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1. Safety

Read this Chapter carefully before installation and use of the instrument.

1.1 Introduction

The instrument described in this manual is designed to be used by properly-trained personnel only. Adjustment, maintenance and repair of the exposed equipment shall be carried out only by qualified personnel who are aware of hazards involved.

1.2 Safety Precautions

For the correct and safe use of the instrument, it is essential that both operating and servicing personnel follow generally accepted safety procedures in addition to the safety precautions specified in this manual. Specific warning and caution statements, where applicable, are found throughout this manual. Warning and caution statements and/or symbols are marked on the instrument where necessary.

1.3 Caution and Warning Statements

Caution

Used to indicate correct operation or maintenance in order to prevent damage to, or destruction of equipment or other property.

Warning

Used to indicate a potential hazard that requires correct procedures or practices in order to prevent personal injury.

1.4 Impaired Safety Protection

1.4.1 Technical Specifications

This manual provides technical information important for safe operation of the equipment.

Please refer to the Chapter Product Data for information regarding technical specifications and the Chapters Installation and Operating Instructions regarding instructions for use.

Technical assistance may be obtained from your local DK-Technologies customer support organization or from

DK-Technologies A/S
Marielundvej 37D
DK-2730 Herlev
Denmark

Phone: +45 4485 0255
Fax: +45 4485 0250
E-mail: info@dk-technologies.com
Website: www.dk-technologies.com

1.4.2 Equipment Ratings

The instrument can be used with a power voltage supply of:

Voltage:
100VAC - 240VAC
(-15%, max. 250VAC)

Frequency:
48 - 65Hz

Power consumption:
< 15 VA.

The instrument is designed for the following environmental conditions:

- ♦ Indoor use
- ♦ Altitudes up to 2000m
- ♦ Temperatures between 5°C and 40°C
- ♦ Maximum relative humidity of 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C
- ♦ Transient overvoltages according to installation category II
- ♦ Pollution degree 1

The instrument is equipped with a number of input and output terminals as described in the Chapter **Product Data**.

The terminals are protected from becoming hazardous live by means of basic insulation and protective screening.

Whenever it is likely that safe operation is impaired, the instrument must be made inoperative and secured against unintended operation. The appropriate servicing authority must be informed.

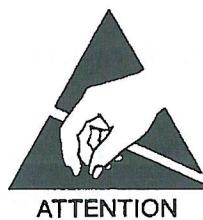
For example, safety is likely to be impaired if the instrument fails to perform the intended measurements or shows visible damage.

WARNING: Protection provided by the equipment may be impaired, if the equipment is used in a manner not specified by this manual.

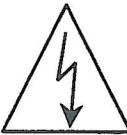
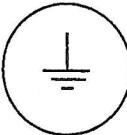
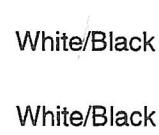
1.5 Electrostatic Sensitive Devices

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce lifetime drastically.

When repairing, make sure that you are connected to the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.



1.6 Symbols

| Symbol: | Color: | Explanation: |
|---|--------------|---|
|  | Red | High voltage terminal: a terminal at which a voltage, with respect to another terminal or parts exists or may be adjusted to 1000V or more. (High voltage $\geq 1000V$). |
|  | Black/Yellow | Live part shock risk of electric shock. |
|  | Black/Yellow | To preserve the instrument from damage the operator must refer to an explanation in the instruction manual. |
|  | White/Black | Protective earth (grounding) terminal |
|  | Black | Alternating current (<i>placed on the identification plate</i>) |
|  | White/Black | Off (supply - power switch) |
|  | White/Black | On (supply - power switch) |

2. Introduction and Applications

2.1 Introduction

The PT 5211 VariTime™ Changeover is designed for use together with two PT 5210 VariTime™ Digital Sync Generators.

The PT 5210 is designed as a modular system which can be configured for use in all environments, from the smallest edit bay to the largest studio.

The PT 5211 is designed as a similar modular system in order to form the perfect solution, operating together with variously configured PT 5210 VariTime™ Digital Sync Generators.

The basic version of the PT 5211 includes four channels equipped with 75Ω BNC connectors. The channels can be used to switch both analog and digital video signals as well as unbalanced digital audio.

Two options can provide further channels.

- ♦ The PT 8617 BNC channel option adds two additional BNC channels. Up to four PT 8617 options may be used at the same time.
- ♦ The PT 8618 XLR channel option adds two additional XLR channels for balanced signal switching. Only one PT 8618 may be installed at any one time. One installed PT 8618 takes up the same amount of space as two of PT 8617 options.

