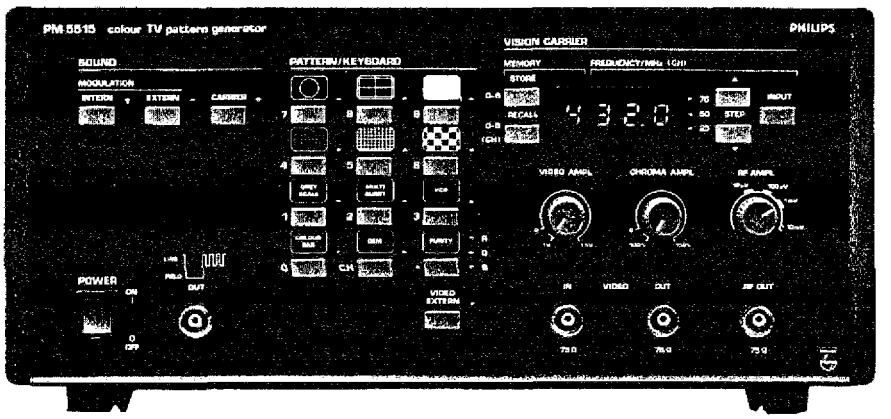
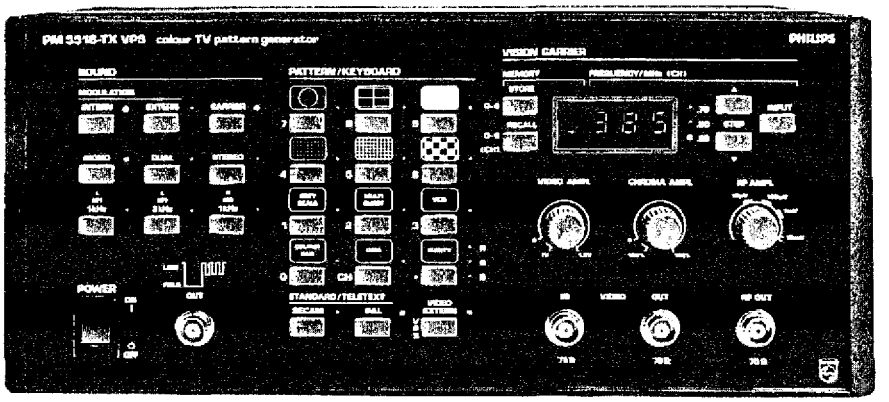
# PM 5515 & PM 5518

GPIB IEEE-488




PM 5515




PM 5518 TXI
IEEE-488 Version

## PM 5515 & PM 5518 Color TV Pattern Generator Family

- Keyboard call-up of up to 70 test patterns/combinations
- Simple TV standard selection of PAL, NTSC or SECAM
- 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
- Operation of up to 3 to 4 receivers on a 10 mV output
- RGB + Y/C (option for S-VHS compatibility)
- GPIB/IEEE-488 version with standard RGB and universal chroma

Philips' PM 5515 & PM 5518 offer today's most complete range of color pattern generator performance. With a choice of powerful yet easy-to-use instruments that speed and simplify every aspect of video testing and troubleshooting. Providing a complete and economic solution for every testing requirement: color TV, closed circuit TV systems, video recorders, and video display monitors.

### Multi-Standard Coverage

Philips' pattern generators cover all of the world's major TV standards – NTSC/PAL/SECAM on the powerful PM 5518, and NTSC/PAL on the PM 5515 – with simple switch selection at the rear panel to ensure compatibility with your system of choice. (An additional model PM 5516 is also available for SECAM-only compatibility.)

Each model is also available in a variety of optional configurations, ensuring optimum economy in meeting specific requirements. Choices include an RGB option for servicing color TV monitors and applications involving computer graphics, Y/C output for S-VHS, GPIB/IEEE-488* for system use, and a variety of PAL teletext and stereo options.

### Versatility With Ease

The PM 5515 and PM 5518 series offer you unparallelled versatility and ease-of-use.

Thanks to microcomputer control, one simply keys-in the programs required – RF 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.

