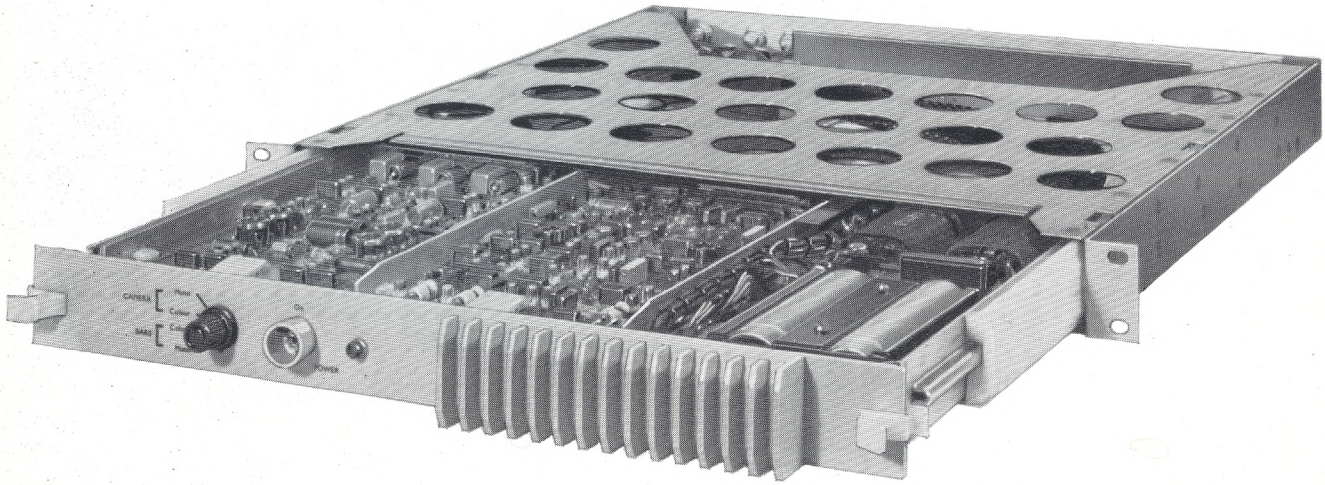
Marconi Broadcasting Systems

Colour Coder B3373



Features

- 1¾in rack space
- All solid state
- Alignment without vectorscope
- Integral colour bar generator
- Highly stable
- 525 NTSC or 525/625 PAL versions
- No extension boards needed
- Self-powered
- BNC connectors

Introduction

The Colour Coder Type B3373 has been designed to accept standard level G, R, & B signals from a camera or telecine equipment, and to combine them into the form required by the NTSC or PAL systems.

Particular attention has been paid in the design to the stability and reliability of the equipment. In this context the controls available on the front panel have been restricted to function controls only, in order to prevent accidental mis-setting of important parameters.

Procedures have been developed which enable the coder to be set up correctly without the use of a vectorscope. Looping of colour bar signals from one unit to another has been avoided by the incorporation of a highly accurate colour-bar generator which is capable of adjustment to any of four different types of colour bar (see Fig.2).

Description

The unit is constructed in a horizontal drawer format and is designed for mounting in standard 483mm (19in) racks. A flexible cableform enables the drawer containing the entire electronics to be withdrawn with the power on, all a.c supply voltages being protected by shrouds. This eliminates the need for extension boards for servicing and ensures that constant electrical conditions remain under all circumstances.

The drawer runners enable the unit to be tilted up or down for easy access for setting up or servicing. Numerous test points are provided throughout the equipment.

Within the drawer the equipment is divided into six principal sub-units.

All units with the exception of the power supply are mounted on plug-in printed circuit boards.

A front panel selector switch provides the following facilities.

1 Bars (Colour Off and Burst Off).
2 Bars (Colour On).
3 Camera (Colour On).
4 Camera (Colour Off and Burst Off).

An a.c ON–OFF switch is also provided on the front panel. All other controls are internal but readily accessible. Three standard level outputs are provided on BNC connectors.

For NTSC operation no burst gating pulse is required. It is, however, needed for PAL. No PAL colour switching input is required as this waveform is internally generated from syncs and burst gate.

Alignment without a Vectorscope

Correct amplitudes can be set up on the waveform monitor and phase can be set by tuning for minimum flutter using the PAL axis switching. For NTSC versions the axis switching effect can be temporarily introduced during setting up.

