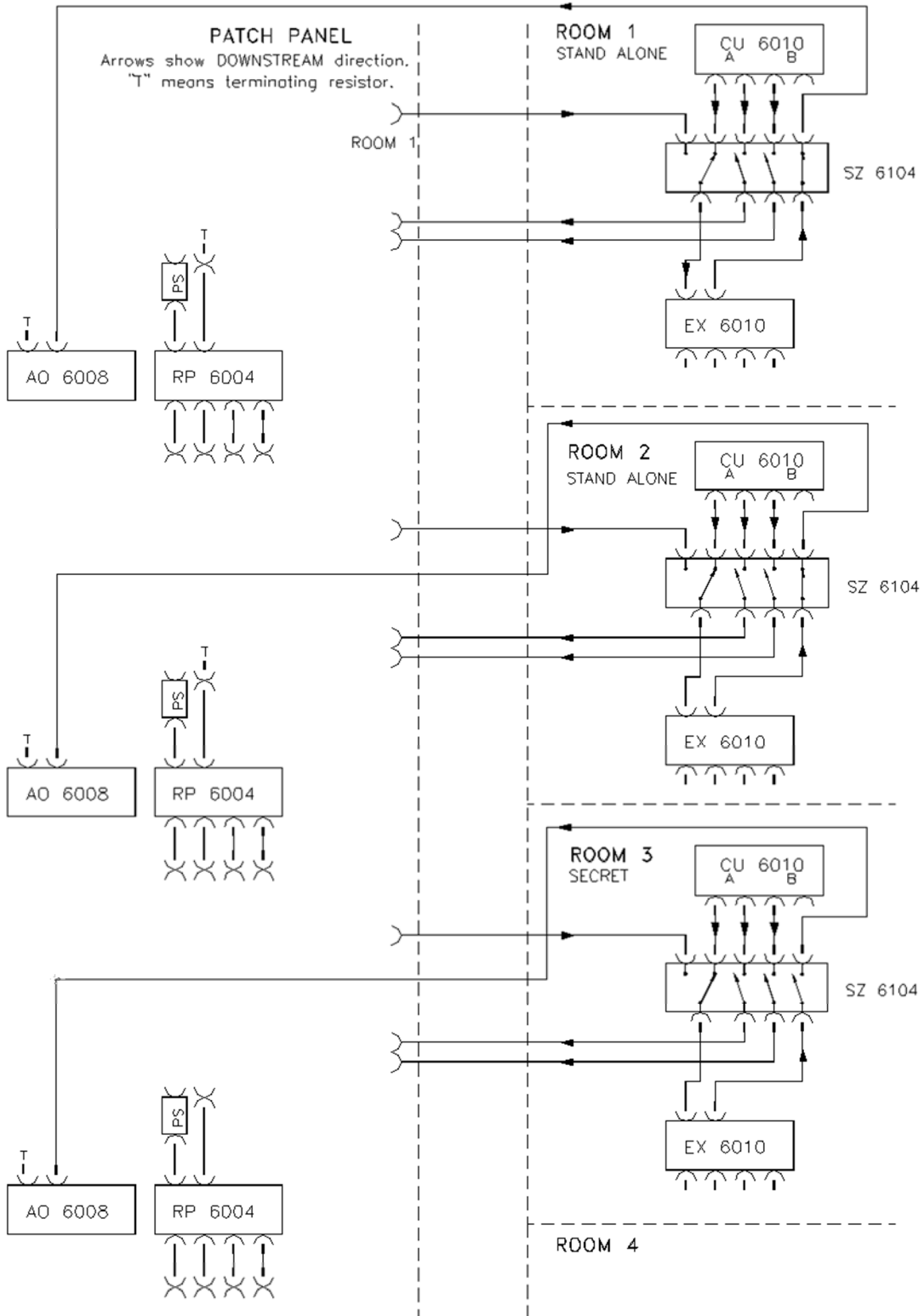


NOTE: PS 6000 must be used, if long cables/more EX's!

