

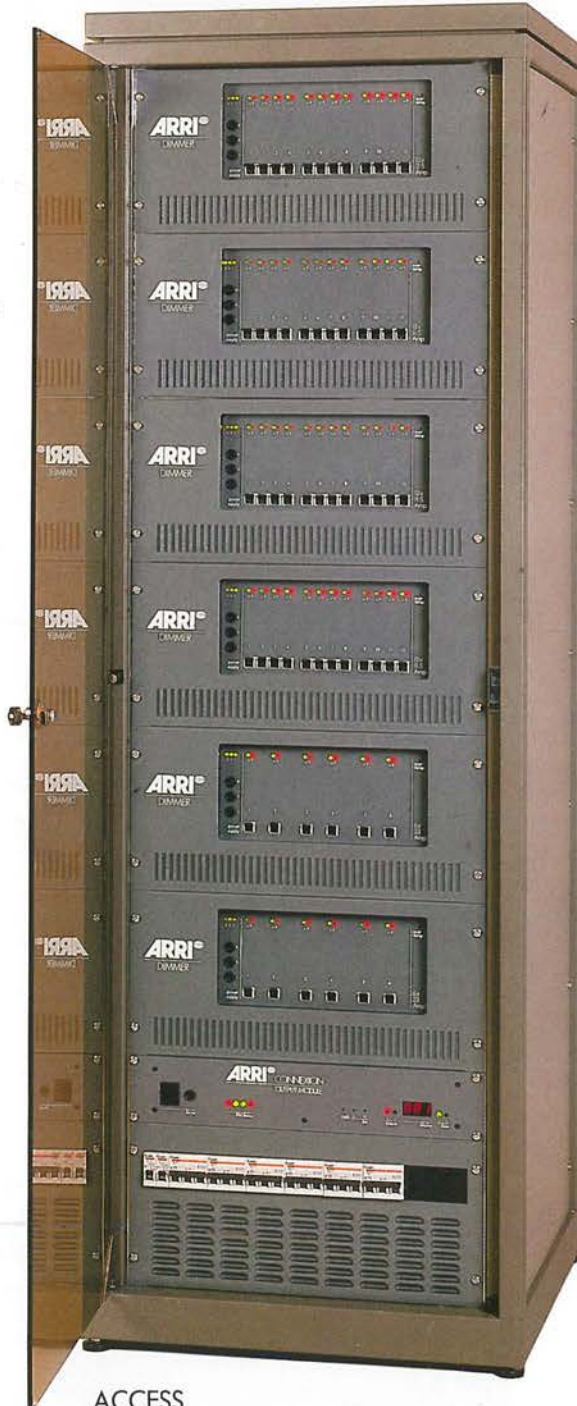
# ARRI



## LIGHTING PERMANENT DIMMER RACK

The ARRI Professional Dimmer Rack combines superb engineering quality and performance with high power density, elegance and ease of installation and maintenance.

- Up to 72 dimmers in one cabinet
- Modules mount on retractable slides
- Three module ratings:
  - 12 x 11.5 amps
  - 6 x 23 amps
  - 3 x 46 amps
- Any mix of modules in a standard cabinet
- Full diagnostic indication for each dimmer
- Lockable Glass Door for security
- Digital or Analogue control
- Optional Earth Leakage Protection



- Top quality matched thyristor pairs and circuit breakers for ultimate reliability
- Load Fail Indicators
- Circuit Breaker Indicators
- Control Level Indicators
- Temperature Indicators
- Phase Indicators
- Closed Loop Regulation – if the mains dip, your lights don't
- Low-noise Toroidal Chokes
- Filtering to VDE 0871, VDE 0875, BBC 304 and all normal broadcast requirements

### RELIABILITY

ARRI Dimmers are engineered for continuous operation at the high powers encountered in broadcast television studios. Careful matching of generously-rated power components virtually eliminates thyristor failure, and all module electronics are on one easily-replaceable circuit board.

### ACCESS

With top or bottom wiring entry, ARRI Dimmers are quick and easy to install, even when backed up to a wall. Modules simply slide into place, on ball-bearing runners.

### SAFETY

With an eye to increasingly stringent safety regulations, racks may be supplied with Earth Leakage Protection (RCCBs) fitted to the supply to each module. Studio personnel are thus guaranteed to be safe from wiring faults in equipment connected to dimmer outlets.

