PHILIPS

CLOSED CIRCUIT TELEVISION EQUIPMENT

# Plumbicon* Live Camera, Type LDH 200


The Plumbicon live camera LDH 200 is intended for use in mobile reporting vans, in production studios for educational, training and advertising purposes, in announcement and broadcasting sub-studios, and numerous other applications in the technical and scientific field where a high-quality easy-to-operate camera is required.

The system consists basically of a multi-purpose camera chain LDH 150 - LDH 160, equipped with the latest 1-inch Plumbicon tube. It features a number of technical refinements normally associated only with professional studio cameras. The functionally designed housing contains: the basic camera, a 6½-inch monitor as electronic viewfinder, a zoom lens (Angénieux 10 : 1, for camera version LDH 200/00, or Schneider 5 : 1, for camera version LDH 200/01) and the lens drive mechanism.

Lens adjustments, focus and focal length, can be easily effected with one hand by means of controls located on the right of the camera; iris control is servo-operated from the CCU or from the studio control room. A remote-controlled filter unit fitted behind the lens, contains a neutral density

* Registered Trade Mark for television camera tubes

**Preset controls:**

On the modules in the CCU:

Beam alignment (horizontal and vertical), scanning linearity (horizontal and vertical), scanning amplitude (horizontal and vertical), clamp pulse timing, aperture correction, cable length compensation. Selector for automatic gain control on average/peak-peak value, gamma correction for light and dark portions of the picture, white limiter, set-up, output level, sync level (for each of the 3 outputs), selector for fixed or variable target voltage, shift (horizontal and vertical) for normal and reversed scanning, and switch for test signal generator in the camera

**Remote control:**

Remote control is by means of a common switch at the rear of the CCU, providing the following functions: gamma on/off, scan reversal, neutral density filter on/off, iris, black level and white level

The above-mentioned controls are duplicated on the remote control unit supplied with the equipment. Maximum length of remote control cable type 0722 255 01001 is 100 metres

**Lens controls:**

Manual focus and zoom controls are on the right-hand side of the camera; the iris is servo-controlled from the CCU or remote control unit.

Sensitivity of the iris servo: variations of 1 % of nominal white level are attainable. The iris can be driven over its full range within 3 seconds

**Cueing:**

'On air' lights are provided at the top of the camera housing, inside the viewfinder hood, on the CCU and on the remote control unit

**Permissible ambient temperature:**

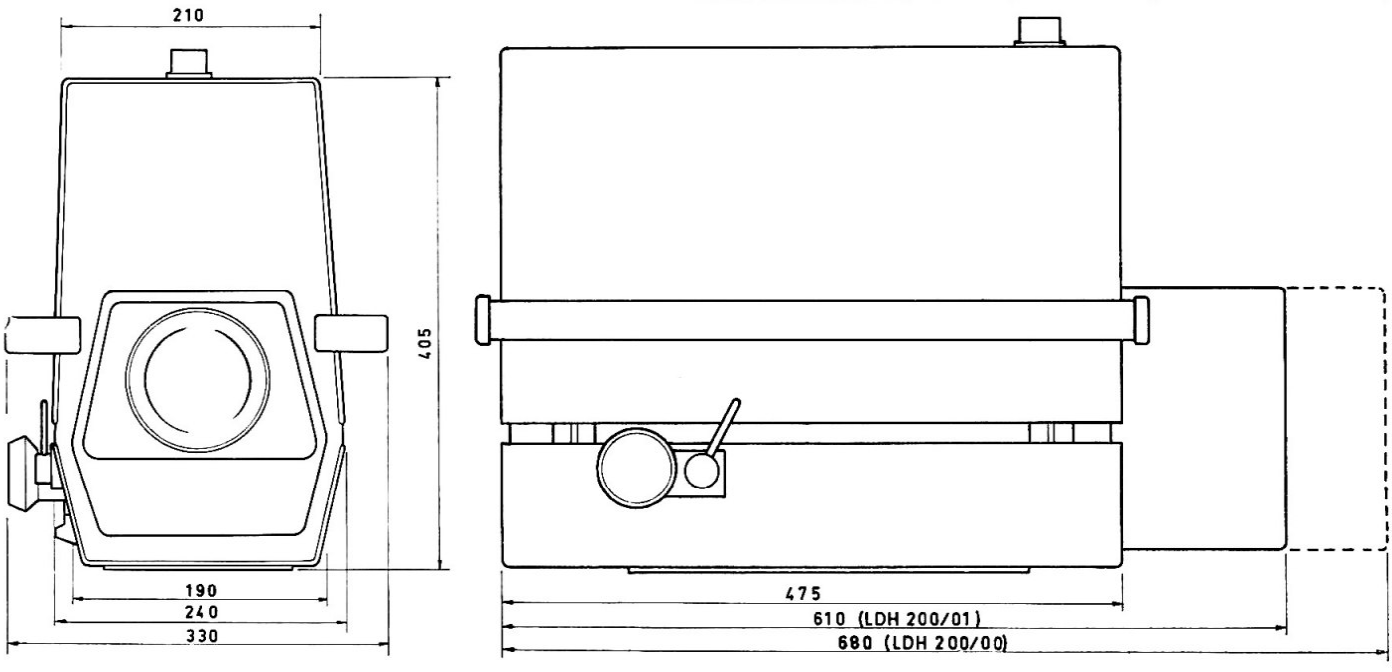
Camera: −10 to +40 °C
CCU and
Remote control unit:
−10 to +45 °C
} tropicalised design

