AC10 Control for Slipring Motors

1.1   Control Assembly-A2

In a rugged modular eurorack format, the AC10 A2 controller has many years of experience and development built into it.   The original concept was modeled around crane hoist and travel drives.   The application use of it has extended to industrial drives – such as plate and crop shears – which benefit from smooth starting and speed control.

The AC10 A2 controller has numerous important features in addition to the basic control function.   They include:

1-   **Over-speed trip**: the A128 Speed Loop Supervisor monitors the dc tacho feedback and trips in the event of over-speed.   The trip set-point is $Ns \times 1,2$.

2-   **Broken brake protection**: in a separate control function, the A128 SLS will respond to an unauthorized downward movement of the load.   It will activate the AC10 system and lower the load at a controlled slow speed.   It will then deactivate at ground level.   A broken brake is any mechanical fault which prevents full application of brake torque.

3-   **Broken tacho protection**: in a further separate function, the A128 SLS monitors the presence of the dc tachogenerator.   If the circuit is not complete, the system will trip.
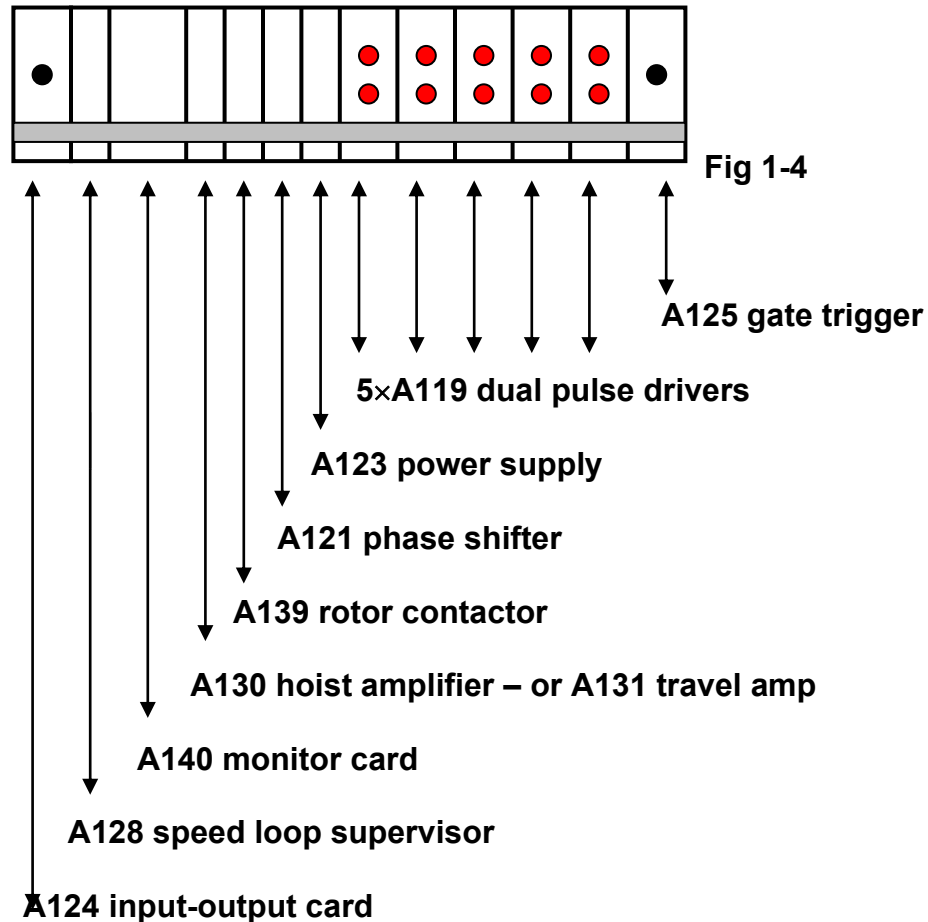

Fig 1-3. A2 modular eurorack AC10 controller.

4-   **Phase reversal protection**. The A123 Power Supply card will trip the system if the sequence of stator supply is not R-W-B.

A number of the protection features inherent in AC10 are unique in the control industry.

AC10 Primary Thyristor Control for Slipring Motors

The AC10 controller is fitted with the following cards:

Fig 1-4

A125 gate trigger

5×A119 dual pulse drivers

A123 power supply

A121 phase shifter

A139 rotor contactor

A130 hoist amplifier – or A131 travel amp

A140 monitor card

A128 speed loop supervisor

A124 input-output card

The red dots in the A119 dual pulse drivers represent high density LED's. They indicate active output to the thyristor driven by them. LED's are also fitted to A128, A130 (and A131), A123 and A139 cards. As a group, the LED's give a clear indication of the status of the driven machine. This, and the modular construction of the A2 controller, are important features of AC10 control.

The A2 controller is simple, straightforward, and easy to maintain. Yet it provides sophisticated control and protection. Individual cards are based on discrete electronics. They are tolerant to relatively high noise and temperature levels. With one of each card in stock, security of operation is high.

A separate specification sheet is provided for each AC10 card.