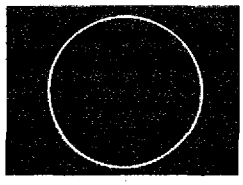
**The terms GPIB and IEEE-488 may be used interchangeably throughout this catalog.*

# TV & Video Pattern Generators

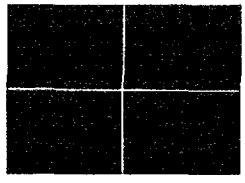
## PM 5515 & PM 5518

### Patterns for Now and for the Future

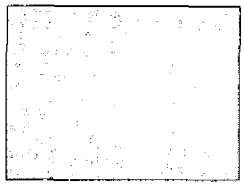
Twelve pushbuttons make the selection of eighteen different basic patterns possible. These test patterns check and align the monochrome and chrominance circuitry of the color TV monitors and VCR. They can also be combined in over 70 patterns for special requirements.



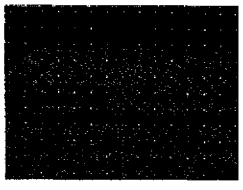
**Circle** on a grey background for checking the overall linearity and geometry. The white circle changes automatically to black when used with the white pattern and is useful for checking reflections.



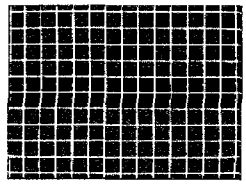
**Center Cross/Border Lines** is ideal for centering TV monitors and TV screens. Also to check the deflection linearity and for pin-cushion correction.



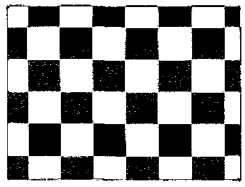
**White** 100% with swinging burst is designed for setting white D and for an overall check of purity. Also for beam current adjustment. White D is the correct white necessary for a natural color reproduction.



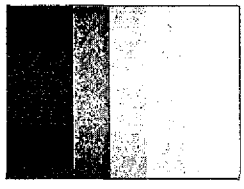
**Dot** pattern mainly for static convergence. The screen should contain pure white dots.



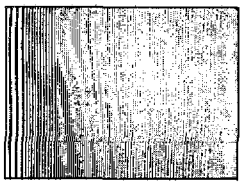
**Cross Hatch/Center Indication** with 17 vertical and 12 horizontal lines is used for checking and realigning dynamic and corner convergence. The advantage is that there is no interlacing which would normally tire the eyes. If interlacing is required this can be achieved by superimposing another pattern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



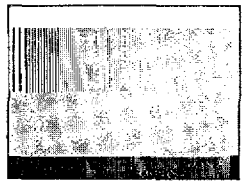
**Checkerboard Pattern** of six times eight rows of squares provides a visual standard for basic picture tube alignments, for example: centering, focus, horizontal and vertical deflection and linearity.



**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.



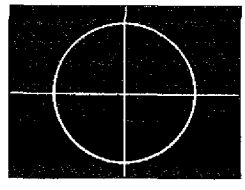
**Multiburst** contains eight full screen vertical bars of definition lines in the frequency ranges 0.8, 1.8, 2.8, 3.0, 3.2, 3.4, 3.8 and 4.8 MHz. This checks the bandwidth of the video or luminance amplifier in black and white or color TV as well as the resolution of monitors and video recorders.



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

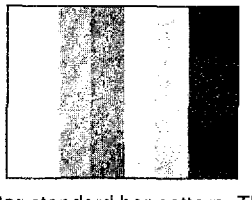
This combined test pattern is divided into 4 horizontal segments:

- 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.

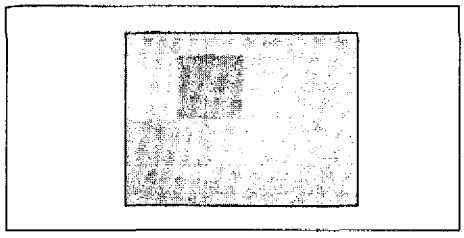


**Color Bar** standard bar pattern. The vertical bars are white D, yellow, cyan, green, magenta, red, blue and black.

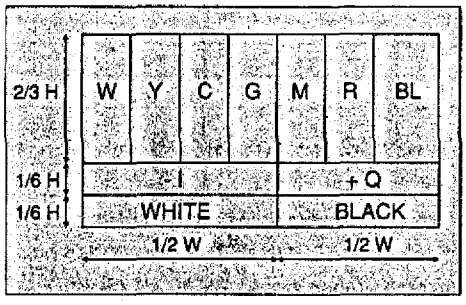
Since it is dependent on the TV system selected, the luminance content is automatically corrected for each setting.