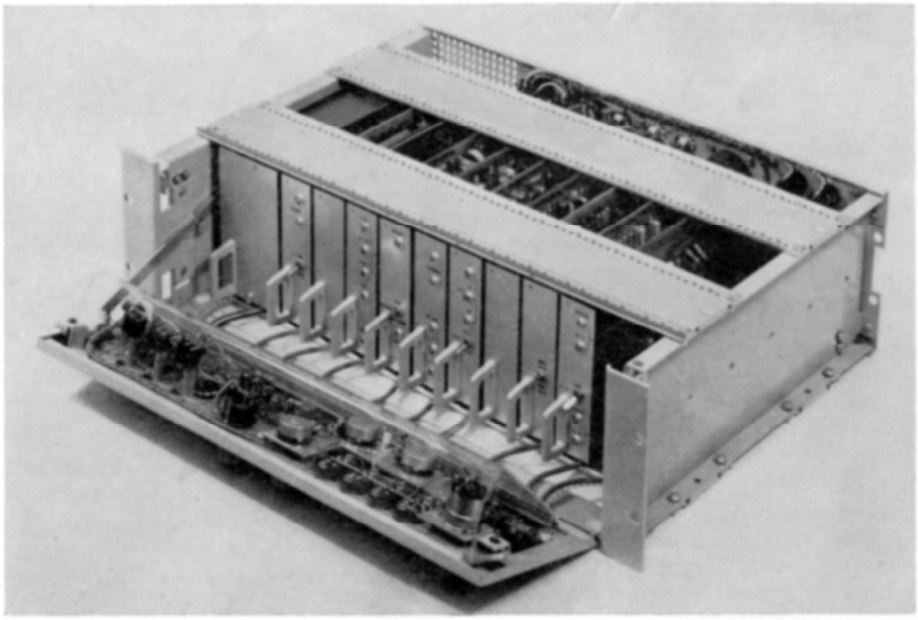
**Dimensions:**

see dimensional sketches

**Weights:**

Camera complete with lens Angénieux 10 : 1 approx. 40 kg (88 lb);
CCU approx. 11 kg (24 lb)





*Camera Control Unit with front panel hinged down.*


*Remote Control Unit.*

by means of an internal preset potentiometer.
The polarity of the signals can be reversed by means of a switch on the front panel of the CCU.

b) H-drive, V-drive, blanking and sync signals, negative going, 3.5 $V_{pp}$ into 75 Ω, when modular pulse generator LDH 4300 is incorporated in the CCU

**Intercom:**
Headset jacks are provided on the camera, CCU and remote control unit. The camera is provided with a separate headphone connection