2.2 Applications

The PT 5211 VariTime™ Changeover is designed for use in both serial digital and analog television environments, also environments with AES/EBU digital audio signals. The use of the changeover unit greatly improves the reliability of a single *Sync Pulse Generator* (SPG) by having a backup unit ready to take over in the event of an SPG break-

down. To improve the reliability of the complete system, it is essential to have a simple changeover unit. So that system reliability will not be affected by the complexity of the changeover unit.

The PT 5210 VariTime™ Digital Sync Generator employs internal surveillance of the operation by means of hardware separate from the rest of the SPG. The monitored signals are selectable in the SPG. This reduces the complexity of the changeover unit and results in two independent sets of surveillance circuits, one for each SPG.

Information on each of the SPGs operating conditions is communicated in a simple and reliable way to the changeover unit, which in turn uses this information to determine the status of both SPGs.

The PT 5211 VariTime™ Changeover automatically switches serial digital video, composite video, composite black burst, AES/EBU digital audio, and LTC signals from the primary to the backup SPG.

The switching is done by means of relays which switch all channels simultaneously. Latching relays ensure that the SPG selection remains unchanged even in the case of power failure in the changeover unit.

Front panel control is provided to select which generator is to be the primary SPG (operating mode manual or automatic). The front panel is secured against accidental operation by a "HOLD TO MODIFY" button which must be pressed simultaneously with any other button.

Remote control is facilitated by a parallel remote interface. In emergency situations, the remote control can always be overruled by the front panel controls.

A simple relay contact in the remote connector may be used to connect an external warning circuit. The contact is open during normal operation and closes during failure. This relay may be used

to activate an external alarm in the event of a failure - even in the case of power failure in the changeover system.

2.3 Configuration

The basic PT 5211 VariTime™ Changeover includes four identical 75Ω channels with BNC connectors.

The two options, the PT 8617 and PT 8618, are used to add more channels to the changeover unit.

The PT 8617 BNC option adds two additional channels. The function and quality of these extra BNC channels are equal to that of the basic channels.

The PT 8618 XLR option adds two balanced channels with XLR connectors. The PT 8618 is used for switching balanced AES/EBU digital audio and balanced LTC signals.

Up to four PT 8617 options or two PT 8617 options plus one PT 8618 can be used at the same time. This gives a maximum of either 12 BNC channels or of eight BNC channels plus two XLR channels.

3. Product Data

3.1 Safety Characteristics

This apparatus has been designed and tested in accordance with the Safety Class 1 requirements of IEC Publication 1010-1 ("Safety Requirements for Electrical Measuring Apparatus"), and is safe as supplied. This manual contains information and warnings which must be followed during operation and maintenance in order to ensure operator and service personnel safety.

3.2 Performance Characteristics

Characteristics expressed in numerical values with stated tolerances are guaranteed to be within these limits. Characteristics expressed in numerical values indicate typical values at a nominal ambient temperature (25 °C) and reflect an average performance.

3.3 Versions

The PT 5211 VariTime™ Changeover is multi-standard, operating with all the formats available from the PT 5210 VariTime™ Digital Sync Generator.

For operation with balanced signals the PT 8618 2 XLR Changeover Channels option is required.

3.4 Options

3.4.1 PT 8617 - BNC Changeover Channels

This option adds two unbalanced channels to the PT 5211. Up to four options may be used at the same time, except when a PT 8618 is being used, in which case installation of two 2 additional PT 8617s is possible.

3.4.2 PT 8618 - XLR Changeover Channels

This option adds two balanced channels to the PT 5211. Only one option can be used at a time. The PT 8618 comes with an interface cable to provide the connections between the changeover and the two PT 5210s in the setup.

3.5 Electrical Data

3.5.1 BNC Channels (Basic and PT 8617)

Connector:

BNC 75 Ω

Return loss:

> 36 dB, 0.1 to 10 MHz

> 15 dB, 10 to 360 MHz

Insertion loss:

< 0.2 dB, 0.1 to 180 MHz

< 1 dB, 180 to 360 MHz

On resistance:

< 0.2 Ω

Cross-talk:

< -70 dB, 0.1 to 10 MHz

< -80 dB at fsc

< -50 dB, 10 to 180 MHz

< -30 dB, 180 to 360 MHz

3.5.2 XLR Channels (PT 8618 Option)

Connectors:

Signal input : Sub-D 9 pin, female

Signal output : XLR 3 pin, male

Insertion loss:

< 0.4 dB, 0.1 to 20 MHz

On resistance:

< 0.2 Ω

Cross-talk:

< -50 dB, 0.1 to 8 MHz

3.5.3 Remote Interface

Specification for relay contacts for external alarm function.