Ordering Information

To ensure that you are supplied with equipment exactly to your requirements, please make certain that the ordering information is clear.

When ordering please state :—

1 Television standard employed.
2 A.C voltage on which equipment is to operate.
3 If additional handbooks are required.
4 If spares are required.
5 Whether any associated equipment such as B3605 Synchronizing Equipment is required.

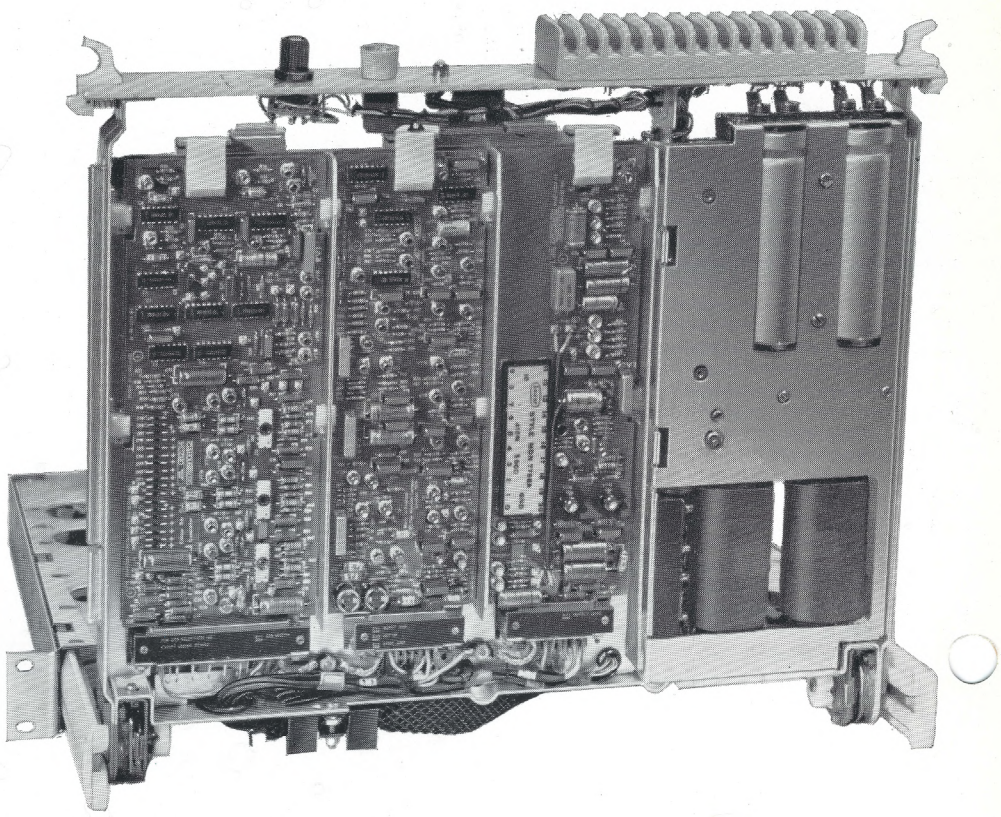
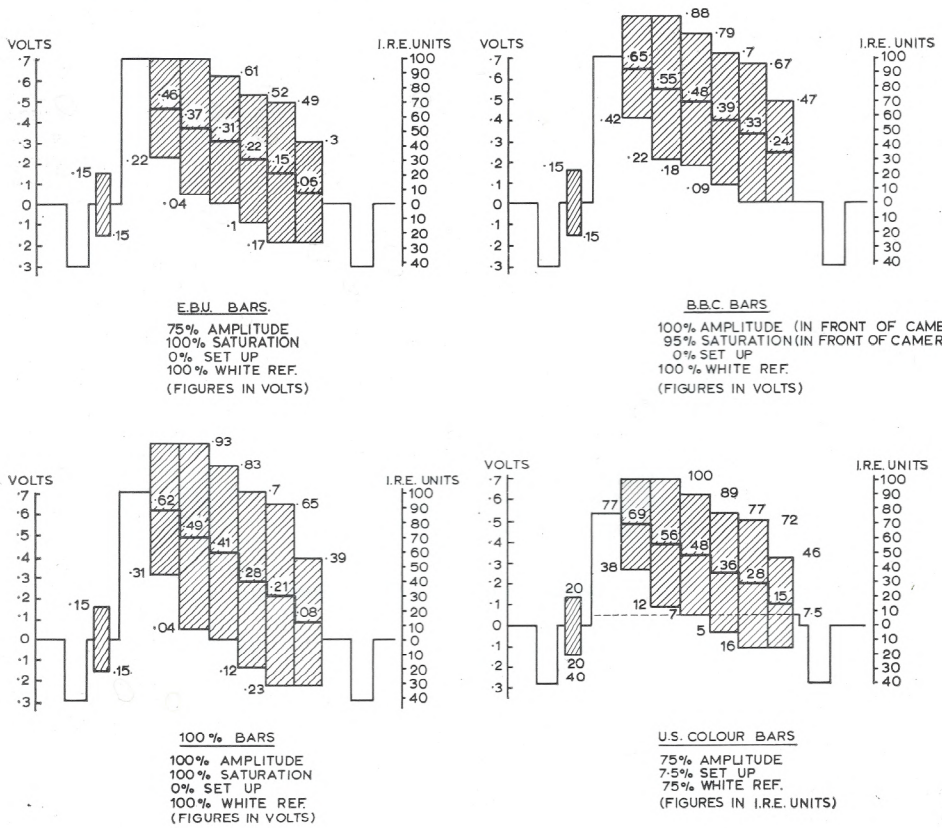


