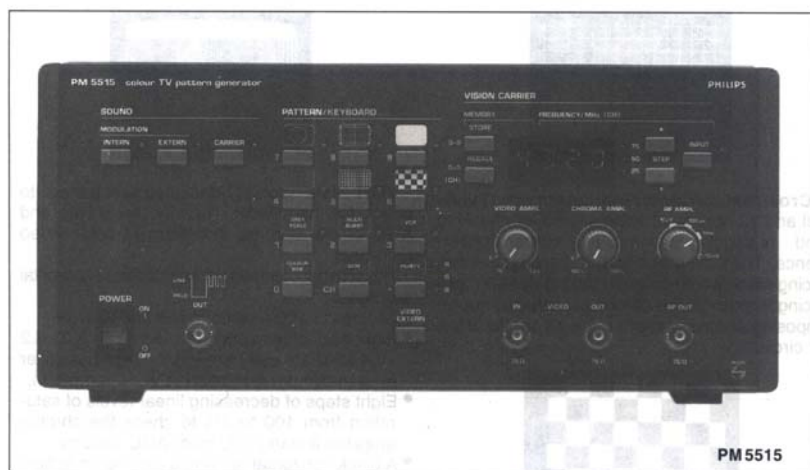


TV & Video Pattern Generators

PM 5515, PM 5516 & PM 5518



A Pattern for the Future

This family of versatile color pattern generators is designed to cover all available TV standards.

- PM 5515 is for PAL/NTSC
- PM 5516 is for SECAM
- PM 5518 is for SECAM/PAL/NTSC

All models are microcomputer-controlled with powerful, non-volatile memories, allowing pre-determined user-programs to be stored and recalled at will. At the touch of a key.

Over 70 different patterns and combinations are achievable, as well as Teletext, FM stereo and dual-channel sound. All very simple to set up.

Each model in the series is available in a basic configuration, and also with enhanced versions to cater to the widest possible spectrum of applications. These are listed at the end of this section. For servicing of color TV monitors and applications involving computer graphics, an y/c + RGB option is available. A system version, the TXI, with GPIB/IEEE-488* interface built-in, y/c (RGB), and universal chroma as standard, is also available.

Thus many of today's video testing problems are well covered, with reserve capability ready for tomorrow's needs.

Versatility with Ease

The PM 5515/16/18 series offers you unparalleled versatility and ease of use.

Thanks to microcomputer control, one simply keys-in the programs required — R.F. frequency setting, pattern selection and sound modulation. Touch a button to store them — ready for recall. And, even a year later, just recall and the program is still there — ready for immediate use. Versatility plus simplicity.

Lowest Cost of Ownership

Microprocessor control offers more than versatility with ease. It offers security and reliability. Software modules and solid-state memories take over from mechanical switches, reducing service and maintenance costs to the absolute minimum. And with Philips built-in quality and reliability the user enjoys a sound guarantee of low cost of ownership.

An Unparalleled Range

The PM 5515/16/18 series offers an unparalleled range of pattern generators. From the versatile basic model with its touch-button control of every parameter, through models offering FM-stereo and dual sound or Teletext test and page signals, up to the model that offers everything! A range from which one can choose a pattern generator for today — knowing that it will meet tomorrow's needs.

PM 5515/16/18 Color TV Pattern Generator Family

Synthesized control of RF frequency

Covering every RF band from IF to bands IV/V including cable TV bands

Storage and recall of 10 complete programs, RF freq., pattern and sound settings

Keyboard call-up of up to 70 test patterns/combinations

Simple TV standard selection of PAL, NTSC or SECAM

Operation of up to 3 to 4 receivers on a 10 mV output

Y/C + RGB option

GPIB/IEEE-488 version with standard RGB and universal chroma PM 5518 TXI



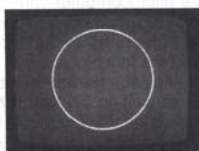
*The terms GPIB and IEEE-488 may be used interchangeably throughout this catalog.