Connector:

9 pin male sub-D

Voltage between contacts:

< 50 V

Relay current:

< 0.5 A

Switching power:

< 60 W

Common mode voltage:

< 50 V

Other contacts in remote connector:

Internal pull up resistors, max. external voltage

-0.5 V to + 6 V.

3.6 Environmental Conditions

3.6.1 Regulations and Standards, EMI

EN 50081-1/1994 (emissions)

EN 50082-1/1992 (immunity)

FCC Rules & Regulations, Part 15, Subpart J,

Level B (emissions)

3.6.2 Climatic Conditions

Temperature Range:

Storage:

20 to +70°C

Operating ambient:

+5 to +45°C

Humidity:

Non-condensing (IEC 721)

3.6.3 Mechanical Requirements

Vibration, according to IEC 68-2-64 test Fh

10 - 20 Hz, $0.05 \text{ g}^2/\text{Hz}$, decreasing 20 - 150 Hz

-3 dB/oct, 1h in each of three directions, 1.6gRMS.

Bump, according to IEC 68-2-29 test Eb

1000 bumps/direction, 3 directions, 6 ms/bump,

25g.

3.6.4 Safety

IEC1010-1

3.6.5 Power Supply

Voltage:

85 - 132 V AC, 180 - 250 V AC

Frequency:

48 - 62 Hz

Power consumption:

< 15 VA with all options

3.6.6 Mechanical Data

19" rack mount cabinet.

Height : 44 mm (1.73")

Width : 483 mm (19")

Depth : 490 mm (19.3")

Weight : 4 kg (8.8 lbs)

4. Accesories and Options

4.1 Accessories

| Item: | Quantity: | Order Number: |
|------------------------|-----------|----------------|
| Mains cable, EURO | 1 | 5322 321 11284 |
| Mains cable, US | | 5322 321 11285 |
| Mains cable, UK | | 5322 321 11286 |
| Instruction Manual | 1 | 9499 493 10111 |
| Rubber foot selfadh. | 4 | 5322 462 44434 |
| Cable Assy (3 x Sub-D) | 1 | 4008 105 04210 |

4.2 Options

| Description: | Order Number: |
|-----------------------------|----------------|
| PT 8617 : BNC Option | 9449 086 01701 |
| PT 8618 : XLR Option | 9449 086 01801 |
| PM 8552 : Rack Mounting Kit | 9449 085 52001 |

5. Installation

5.1 Initial Inspection

Check the contents of the shipment for completeness and possible transport damage. If the contents are incomplete or damaged, a claim should be filed with the carrier immediately, and the

The PTV Sales or Service organization should be notified in order to facilitate the repair or replacement of the instrument.

5.2 Safety Instructions

5.2.1 Grounding

Before any other connection is made, the instrument must be connected to a protective ground conductor in one of the following ways:

- ♦ via the three-core power cable
- ♦ via the protective ground terminal marked 

Before connecting the equipment to the main power supply make sure that the building is properly grounded.

WARNING: Any break in or disruption of the protective conductor inside or outside the instrument or disconnection of the protective ground terminal, is likely to make the instrument dangerous. Intentional interruption is prohibited.

5.3 Power Supply Cord and Fuses

Different power supply cords are available for various voltage outlets.

Note: If the outlet plug has to be adapted to the local situation it should only be done by a qualified person.

No voltage setting of the equipment is necessary. The instrument is equipped with a tapless switch mode power supply that covers most nominal voltage ranges in use: 90-250V AC RMS. This eliminates the need to change anything to adapt to the local power supply voltage.

The frequency required is 48-65 Hz.

WARNING: Please disconnect the instrument from all voltage sources before replacing a fuse.

Power fuse rating: 1.6A delayed action, 250V. The mains fuseholder is located on the rear panel of the instrument.

If the power fuse has to be replaced, proceed as follows:

1. Remove the mains cable.
2. Lift the plastic cover (fuseholder) using two small screwdrivers (simultaneously).
3. Remove old fuse.
4. Insert the new fuse into the top of the fuseholder.
5. Replace the cover (fuseholder).