Above they are shown with one room as master and two rooms as slaves. Note that there are RP 6604 Repeaters and PS 6000 Power Supplies in the Operators Room. The repeaters are needed if there are longer distances and the power supplies

are needed if there are longer distances or possibility of a load of several EX 6010's.

Below the same set-up is shown with two rooms as "Stand alone" and one room as "Secret":



NOTE: PS 6000 must be used, if long cables/more EX's!

Technical Specifications

System Specification

General

Power requirement	24-48 V DC
Power consumption	10W maximum
Power supplied from	CU 61xx / EX 6010 / PS 6000
Temperature to guarantee specified performance	5 Deg C. to 40 Deg C. (35 to 80% humidity)
Storage temperature	-20 Deg C. to 60 Deg C. (10 to 80% humidity)
Weight	0.84 kg
Dimensions (W x H x D)	41,3 x 288 x 128 mm

Connectors

DCS-LAN connectors	9 pieces RJ45
Control	D9F sub

Specifications are subject to change without notice.

Connection Details

DCS-LAN Chain

The DCS 6000 system uses shielded Cat5e, Cat6 or Cat7 F/UTP or U/FTP cables with shielded RJ45 connectors.

EIA 568-B wiring shall be used.

Important: The names of Cat5/6/7 cable type have changed.

Old name	New name
FTP	F/UTP
STP	U/FTP
UTP	U/UTP

Important: Use only F/UTP or U/FTP (shielded) cables and shielded RJ45 connectors and not U/UTP cable, which are unshielded.

How to wire a Cat5e (EIA 568-B) cable to a RJ45 con.:

Pin	Function	Connector #1	Connector #2
1	In-going +	ORG/WHT	ORG/WHT
2	In-going -	ORG	ORG
3	+48V	GRN/WHT	GRN/WHT
4	0V	BLU	BLU
5	0V	BLU/WHT	BLU/WHT
6	+48V	GRN	GRN
7	Outgoing -	BRN/WHT	BRN/WHT
8	Outgoing +	BRN	BRN

Important: If other color codes are used then the four pairs are connected as follows:

Pair 2: Pin 1 & 2
 Pair 3: Pin 3 & 6
 Pair 1: Pin 4 & 5
 Pair 4: Pin 7 & 8

The phase of the pairs must be correct and the wiring spec. as stated in Cat5e (EIA 568-B) have to be followed.

Note: Cat6 and Cat7 cables can normally only be terminated in sockets (female) and not in cable plugs.

Cat6 and Cat7 can thus only be used for feeding cables terminating in wall outlets or patch panels.

Accessories

Cat5e Connection Cables (AWG24)

EC 6001-0.5 Connection Cable 0.5 m
 EC 6001-01 Connection Cable 1 m
 EC 6001-02 Connection Cable 2 m
 EC 6001-05 Connection Cable 5 m

EC 6001-10 Connection Cable 10 m
 EC 6001-20 Connection Cable 20 m
 EC 6001-50 Connection Cable 50 m



www.shure.com

**United States, Canada, Latin
America, Caribbean:**
Shure Incorporated
5800 West Touhy Avenue
Niles, IL 60714-4608
USA

Phone: +1 847 600 2000
Fax: +1 847 600 1212 (USA)
Fax: +1 847 600 6446
Email: info@shure.com

Europe, Middle East, Africa:

Shure Europe GmbH
Jakob-Dieffenbacher-Str. 12
75031 Eppingen
Germany

Phone: +49 (0) 7262-9249-100
Fax: +49 (0) 7262-9249-114
Email: info@shure.de

Asia, Pacific:

Shure Asia Limited
22/F, 625 King's Road
North Point, Island East,
Hong Kong

Phone: (+852) 2893-4290
Fax: (+852) 2893-4055
Email: info@shure.com.hk