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.

# PM 5515 & PM 5518

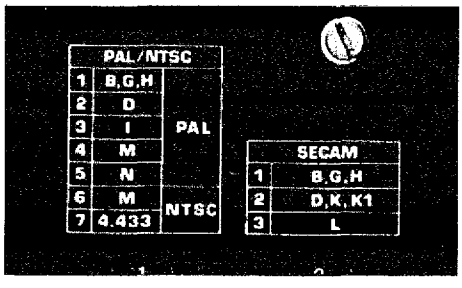


*Examples of PAL coded DEM pattern. For NTSC this DEM pattern contains different color coding.*



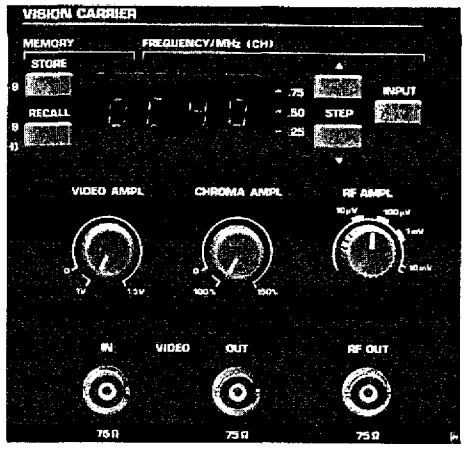

**DEM Pattern.** Demodulator is a combined test pattern which, divided in 3 sections, contains information to make on-screen checks and alignments of the color demodulators and subcarrier frequency. This test pattern contains information similar to the EIA split field color bar, certaining split field color bar, - I, + Q signals and white and black information.

The screen shown is an example of a NTSC coded DEM pattern. For PAL this DEM pattern contains different color codings.




## Multi-Standard Switch

On the rear panel of the TV color pattern generators is a switch for direct selection of the required TV and chroma system using a simple thumbwheel setting. Line frequency is automatically selected using internal crystal; either 15,625 Hz for CCIR or 15,734 Hz for RTMA with a frequency tolerance of less than 0.4 Hz. The required sound and vision carrier separation and chroma subcarrier are selected simultaneously.




## RF Selection

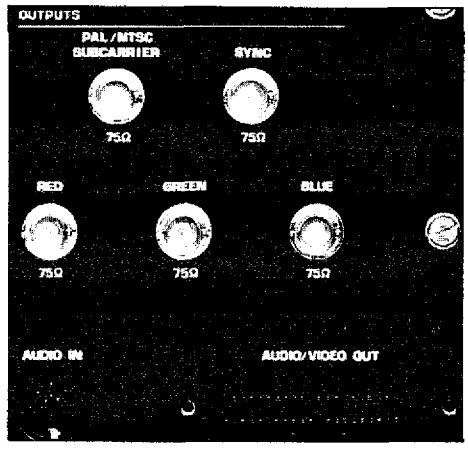
All models cover the full frequency range from 32 MHz to 900 MHz, including IF and TV transmissions in frequency bands I, III, IV and V. Full coverage of cable TV and S-channels is provided in frequency bands 104 MHz to 175 MHz (S1 to S10) and 230 MHz to 300 MHz (S11 to S20); and hyperband coverage is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

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 5515/18 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 Euro/SCART connector for audio/video out as well as the DIN connector for external audio modulation are standard for all models.*

## Outputs and Y/C plus RGB

On the rear panel, video output is via a Euro/Scart connector and external sound modulation via a standard DIN plug. Color subcarrier and input sync signal are supplied as standard, with Y/C plus RGB optionally available (PM 9553).

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.

Included with the RGB option, the Y/C module gives 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.

## IEEE-488 Version

For use in systems applications, the PM 5518TXI model 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.