**Test signal generator:**
Incorporated in the camera, can be switched on at the CCU

**Elapsed time meter:**
Fitted in the camera housing

**Viewfinder:**
6½-inch monitor, with contour enhancement (crispening) and controls for contrast, brightness, picture height and synchronisation (horizontal and vertical)

**Scan reversal:**
Separate switches at the CCU and the remote control unit for horizontal and vertical scanning

**Cable length compensation:**
In 7 steps of 50 m, from 0 to 300 m; correction for frequency response; preset adjustment for clamp pulse timing

**Stability:**
The specification of the camera chain applies after a warm-up time of 5 minutes; stabilisation and electronic regulation of the power supply section as well as the focusing and beam currents ensure stable operation during the entire life of the camera tube

**Frequency response:**
flat within ± 0.5 dB up to 5 MHz,
−3 dB at 7 MHz

**Geometry:**
max. error ± 1 % of the picture height (lens errors not taken into account)

**Gain:**
A signal current of 75 nA yields a VB signal of 1 $V_{pp}$

**Signal-to-noise ratio:**
45 dB at a signal current of 300 nA, measured with a 5 MHz filter, without aperture and gamma correction

**Illumination level:**
150 lux of average reflected light on the camera, for a signal-to-noise ratio of 45 dB, at iris aperture f/2.0

**Aperture correction:**
Adjustable up to +10 dB at 5 MHz (relative to 0.5 MHz), with a maximum at approximately 7 MHz; adjustable response level

**Gamma correction:**
Preset controls for correction of the bright and dark portions of the picture between gamma 0.4 and 0.6; switchable to gamma = 1. The white level will remain constant at all gamma values

*Camera cable connectors are according to IEC requirements.*

**Black level:**
Adjustable between −30 % and +15 % of white level without gamma correction, and between −30 % and +40 % at maximum gamma correction; the white level will remain constant when the black level is readjusted

**White limiter:**
Clipping at approximately 140 % and continuously adjustable limiting between 90 and 120 % of white level

**Controls:**
The following controls are provided on the front panel of the CCU: iris, neutral density filter, scan reversal (horizontal and vertical) gamma on/off, automatic gain control, black level, white level, focusing current, beam current, target voltage, stand-by/operation switch and video pos./neg. switch

filter with 5 % transmission for outside broadcasts, and for indoor broadcasts a clear glass disk replacing the glass thickness of the neutral density filter in the light path of the zoom lens.

With a view to the operation of the camera chain also by non-trained personnel, it should be mentioned that the camera cable and its connectors comply with IEC safety regulations.

The camera chain employs solid-state circuitry, and all important functional parameters, such as focusing current, beam current, tube heater and transistor voltages, are electronically stabilised so that readjustments due to changes in external conditions or ageing of the camera tube are hardly necessary over long periods of operation. The camera also includes a simple test signal circuit, which enables rapid and accurate lining-up and checking of the entire camera chain.

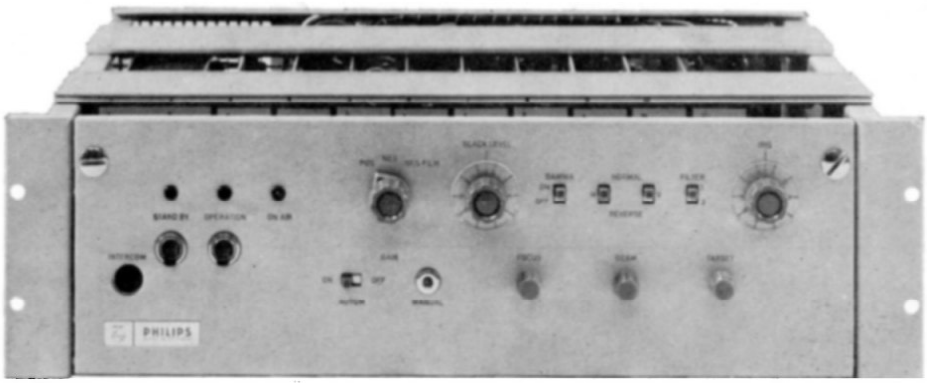
All controls are located on the front panel of the CCU. The operational controls for white level, black level, gamma on/off, scan reversal, iris setting and filter on/off can be switched to remote control. A remote control unit with the above-mentioned controls is supplied with the camera chain. The cueing and intercom circuits include 'on air' pilot lamps on the camera, CCU and remote control unit, headset jacks on the camera (2 x), CCU and remote control unit, as well as a socket for a communication link with a mixing desk or other control area.

