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 breakdown. 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 f_{SC}
< -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 g^2/Hz, decreasing 20 - 150 Hz -3 dB/oct, 1h in each of three directions, 1.6g_{RMS}.

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