Fig. 1. Coder tilted up showing underside

Fig. 2. Standard Colour Bars available from Coder type B3373



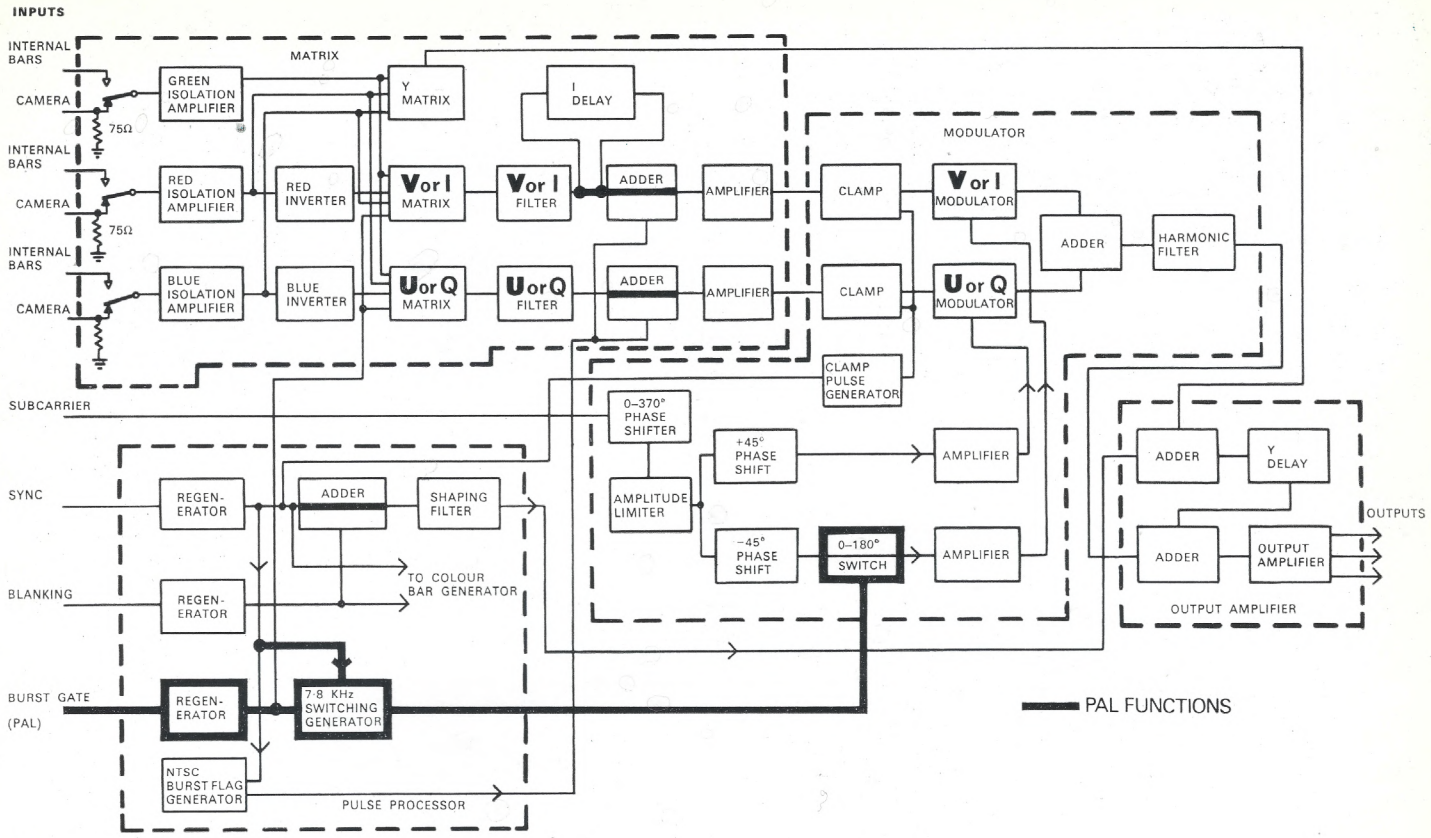


Fig. 3. Block diagram of Coder Type B3373

Data Summary

MODULES

		625 PAL	525 PAL	NTSC
1	Power supply	B01–3373–01	B01–3373–01	B01–3373–01
2	Matrix	B02–3373–01	B02–3373–01	B07–3373–01
3	Modulator	B09–3373–01	B09–3373–02	B09–3373–02
4	Pulse processing	B04–3373–01	B04–3373–01	B08–3373–01
5	Output amplifier	B05–3373–01	B05–3373–01	B05–3373–02
6	Colour bar generator	B06–3373–01	B06–3373–01	B06–3373–01

INPUTS
A.C 100–125V or 200–250V±6%, 48 to 60Hz EP4 connector. 24VA.
Video : G, R & B inputs from camera terminated internally by 75Ω 1% termination. BNC socket.
Return loss better than 30dB to 625 line T pulse and bar signal. 0·7V peak-to-peak non-composite signal.
Syncs and blanking : Bridging input BNC 75Ω. Return loss better than 30dB to 625 line 2T pulse and bar signal. Input level 1·0V to 4V peak-to-peak.

Burst gating pulse
Not required for NTSC. On PAL specification as for sync pulse input.

PAL switching waveform
Not required.

Sub-carrier
BNC bridging input 75Ω. Return loss better than 30dB over frequency band 3 to 4·5MHz
Input level range from 0·5V to 3·5V peak-to-peak.

OUTPUTS
Coded signal