The camera is fitted with two carrying handles, one either side, and should preferably be mounted on a heavy-duty stand or pan-and-tilt head by means of a wedge plate. A suitable wedge plate is supplied with tripod EL 8303/22.

The camera cover can be easily removed, after which the camera proper and the viewfinder are fully accessible. If necessary, these units can be easily pulled out for repair or replacement. The lens is protected by means of a separate cover attached to the housing which at the same time serves as a sun visor. The viewfinder is shielded from stray light by means of a hinged hood. The modular type CCU is suitable for incorporation into a standard 19-inch rack. The remote control unit is also suitable for rack, panel or desk mounting.

## COMPONENTS OF THE SYSTEM

**Plumbicon live camera chain** LDH 200/00, or LDH 200/01, comprising:
- complete camera housing, with Plumbicon camera, 6½-inch viewfinder and zoom lens;
- CCU;
- Remote control unit;
- Two 'Harting' connectors for the remote control cable



*Camera Control Unit.*

**Plumbicon tube:**
XQ 1071, 1-inch separate-mesh tube

**Camera cable:**
LDH 8103/00 length 5 m;
LDH 8103/01 length 10 m;
LDH 8103/02 length 25 m;
LDH 8103/03 length 50 m;
LDH 8103/04 length 100 m

**Mains cable:**
LDH 8113/01 length 1.80 m, with European plug;
LDH 8113/02 length 1.80 m, with American plug

**Co-axial BNC connector:** EL 8498/11

**75 Ohm terminating plug:** EL 8498/13

**Remote control cable:** 0722 255 01001 in lengths per lineal metre, without connectors

**Headsets:**
LCH 0006/01 with dynamic microphone;
LCH 0007/01 without microphone

**Tripod ('Killy'):** EL 8970/00 with pan-and-tilt head and wedge plate

**Dolly:** EL 8970/01 for 'Killy' tripod

## TECHNICAL DATA

**Versions:**
LDH 200/00 with 'Angénieux' zoom lens, f/2.8; 15 - 150 mm;
LDH 200/01 with 'Schneider' zoom lens, f/2.0; 18 - 90 mm

**Scanning system:**
CCIR 625 lines, 50 fields/s
and
EIA 525 lines, 60 fields/s

**Power supply:**
110, 117, 220 and 234 V (voltage adapter); 50 - 60 Hz;
Power consumption approx. 80 VA

**Permissible mains voltage variations:**
Depending on mains voltage and camera cable length:
for 220 V and 100 m camera cable: ± 10 %
for 110 V and 100 m camera cable: +10 %, −3 %

**Input signals:**
H-drive, V-drive, blanking and sync signals, negative going, 0.6 to 4 $V_{pp}$ into 75 Ω, looped-through sockets.
The signals are derived either from an external generator or from modular pulse generator LDH 4300, which can be plugged into the CCU (External/Internal switch at the rear of the CCU).
Additional input for an external test signal (VB), positive going, max. 1 $V_{pp}$ into 75 Ω

**Output signals:**
a) 3 x either VB signal, 1 $V_{pp}$ (or 0.7 $V_{pp}$) or VBS signal, 1.4 $V_{pp}$ (or 1 $V_{pp}$), into 75 Ω.
One of these signals is used for the viewfinder, and an external signal can be superimposed on it.
Changing over from VB to VBS is effected by turning up the sync signal amplitude from 0 to 0.4 $V_{pp}$.
Changing over to 0.7 $V_{pp}$ VB signal, respectively 1 $V_{pp}$ VBS signal, is possible