## DIMMER CABINETS

(YA-DR6, YA-DR3)



Diagnostic indicators and circuit breakers are clearly visible through the smoked glass door

### I MECHANICAL

- The Dimmer Rack shall be a free-standing steel cabinet no larger than 1800mm high (YA-DR6), 1250mm high (YA-DR3) x 600mm wide x 600mm deep.
- The rack shall be robustly constructed of formed steel. All internal metal components shall be plated or anodised. External surfaces shall be finished with high quality textured paint, in two tone grey.
- All side and front panels shall be removable (with screwdriver), and an optional, lockable, smoked plate glass door may be supplied for the front of each unit.

### II ELECTRICAL

- All electrical connections (power input and load outputs) shall be made via standard fittings and screw terminals, as appropriate, within each rack. The rack shall be so constructed that it shall be convenient for the electrical contractor to make all electrical connections within each rack, prior to installing the Dimmer Modules (see below). Wiring access shall be possible either from above or below the rack.
- Control signal connection shall be via 5-pin XLR connector when digital control is required (to the USITT DMX 512 Standard). Internal low-voltage control distribution shall be such as to allow the user to configure the rack for any combination of different ratings of ARRI Dimmer Modules.
- Dimmer Racks shall be designed to operate from the specified voltage and type of electrical service, with cabling rated for the specified current. Internal power distribution cabling shall be factory installed and neatly dressed. Sufficient space shall be allowed for user installed input and output wiring. Between each module position shall be located a connection tray, providing power input and output plus dimmer control input and dimmer diagnostic output (if required) connectors.

### III DIMMER CAPACITY

- Each YA-DR6 Dimmer Rack shall accept up to six ARRI Dimmer Modules or equivalent Blank Front Panels, plus one ARRI CONNEXION Output Module, which will provide analogue dc signals to control the dimmers.
- Each YA-DR3 Dimmer Rack shall accept up to three ARRI Dimmer Modules or equivalent Blank Front Panels, plus one ARRI CONNEXION Output Module, which will provide analogue dc signals to control the dimmers.
- Modules fitted may be any combination of standard sizes; 12 x 11.5 amp, 6 x 23 amp or 3 x 46 amp.

### IV VENTILATION

- Each Dimmer Module shall be provided with a ventilation fan, and further ventilation shall be effected via fans mounted in the top of each cabinet. Air inlets shall be provided in the base of each rack, so as to provide adequate ventilation with air inlet temperatures of up to 40 degrees Celsius. If desired, the exhaust air from the extract fans may be ducted by the user to an outside outlet.
- In the event of overheating, thermal cutouts are provided in each Dimmer Module, closing down any module which is over its rated temperature.

## DIMMER MODULES

(YA-DM11, YA-DM23, YA-DM46)

### I MECHANICAL

- Each Dimmer Module is a self contained dimmer

assembly, comprising all electronic and power components for the dimmers within each module. The module is constructed from mild steel, and all components are either plated or painted, as appropriate.

- Each module is supported on telescopic steel runners within the Dimmer Rack, for easy installation and removal.
- All controls and diagnostic indicators for each Dimmer Module are brought to the Module Front Panel, for easy access.
- Each Dimmer Module is 19" x 4U high, and is used in association with a 1U high Connection Tray, which is not normally removable. The Connection Tray supports all input and output connectors for its associated module.
- Each module shall contain a low-noise ventilation fan, to provide efficient internal cooling of all components.

### II ELECTRICAL PROTECTION

- Each module shall optionally be protected by a three phase Residual Current Circuit Breaker, to provide earth leakage protection for the entire module. The RCCB Actuator and Test Switch shall be accessible from the front of the rack. NB: This option is only available when the Dimmer Rack is to be supplied with three phase and neutral 220/380V ac or 240/415V ac.
- Each dimmer shall be protected by a magnetic single pole miniature circuit breaker, rated so as to offer maximum protection to the dimmer's thyristor devices.
- The actuator of each MCB shall be accessible from the front panel.
- Circuit Breaker ratings are as follows:
  - 11.5A Dimmer – 20A MCB (interrupt rating 15KA)
  - 23A Dimmer – 40A MCB (interrupt rating 4.5KA)
  - 46A Dimmer – 63A MCB (interrupt rating 4.5KA)
- Each Module Trigger Card shall be protected by three 20mm fuses, mounted in fuseholders on the front panel. Each fuse protects one of the three power supply circuits one each trigger board.