3, 75Ω source impedance BNC Connectors. Return loss better than 30dB to T and TC pulse and bar signal. Normally composite signal. (Non-composite signals are obtainable by adjustment of internal soldered links.)

PERFORMANCE
Sub-carrier
Sub-carrier phase shifter coarse adjustment by links in 90° steps. Resolution of fine control 0·2°. Colour axes are within ±0·5° of nominal values defined by system standard specification.

Burst rise time
250ns ± 50ns NTSC
For PAL, as provided by forming burst by pulse through chrominance channels, approx. 350ns.
Burst amplitude constant to within ±0·25dB.

Sync rise time
250ns ± 50ns for sync input pulses of 50 to 300ns rise time.

Video delay PAL : 460ns approx.
NTSC : 905ns approx.

Sync and burst gate delay
750ns approx.

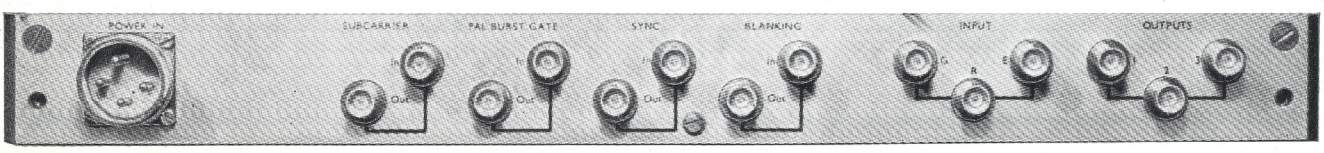
Spurious outputs
Sub-carrier harmonics will not exceed 0·5mV r.m.s when averaged over a field period and measured with a 100% colour bar output signal at standard level.
Sub-carrier breakthrough will not exceed 5mV peak-to-peak including harmonics, when measured at any level from black to white.
Clamp pulse and other short duration transients will not exceed 3mV peak, with respect to average level of signal at point of occurrence.
Hum will not exceed 1mV peak-to-peak.

