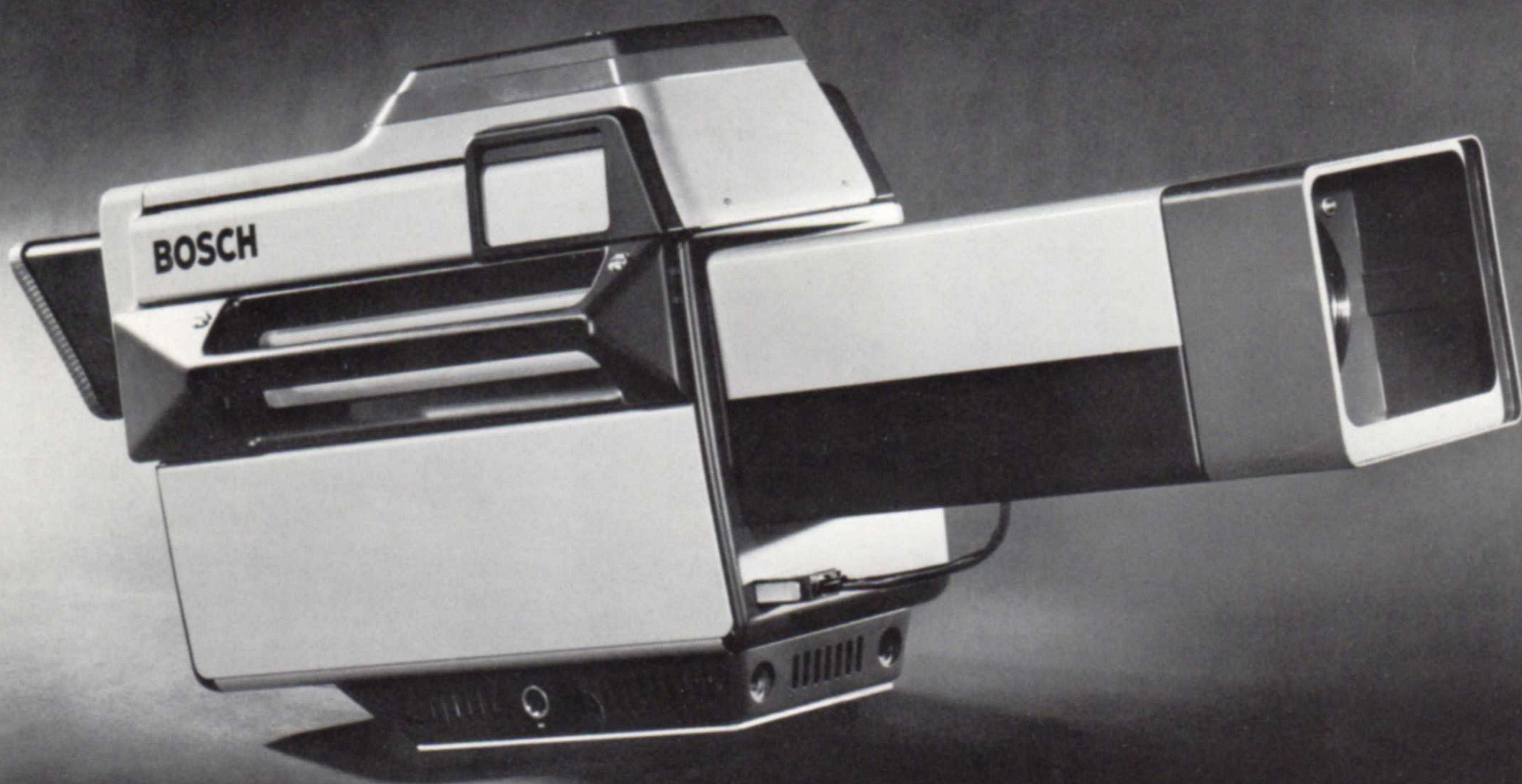


K 400.1 e

# KCP 60

**Economical Broadcast Color Camera**



**BOSCH**

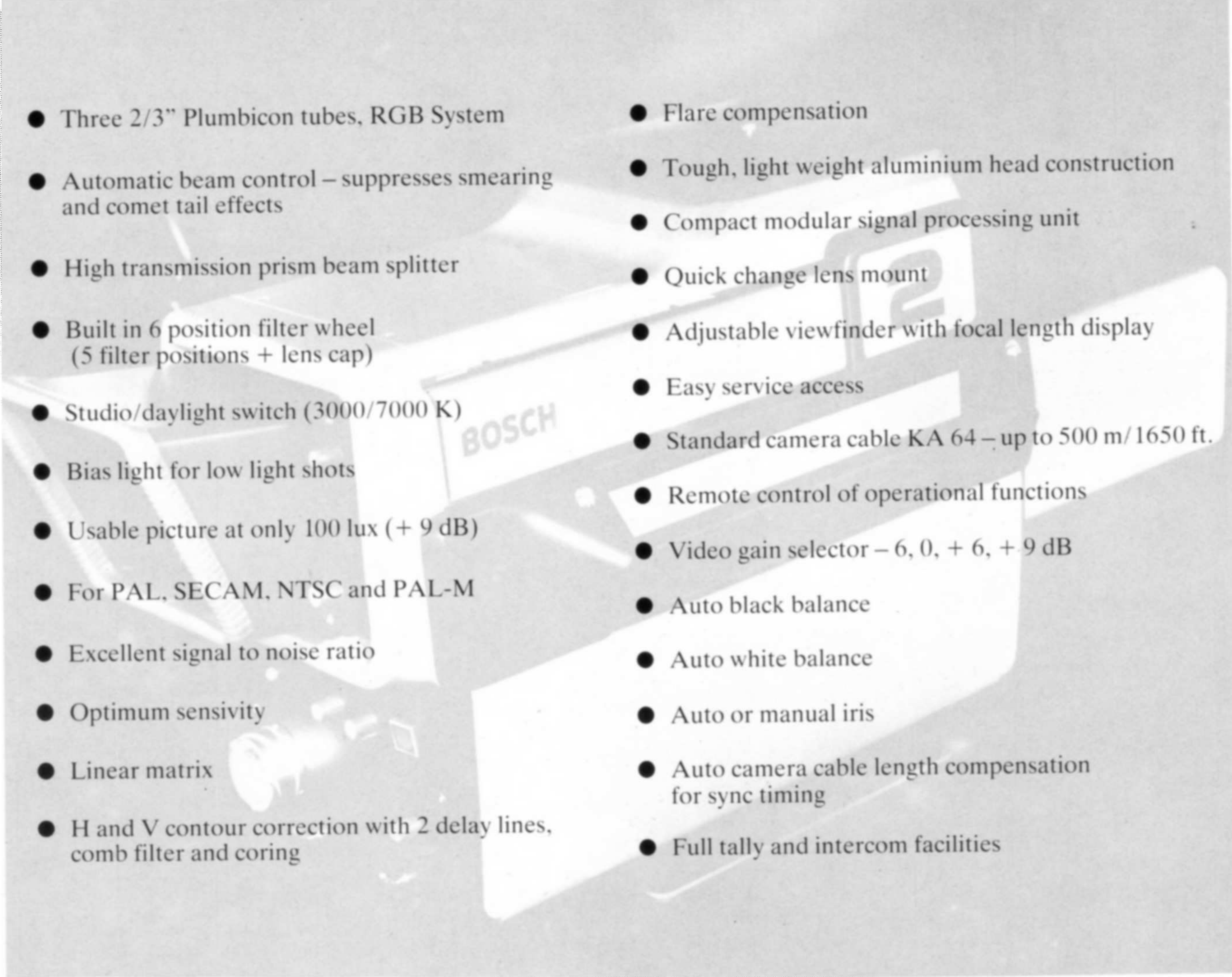
# Applications

**The choice** is no longer sophisticated “hands off” studio camera or ENG/EFP unit – there is a third alternative – the KCP 60.

Studio quality has now been achieved with an economical small tube design. The quality results from combining the most modern tube and circuit technology, the economy results from the design goal – a low