## Added Functionality for PAL Standards

For applications requiring added compatibility with European TV functions, a wide variety of optional configurations are available for selected PAL systems. These include stereo, second sound channel, teletext and VPS.

# TV & Video Pattern Generators

## PM 5515 & PM 5518

### Optional Configuration Compatibility Table

| Basic Configuration** | TV System | | | | | | | | | | | | Y/C +RGB | IEEE-488 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NTSC | PAL | | | | | SECAM | | | | | | | |
| | M | D | B, G, H | I | M | N | L | B | D | G | H | K1 | | |
| PM 5515MM | a | a | a | a | a, opt* | a, opt* | not avail | not avail | not avail | not avail | not avail | not avail | opt | not avail |
| PM 5515GX | a | a | a, b | a | a, opt* | a, opt* | not avail | not avail | not avail | not avail | not avail | not avail | opt | not avail |
| PM 5515GT | a | a | a, c | a, c | a, opt* | a, opt* | not avail | not avail | not avail | not avail | not avail | not avail | opt | not avail |
| PM 5515GTX | a | a | a, b, c | a | a, opt* | a, opt* | not avail | not avail | not avail | not avail | not avail | not avail | opt | not avail |
| PM 5515TXS | a | a | a, b c, d | a | a, opt* | a, opt* | not avail | not avail | not avail | not avail | not avail | not avail | opt | not avail |
| PM 5518 | a | a | a | a | a, opt* | a, opt* | a | a | a | a | a | a | opt | not avail |
| PM 5518TX | a | a | a, b, c | a, c | a, opt* | a, opt* | a, e | a | a | a | a | a | opt | not avail |
| PM 5518TXS | a | a | a, b c, d | a, c | a, opt* | a, opt* | a, e | a | a | a | a | a | opt | not avail |
| PM 5518TXI | a | a | a, b, c d, opt | a, c | a | a | a, e | a | a | a | a | a | opt | std |

*a. Mono sound*
*b. FM stereo and dual sound*
*c. Teletext, 5 pages plus wallpaper test patterns*
*d. VPS*
*e. Antiope-teletext*

**Via PM 9546 option*
***Compatible with all broadcast standards listed, unless noted*

## Specifications

### Technical Specifications

#### Video Carrier

**Frequency**
**Range:** 32 MHz to 900 MHz
**IF + Band I:** 32 MHz to 90 MHz
**S-Band S1-S10:** 104 MHz to 174 MHz
**Band III:** 174 MHz to 230 MHz
**S-Band S11-S20:** 230 MHz to 300 MHz
**Hyperband H21-H40:** 300 MHz to 470 MHz
**Band IV-V:** 470 MHz to 900 MHz
**Frequency Selection:** Keyboard
**Fine Tuning:** 250 kHz steps for TV frequencies 100 kHz steps for IF frequencies (32 MHz to 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 to 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

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

**Input**
**Video Input:** BNC connector (front panel)
**Input Voltage (P-P):** 1V
**Maximum Permissible Input Voltage:** ±5V
**Impedance:** 75Ω
**Polarity:** White level positive
**Coupling:** DC (clamping on sync)

**Output**
**Video Output:** a) BNC connector; b) SCART connector (Euro-AV connector), pin 19 (rear)
**Impedance:** 75Ω
**Voltage (P-P):** a) 1V fixed; b) variable between 0 to 1.5V/75Ω
**Polarity:** Negative
**Coupling:** DC

#### Chroma (PAL and NTSC)

**Chroma Standards:** PAL according to system B, D, G, H, I, (M, N), NTSC according to system M (switchable)
**Selection:** Rear panel thumbwheel system switch
**Subcarrier Frequency:** 4.433619 MHz for PAL B, D, G, H, I; 3.575611 MHz for PAL M; 3.582056 MHz for PAL N; 3.579545 MHz for NTSC; subcarrier frequencies coupled to line frequency according to selected standard
**Tolerance:** ≤3 x $10^{-5}$ (+5°C to +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% to 150%
**Chroma Vectors Inaccuracy:** Phase ≤3°, amplitude ≤5% relative to luminance amplitude