Crosstalk
Crosstalk on outputs better than 40dB to T and TC 625 pulse and bar at sub-carrier frequency. Crosstalk on inputs better than 60dB below 1MHz, and better than 50dB below 6MHz when terminated in 75Ω.

D.C components
Inputs up to ± 5V d.c superimposed on the video input signal will be accepted. Up to ± 50V d.c superimposed on the pulse and sub-carrier input signals will be accepted. Outputs. Mean d.c level will not exceed 50mV when terminated in 75Ω.

Frequency response
Luminance channel. Flat to within ± 0·25dB from 100kHz to 6MHz and not more than 3dB down at 10MHz.

Fig. 4 Rear of Unit



Chrominance channel (625 lines)
'U' and 'V' channels not more than 3dB down at 1·3MHz and not less than 20dB down at 4MHz.
Chrominance channel (525 lines).
'I' channel not more than 2dB down at 1·3MHz and not less than 20dB down at 3·6MHz.
'Q' channel not more than 2dB down at 0·4MHz and not more than 6dB down at 0·5MHz and not less than 6dB down at 0·6MHz.

Matrix
Coefficients conform to the equation below* and are within 0·25% of nominal values.

COLOUR BARS
Choice of four different bars by selecting internal links.

U.S	75% amplitude, 75% white reference.
BBC	100% amplitude, 95% saturation and 100% white reference.
EBU	75% amplitude, 100% saturation and 75% white reference.
	100% amplitude, 100% saturation and 100% white reference.

Absolute accuracy of colour bar amplitude ± 1%.
Relative accuracy between bars in any one coder within 0·5%.
¾ split field with white bar display available by selecting links.

STABILITY
After 5 min warm up, over a temperature range of ± 10 °C of the setting-up temperature within an operational ambient of −10 °C to +45 °C.
a) Output signal amplitude 2%.
b) Sync burst and set-up timing with respect to video signal 20ns.
c) Burst and chrominance phase : 1 ° with respect to incoming sub-carrier.
d) Carrier unbalance 10mV peak-to-peak.
e) Vector accuracy of chrominance signals relative to burst 1 °.
f) Bar stability (i) Better than 0·25% for relative stability between bar signals in any one coder. (ii) better than 0·5% absolute stability.

TEMPERATURE RANGE
a) Operating range −10 °C to +45 °C ambient.
b) Full performance within ±10 °C of setting-up temperature.
c) Reduced performance over range −20 °C to −10°C.
d) Maximum storage temperature range −20 °C to +70 °C.

Cooling requirements
The normal position for the coder is considered as rack mounted immediately above the B3217 Camera Control Unit. In this condition it will receive cooling air from the control unit blower. However, if it is considered desirable to mount coders in groups of two or more in other positions in a rack, fan and deflector units should be used. The items required are (a) Fan Unit B00–4254–01 and (b) its associated Deflector Unit B01–4254–01. One pair of units will provide adequate cooling air for up to eight coders.

DIMENSIONS

Height	43·5mm (1·75in).
Width	483mm (19in).
Depth	483mm (19in).
Weight	9kg (20lb).

*

NTSC luminance channel	$E_{Y'}=0{\cdot}30E_{R'}+0{\cdot}59E_{G'}+0{\cdot}11E_{B'}$
'I' signal	$E_{I}=0{\cdot}60E_{R'}-0{\cdot}28E_{G'}-0{\cdot}32E_{B'}$
'Q' signal	$E_{Q}=0{\cdot}21E_{R'}-0{\cdot}52E_{G'}+0{\cdot}31E_{B'}$
PAL luminance channel	$E_{Y}=0{\cdot}299E_{R'}+0{\cdot}587E_{G'}+0{\cdot}114E_{B'}$
'U' signal	$E_{U}=-0{\cdot}147E_{R'}-0{\cdot}289E_{G'}+0{\cdot}437E_{B'}$
'V' signal	$E_{V}=0{\cdot}615E_{R'}-0{\cdot}515E_{G'}-0{\cdot}100E_{B'}$

The information contained herein is subject to confirmation at time of ordering.

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