cost alternative camera for those situations which do not require the complex sub-systems of today's bulkier top grade cameras, but which **do** require their quality.

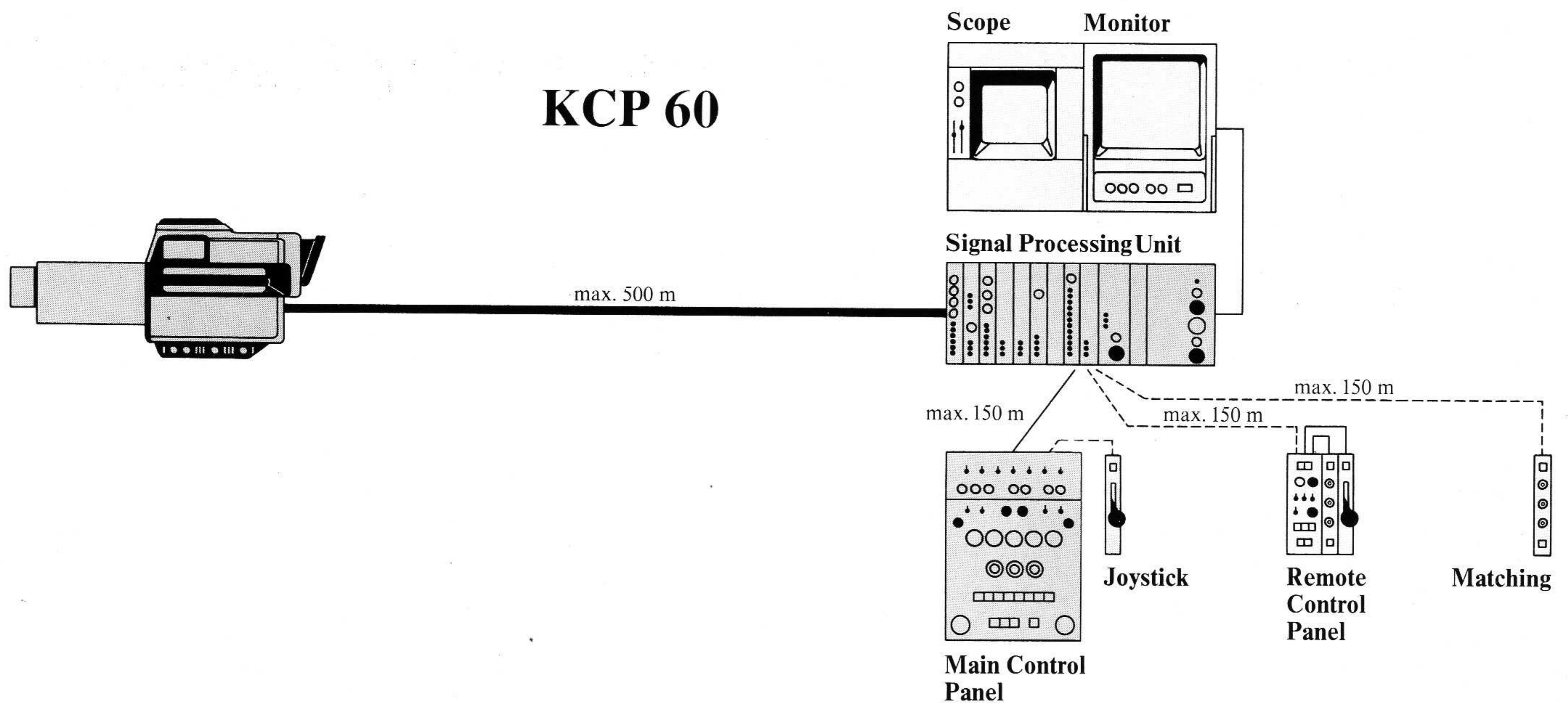
**Outside broadcast durability** was a key factor in the development of the KCP 60. The robust 2/3 inch optical system practically eliminates microphony and provides all important size and weight savings. The system layout also was designed with today's compact outside broadcast vehicles in mind.