TV & Video Pattern Generators

PM 5515, PM 5516 & PM 5518

Patterns for Now and for the Future

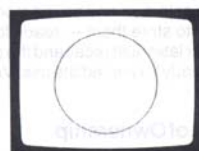
Twelve push-buttons make the selection of eighteen different patterns possible. These test patterns check and align the monochrome and chrominance circuitry of the color TV monitors and VCR.



Circle on a grey background for checking the overall linearity and geometry. The white circle changes automatically to black when used with the white pattern and is useful for checking reflections.



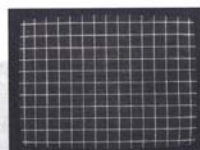
Center Cross/Border lines is ideal for centering TV monitors and TV screens. Also to check the deflection linearity and for pin-cushion correction.



White 100% with swinging burst is designed for setting white D and for an overall check of purity. Also for beam current adjustment. White D is the correct white necessary for a natural color reproduction.



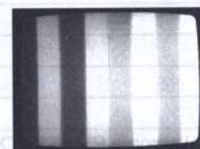
Dot pattern mainly for static convergence. The screen should contain pure white dots.



Cross hatch/Center Indication with 17 vertical and 12 horizontal lines is used for checking and re-aligning dynamic and corner convergence. The advantage is that there is no interlacing which would normally tire the eyes. If interlacing is required this can be achieved by superimposing another pattern such as center cross or circle.



Checkerboard pattern of six times eight rows of squares provides a visual standard for basic picture tube alignments, for example: centering, focus, horizontal and vertical deflection and linearity.



Grey scale. Full-screen linear staircase signal with 8 equal steps from black to white is used to locate faulty linearity of the video amplifier or grey-scale setting.



Multiburst contains eight full screen vertical bars of definition lines in the frequency ranges 0.8, 1.8, 2.8, 3.0, 3.2, 3.4, 3.8 and 4.8 MHz. This checks the bandwidth of the video or luminance amplifier in black and white or color TV as well as the resolution of monitors and video recorders.



VCR is a specially-designed test pattern to check the bandwidth, linearity, sensitivity and AGC of the chroma amplifiers in color video recorders.

This combined test pattern is divided into 4 horizontal segments:

- 24 lines of 100% white to clip and to level.
- Eight bars of resolution of which 2.8 - 3.0 - 3.2 - 3.4 MHz are used to align the high-pass filter for a maximum resolution in VCR bandwidth.
- Eight steps of decreasing linear levels of saturation from 100 to 0% to check the chroma amplifier linearity and color AGC circuitry.
- A black horizontal bar with a moving white field to check moving pictures on video recorders.

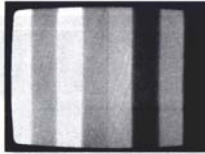


Purity with a choice of the three primary colors clearly indicated by LEDs. The red pattern is used for checking color purity. The green pattern provides a purity check for three-in-line tubes. Blue is also available to check color performance. The three complementary colors, magenta, yellow and cyan can also be displayed by selection, as can white and black.

Combinations with circle and/or center cross are easy to select.

TV & Video Pattern Generators

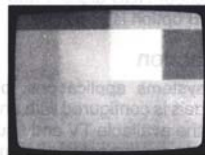
PM 5515, PM 5516 & PM 5518



Color bar standard bar pattern. The vertical bars are white D, yellow, cyan, green, magenta, red, blue and black.

Since it is dependent on the TV system selected, the luminance content is automatically corrected for each setting.

The color bar pattern therefore provides sufficient information for a good overall check of color performance, including checks on burst keying, subcarrier regeneration, RGB amplifiers, the delay color versus B/W signal and saturation.



Examples of PAL coded DEM pattern.

G - Y = 0		Y = 50%	
Δ	Δ	$\hat{0}$	$\hat{0}^*$
$+(R - Y)$	$-(R - Y)$	$+(B - Y)$	$-(B - Y)$
Δ	Δ	$\hat{0}$	$\hat{0}^{**}$
$\pm (R - Y)$	$\pm (R - Y)$	$\pm (B - Y)$	$\pm (B - Y)$