WARNING: Make sure that only fuses of the required rating, correct voltage, and the specified type are used for replacement. The use of repaired (jumpered) fuses and/or short circuiting of the fuse holder is prohibited. Fuses may only be replaced by a qualified person who is aware of the hazards involved.

5.4 Rack Mounting

This PTV instrument is delivered in a 19" cabinet. Four selfadhesive rubber feet are supplied together with this instrument.

If several cabinets are mounted in a 19" rack, special attention must be paid to the temperature inside the rack.

The PT 5211 can be used in between two PT 5210s without problem, but if the PT 5211 is mounted between other instruments with high surface temperatures, we recommend using one PM 9799 air-flow unit for every two pieces of equipment in the rack and fans in the top of the racks to provide forced air circulation.

5.4.1 Installation of Rack Mounting Kit PM 8552

The rack slides can be used in any rack with a front-to-rear spacing of between 18 and 27 inches. Make sure to provide clearance between the rear panel of the instrument and the cabinet panel for connectors and to provide necessary air circulation.

Mounting slide tracks

1. Mount the chassis section of the rack slide kit onto the instrument with the snap latch at the rear. Make sure that the screws are secured.
2. Mount the rails using the hardware shown in the figure below. Align the stationary sections both horizontally and with respect to level.

Installing the instrument

1. Pull the slide-out section out until it is fully extended.
2. Insert the instrument chassis section into the slide-out sections.

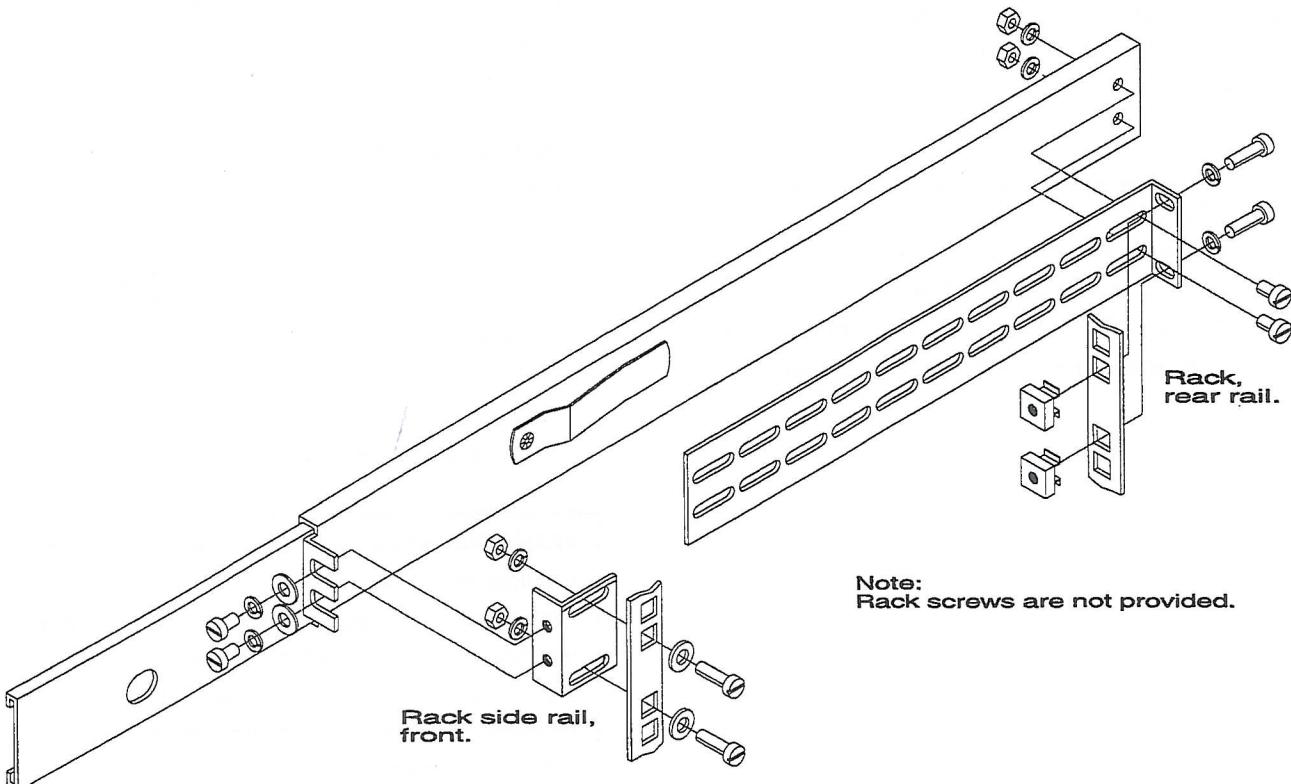


Fig. 5-1 Installation of PM 8552

3. Press the snap latches and push the instrument towards the rack frame until the latches snap into their holes.
4. Press the stop latches again and push the instrument all the way into the rack.
5. Fix the instrument by means of the front panel screws.