# Features

- 
- Three 2/3" Plumbicon tubes, RGB System
  - Automatic beam control – suppresses smearing and comet tail effects
  - High transmission prism beam splitter
  - Built in 6 position filter wheel (5 filter positions + lens cap)
  - Studio/daylight switch (3000/7000 K)
  - Bias light for low light shots
  - Usable picture at only 100 lux (+ 9 dB)
  - For PAL, SECAM, NTSC and PAL-M
  - Excellent signal to noise ratio
  - Optimum sensitivity
  - Linear matrix
  - H and V contour correction with 2 delay lines, comb filter and coring
  - Flare compensation
  - Tough, light weight aluminium head construction
  - Compact modular signal processing unit
  - Quick change lens mount
  - Adjustable viewfinder with focal length display
  - Easy service access
  - Standard camera cable KA 64 – up to 500 m/1650 ft.
  - Remote control of operational functions
  - Video gain selector – 6, 0, + 6, + 9 dB
  - Auto black balance
  - Auto white balance
  - Auto or manual iris
  - Auto camera cable length compensation for sync timing
  - Full tally and intercom facilities

# System

The camera head can be displaced up to 500 metres (1650 ft) from the signal processing unit. Both line up control and remote control can be displaced up to 150 m/500 ft from the processor.



## Camera head

The compact light weight 2/3" optical system is flanked by two fold out printed circuit boards containing all necessary test and adjustment points and needing no test adapters. One contains all deflection circuitry while the other is predominantly for signal processing.

To ensure **good noise performance** the red, green and blue preamplifiers are located in the immediate vicinity of their respective pick up tubes.

**The excellent registration** is due to the carefully matched tubes and deflection systems together with the mechanical and thermal stability of the prism system.

**Low smearing and comet tail effects** achieved with the help of automatic beam control circuitry which can handle up to 16 times highlight overload (4 iris stops) when operating with diode gun pick up tubes.

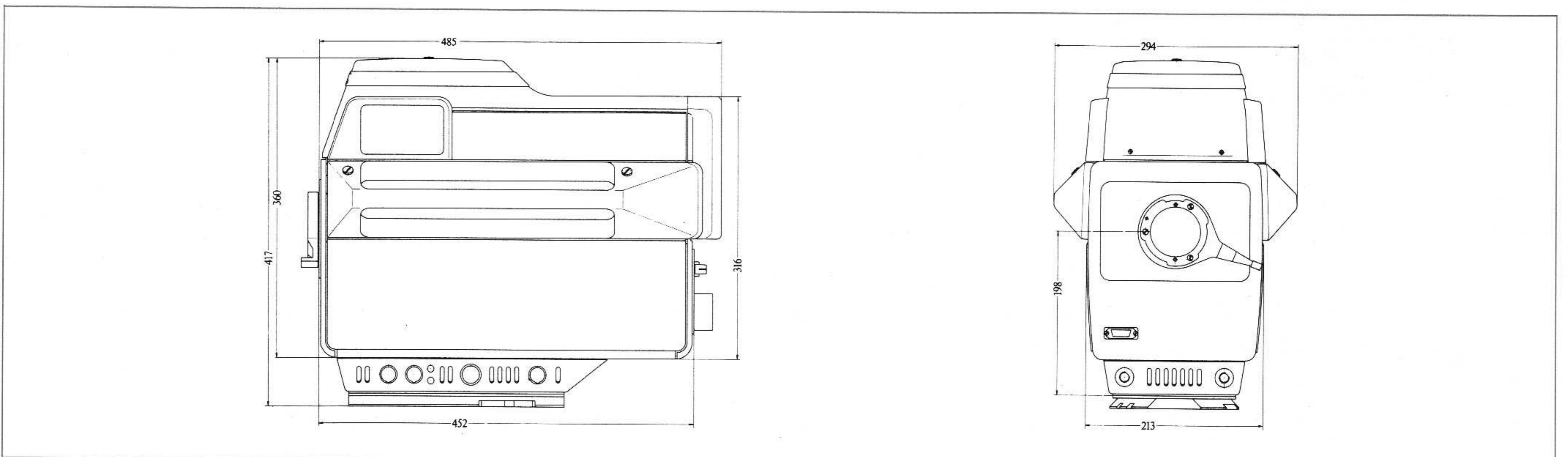
**Static and dynamic shading** compensation signals prevent additive errors when using the bias light.

**The viewfinder** employs a high resolution 14 cm/5" tube and can be tilted by  $\pm 15^\circ$  or removed altogether. The zoom lens focal length is displayed and an external signal can be fed in via the signal processor.