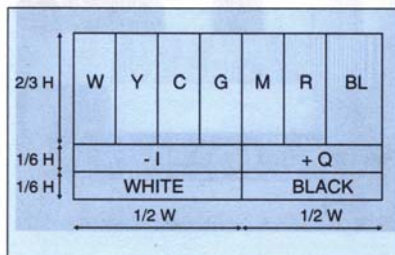
Reference Y = 50%

$\Delta (B - Y) = 0$ $\hat{0} (R - Y) = 0$

* PAL coded

** Anti-PAL coded

DEM Pattern. Demodulator is a combined test pattern which, divided in 4 sections, contains information to make on-screens checks and alignments of the color demodulators and sub-carrier frequency. For PAL it is used to check the chroma delay line for amplitude and phase (venetian blinds). For the NTSC system, the pattern is according to the NTSC requirements and contains 7 color bars, -I and +Q signals and a black and white reference field.



Stereo and Second Sound Channel

For use in standard CCIR, PAL G systems, the PM 5515 and PM 5518 have a selection of optional -X, -TX, and TXS configurations with two sound carriers — for use in one- and two-channel mode, or right and left channel of a stereo signal. They are therefore appropriate for European systems (and are not compatible with MTS (NTSC) stereo systems).

CTV transmission with stereo sound or alternative second sound channel (e.g. to choose between synchronized or original voice tracks) is becoming more common. The special CTV receivers with stereo decoders needed to reproduce these broadcasts can be expected to be increasingly popular. The -X, -TX and -TXS meet the need for a portable color pattern generator for test and realignment of these receivers.

The instrument allows external modulation from a full stereo tuner/amplifier, tape or cassette recorder, with PM 5515/5518 as the RF modulator.

- Sound carriers according to standard at 5.5 MHz and 5.742 187 5 MHz $\pm 3 \times 10^{-5}$
- Sound/vision separation at 13 and 20 dB, respectively
- Internal FM of 1 kHz and 3 kHz with 30 kHz deviation
- Full external stereo modulation facility for all types of stereo equipment (recorders, CDs, tuners, etc.)
- Pilot tone according to standard at 54.687 5 kHz $\pm 3 \times 10^{-5}$, with recognition frequencies at f_1
- 133+117.5 Hz (stereo) and $f_2/57+274.1$ Hz (second sound channel)



Teletext

The growth of electronic communications has seen a rapid increase in the introduction of text transmission. To meet the highly specialized requirements for the checking and alignment of teletext receivers and decoders in PAL G and I systems the -T, -TX, and -TXS configurations have been specially developed. Both instruments offer the facility of a selection of five teletext pages with special contents for decoder testing as well as a wallpaper test pattern.



FLOF, TOP and VPT

New added TELETEXT facilities

The test facilities of the PM 5515/5518 teletext versions has been extended by a selection of teletext pages including normal teletext, FLOF (Full Level One Features), TOP (Table of pages) and VPT (Video Programming by Teletext). FLOF is used in the UK, while TOP is used in Germany, Switzerland and Austria, as well as via cable distribution systems in the Netherlands. TOP and FLOF also feature extra country characters.

VPT provides a menu that makes VCR programming simple, allowing programmes to be selected by setting the start and stop time.

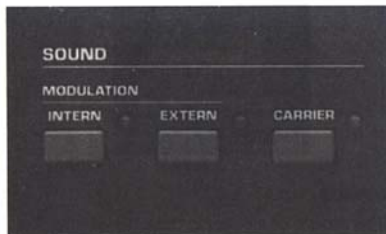
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TV & Video Pattern Generators

PM 5515, PM 5516 & PM 5518



RF Selection

All models cover the full frequency range from 32...900 MHz, including IF and TV transmissions in frequency bands I, III, IV and V. Full coverage of cable TV and S-channels is provided in frequency bands 104...175 MHz (S1...S10) and 230...300 MHz (S11...S20); and hyperband coverage is provided in the frequency range 300...470 MHz. Selection of the synthesized RF frequency within these bands is electronic, via the keyboard.

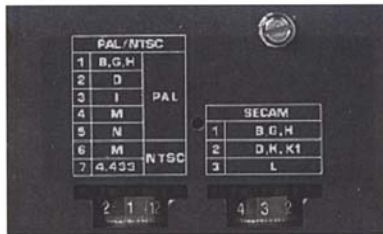
Up to ten memory places can be used either to store the selected RF frequency or TV channel number. Having stored, e.g. the local TV stations, any one of them can be recalled at the touch of a button without time consuming dial tuning.