#### Chroma (PAL/NTSC; PM 5518TXI)

**Chroma Standards:** As PM 5518TXS with PAL M, N as standard
**Subcarrier Frequency (coupled with line frequency):** PAL B, D, G, H, I, 4.433619 MHz; PAL M, 3.575611 MHz; PAL N, 3.582056 MHz
**Tolerance:** $10^{-6}$
**Temperature Coefficient:** 2 x $10^{-6}$/K
**Aging:** 2 x $10^{-6}$/year
**Subcarrier Frequency (not coupled with line frequency):** NTSC (4.433 MHz) 4.433619 MHz
**Tolerance:** <$10^{-4}$ at 23°C
**Aging:** 2 x $10^{-6}$/K
**Subcarrier Blanking:** Acc to system

#### 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:** 3 AF/neg
**Type of Sound Modulation:** FM
**Chrominance Subcarrier (Hz):** FOB = 4,250,000 FOR = 4,406,250
**Tolerance:** <2 kHz
**Type of Chrominance Subcarrier 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 subcarrier reference signal) on the back porch according to TV standard (B, D, G, H, K, K1, L/SECAM)

**Amplitude:** Line and frame identification according to TV standard, but also variablebetween 0% to 150% together with chroma information
**Chrominance Signal:** According to standard, but also variable
**Amplitude:** Between 0% to 150% of the nominal value
**Frequency Deviation:** Of chrominance subcarrier 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; PM 5518TXI) as above except:

**Tolerance:** $<10^{-6}$
**Temperature Coefficient:** $2 \times 10^{-6}$/K
**Aging:** $2 \times 10^{-6}$/year

### Synchronization

**Line Frequency:** 15,625 Hz (CCIR), 15,734 Hz (RTMA)
**Frequency Tolerance:** 0.4 Hz (+5°C to +40°C)
**Number of Lines:** 625 (CCIR), 525 (RTMA)
**Field Frequency:** 50 Hz (CCIR), 60 Hz (RTMA)
**Line and Frame Sync:** According to TV standard, 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:** $\leq 3 \times 10^{-5}$ (+5°C to +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**
**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**
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 to 15 kHz
**Maximum Input Voltage:** ±40V
**Output:** SCART connector (Euro-AV connector), pin 3 (rear panel)
**Impedance:** 1 kΩ
**Voltage:** 0.4V

### Teletext for T and TX Versions

**Data Synchronization Frequency:** PAL BGI-6.9375 MHz, ~444 x $f^H$; SECAM L-6.203125 MHz, ~397 x $f^H$
**Data Coding:** Acc to standards as PAL
**Signal Levels:** '1' + 66% level, 0+black level; '1' + 100% White level as PAL
**Signal Shaping:** $Cos_2$ 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:** ≥5 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:** $<3 \times 10^{-5}$ (+5°C to +40°C)

**Modulation**
FM, internal and external on/off switchable
**Pre-Emphasis:** 50 µs

**Internal Modulation**
**Sound Channel 1:** 1 kHz on/off switchable; 3 kHz on/off switchable
**Deviation:** ±30 kHz in mono/dual channel; ±15 kHz in stereo, right channel switched off; ±30 kHz in stereo, left and right channels switched on with 1 kHz internal signal
**Sound Channel 2:** 1 kHz, on/off switchable
**Deviation:** ±30 kHz

**External Modulation**
**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 MΩ
**Bandwidth:** 40 Hz to 15 kHz
**Maximum Permissible Voltage:** +40V

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

**Operating Mode Detection**
**Pilot Frequency:** 54.6875 kHz (3.5 x $f_{line}$)
**Tolerance:** $<3 \times 10^{-5}$ (+5°C to +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:** ±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:** $Cos_2$ 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 plus RGB Option (PM 9553)

**RGB Outputs:** BNC connectors (rear panel)
**Output Voltage (P-P):** 0.7V/75Ω
**Impedance:** 75Ω

**Subcarrier Output:** BNC connector (rear panel)
**Output Voltage (P-P):** 1V/75Ω
**Impedance:** 75Ω
**Sync Output:** BNC connector (rear panel)
**Output Voltage (P-P):** 2V/75Ω
**Impedance:** 75Ω