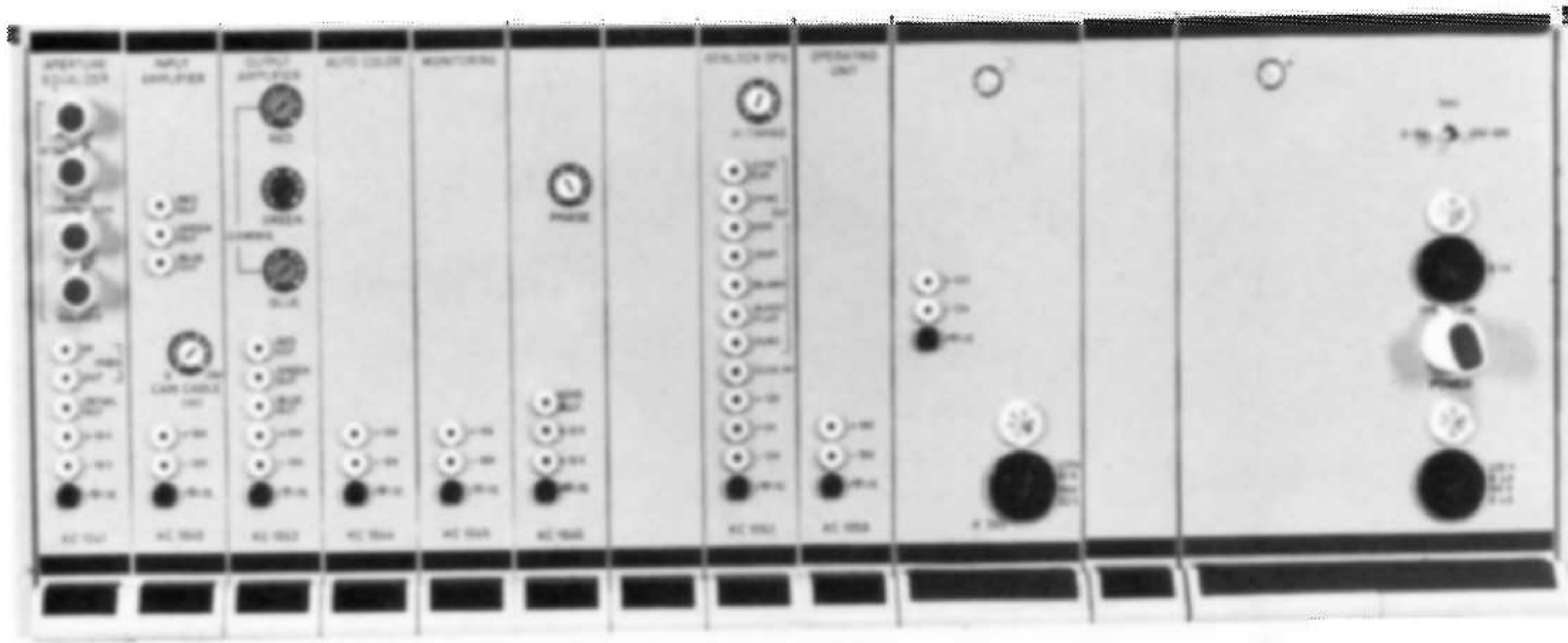
**All customary connections** for tally, headset and monitoring are present, and the base pan contains the programme microphone input and intercom connections plus a CCVS monitoring output.

**A full range of zoom lenses** is available from manually adjustable 10 x up to fully servo controlled 30 x units. The camera head contains a support for the larger lenses.

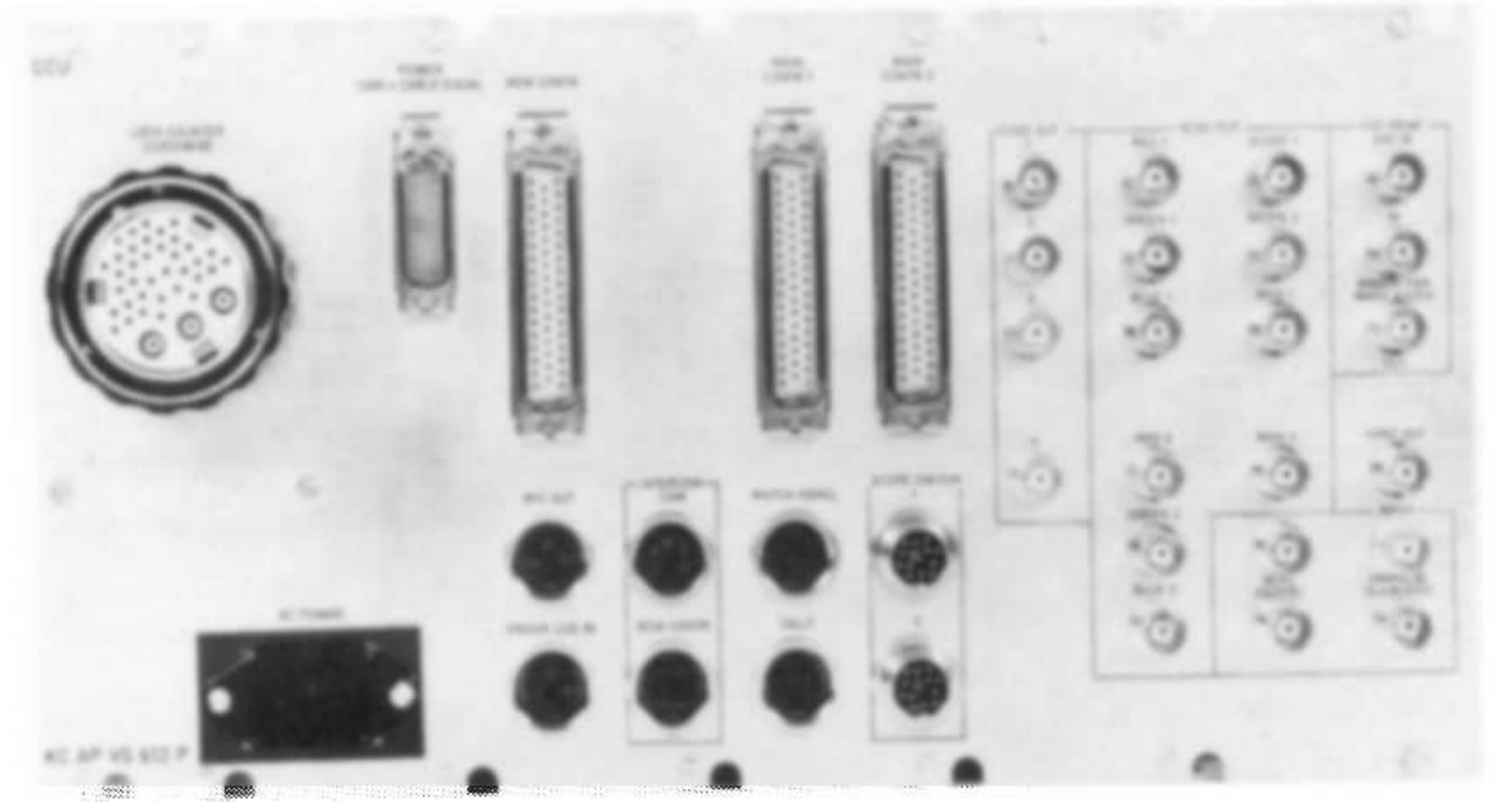
**The Ka 64 camera cable** is identical to that used with the established KCP 40, KCU and KCK cameras.