The first digit shows the memory place. The other three digits indicate the selected frequency or TV channel. The RF carrier output of >10 mV into 75Ω is ample for 3 or 4 receivers in parallel during workshop repairs, and the carrier can be continuously attenuated by more than 60 dB, with output indications at 1 mV, 100 μV and 10 μV levels. The ability to smoothly vary the RF level is of particular value when checking the overall RF sensitivity or AGC circuits.

Up to ten memory places can be used either to store the selected RF frequency or TV channel number. Having stored, e.g. the local TV stations, any one of them can be recalled at the touch of a button without time consuming dial tuning.

RF Carrier and Frequency Spectrum

Although double sideband, the RF envelope of the PM 5515/16/18 is very similar to that transmitted by professional TV broadcast companies, such as, e.g., 13 dB for TV standard G between the sound and vision channels. (Most other generators have 25 dB or more separation, leading to false impressions when aligning tuners and RF amplifiers.)



The System Switch

The rear of the instrument offers additional facilities which add to the uniqueness of the PM 5515/16/18 range. A selection switch is used to choose the TV system required. Line frequency is automatically selected, either 15 625 Hz for CCIR or 15 734 Hz for RTMA with less than 0.4 Hz frequency tolerance.

The correct crystal for color and subcarrier, determining line- and frame-frequencies, is selected automatically.



The Euro/SCART connector for audio/video out as well as the DIN connector for external audio modulation are standard for all models.

Outputs

On the rear panel, video output is via a Euro Scart connector an external sound modulation input via a standard DIN plug. Color subcarrier and sync signal are supplied as standard, with RGB optionally available.

Y/C plus RGB option PM9553

Color pattern generators get S-VHS capability. An optional Y/C module gives the Philips PM 5515 to PM 5518 range of color pattern generators the separate luminance and chroma (Y/C) outputs needed by the new-generation S-VHS video recorders and Y/C monitors. By separately recording the Y and C signals, these VCRs eliminate cross-color effects to give dramatically improved color reproduction. The PM 9553 Y/C module can be retro-fitted to any of the PM 5514V,



PM 5515, PM 5516 and PM 5518 pattern generators, and provides output signals to the S-VHS VCR or Y/C monitor via a special connector. The RGB outputs are also included in this option.

RGB signals and a SYNC and subcarrier facility are available to meet the rapid advance in computer graphics techniques and servicing of color video monitors. There are many monitors which only accept RGB signals and for testing these the RGB option is essential.

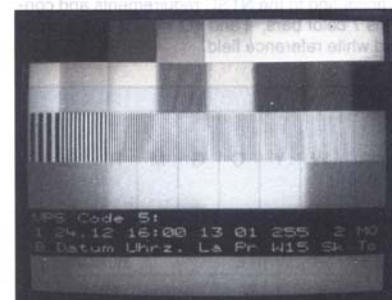
IEEE-488 version

For use in systems applications, one of the PM 5518 models is configured with an IEEE/IEC interface. All the available TV and sound modulation standards can be selected remotely, and "bus learn mode" and "identification mode" are included. See page 16 - 14 for more information about the PM 5518 TXI IEEE-488/IEC version.

VPSTest Facilities

PM 5515-TXS and PM 5518-TXS models offer complete testing of video cassette recorders equipped with VPS, under the PAL B/G/H, D and I/N standards. A maximum of 9 coded VPS signals are available including date, transmission time, country indication, TV channel, stereo/dual/mono sound and adult/general suitability.

Special signals such as LEER code, program interrupt and system status can also be selected. VPS data is shown in a 1/6 screen height horizontal bar which can be combined with any test pattern and displayed in six positions, either on- or off-screen. Unique to VPS instruments is on-screen display of codes and programming the generator to set codes locally if required.



TV & Video Pattern Generators

PM 5515, PM 5516 & PM 5518



A Range for Today and Tomorrow

The versatility of the Philips color pattern generator family not only ensures that today's requirements are expertly met but the developments of tomorrow are anticipated.

