

VG-739

PRIORITY CONTROLLER

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VG-739

PRIORITY CONTROLLER

INSTRUCTION BOOK

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WARNING

OPERATION OF ELECTRONIC EQUIPMENT INVOLVES THE USE OF VOLTAGES AND CURRENTS WHICH MAY BE DANGEROUS TO HUMAN LIFE. OPERATING PERSONNEL SHOULD OBSERVE ALL SAFETY REGULATIONS. DO NOT CHANGE COMPONENTS OR MAKE ADJUSTMENTS INSIDE THE EQUIPMENT WITH POWER **ON** UNLESS PROPER PRECAUTIONS ARE OBSERVED. NOTE THAT UNDER CERTAIN CONDITIONS DANGEROUS POTENTIALS MAY EXIST IN SOME CIRCUITS EVEN THOUGH POWER CONTROLS ARE IN THE **OFF** POSITION.

GENERAL DESCRIPTION

The VG-739 Priority Controller is designed to control the switching action of the IRT 5 input audio or video switchers. Two groups of 5 (ground active) input control circuits are provided with a separate control line to select which group is to provide the input control to the VG-739 encoder circuitry.

The outputs of the VG-739 consist of open collector NPN transistor circuits switching to ground. Each output circuit provides two diode isolated outputs, thus allowing the VG-739 to control two separate units such as a IRT 5 input switcher and a IRT RL-740 auxiliary relay unit.

A relay is provided in the VG-739 which can be controlled from one of the 5 output circuits as selected by a internal link. The relay contacts can be used to control a local program source such as a tape player when the VG-739 is used to control the program input selection to a broadcast transmitter.

By use of a priority encoder in the VG-739 logic circuit, with a number of inputs enabled by the control outputs of IRT AG-738 audio or VG-737 video presence detectors only the input with the highest priority (input 1) is selected. If the output from the audio or video presence detector connected to the highest priority input changes state and removes the enable on the VG-739 input line, then the next highest priority input enabled by a presence detector control output will provide the corresponding output from the VG-739. In this way the control output from the VG-739 will range with the inputs enabled by the audio or video presence detectors.

The second group of control inputs to the VG-739 can be connected to remote control equipment in a remote installation so that control of the input selection can be made via the remote supervisory/control system.

Battery backup of the encoded data ensures that the VG-739 will return the same data on POWER ON as that selected at POWER OFF.

A front panel enable switch is provided which can disable the output circuit of the VG-739 without changing the internal logic settings. This allows local control of the program input switcher using the switcher front panel control switches for local testing of the program circuits. A front panel LED indicator and external tally contact set provide indication of the enable disable switch position.

The VG-739 is built to the EUROCARD format and will mount in a IRT FR-700 frame which provides the 28V CT ac required from the PT-700 dual power supply.

TECHNICAL SPECIFICATIONS

Inputs / o	outputs:	
Control inputs.		CMOS contact bounce eliminating circuits. Ground active controls with internal pull-up resistors to the control logic supply voltage of +5 volts.
Control outputs		Open collector NPN transistor circuits switching to ground. Two diode isolated outputs from each control output.
Battery backup		NICAD battery backup of the data latch containing information of the encoder input selected.
Auxiliary relay		Controlled from a output circuit, selected by a PCB solder link. Make and break contacts available.
Relay contact rating		24 Vdc - 1 A 100 Vac - 0.3 A
Enable switch		Front panel switch with an isolated contact set available for remote tally indication of the switch position.
Switch contact rating		28 Vdc - 5 A 120 Vac - 5 A
Visual indicators		OUTPUT CIRCUIT DISABLE POWER
Control o	connectors:	
Inputs and tally		Terminal strips accepting spade terminals to which the wiring is crimped or soldered
Outputs		8 pin 0.1 inch spaced socket strip with mating locking plug assembly.
Other:		
Power requirements Power consumption		28 Vac CT (14-0-14) or ± 16V DC. <1.5 VA.
Temperature range Mechanical		0 - 50° C ambient Suitable for mounting in IRT 19" rack chassis types FR-700 & FR-722 with input output and power connections on the rear panel
Finish:	Front panel Rear assembly	Grey enamel, silk screened black lettering & red IRT logo Detachable silk screened PCB with direct mount connectors to Eurocard and external signals
Dimensions		6 HP x 3 U x 220 mm IRT Eurocard
Standard accessories (supplied with module)		Rear connector assembly including matching connector for switcher control.
Optional accessories		TME-6 module extender card

CIRCUIT DESCRIPTION

The control input circuit consists of MC14490 CMOS clocked bounce eliminator circuits, with internal pull-up resistors arranged in two groups for the auto and remote input circuits. Each input line contains a 1K ohm 100 nF RC filter for transient and RF protection. The two groups of control inputs are switched into U5 the 4532 priority controller by means of U3 and U4 two 4502 buffers whose output inhibit inputs are controlled by the remote enable circuit and inverter U6C. This means that only one group of input control lines is active at any one time.