### Y/C Outputs

**Connector:** 4-pin S-connector (rear panel)
**Y Signal (luminance):** Y signal at pin 3, Y ground at pin 1
**Impedance:** 75Ω
**Nominal Output Level:** 1 $V_{pp}$ (into 75Ω)
**Tolerance:** ±10%

| Standard | B, D, G, H, I | M |
|---|---|---|

# TV & Video Pattern Generators

## PM 5515 & PM 5518

| Standard | B, D, G, H, I N, K, K1, L | M |
|---|---|---|
| Sync level | -43% ±3% | -40% ±3% |
| Blanking level | 0% | 0% |
| Black level | 0% | 0% |
| White level | 100% | 100% |

**C Signal (chroma):** Complete chroma signal including color burst of CVBS signal. C signal at pin 4; C ground at pin 2.
**Impedance:** 75Ω
**Output Level into 75Ω:** Nominal value: 100% ±10% in stop position CHROMA AMPL. Setting *range: 0 to 150% continuously adjustable (not* PM 5514V); 0 to 100% switchable for PM 5514V.

### Universal PAL/NTSC Chroma Module
(PM 9546)

**PAL Systems:** B, D, G, H, I, M, N
**NTSC Systems:** M
**Subcarrier Frequency (coupled with line frequency):** PAL B, D, G, H, I, 4.433619 MHz; PAL M, 3.575611 MHz; PAL N, 3.582056 MHz; NTSC, 3.579545 MHz
**Subcarrier Frequency (not coupled to line frequency):** NTSC (4.433 MHz) - 4.433619 MHz
**Tolerance:** <100 x $10^{-6}$ at 23°C
**Subcarrier Blanking:** According to system

### Hyperband Module (PM 9545; only for instruments made before 1987)

***Total Frequency Range:*** *32 MHz to 900 MHz*
**IF + Band I:** 32 MHz to 104 MHz
**S-Band S1 - S10:** 104 MHz to 174 MHz
**Band III:** 174 MHz to 230 MHz
**S-Band S11 - S20:** 230 MHz to 300 MHz
**Hyperband H21 - H40:** 300 MHz to 470 MHz
**Bands IV-V:** 470 MHz to 900 MHz

## General Specifications

### Power Supply

**Voltage:** 100V, 120V, 220V, 240V -12% to +10%
**Frequency:** 50/60 Hz ±5%
**Power Consumption:** Depends on version

### Mechanical Specifications

**Size:** 300 mm W x 140 mm H x 395 mm L (11.8 in W x 5.5 in H x 15.6 in L)
**Weight:** Approx 10 kg (22 lb)

## Ordering Information

### Models

**PM 5515MM** NTSC/PAL Pattern Generator ..... $2070
**PM 5518** NTSC/PAL/SECAML Pattern Generator ..... 2575

**Included with Instrument**
One-year product warranty, line cord, RF cable, BNC TV connector 758, operating manual, and Certificate of Calibration Practices.

| PAL and NTSC TV Systems Specifications For PM 5515 and PM 5518 | | | | | | |
|---|---|---|---|---|---|---|
| **Series** | **B, G & H** | **D** | **I** | **M** | **N** | **M** |
| TV and chroma standard | CCIR, PAL | CCIR, PAL | CCIR, PAL | RTMA, NTSC | CCIR, PAL | RTMA, PAL |
| No. of lines per picture frame | 625 | 625 | 625 | 525 | 625 | 525 |
| Field frequency (Hz) | 50 | 50 | 50 | 60 | 50 | 60 |
| Line frequency (lines/second) | 15,625 | 15,625 | 15,625 | 15,734 | 15,625 | 15,734 |
| Chrominance subcarrier (MHz) | 4.433619 | 4.433619 | 4.433619 | 3.579545 | 3.582056 | 3.575611 |
| Sound carrier to vision carrier (MHz) | 5.5 | 6.5 | 6 | 4.5 | 4.5 | 4.5 |
| Sound modulation | FM | FM | FM | FM | FM | FM |
| Pre-emphasis (µs) | 50 | 50 | 50 | 75 | 75 | 75 |