PM5515 Generator For PAL/NTSC

The standard PM 5515 generator with its advanced features, unrivalled in the market place, is complemented by four enhanced models:

PM 5515-T has Teletext pages plus a wallpaper test pattern for aligning and testing teletext receivers and decoders.

PM 5515-X features full additional FM stereo and dual sound channel facilities according to system G.

PM 5515-TX offers, in addition to all the facilities of the basic model, all those features provided by the other two models.

PM 5515-TXS further expands on the -TX version by adding VPS for PAL system G.

PM 5515 TN and PM 5518 TN are the NICAM versions

PM5516 Generator For SECAM

The PM 5516 offers the same features as the standard PM 5515 above, except it operates according to the French SECAM TV system L with positive video modulation and AM sound. It also operates to the TV standards D, K1, B, G and H corresponding to OIRT TV system with negative

video modulation and FM sound. The desired TV standard is simply selected at the rear of the instrument.

PM 5516 is the standard SECAM COLOR generator.

PM 5516-T is as PM 5516 but extended with ANTIOPE.

PM5518 Generator For SECAM/PAL/NTSC

The PM 5518 expands on the basic PM 5515 by supporting not only the NTSC and PAL TV standards, but also SECAM. In addition, it adds IEEE-488 compatibility as an optional configuration for systems application. As such, it is Philips' most advanced color pattern generator.

A push-button on the front panel selects PAL or SECAM, with a rear panel switch to select NTSC.

In addition to the standard PM 5518, enhanced versions include:

PM 5518-TX operates according to TV standard G, STEREO FM, DUAL SOUND and pages of teletext and — according to system SECAM L — seven pages of ANTIOPE.

PM 5518-TXS further expands on the -TX by adding VPS for TV standard G.

The PM 5518 TXI is the most advanced color pattern generator in Philips' range. It is functionally equivalent to a PM 5518 TXS, except that it is designed specifically for systems use and comes with an GPIB/IEEE-488 interface as standard. It is the most versatile general purpose instrument for testing and adjustment of TV sets, monitors and video recorders, in virtually any systems (or stand-alone) application in development, production and service.

The IEEE interface allows remote selection and control of all the functions and allows operation in automatic test environments. "Identification mode" and bus "learn mode" are implemented in the PM 5518 TXI.

This unit supports all PAL/SECAM/NTSC TV standards, including PAL M & N. Also included are teletext, antiope, composite video outputs and sound modulation in stereo, dual channel and mono. In addition, it has included as standard the universal chroma and Y/C+RGB facilities available only as options on other instruments.

These systems-oriented instruments are often used continuously in factory set-ups, so the crystal oscillators have a higher stability than standard models.

PAL and NTSC TV Systems Specifications for PM5515 and PM5518						
Series	M	B, G & H	D	I	N	M
TV and chroma standard	NTSC, RTMA	CCIR, PAL	CCIR, PAL	CCIR, PAL	CCIR, PAL	RTMA, PAL
No. of lines per picture frame	525	625	625	625	625	525
Field frequency (Hz)	60	50	50	50	50	60
Line frequency (lines/second)	15734	15625	15625	15725	15625	15734
Chrominance subcarrier (MHz)	3.579545	4.433619	4.433619	4.433619	3.582056	3.575611
Sound carrier to vision carrier (MHz)	4.5	5.5	6.5	6	4.5	4.5
Sound modulation	FM	FM	FM	FM	FM	FM
Pre-emphasis (μs)	75	50	50	50	75	75

SECAM TV System Specifications For PM5516 and PM5518			
TV systems	SECAM B, G, H	SECAM D, K, K1	SECAM L
Sound carrier relative to vision carrier (Hz)	5500000	6500000	6500000
Type and polarity of video modulation	A3F neg.	A3F neg.	A3F pos.
Type of sound modulation	FM	FM	FM
Chrominance subcarrier (Hz)	$F_{os} = 4250000$ $F_{os} = 4406250$		
Type of chrominance subcarrier modulation	Frequency modulation		
Transmitted chrominance information	Line sequential D'R and D'B		
Line frequency (lines/second)	15625		
Field frequency (Hz) (fields/second)	50 (50)		