After installation, the slide tracks may need to be adjusted slightly to ensure smooth operation. To do so, pull the instrument halfway out, slightly loosen the screws holding the tracks onto the front rail and allow the tracks to settle to position which allows smooth operation. Tighten the screws and pull the instrument in and out several to make sure it moves smoothly.

Removing the instrument

Be sure that all cabling is disconnected before removing the instrument.

1. Loosen the screws in the rack frame and pull the instrument forward until the stop latches snap into their holes.
2. Press the stop latches and remove the instrument.

5.5 Cleaning

- Disconnect the instrument from the power voltage supply before cleaning.
- Use a damp cloth only.
- Be careful not to spill liquid into the instrument.

5.6 Access to and Replacement of Parts

5.6.1 Safety

The opening of covers or removal of parts, except those to which access can be gained by hand, is liable to expose live parts.

The instrument must be disconnected from all voltage sources before performing any adjustment, replacement, maintenance, or repair which requires the instrument to be opened. If repair of the opened instrument is unavoidable, it must only be carried out by a skilled person who is aware of the hazards involved.

To guarantee safety only original spare parts must be used.

5.6.2 Access to the Units

To gain access to the units, remove the screws that secure the top cover of the instrument and lift the cover up.

5.6.3 Installation of Options

Installation instructions are included with the option to be installed.

6. Configuration

6.1 General Information

The function of the PT 5211 VariTime™ Changeover is internally programmed by use of jumper plugs.

The jumpers are located on the left side of the Main Board (Unit 1). The jumpers are visible just below the printed circuit board, which is placed with the component side down.

ALARM:

Is defined as an action where the changeover indicates that there is or was, an error, either by closing the relay contacts in the remote connector and, if selected, sounding the audible beeper.

A previously detected fault is always indicated on the PT 5210 which performed the actual fault detection: the "WARNING" LED on the PT 5210 front plate lights up (*Please refer to the PT 5210 operating manual*).

6.2 Jumpers

6.2.1 PP1 - Audio Beeper

The audible alarm can be programmed to three different functional modes.

CENTER position: (*factory default setting*).

OFF

No connection in the jumper field

FRONT position:

FOLLOWS ALARM

The beeper follows the alarm function and is reset together with this function from the front of the instrument.

BACK position:

FOLLOWS FAULT

The beeper follows the fault indicators on the front of the PT 5211. The fault indicators are directly controlled by the error signals from the PT 5210s. Whenever an error is detected in any of the PT 5210s, the beeper will sound.