# Signal Processor



Front view



Rear view

The compact KCP 60 signal processor has been designed to fit into one module frame of construction type 6, for DIN or 19" rack mounting. The plug in modules from left to right are outlined below.

**Horizontal and vertical contour correction** (aperture equaliser) is performed with two delay lines for vertical correction, comb filtering for the horizontal detail signal and symmetrical enhancement with continually adjustable noise compression and notch filter. Horizontal and vertical detail signals can be adjusted by  $\pm 2$  dB with respect to one another.

**The input amplifier** contains the blue signal demodulator and adjustable cable compensation for red and green, together with the matrixing circuit.

**The output amplifier** provides black level, white level, gamma correction and blanking.

**Auto color** is an optional plug in module which performs iris control, black level and white balance. The signal processor is prepared for this module so that no modifications are necessary at the head or signal processor. All automatic functions can be switched off and controlled manually.

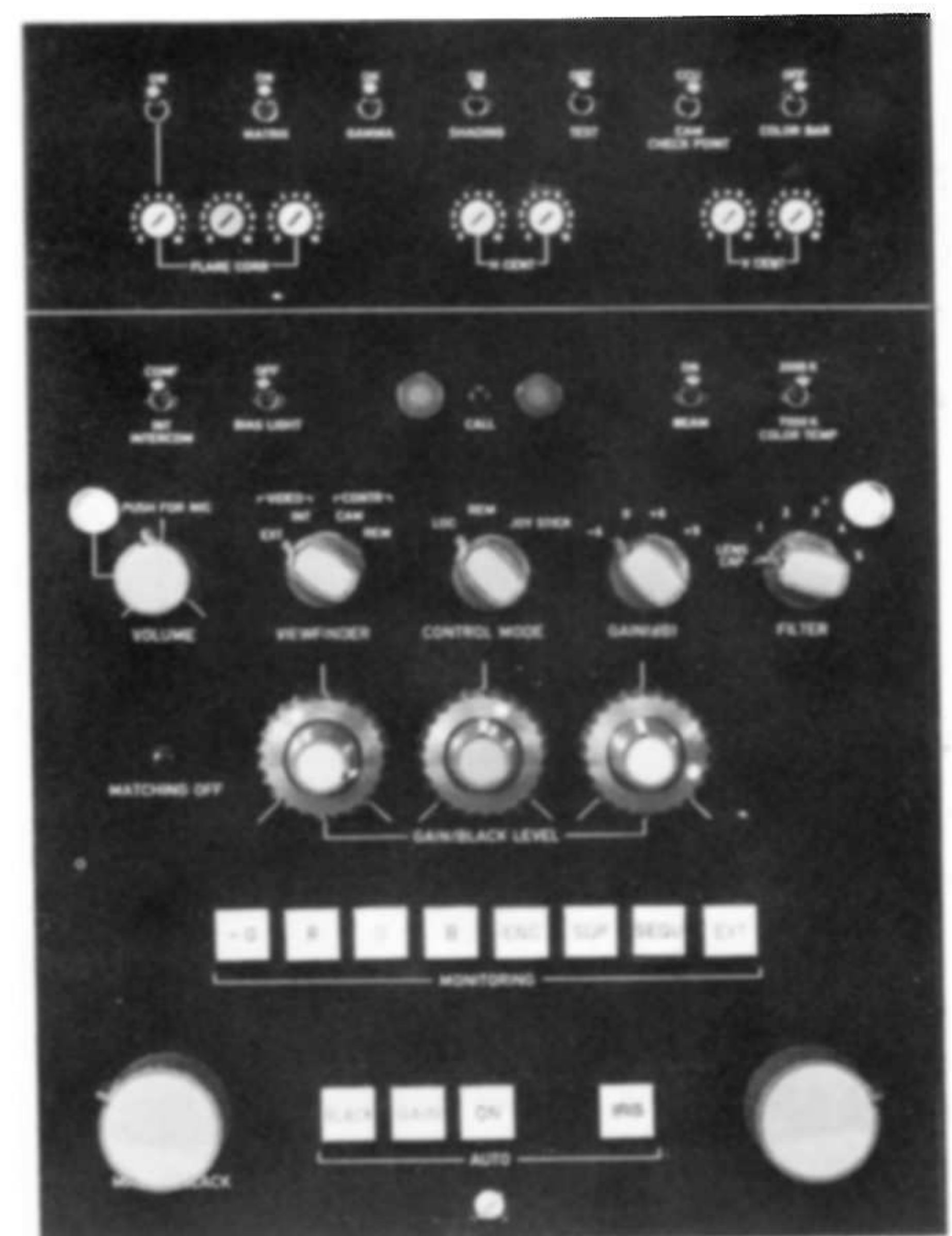
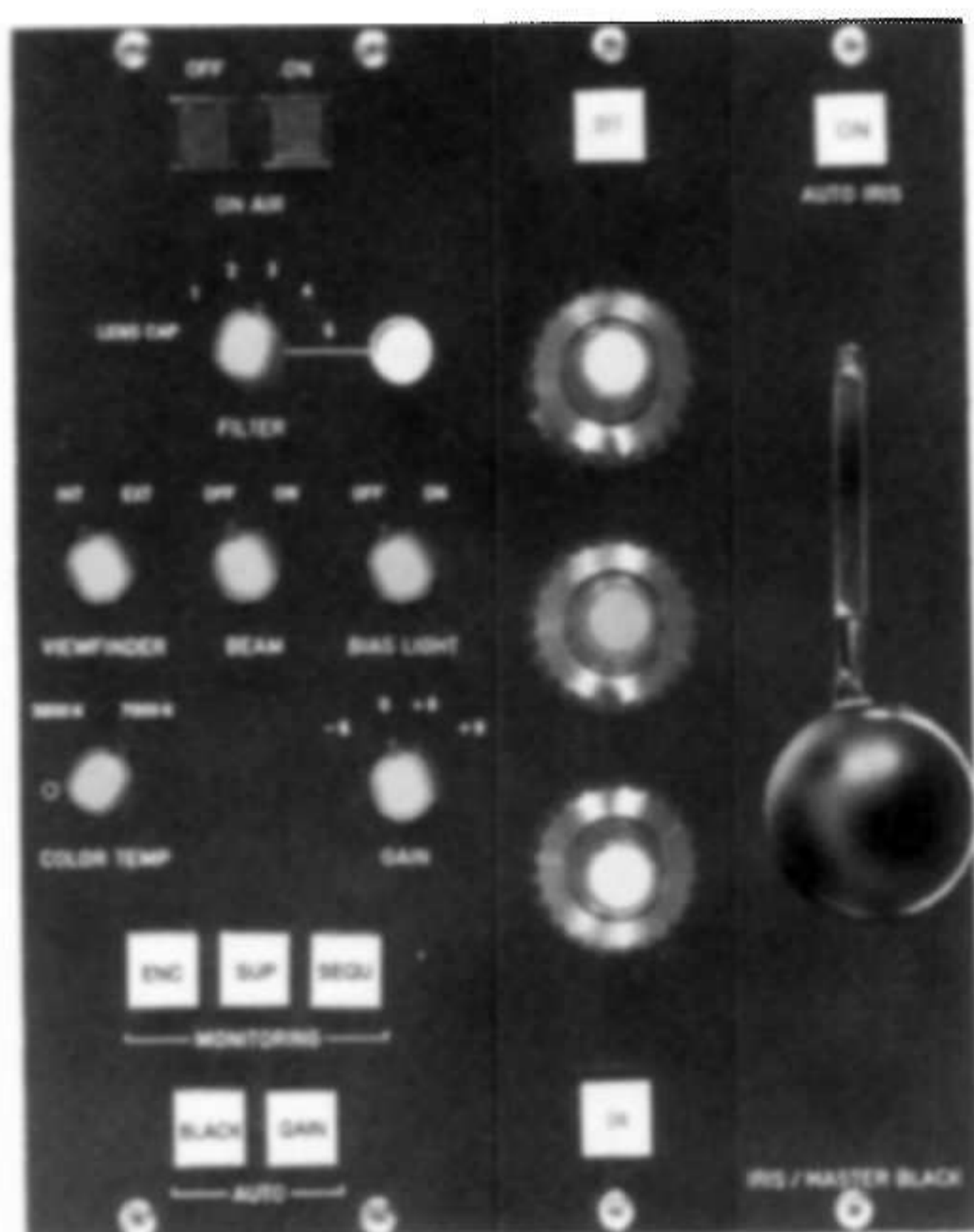
**The monitoring module** generates sequential signals necessary for picture and waveform monitoring and performs signal routing for the camera viewfinder and for camera line up.