TV & Video Pattern Generators

PM 5515, PM 5516 & PM 5518

Specifications

Technical Specifications

Video Carrier

Frequency
Range: 32...900 MHz
IF = Band I: 32...90 MHz
S-Band S1-S10: 104...174 MHz
Band III: 174...230 MHz
S-Band S11-S20: 230...300 MHz
Hyperband H21-H40: 300...470 MHz
Band IV-V: 470...900 MHz
Frequency Selection: Keyboard
Fine Tuning: 250 kHz steps for TV frequencies
 100 kHz steps for IF frequencies (32...44.9 MHz)
Frequency Tuning: In positive or negative
 direction. Tuning speed increase by holding step
 button
Storage:
 a) Possibility for 10 different RF
 frequencies
 b) As a), indicated as TV channel
 numbers
Indication: 4-digit 7-segment LED display
 a) First digit: memory, store and recall
 position 0...9
 b) 2nd, 3rd and 4th digits: 3-digit indication of
 frequency in MHz. Separate indication for
 250 kHz, 500 kHz and 750 kHz steps
 c) Keyboard-selectable TV channel numbers
 (e.g. C21 or C70)

RF Output

RF Output: BNC connector (front panel)
Impedance: 75Ω
Output Voltage: <10 mV
Attenuation: 60 dB, continuous

Video

Video Modulation
Modulation: AM internal-external switchable
Polarity: Negative/positive for SECAM L

Video Input

Video Input: BNC connector (front panel)
Input Voltage (PP): 1V
Max. permissible input Voltage: ±5V
Impedance: 75Ω
Polarity: White level positive
Coupling: DC (clamping on sync.)

Outputs

a) BNC connector
 b) SCART connector (Euro-AV
 connector), pin 19 (rear)
Impedance: 75Ω
Voltage (PP):
 a) 1V fixed
 b) Variable between
 0...1.5V/75Ω
Polarity: Negative
Coupling: DC

Chroma (NTSC/PAL)

Chroma Standards: NTSC according to system
 M (switchable)
 PAL according to system B, D, G, H, I, (M, N)
Selection: Rear panel thumbwheel system switch
Sub-Carrier Frequency:
 3.579545 MHz for NTSC
 4.433619 MHz for PAL B, D, G, H, I;
 3.575611 MHz for PAL M;
 3.582056 MHz for PAL N;
 Sub-carrier frequencies coupled to line frequency
 according to selected standard
Tolerance: ≤3 x 10⁻⁵ (+5...+40°C)
Burst: Position, number of cycles and phase
 according to selected standard
Amplitude: Chroma with burst
 a) Fixed (100%)
 b) Continuously variable from
 0...150%
Chroma Vectors Inaccuracy: Phase ≤3°, am-
 plitude ≤5% relative to luminance amplitude

Chroma PM5518TXI

as above but with PAL M, N as standard

Chroma (SECAM)

Chroma standards: SECAM B, G, H, D, K, K1
 and L
Selection: Two rear panel thumbwheel system
 switches
Sound Carrier Rel. to Vision Carrier (Hz): B, G,
 H-5,500,000; D, K, K1, L-6,500,000
Type/Polarity of Video Modulation: A3 F/neg.
 (L pos.)
Type of Sound Modulation: FM (except L)
Chrominance Sub-Carrier (Hz): fOB=4,250,000
 fOR = 4,406,250
Tolerance: <2 kHz
Type of Chrominance Sub-Carrier Modulation:
 Frequency modulation
Transmitted Chrominance Information:
 Line-sequential D'R and D'B
Line Frequency: 15,625 lines/s
Field Frequency: 50 Hz (50 fields/s)
Signals: D'R = -1.9 (E'R - E'Y)
 D'B = 1.5 (E'B - E'Y)
Identification: According to TV system in line
 and frame
Frame Identification: Position in lines 7 to 15; in
 1st, 3rd and 5th field etc.: in lines 320 to 328; in
 2nd, 4th and 6th field etc.
Line Identification: By burst (chrominance sub-
 carrier reference signal) on the back porch ac-
 cording to TV standard (B, D, G, H, K, K1, L/
 SECAM)
Amplitude: Line and frame identification accord-
 ing to TV standard, but also variable between
 0...150% together with chroma information
Chrominance Signal: According to standard,
 but also variable
Amplitude: Between 0...150% of the nominal
 value
Frequency Deviation: Of chrominance subcar-
 rier according to TV standard

