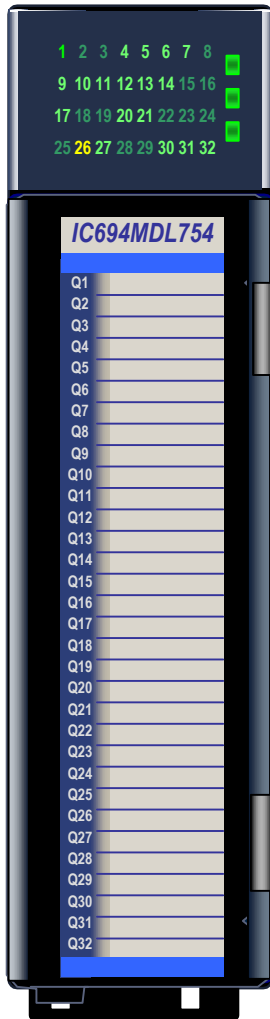


## Output Module, 12/24VDC,ESCP 0.75A Pos. Logic, 32 Pt: IC694MDL754



The **12/24 volt DC, ESCP 0.75A Positive Logic Output** module, IC694MDL754, provides 32 discrete outputs in two isolated groups of 16. Each group has its own common. The outputs are positive logic or sourcing type outputs; they switch the loads on the positive side of the power supply, and supply current to the load. The outputs can switch user loads over the range of +12 to +24 VDC (+20%, -15%) and can source a maximum current of 0.75 Amps per point.

Each point has electronic overcurrent/short circuit protection and generates an individual fault if either condition exists. In addition to output driver faults being sent back to the RX3i controller, the module provides a loss of field side power fault, ESCP point failure within a group, field terminal block ON/OFF status and a DIP switch configuration mismatch fault.

Each group can be used to drive different loads. For example, one groups might drive 24 VDC loads, and the other could drive 12 VDC loads. Power for the loads must be provided by the user.

A DIP switch on back of the module is used to select the outputs default mode: Force Off or Hold Last State. The module must be removed from the backplane to set this switch.

This module can be used with either a Box-style (IC694TBB032) or Spring-style (IC694TBS032) front Terminal Block. The Terminal Block is ordered separately.

The blue bands on the label show that MDL754 is a low-voltage module.

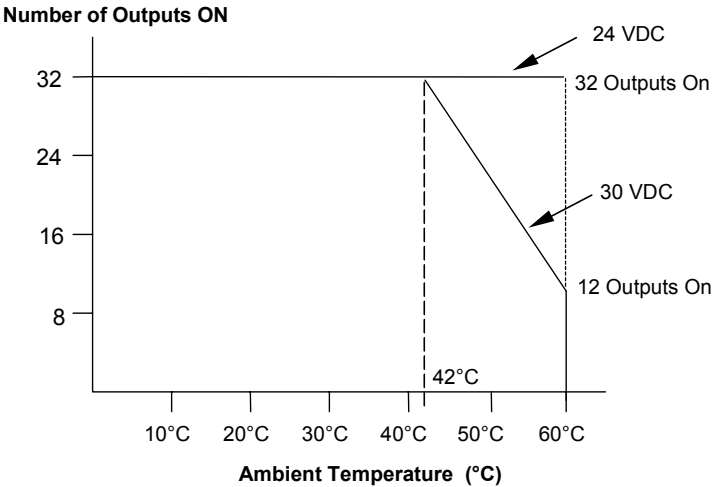
This module can be installed in any I/O slot in an RX3i system. It must be used with an RX3i CPU (release 2.90 or greater). It cannot be used with a Series 90-30 PLC CPU.