**The color coder** with integrated color bar generator occupies only one module for all TV-Standards.

**The genlock sync pulse generator** takes a CCVS signal as reference. For integrated studio operation a unipulse (FASK or FASP) separator is sufficient.

**The control and signaling (operating) unit** contains the command transmitter, intercom and programme audio circuitry. Two further modules contain the power supply units for the signal processor and camera head respectively.

## Line up and Operation

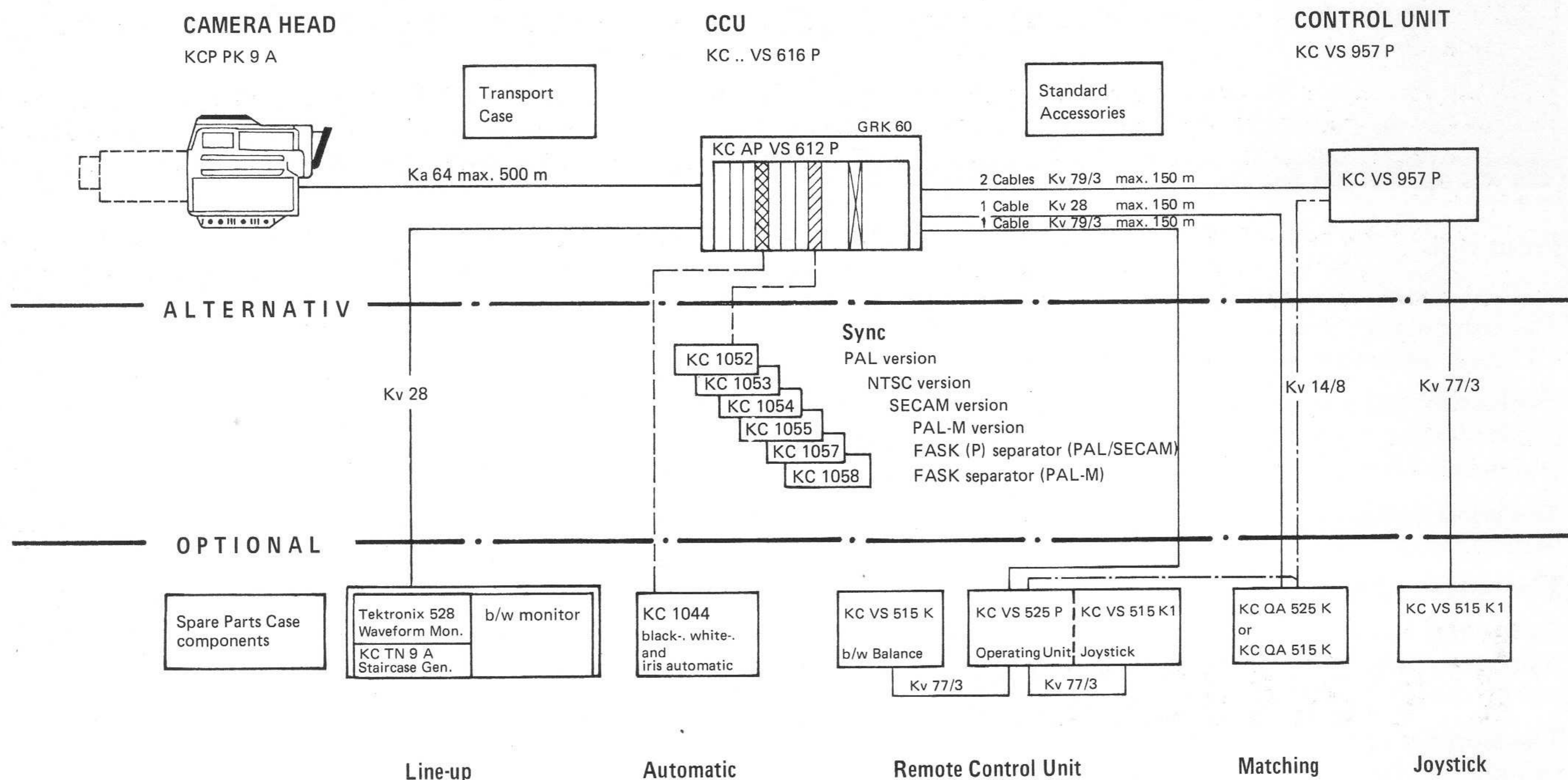


All line up controls can be effected from the **main control panel** which is suitable for either desk or rack installation. Major line up functions such as white balance and black level are automated.

After line up with the main control panel the operating functions can be switched over to the **remote control panel** which can be up to 150 metres/ca 500 ft away. Remote control joystick and black and white balance modules from the already proven KCK camera may also be used. The joystick module controls the functions master black, iris, auto iris on/off, and monitoring signal selection.

A separate matching panel can be connected to the main control panel for manual black pedestal and "painting" adjustment.

# Order Information



Item	Description	Unit Type	Order Number
K-400	<b>COLOR CAMERA CHAIN</b>	<b>KCP 60</b>	
K-400.01	camera head with electronic viewfinder	KCP PK 9 A	0 105 860 000
K-400.02.01	pick-up tubes set Plumbicon $\text{\textcircled{2}}/\text{\textcircled{3}}$ "	XQ 1427 BGR	0 921 510 000
K-400.02.02	pick-up tubes set Plumbicon $\text{\textcircled{2}}/\text{\textcircled{3}}$ "	XQ 2427 BGR	0 921 700 000
K-400.03	transport case		2 113 630 100
K-400.04.01	lens Schneider 10 times manual		3 160 613 002
K-400.04.02	lens Schneider 20 times manual		3 160 613 004
K-400.04.03	lens Schneider 20 times servo	on request	
K-400.04.04	lens Schneider 30 times servo	on request	
K-400.04.05	lens Angenieux 25 times servo		3 160 616 000
K-400.04.90	accessories for lenses		on request
K-400.05	camera cable (max. 500 m, 13 mm)	Ka 64	0 791 100 000
	cable per metre	753-5	5 136 201 009
K-400.06	<b>CCU</b>		
	consisting of: operation unit, power supplies, encoder, aperture correction and connection plate		
K-400.06.01	CCU PAL version	KC P0 VS 616 P	0 113 770 000
K-400.06.02	CCU NTSC version	KC N5 VS 616 P	0 113 790 000
K-400.06.03	CCU SECAM version	KC S6 VS 616 P	0 113 800 000
K-400.06.04	CCU PAL-M version	KC P5 VS 616 P	0 113 780 000
K-400.90	<b>automatic</b> (black-, white- and iris automatic)	KC 1044	0 113 640 500
K-400.07.01	genlock sync pulse gen. PAL version	KC 1052	0 113 641 300
K-400.07.02	genlock sync pulse gen. NTSC version	KC 1053	0 113 641 400
K-400.07.03	genlock sync pulse gen. SECAM version	KC 1054	0 113 641 500
K-400.07.04	genlock sync pulse gen. PAL-M version	KC 1055	0 113 641 600
K-400.07.05	FASK (P) separator (unipulse) 625 lines	KC 1057	0 113 641 800
K-400.07.06	FASK separator (unipulse) 525 lines	KC 1058	0 113 641 900
K-400.08.01	plug-in unit support	GRK 60 DIN	2 520 670 200
K-400.08.02	plug-in unit support	GRK 60 Zoll	2 520 670 201
K-400.08.03	plug-in unit case	GRK 69 A	0 536 820 000
K-400.09	<b>control unit</b>		
	2 connection cable	KC VS 957 P	0 281 600 000
	control unit joy stick	Kv 79/3 (10 m)	0 793 340 200
K-400.91	connection cable	KC VS 515 K 1	0 281 210 000
		Kv 77/3 (0,5 m)	0 794 980 200
K-400.10	<b>standard accessories</b>	KC 1109	0 113 630 100
	consisting of: 2 head sets, light protection (short), dust cover and small accessories		
K-400.92	p.c. board extender	A 096	0 030 220 000