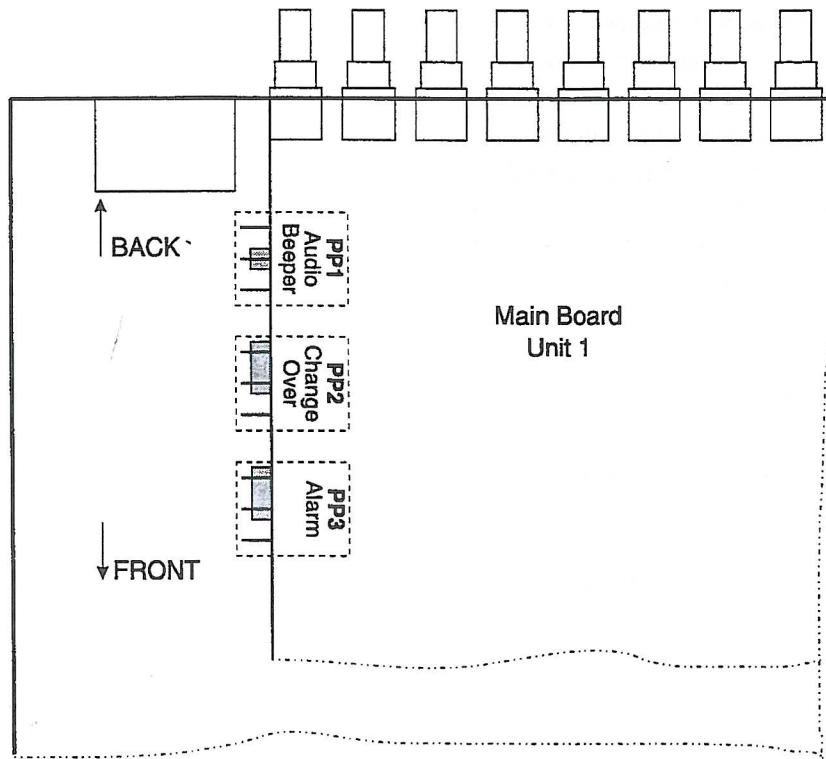


Fig. 6-1 Jumpers Location

6.2.2 PP2 - Change Over

PP2 enables the "one time switching only function" in AUTO mode.

When multiple switching is selected and a short circuit appears downstream from the changeover, the error can not be corrected and the changeover will start switching back and forth between the two sync generators. This can be overcome by use of the "one-time switching only" function.

When an error is detected in the primary sync generator, the changeover switches to the backup unit. The changeover will then switch back to the primary if the error flag from the primary disappears as long as "multiple switching" is selected. The changeover will not switch back when this happens if "one-time switching only" is selected.

FRONT position: (factory default setting)

Selects single time switching.

BACK position:

Selects multi time switching only.

6.2.3 PP3 - Alarm

The alarm relay with contacts connected to the remote connector can be programmed to operate in two different ways. The alarm relay can only be activated when the changeover is used in the AUTO mode or when the alarm relay is enabled in both MANUAL and AUTO mode. The alarm indicates that a fault has occurred. The function is latched and has to be reset at the front of the instrument.

Resetting the alarm relay

The alarm relay is reset by selecting MANUAL, or by designating one of the generators as primary.

To reset press:

HOLD TO MODIFY plus **MANUAL**

or

HOLD TO MODIFY plus **SYNC GEN. 1**

or

HOLD TO MODIFY plus **SYNC GEN. 2**

By choosing the mode already active the alarm relay can be reset without changing to changeover signal routing.

Note: The alarm can not be reset if the error signal from the PT 5210 is still active. It is not possible to disable the alarm relay function completely.

FRONT position: (factory default setting)

Alarm relay enabled in both auto and manual mode.

BACK position:

Alarm relay enabled in auto mode only.

7. Operating Instructions

7.1 Front Panel Indicators

POWER

A green LED that indicates when DC power is available from the internal DC supply.

REMOTE

A yellow LED that indicates that the unit is being controlled from the remote interface, not from the front panel.

ON AIR

Two green LEDs that indicates which sync generator is "on air". One of the ON AIR indicators will be active at any one time.

FAULT

Two red LEDs, each indicating that an error has been detected in the corresponding sync generator. When an LED is illuminated, it indicates that the error in the sync generator is momentarily active.

7.2 Front Panel Controls

HOLD TO MODIFY

A safety button which has to be held down whenever another button is operated. This function reduces the risk of accidentally changing to the function of the changeover.

MANUAL

A button that takes the unit into the manual operation mode. The unit does not respond to any detected errors in the connected PT 5210s (except for the fault indicators which are still enabled). If the yellow LED in the button is lit, this indicates that manual mode is activated.

AUTO

A button that takes the unit into automatic operation mode. The unit switches automatically according to the status of error detection circuit in the sync generators and additional setup parameters in the changeover unit. A lit yellow LED in the button indicates that auto mode is activated.

SYNC GEN. 1 / PRIMARY

A button used to select Sync Generator 1, PT 5210, as the primary - i.e. Sync Generator 2, PT 5210, as backup. If the green LED is lit, this indicates that Sync Generator 1 is selected as primary.

SYNC GEN. 2 / PRIMARY

A button used to select Sync Generator 2, PT 5210, as the primary - i.e. Sync Generator 1 as backup. If the green LED is lit, this indicates that Sync Generator 2 is selected as primary.

REMOTE ENABLE

A button that enables use of the remote interface. Depending upon the selection on the remote connector the instrument may go into remote-controlled mode. In emergencies it is always possible to disable the remote and take the instrument into the local mode controlled from the front panel.