Data from the priority encoder IC U5 is latched in U7 a CMOS latch on the leading edge of clock pulses generated by U6A, B and D, with the any key signal from U5 being used to enable the clock oscillator. Transistors Q1 and Q2 serve to initiate the power down action of the latch circuit, isolating the inputs by preventing pin 10 from being grounded and removing the output enable ground on pins 1 and 2. NICAD battery B1 will hold the supply voltage on U7 to retain the stored data when power is removed from the VG-739.

The latched data from U7 is decoded in U8 a 4028 decoder and the decoded output drives the input circuit of the appropriate section of the ULN2003 output driver U9. Two output lines isolated by diodes are provided from each output driver circuit thus allowing the VG-739 to control two circuits which may have different operating voltages, for example a relay card and a 5 volt logic input 5x1 switcher, such as the IRT AA-620/625 audio switcher. A separate output driver circuit U9A can be strapped to operate on a output line of the decoder U8, to energise relay RL1 which can be used to control external equipment such as a local program source. In this way when the priority changes due to failure of program sources local backup program can be initiated.

A switch on the front panel of the VG-739 is used to isolate the VG-739 control output from the 5x1 switcher being controlled, allowing local control via the switch panel of the 5x1 switcher. A contact set on SW1 provides contacts for the OFF NORMAL loop in the equipment installation to provide remote indication.

The logic action of the local/remote switch with the front panel switch in the local (disable) position is to pull the 'D' input of decoder U8 to V+ and thus ensure that decoder outputs Q0 to Q4 are not available. U12 a 'D' type latch is provided to allow the action of the local/remote switch to be reset to the remote mode if the switch is inadvertently left in the local (disable) position. The latch is reset by a low input to pin 9b of the module. The other input of the latch is connected to SW1/1 circuit to sense the switch position. Q3 is used to connect the latch output to the 'D' input of decoder U8 and will ground U8/11 when a reset signal is applied to module pin 9b. **NOTE** the switch tally indicator will still show the OFF NORMAL position of SW1, but operation of the VG-739 can be restored remotely if required.

The power supply circuit consists of full wave rectifier circuits D1 to D4 and three terminal regulators U10 and U11 to provide the 12 volts to operate the relays and the 5 volts for the logic circuits.

NOTE: The logic circuits used are all standard CMOS IC's and will all work at 12 volts if required. This means that if greater noise immunity is required on the input circuits and the remote control equipment can operate at 12 volt logic levels, then U11 can be removed and a wire strap used to bypass it and change the V+ line to 12 volts. The 4 volt battery will still hold the data in the latch when a 12 volt supply is used as before.

INSTALLATION

The VG-739 mounts in a IRT FR-700 EUROCARD frame fitted with a PT-700 power supply. The VG-739 card plugs into the frame and is secured by the screws at the top and bottom of the front panel. The RB-739 rear assembly plugs onto the connector pins of the connectors on the mother board on the rear of the frame and is secured with two small 2.5 mm screws.

The control output connections are SK12 a 8 pin 0.1 inch spaced socket strip with mating locking plug assembly, and SK1 to SK5 a set of five two pin 0.1 inch spaced socket strip with mating locking plug assembly. The plug assembly pins clip into the assembly after terminating onto the control cable by crimping or soldering. The connections are shown on the RB-739 drawing No. 803158.

The remote input control lines, auxiliary control relay contacts, the local remote switch tally indication and the local (disable) connections are made to spade terminals which push onto groups of terminal strips on the RB-739 rear assembly.

The auto input control lines can be made in one group to SK6 an 8 pin socket strip or to SK7 - SK11 a group of five 2 pin socket strips, this allows direct connection to SK6 in one cable from a RL-740 auxiliary relay card or individual connections from separate program fail detectors to SK7 - SK11.

NOTE: When a 8 pin socket is used the connections are pin equivalent to the control connections of other modules such as the AA-625 5x1 audio switcher and the RL-740 auxiliary relay card.

The auxiliary relay circuit is strapped to operate on the input 3 control circuit, pads are provided to change this to any of the five control circuits.

When using the VG-739 Priority Controller to control a RL-740A 5X1 Relay Audio Switcher an option is to use the +12 volt supply from the VG-739 to operate the RL-740A. To implement this option the 12 volts supply is brought out on pin 27A by inserting diode D7 on the VG-739 circuit board, and using the pin 7 wiring on SK12 of the RB-739 to J1 (or J2) of the RB-620 in the connectors carrying the control connections between the VG-739 and the RL-740A to bring the +12 volts to pin 30A of the RL-740A. On the RL- 740A insert F5 and cut the track between the two pads above C3 and wire a link from the centre pad to the pad marked EXT. VOLTS.

MAINTENANCE

The VG-739 Priority encoder is tested for correct operation.

NOTE: If it is necessary to remove a component from the circuit board during maintenance **IT IS ESSENTIAL TO ADD SOME SOLDER TO THE COMPONENT SOLDER JOINTS BEFORE REMOVAL IS ATTEMPTED**. This will add some solder flux to the joint and allow the heat from the iron to flow quickly into the joint and prevent localised overheating and damage to the circuit board.

DRAWING INDEX

Unless otherwise specified all references on diagrams to VG-639 and RB-639 refer equally to the VG-739 and RB-739 respectively.

Drawing #	Sheet #	Description
803154 803158	1	VG-739 main circuit schematic RB-739 Rear assembly