**Specifications: MDL754**

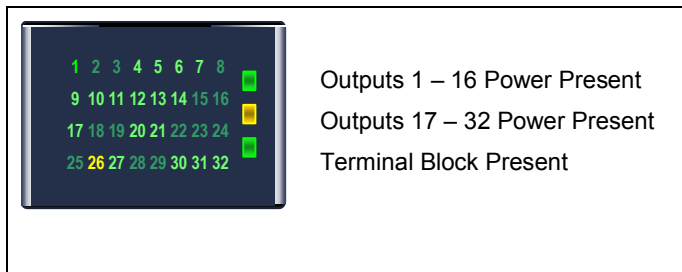
<b>Rated Voltage</b>	12/24 volts DC, nominal
<b>Output Voltage Range</b>	10.2 to 30 volts DC
<b>Outputs per Module</b>	32 (two isolated groups of 16 outputs each)
<b>Isolation:</b>	
<b>Field to Backplane (optical) and to Frame Ground</b>	250 VAC continuous; 1500 VAC for 1 minute
<b>Group to Group</b>	250 VAC continuous; 1500 VAC for 1 minute
<b>Module ID</b>	0x059h
<b>Output Current</b>	0.75 Amps per point
<b>Power Consumption</b>	300 mA (maximum) from 5 volt bus on backplane;
<b>Thermal Derating</b>	No derating at 24VDC. At 30VDC, outputs are derated above 42 degrees C as shown below.
<b>External Power Supply</b>	+12 VDC to +30 VDC, 12/24 VDC nominal
<b>Output Characteristics</b>	
<b>Inrush Current</b>	3 Amps supplied for 10ms without ESCP trip
<b>Output Voltage Drop</b>	0.3 volt DC maximum
<b>Steady-state overcurrent trip</b>	5A typical per point
<b>Output Leakage Current</b>	0.1mA maximum
<b>On Response Time</b>	0.5ms maximum
<b>Off Response Time</b>	0.5ms maximum
<b>Protection</b>	Short-circuit protection, overcurrent protection, overtemperature protection, all with auto recovery .

Refer to Appendix A for product standards and general specifications.

**Output Points vs. Temperature**



## LEDs



32 green/yellow LEDs on the module indicate the ON/OFF status of points 1 through 32. These LEDs are green when the corresponding outputs are on, and yellow if the outputs are faulted. They are off when the corresponding outputs are off.

Two green/yellow LEDs indicate the presence of field power to each of the isolated output groups. They are green if field power is within limits. They are yellow if a point fault exists within their group. And they are off when field power is absent or outside operating limits.

The module's red/green Terminal Block LED is green when the module's removable terminal block is locked in place. It is red when the terminal block is not locked. The Terminal Block LED blinks if there is a non-recoverable module fault. The module also sends an *Addition of Terminal Block* or *Loss of Terminal Block* message to the RX3i CPU to report the Terminal Block status.

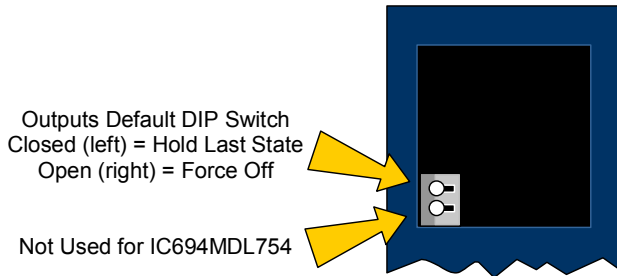
## Electronic Short-circuit Protection

Each output point provides "self-recovering" protection against overcurrent, short circuit and overtemperature. The fault is present until the condition that caused the fault is removed or the faulted point is turned off. After the fault condition is removed the output driver automatically sets the output to the state it was in before the fault occurred.

Each output point provides transient voltage protection to clamp high voltages at or below 40VDC. Reverse voltage protection is provided for field power inputs.

## Output Defaults

The DIP switch on back of the module selects the default operation for the module’s outputs. The module must be removed from the backplane to set this switch. Note that there are two DIP switches on the module. Only the upper switch is used for this module.



With the Outputs Default switch in the right (open) position, the outputs mode is set to Force Off. In this mode, the outputs will go to zero whenever communication with the CPU is lost. When the switch is in the left position, the Outputs Default mode is set to Hold Last State. In this mode the outputs will retain their last programmed value whenever communication with the CPU is lost, and field power is present.