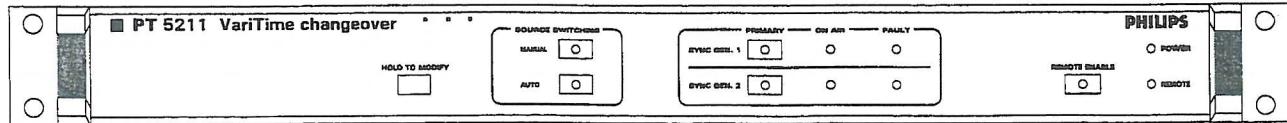


Fig. 7-1 Front of the Instrument

7.3 Rear Panel Connections

Note: Depending upon which options are installed, some or all of the outputs may be present in your changeover unit.



Safety Grounding (chassis)

On/Off button

Power switch

ON: When "I" is pressed.

OFF: When "O" is pressed.

Power Connector

Inlet power connector.

REMOTE

Connector for remote control of the changeover unit. The remote connector is of the ground closure type.

PT 5210 1/2

Control connector used with a special cable to connect the two PT 5210 VariTime™ Digital Sync Generators in the setup to the changeover unit.

Which generator is SPG1 and which is SPG2 is defined by how this cable is connected. The identification is printed on the cable connectors.

BNC connectors

BNC connectors are used on all the unbalanced channels. The connectors are arranged in groups of three, each identified by a number corresponding to a the changeover channel. The standard unit includes the Channels 1 to 4. Up to 12 channels can be installed in the form of optional units.

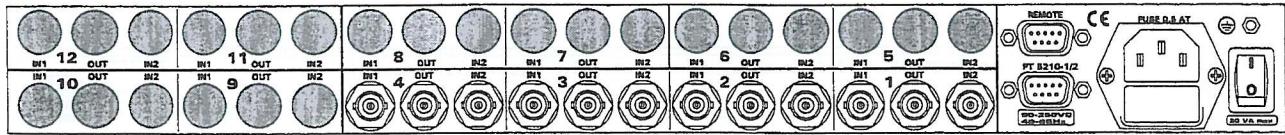


Fig. 7-2 Rear of the Instrument (Basic Instrument)

IN1:

Connector to be used for the signal from the SPG1 generator.

IN2:

Connector to be used for the signal from the SPG2 generator.

OUT:

Connector with the selected output from either SPG1 or SPG2.

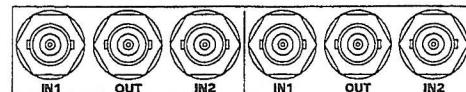


Fig. 7-3 PT 8617 Option

7.3.1 PT 8618 - Option

XLR connectors

XLR connectors are used for output at the balanced signal channels of the changeover. These channels are only available when the PT 8618 option has been installed.

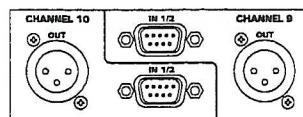


Fig. 7-4 PT 8618 Option

7.3.2 Remote Interface

The remote interface is of the TTL pull-down type with a 9-pin male sub-D connector on the back panel.

The remote interface provides access to additional functions other than those on the front of the instrument.

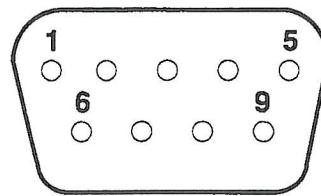


Fig. 7-4 Remote Interface, seen from rear panel

| Pin: | Function and Value: | Comments: |
|------|--|---|
| 1 | Input: 0: Remote enable 1: Remote disable. | Control function to enable remote controlled operation if remote control is enabled on the front of the instrument. The output signals from the remote connector are active and indicate the status even when the remote control is disabled. <u>Note:</u> If the remote is enabled on the front of the instrument and nothing is connected to the remote connector, the operation of the instrument is unchanged. |
| 2 | Input: 0: Selection of sync generator 1 as primary 1: Selection of sync generator 2 as primary | Selects which sync source has been selected as the primary. The primary generator is always selected "ON AIR" in manual mode. The primary generator is the preferred "ON AIR" generator in auto mode. |
| 3 | Input: 0: Selection of manual mode 1: Selection of auto mode | Selects if the switching is manual or automatic. |
| 4 | Output: "ON AIR" 0: Sync generator 1 1: Sync generator 2 | Indicates which sync generator is being used, i.e. ON AIR on the front panel. |
| 5 | Ground connection | |
| 6 | Output 0: Fault on sync generator 1 1: No fault on sync generator 1 | Error status flag for sync generator 1. <u>Note:</u> During power failure in the changeover, pins 6 and 7 indicate fault on sync generators both 1 and 2. |
| 7 | Output 0: Fault on sync generator 2 1: No fault on sync generator 2 | Error status flag for sync generator 2 <u>Note:</u> During power failure in the changeover, pins 6 and 7 indicate fault on sync generators both 1 and 2. |
| 8/9 | Relay contacts Connected during fault conditions. | Relay contacts to be used for an externally powered alarm circuit. The relay contacts are floating. The contact closes whenever an error is detected, also in case of internal or external power failure. |

8. General Service Information

8.1 Use of the Service Instructions

Troubleshooting is best carried out on a functional level using block diagrams. Reference is made to Chapters - "Instrument Block Diagram" and "Circuitry Description" for an overall description of the instrument.