Item	Description	Unit Type	Order Number
	<b>REMOTE CONTROL UNIT (modular version)</b>		
K-401.01	control unit operation	KC VS 525 P	0 391 490 000
X-879.01	connection cable	Kv 79/3	0 793 340 000
X-879.02	cable per metre	52 x 18 x 0,1	5 136 301 010
K-401.02	control unit joy stick	KC VS 515 K 1	0 281 210 000
	connection cable	Kv 77/3 (0,5 m)	0 794 980 200
K-402	control unit b/w balance	KC VS 515 K	0 281 290 000
	connection cable	Kv 77/3 (0,5 m)	0 794 980 200
K-403.00.01	control unit matching with separate control for RGB	KC QA 515 K	0 281 240 000
K-403.00.02	control unit matching with joy stick	KC QA 525 K	0 281 400 000
X-828.01	connection cable	Kv 28	0 790 340 000
X-828.02	cable per metre	12 x 18 x 0,1	5 136 301 008
X-815.01	connection cable	Kv 14/8	0 790 590 000
X-815.02	cable per metre	6 x 18 x 0,1	5 136 301 000
	<b>ACCESSORIES</b>		
K-405	spare parts kit components	Z KC 9-019	0 806 510 000
K-408	test projector incl. slides	O PP 9 K	2 736 660 000
K-409	simulator for $\text{\textcircled{2}}/\text{\textcircled{3}}$ " plumbicon <sup>®</sup>	T XM 9 A	0 828 830 000
K-410	camera viewfinder 6 inch	K 15 BB 9 A	0 113 730 000
K-410.90	viewfinder hood (long)		2 105 860 096
K-411	<b>LINE-UP</b>		
K-411.01	<b>waveform monitor</b>		
K-411.01.01	625 lines/50 Hz	Tektronix 528 opt. 3	3 119 100 052
K-411.01.02	525 lines/60 Hz	Tektronix 528	0 920 600 000
K-411.02	<b>staircase generator</b>	KC TN 9 A	0 113 600 000
K-411.03.01	b/w precision monitor	M 24 BA 446 A	0 430 580 000
K-411.03.02	b/w high quality monitor	M 24 BB 446 A	0 421 770 000
K-411.04.01	plug-in unit support	GRK 486 DIN	2 016 049 065
K-411.04.02	plug-in unit support	GRK 486 Zoll	2 016 049 066
K-411.04.03	plug-in unit case	GRK 49 X	0 536 750 000
K-411.05	<b>mounting part</b>	M 24 ../Tek. 528	2 016 049 060
K-411.06	<b>cover plate set</b>		2 016 049 088
K-415	<b>weather cover</b>		2 105 860 150
K-800	<b>test plate set</b>		2 015 630 010

# KCP 60

## Economical Broadcast Color Camera

### Technical Specifications

#### Video Characteristics

<b>Color Standards</b>	PAL, NTSC, SECAM, PAL-M	<b>Raster Geometry**</b> (Excluding distortion due to lenses)	Zone 1: $\pm 0.5\%$ Zone 2: $\pm 1.0\%$
<b>Tubes (R, G, B)</b>	3 x 2/3" Plumbicon®	<b>Registration Accuracy**</b> (Excluding distortion due to lenses)	Zone 1: 0.1 % Zone 2: 0.2 %
<b>Signal to Noise Ratio*</b> $\gamma = 1$ , unweighted R + S Method. Without aperture correction, with subcarrier suppressor	typ. 50 dB (PAL, SECAM) typ. 52 dB (NTSC, PAL-M)	<b>Gain Control</b> (Switchable)	- 6, 0, + 6, + 9 dB
<b>Resolution</b> Depth of Modulation when transmitting a 4 MHz bar pattern	$G \geq 45\%$ (better values attainable with diode gun tubes)	<b>Frequency Response</b>	$\pm 0.5$ dB up to 5 MHz
<b>Sensitivity*</b> Reflection Coefficient for white = 60 % Color Temperature 3200 K Gain Control 0 dB	1250 lux/F 2.8	<b>Pulse Response</b>	50 Hz $\leq 2\%$ 15 kHz $\leq 1\%$ 250 kHz $\leq 1\%$
<b>Max. Sensitivity*</b> Color Temperature 3200 K Gain Control 0 dB	310 lux/F 1.4	<b>Differential Gain</b> (without contour correction)	$\geq 0.95$
<b>Max. Aperture</b> Camera Input	F 1.4	* Sensitivity and S/N ratio are measured with signal current of 200 nA in the green channel. ** Zone 1: Circle 0.8 picture height Zone 2: Circle of picture width	

#### Inputs

1 x <b>SYNC</b> Unipulse (FASK or FASP) or CCVS or Black Burst	1 V <sub>pp</sub> /75 Ω (looped)	1 x <b>CVS</b> Viewfinder	1 V <sub>pp</sub> /75 Ω
1 x <b>NCVS</b> Scope (reference signal)	0.7 V <sub>pp</sub> /75 Ω (looped)	1 x <b>Audio</b>	+ 6 dB/600 Ω
		1 x <b>Intercom</b>	+ 6 dB/600 Ω

#### Outputs

4 x <b>CCVS</b>	1 V <sub>pp</sub> /75 Ω	1 x <b>SYNC</b>	- 4 V <sub>pp</sub> /75 Ω
2 x <b>R, G, B</b>	0.7 V <sub>pp</sub> /75 Ω	1 x <b>Mic</b>	+ 6 dB/600 Ω
2 x <b>NCVS</b> (Monitoring)	0.7 V <sub>pp</sub> /75 Ω	1 x <b>Intercom</b>	+ 6 dB/600 Ω
2 x <b>NCVS</b> (Scope)	0.7 V <sub>pp</sub> /75 Ω		

#### General

<b>Power Supply</b>		<b>Dimensions</b>	Height (mm)	Width (mm)	Length (mm)	Weight (kg)
Voltage	110/117 or 220/240 V $\approx$ + 5 % ... - 10 %	Camera (without lens)	417	294	485	23
Power	approx. 160 Watt	Processor (19" or DIN mounting)	170	445	445	18
<b>Ambient Operating Temperature Range</b>	- 20° C ... + 45° C	Main Control Panel	120	200	280	3.7
		Remote Control Panel	95	160	200	4
		Matching	95	40	200	1

#### Modifications reserved

Your Video System Partner

# BOSCH

Television Systems Division

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