Video Pre-Emphasis: Low
 frequency pre-correction and high-frequency bell
 filter according to TV standard
Bell Center Frequency: 4.286 MHz
Tolerances: ≤20 kHz

Chroma (SECAM);

PM5518TXI

as above except:
Tolerance: <10°
Temperature Coefficient: 2 x 10⁻⁴/K
Ageing: 2 x 10⁻⁴/year

Synchronization

Line Frequency: 15,734 Hz (RTMA), 15,625 Hz
 (CCIR),
Frequency Tolerance: 0.4 Hz (+5...+40°C)
Number of Lines: 525 (RTMA), 625 (CCIR),
Field Frequency: 60 Hz (RTMA), 50 Hz (CCIR),
Line and Frame Sync.: According to TV stan-
 dard, interlacing
Output: BNC connector (front panel)
Sync. Signal: Combined signal with line and field
 synchronization pulses with amplitude
 difference
Voltage (open-circuit): 2.6V for line pulse, 5.0V
 for field pulse
Impedance: 6 kΩ
Polarity: Negative

Sound Carrier and Modulation

Sound Carrier (mono): On/off switchable
Frequency: 4.5 MHz, standard M, N;
 5.5 MHz, standard B, G, H;
 6.0 MHz, standard I;
 6.5 MHz, standard D, SECAM L
Tolerance: ≤3 x 10⁻⁵ (+5...+40°C)
Vision/Sound Carrier Ratio: 13 dB,
 standard B, G, H;
 11 dB, standard D, K, K1, L;
 13 dB, standard M, N;
 12 dB, standard I
Sound Modulation: FM, internal and external
 on/off switchable, AM for SECAM L
Pre-Emphasis: 50 μs, standard B, D, G, H, I, K,
 K1; 75 μs, standard M, N

Internal FM

Frequency Deviation:
 ±30 kHz, standard B, G, H;
 ±15 kHz, standard M, N;
 ±27.5 kHz, standard I;
 ±24 kHz, standard D, K, K1
Modulation Depth: 50%, standard SECAM L

External FM

0.4V will give the same deviation or modulation
 depth as with internal modulation
Input: DIN connector, pin 3 + 5 (rear panel)
Impedance: 0.5 MΩ
Bandwidth: 40 Hz...15 kHz
Max Input Voltage: ±40V

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Output: SCART connector (Euro-AV connector), pin 3 (rear panel)
Impedance: 1 k Ω
Voltage: 0.4V

Teletext for T and TX Versions

Data Synchronization Frequency: PAL BGI-6.9375 MHz, ~444 x f_H; SECAML-6.203125 MHz, ~397 x f_H

Data Coding: Acc. to standards as PAL
Signal Levels: '1' + 66% level, 0+black level; as PAL, '1' + 100% White level as SECAM
Signal Shaping: Cos² filter

Text Data

Decoder Alignment: No combination possible with test alignment patterns only PM 5515T and PM 5516T

Data Contents: Clock run-in standard, framing code standard, full field, remaining pattern pseudo-random (not PM 5518)

Normal Working Mode: Combinations possible with all test patterns

Data Lines: 22; 335

Data Contents: Text pages with special contents for decoder testing for each standard

Signal Output

Teletext Signal Combined with Video Signal: Video output

Modulated RF Signal: RF output, RF from basic unit

Sound Section for Stereo and Second Sound Channel Transmission for X and TX Versions

Standards: B, G

Sound Carriers: Carrier 1: 5.5 MHz;
 Carrier 2: 5.7421875 MHz

Vision Sound Carrier Ratio: Carrier 1: 13 dB;
 Carrier 2: 20 dB

Frequency Tolerance: <3 x 10⁻⁵ (+5...+40°C)