| SECAM TV System Specifications For PM 5516 and PM 5518 | | | |
|---|---|---|---|
| *TV systems* | *SECAM B, G, H* | *SECAM D, K, K1* | *SECAM L* |
| Sound carrier relative to vision carrier (Hz) | 5,500,000 | 6,500,000 | 6,500,000 |
| Type and polarity of video modulation | A3F negative | A3F negative | A3F positive |
| Type of sound modulation | FM | FM | FM |
| Chrominance subcarrier (Hz) | $F_{OB}$ = 4,250,000 $F_{OR}$ = 4,406,250 | | |
| Type of chrominance subcarrier modulation | Frequency modulation | | |
| Transmitted chrominance information | Line sequential D'R and D'B | | |
| Line frequency (lines/second) | 15,625 | | |
| Field frequency (Hz) (fields/second) | 50 (50) | | |

**Optional Configurations***
**PM 5515MM+Y/C** Standard PM 5515MM plus Y/C and RGB outputs ..... $2625
**PM 5515GX** Standard PM 5515MM plus PAL G stereo ..... 2575
**PM 5515GX+Y/C** Same plus Y/C and RGB outputs ..... 3130
**PM 5515GT** Standard PM 5515MM plus PAL G teletext ..... 2575
**PM 5515GT+Y/C** Same plus Y/C and RGB outputs ..... 3130
**PM 5515GTX** Standard PM 5515MM plus PAL G stereo and teletext ..... 2920
**PM 5515GTX+Y/C** Same plus Y/C and RGB outputs ..... 3495
**PM 5515TXS** Standard PM 5515MM plus PAL G stereo, teletext, and VPS ..... 3535
**PM 5515TXS+YC** Same plus Y/C and RGB outputs ..... 4090
**PM 5518+Y/C** Standard PM 5518 plus Y/C and RGB outputs ..... 3130
**PM 5518TX** Standard PM 5518 plus PAL G stereo, PAL G/I teletext, and SECAM L antiope ..... 3535
**PM 5518TX+Y/C** Same plus Y/C and RGB outputs ..... 4090
**PM 5518TXS** Standard PM 5518 plus PAL G stereo and VPS, PAL G/I teletext, and SECAM L antiope ..... 4140
**PM 5518TXS+YC** Same plus Y/C and RGB outputs ..... 4695
**PM 5518TXI+Y/C** Standard PM 5518 plus PAL G stereo, PAL G/I teletext SECAM L antiope, Universal Chroma RGB and IEEE-488 ..... 5495

**For PAL M/N, see options below.*

*For additional models configured for use outside N. America (including the PM 5516), contact factory.*

**Options**

**PM 9544**[2,4] VPS Module ..... $ 665
**PM 9545**[2,3] Hyperband Module ..... 665
**PM 9546**[1] Universal Chroma Unit, PAL M/N ..... 250
**PM 9553**[1] Y/C + RGB Output ..... 605

[1] *Retrofit, installed by Fluke/Philips Service*
[2] *For factory installation with new mainframes, or retrofit installed by Fluke/Philips Service*
[3] *Replacement for pre-1987 units only; now standard on all models*
[4] *See VPS for TXS in specs*

**Accessories**
**PM 9075** 75Ω BNC-BNC Cable ..... $ 20
**PM 9539/01** RF cable and 300Ω TRAFO ..... 30
**PM 9561** 19-inch Rack Mount Unit ..... 150

**Manuals**
**PM 5515** Operator Card (PN 849646) ... $ 5
**PM 5515** Operator (PN 222914) ..... 25
**PM 5515** Service Information Operating Card (PN 839407) ..... 5
**PM 5515/5518** Service (PN 222963) ..... 40
**PM 5518** Operating Card (PN 864801) .. 10
**PM 5518** Operator (PN 856117) ..... 55
**PM 5518** TXI (PN 896647) ..... 15

**No charge with purchase of unit*

**Extended Warranty**
**SC1-PM 5515** Repair w/Recalibration ... $ 93
**SC2-PM 5515** Calibration ..... 120
**SC3-PM 5515** Full Service ..... 200

**SC1-PM 5518** Repair w/Recalibration ... 158
**SC2-PM 5518** Calibration ..... 120
**SC3-PM 5518** Full Service ..... 260

*Note: The above configurations meet North American power requirements. For other power options, see Section 19.*