PHILIPS
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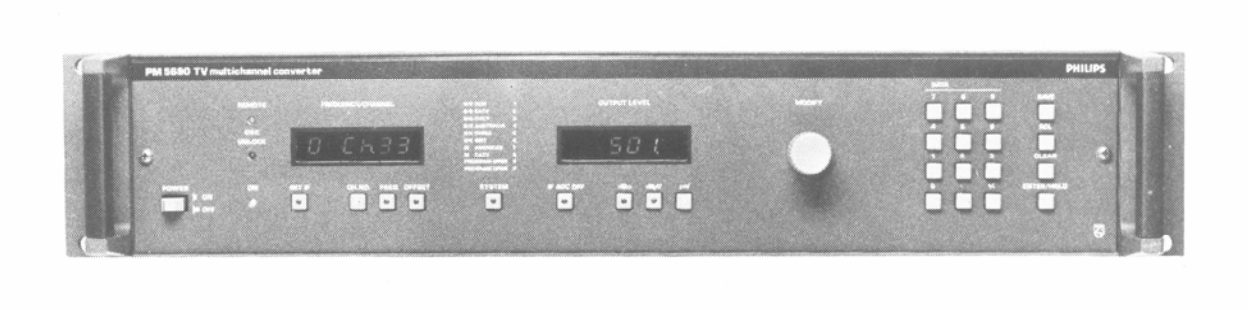
PM 5690 | Multichannel converter

1. Photo



2. Introduction and applications

2.1 Introduction

The TV multichannel converter PM 5690 is a high stability RF converter with calibrated output level in the range of 0.01 to 500mV$_{RMS}$. PM 5690 is capable of converting any TV IF signal between 36MHz and 46MHz into any TV channel from 8MHz through 950MHz.

PM 5690 may readily operate in accordance with the following TV systems:
- B/G CCIR
- B/G CATV
- B/G ITALY
- B/G AUSTRALIA
- D/K CHINA
- D/K OIRT
- M AMERICAS
- M CATV

The converter allows furthermore for user programming of two customized TV systems. All parameters of interest (IF frequency, channel frequency and output level) is easily varied for any channel generated.

2.2 Application

The converter is fully controllable both via the front panel as well as through the IEEE448 interface, and may therefore serve as a "stand alone instrument", or as an integrated part of a computer controlled measuring system.

The application area includes the production of video recorders and TV receivers, including multi-standard receivers. In laboratories PM 5690 may be used for test and repair of transposers and de-modulators. In the field it is suitable in transmission and propagation tests.

3. Technical data

3.1 Safety characteristics

This apparatus has been designed and tested in accordance with Safety Class I requirements of IEC Publication 348 (Safety Requirements for Electronics Measuring Apparatus), and has been supplied in a safe condition. This manual contains information and warnings which must be followed to ensure safe operation and to retain the apparatus in a safe condition.

3.2 Performance characteristics

Properties expressed in numerical values with stated tolerances are guaranteed by the Philips organization in your country. Specified non-tolerance numerical values indicate those that could be nominally expected from the mean values of a range of identical instruments.

3.3 Versions

One multistandard converter supporting all channels in:
- B/G CCIR
- B/G CATV
- B/G ITALY
- B/G AUSTRALIA
- D/K CHINA
- D/K OIRT
- M AMERICAS
- M CATV

3.4 Inputs

3.4.1 IF input

Vision carrier frequency:
36MHz to 46MHz

Nominal level:
1000mV$_{RMS}$
Level range:
100 to 1400mV$_{RMS}$
Connector type:
N/50ohm
Return loss:
>26dB

3.4.2 Reference 10MHz input

Frequency:
10MHz +/-100Hz
Level:
100 to 300mV$_{RMS}$
Connector type:
BNC/50ohm

3.5 Outputs

3.5.1 RF output

RF vision carrier frequency:
8.000MHz to 950.000MHz changed in steps of 1kHz.
Output level with AGC:
0.01 to 500mV$_{RMS}$
Level accuracy:
output level >-13dBm:
+/-1dB, 50ohm
output level <-13dBm:
+/-2dB, 50ohm
Connector type:
N/50ohm (75ohm optional)
Return loss:
>10dB, typically 16dB in 50ohm version.

3.5.2 10MHz reference

Frequency:
10MHz
Level:
150mV$_{RMS}$ +/-3dB
Connector type:
BNC (the connector is shared with the ext. ref. input).