Modulation

FM, internal and external on/off switchable
Pre-Emphasis: 50 μ s

Internal FM

Sound Channel 1: 1 kHz on/off switchable; 3 kHz on/off switchable

Deviation: \pm 30 kHz in mono/dual-channel
 \pm 15 kHz in stereo, right channel switched off
 \pm 30 kHz in stereo, left and right channels switched on with 1 kHz internal signal

Sound Channel 2: 1 kHz, on/off switchable
Deviation: \pm 30 kHz

External FM

Sound Channels 1 & 2 Input Voltage: 0.4V will give the same deviation as the internal signal
Inputs

DIN connector (rear panel)
Contacts: Pin 2 (ground),

pin 3 sound channel 1,
 pin 5 sound channel 2
Impedance: 0.5 M Ω
Bandwidth: 40 Hz...15 kHz
Max. Permissible Voltage: \pm 40V

Outputs

SCART connector (Euro-AV connector)
Contacts: Pin 3 sound channel 1, pin 1 sound channel 2
Impedance: 1 k Ω
Voltage: 0.4V

Operating Mode Detection

Pilot Frequency: 54.6875 kHz (3.5 x f_{line})
Tolerance: <3 x 10⁻⁵ (+5...+40°C)
Modulation: AM
Modulation Depth: 50%
Identification Frequencies: 117.5 Hz (f_{line}/133) stereo mode; 274.1 Hz (f_{line}/57) dual-channel mode
Deviation of 2nd Sound Carrier: \pm 2.5 kHz by modulation of carrier with unmodulated pilot
 For standards D, I, M, N the stereo versions X and TX also offer all mono facilities.

VPS for TXS Versions

VPS Video Programming System for pre-programmed recording with home video recorders according to German broadcasting organizations ARD, ZDF and ZVEI

Data Synchronization Frequency: 5 MHz

Bit Length: 400 ns

Modulation: Bi-phase modulation

Data Coding: According to the guideline issued by ARD, ZDF and ZVEI

Signal Levels: '0' = black level, '1' = 71.4% of white level

Signal Shaping: Cos² filter

Location of Data: Line 16

Data Contents: 9 different freely programmable non-volatile sets of VPS data preset at factory; each with 15 words (8 bits), including clock run-in, special identification and date of transmission

Normal Operating Mode: Combination possible with all test patterns and teletext; on/off switchable

Programming: Via keyboard and text strip inserted in the test pattern

Text Strip: 6 different positions, or not visible

IEEE-488 Interface

(PM 5518TXI only)

Allows selection and control of all functions

Y/C + RGB Option

RGB Outputs

BNC connectors (rear panel)
Output Voltage (PP): 0.7V/75 Ω

Impedance: 75 Ω

Sub-Carrier Output

BNC connector (rear panel)
Output Voltage (PP): 1V/75 Ω

Impedance: 75 Ω

Sync. Output

Y/C signal

Connector: 4-pin S-connector (rear panel)

Y signal (luminance) Y signal at pin 3, Y ground at pin 1

Impedance: 75 Ω

Nominal output level: 1 V_{pp} (intor 75 Ω)

Tolerance: \pm 10%

Standard

	B, D, G, H, I, N, K, K1, L	M
Sync. level	-43% \pm 3%	-40%
Blanking level	0%	0%
Black level	0%	7.5% \pm 2.5%
White level	100%	100%

C signal (chroma) Complete chroma signal including colour burst of CVBS signal c signal at pin 4; c ground at pin 2

Impedance: 75 Ω

Output level into 75 Ω :

Normal value: 100% \pm 10% in stop position
CHROMA AMPL.

Setting value: 0... 150% continuously adjustable (not PM 5514V)

0... 100% switchable for PM 5514V

BNC connector (rear panel)

Output Voltage (PP): 2V/75 Ω

Impedance: 75 Ω

Universal PAL/NTSC Chroma Module

NTSC Systems: M

PAL Systems: B, D, G, H, I, M, N

General Specifications

Voltage: 100, 120, 220, 240 V -12/+10%

Frequency: 50/60 Hz \pm 5%

Power Consumption: Depends on version

Dimensions: 300mm W x 140mm H x 395mm L

Weight: Approx. 10 kg depending on version

Included with instrument:

PM 9538 RF cable, BNC TV connector 758, mains cable, operating manual