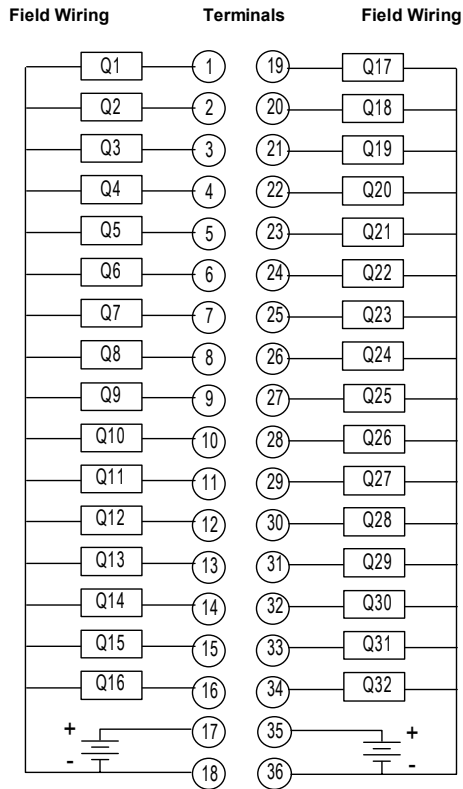
The Outputs Default selection made with the DIP switch must match the selection made for this feature in the module’s software configuration. If the two do not match, a fault occurs.

The table below summarizes the operation of Outputs Default mode with and without backplane power and field (external) power.

Backplane Power	Field Power	Outputs Default	Operation
On	On	Force Off or Hold Last State	Normal Operation. If module fault detected, outputs are set to zero.
On	Off	Force Off or Hold Last State	Module detects loss of field power, communicates fault to CPU while setting outputs to Off state. After field power is restored, the outputs are held in Off state until the module receives new output data from the CPU. Point LEDs indicate desired output without field power.
Off	On	Force Off	Module detects loss of communications and turns off the outputs within 400ms. LEDs are off.
		Hold Last State	Module detects loss of communications and holds outputs on their last states until the CPU sends new output data. LEDs are off

### Field Wiring: MDL754

Connections	Terminals	Terminals	Connections
Output 1	1	19	Output 17
Output 2	2	20	Output 18
Output 3	3	21	Output 19
Output 4	4	22	Output 20
Output 5	5	23	Output 21
Output 6	6	24	Output 22
Output 7	7	25	Output 23
Output 8	8	26	Output 24
Output 9	9	27	Output 25
Output 10	10	28	Output 26
Output 11	11	29	Output 27
Output 12	12	30	Output 28
Output 13	13	31	Output 29
Output 14	14	32	Output 30
Output 15	15	33	Output 31
Output 16	16	34	Output 32
DC+ for 1 - 16	17	35	DC+ for 17 - 32
DC- for 1 - 16	18	36	DC- for 17 - 32

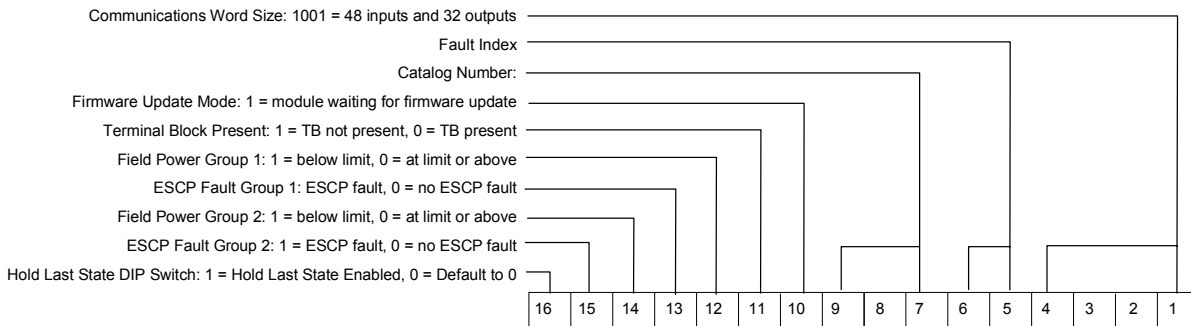


## Module Data: IC694MDL754

Module MDL754 uses 48 input bits and 32 output bits to exchange point status and filter information with the RX3i CPU.

### Input Data: MDL754

The module uses the first 16 input bits to report its status information to the RX3i CPU. It has the following content:



The CPU uses the information contained in these input bits to uniquely identify the module, and to monitor its status.

The module reports the ESCP fault status of the outputs in input bits 17 - 48.

<b>Output ESCP Status Bits</b>	
<i>Output Group 1</i>	<i>Output Group 2</i>
17-32	33 - 48

### Output Data: MDL754

The module receives 32 bits of output data from the RX3i CPU.