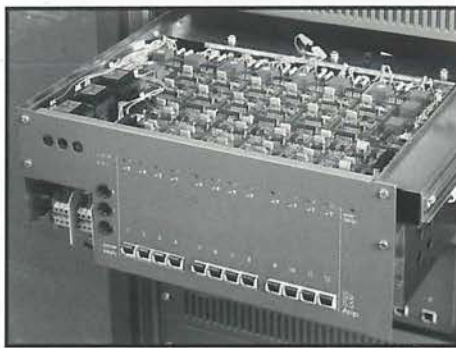
### III DIMMER CAPACITY

- Three ratings of ARRI Dimmer Module shall be available:
  - 12 Dimmers at 11.5 amps
  - 6 Dimmers at 23 amps
  - 3 Dimmers at 46 amps
- All ARRI Dimmers are designed to be used at 220/240 volts ac, 50Hz. ARRI Dimmers may also be used at 120V ac, 60Hz, details upon request from ARRI (GB) Ltd.

### IV POWER DEVICES

- Each dimmer shall incorporate a solid state encapsulated thyristor module, approved by VDE, UL, CSA, SEMCO etc, comprising two silicon-controlled rectifiers in a back-to-back configuration. Triac devices shall not be used. SCR power devices shall have the following minimum ratings:

	11.5 amp	23 amp	46 amp
C. Half Cycle Surge (A, 50Hz)	460	1,100	1,880
D. I <sup>2</sup> T (amp <sup>2</sup> sec)	1,350	6,300	20,000
E. Voltage	600V	600V	600V



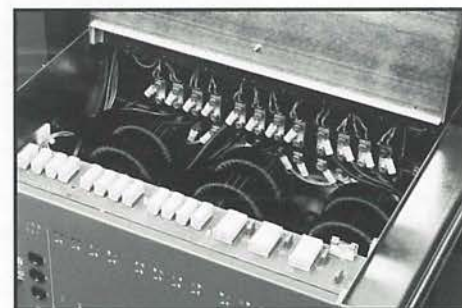
Power modules may be simply withdrawn, for routine maintenance

### V DIMMER DIAGNOSTIC INDICATORS

- Each Dimmer Module shall be provided with three LEDs, indicating the correct functioning of the three power supply circuits on each module's trigger card.
- Each Dimmer Module shall be provided with one LED, legended "over temp", which shall be illuminated in the event that the module should be closed down as a result of overheating.
- Each Dimmer Channel shall be provided with two LED indicators:
  - One green LED to mimic proportionately the level of any incoming dc control signal.
  - One red LED to indicate the state of the dimmer channel's MCB and the presence of a dimmer load. This LED is on when the MCB is closed, and will flash when the MCB is closed, the dimmer channel is on, and no load is detected on the dimmer's output. In the event of a thermal shutdown, all red dimmer channel LEDs in the affected module shall flash rapidly, at approximately 5HZ.
- All the LEDs described above shall be clearly visible on the front panel of each Dimmer Module.

### VI ELECTRICAL PERFORMANCE

- The transfer characteristic of ARRI Dimmers shall be Square Law, resulting in a relatively linear output of light from conventional tungsten-filament lighting loads.
- Each dimmer shall contain a Closed-Loop Regulation Circuit, incorporating a feedback loop from the Dimmer Gate Drive to regulate dimmer output in relation to line supply voltage.
  - The output voltage of each dimmer shall be automatically and continuously regulated for incoming line voltage variations. Note that output voltage cannot be increased above a level equivalent to line voltage minus dimmer insertion (voltage drop).
  - A jumper adjustment shall be provided to optimise closed loop regulation performance between systems operating on 220 volt and 240 volt supplies.



Access to power components is quick and easy

- Each dimming channel's output shall be AC, containing less than 1% DC component.
- At any load, the dimmer's output shall be 0 volts, when the incoming dc control signal for the dimmer is at 0 volts.
- Dimmer insertion – voltage drop shall not exceed 5V RMS for 220/240V dimmers, and shall typically measure less than 4V RMS.
- The output voltage of each dimmer shall continuously respond to within + or – 2.5V to a 0% to a 100% control signal, within 30ms.
- The dimmer regulation shall be factory set, and no further adjustment should be required in service. In the event that attention is required, an adjustment is provided on the trigger card.
- The dimmers shall respond to a dc control voltage of 0 to 10V dc, positive going.

### VII ENVIRONMENTAL PERFORMANCE

- Each Dimmer Module shall include a number of toroidal inductors, using high quality low-noise iron dust cores, the purpose of which is to limit objectionable harmonics, radiated radio frequencies, electro-mechanically induced interference on load conductors and to eliminate filament noise at the lamp. In this way, filtering shall be achieved to comply with VDE0875, BS800 and BBC304.
- Power efficiency of each dimming channel shall be at least 97.5% at full load.
- Thermal dissipation shall not exceed 2.5% of the rated channel load in Watts.

All specifications are correct at time of printing



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