Fault finding to component level will however, require the use of appropriate circuit diagrams.

8.2 Safety

The opening of covers or removal of parts, except those to which access can be gained by hand, is liable to expose live parts. Accessible terminals may also be live.

The instrument must be disconnected from all voltage sources before performing any adjustment, replacement, maintenance, or repair which requires the instrument to be opened.

If adjustment, maintenance, or repair of the opened instrument is unavoidable, it must only be carried out by a skilled person who is aware of the hazards involved.

8.2.1 Electrostatic Sensitive Devices

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).

Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

8.3 Block Diagram Symbols Description

Various symbols and conventions are used in the block diagram and a short description of these is given below.

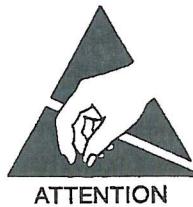
8.3.1 Functional Block Information

The bold text within the block gives the function provided by the block.

Text shows the major components in the block or stage.

The number in the lower right hand corner of the block shows on which sheet of the appropriate circuit diagram the block may be found.

A dotted line around a functional block (or stage) means that the block is either an option or not used in all versions of the instrument.



9. Instrument Block Diagram

9.1 General Information

The PT 5211 VariTime™ Changeover is designed to serve two PT 5210 VariTime™ Digital Sync Generators. The reliability of the total system is considerably better than that of a system with only one sync generator. The simple design of the PT 5211 is essential for the high reliability of the complete system.

The PT 5211 simplified instrument block diagram is shown in figure 9-1. The instrument consists of a basic design that can easily be extended by adding optional PCB modules. In the instrument block diagrams the optional blocks are surrounded by a dotted outer line.

9.2 Basic Instrument

The basic instrument is the simplest version of the instrument which includes no added optional units. The circuitry of the PT 5211 can be divided into a number of functional blocks.

9.2.1 Signal Switches

All the signal switches in the PT 5211 switch simultaneously and are either controlled from the front panel or by the fault signals from the PT 5210 VariTime™ Digital Sync Generators. This functional block contains the relay switches and the switch drivers. The latched signal switches "remember" the mode of the instrument under and after a power-down.

9.2.2 Relay Memories

The instrument mode is controlled either from remote source or from the front panel. This mode is preserved after a power-down. This functional block contains latched relays that serve to store

the manual/auto selection, the primary/secondary selection, the signal switch mode, and the remote enable mode.

9.2.3 Source Error and Shift Logic

The PT 5211 receives fault signals from the PT 5210 sync generators if they fail. These two fault signals are buffered and used in AUTO mode to decide which of the two inputs are to be distributed via the signal switches. If a fault signal is received, an alarm signal is generated and present at the alarm output of the TTL Remote.

9.2.4 Clock Generator and Watchdog

A clock signal of approximately 200Hz is generated for use in the relay memories and in the TTL input buffer. Power watchdog circuitry ensures a proper power-up or -down of the instrument.

9.2.5 Front Panel

The front panel features the pushbuttons necessary for local operation of the instrument. Also included are LED indicators that provide information on various modes. An audio beeper that is activated by an alarm is also placed on the front panel.

9.2.6 Power Supply

The power supply is of a modular switch mode type that generates a single +5 Volt supply to all the circuitry.

9.3 Options

Two different kind of options can be installed into the basic instrument. They are shown in the instrument block diagrams (Figures 9-1 and 10-1) as optional blocks surrounded by a dotted outer line.

9.3.1 PT 8617 - BNC Changeover Channels

The PT 8617 BNC option contains two sets of extra relay switches and switch drivers. The switches and drivers are the same type as found in the basic instrument, which improves changeover capacity.

9.3.2 PT 8618 - XLR Changeover Channels

The PT 8618 XLR option is capable of switching AES/EBU standardized digital audio signals.

Standard XLR connectors are used in the output in order to conform with the AES/EBU standard for digital audio signal distribution.