3.6 Remote (IEEE448 interface)

3.6.1 General

All available front panel functions may be controlled via the interface. The interface complies with the specifications of the IEC-625-1 standard, except for the theoretical demand for 100us reaction time on REN (remote enable) false. The interface is fitted with a connector complying with IEEE448.

3.6.2 Interface characteristic

Function	Classification
Source Handshake	SH1
Acceptor Handshake	AH1
Talker Function	T5
Listener	L3
Remote/Local	RL1
Device Clear	DC0
Device Trigger	DT0

3.6.3 Code

Used code:
ISO 7-bit code (ISO 646)
Input separator:
Fully programmable. Default separator at power on: NL (LF) and the END message (EOI). One of them, or NL and END combined, is accepted.
Output separator:
Equal to input separator, except that END (EOI) is always sent.

3.6.4 Connector

Type:
24 pin female AMPHENOL connector. Contact assignment in accordance with IEEE448.

3.6.5 Timing

Communication speed:
max 1 kbyte/sec

3.7 Electrical characteristics

3.7.1 Frequency response

Response measured in a +/-8MHz bandwidth relative to the selected vision carrier.

AMPLITUDE:
f_{VISION} < 30MHz and lowest frequency 8MHz:
< +/-1dB
f_{VISION} > 30MHz:
< +/-0.3dB

GROUP DELAY:
< +/-5ns

3.7.2 Distortion

Nonlinear distortion and unwanted outputs. The converters contribution to distortion is measured at nominal input level and maximum output level.

INTERMODULATION *:
-60dB

CROSSMODULATION **:
-70dB

HARMONIC AND SPURIOUS:
Measured between 40MHz and 950MHz:
-60dB
Measured above 950MHz:
-50dB

*: Intermodulation between vision and sound, with sound 10dB below peak sync level.

**: Crossmodulation, vision in sound measured according to IEC publication 244-5C, clause 41 and 42. Testsignal A3 modulated between black and white with 100Hz to 100kHz sinewave. Crossmodulation measured relative to 50kHz deviation (25kHz in system M).

3.7.3 Noise and disturbances.

The converters contribution is measured at nominal input level and maximum output level. Video S/N measured relative to the black to white transition.

VIDEO S/N RATIO:
RMS (bw: 0.1 - 5MHz):
56dB
Peak to Peak (bw: 0 - 1kHz):
55dB
Periodic noise:
-60dB

AUDIO S/N RATIO:
S/N *:
60dB
*: Measured with preemphasis on, and using a weighted filter in accordance with CCIR Rec. 468-3; referred to 50kHz deviation (25kHz system M).

3.7.4 Reference oscillator.

Type:
10MHz TCXO
Absolute accuracy:
2ppm
Ageing:
1ppm per year

3.8 Mechanical dimensions

Cabinet:
2U high, 19" rackmount/table cabinet
Height:
88mm (3.5")
Depth (in 19" rack):
421mm (16.6")
Depth (incl. front brackets):
466mm (18.3")
Width (in 19" rack):
440mm (17.3")
Width (incl. front brackets):
483mm (19.0")
Weight:
10kg (22lbs)

3.9 Environmental conditions

The environmental data mentioned in this manual is based on the results of the manufacturers procedures.
Details of these procedures and failure criterias are supplied on request by the PHILIPS organization in your country, or by PHILIPS, INDUSTRIAL & ELECTRO-ACOUSTIC DIVISION, EINDHOVEN, THE NETHERLANDS.

3.9.1 Climatic conditions

Operating temperature range:
5°C to 45°C
Functioning temperature range*:
0°C to 50°C
Storage temperature range:
-30°C to 70°C
*: Some parameters not up to specifications

3.9.2 Mechanical requirements

VIBRATION
Limit range for storage and transport:
30min in each of three directions; 10Hz to 150Hz, 0.7mm$_{P-P}$ and 50m/s^2 max acceleration (according to IEC-publ. 68, test Fc).
NOTE: Unit mounted on vibration table without shock absorbing material.

BUMP
Limit range for storage and transport:
1000 bumps of 100m/s^2 sine, 6ms duration in each of three directions (according to IEC-publ. 68, test Eb).

PACKING
According to UN-D-1400
The test methods mentioned in the N.V. PHILIPS standard UN-D-1400 are in accordance with those of relevant ISO-standards.

3.9.3 Electromagnetic interference

Class:
VDE 0871/DIN 57871 class B.

Block diagram PM5690