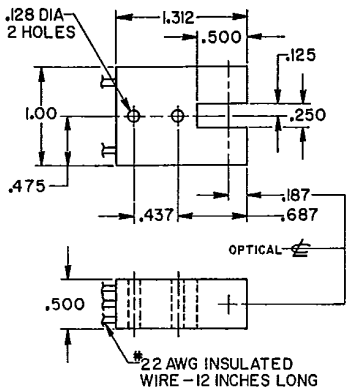
T-41-73

Optical Switches

CLI305 CLI375 CLI325 CLI355



GENERAL DESCRIPTION — The CLI305 — CLI375 series are exceptionally rugged optical switches with Valox® housings and an epoxy backfill. The infrared emitting diode and the phototransistor/darlington phototransistor sensor are hermetically sealed, glass lensed units for maximum environmental protection, long operating life and narrow beam alignment. All models have 12 inch leads that exit from the same surface and two holes for bracket mounting in any desired operating plane. The CLI305 provides an emitter follower output for high gain and fast switching speed. The CLI305 also features a .005" slit over the sensor aperture for improved target resolution. The CLI325 and CLI355 have photo darlington outputs thereby providing high sensor current levels. The CLI375 has phototransistor outputs providing modest sensor current levels with excellent switching speeds.

ABSOLUTE MAXIMUM RATINGS
Maximum Temperature:
Storage – 55°C to + 100°C
Operating Jct. + 100° C

EMITTER (GaAs Diode)
Power Dissipation:
At 25°C Amb., Pd= 100mw,
derate 1.33mw/° C
Maximum Voltage:
V_R Reverse Voltage= 3.0 volts
Maximum Current:
I_F D.C. Forward
Current= 60ma cont.

DETECTOR
Power Dissipation:
At 25°C Amb., Pd= 200mw,
derate 2.0mw/° C
Maximum Voltage:
V_{CEO}= 30 volts, V_{ECO}= 6V
Maximum Curent:
I_C= 200ma pulsed

ELECTRICAL CHARACTERISTICS 25°C Free Air

Symbol	Characteristics	Test Conditions	CLI305 Min.	CLI305 Max.	CLI325 Min.	CLI325 Max.	CLI355 Min.	CLI355 Max.	CLI375 Min.	CLI375 Max.	Units
IRED											
V_R	Reverse Voltage	I_R=10μa	3		3		3		3		volts
V_F	Forward Voltage	I_F=16ma		1.5		1.5		1.5		1.5	volts
SENSOR											
BV_{CEO}	Collector to Emitter Breakdown Voltage	I_C=100μa	30		30		30		30		volts
I_D	Leakage Current	V_{CE}=10V, I_F=0				100		100		50	na
COUPLED											
I_{CE}	Sensor Current	I_F=10ma, V_{CC}=5V			3		12				ma
		I_F=20ma, V_{CC}=5V							1		ma
V_O	Voltage Output Across 270 ohms	I_F=10ma, V_{CC}=5V					3.2				volts
V_{OFF}	Voltage Output Across 270 ohms	I_F=0 or Beam Interrupted						.40			volts
V_O	Voltage Between Leads 5 and 4	I_F=20ma, V_{CC}=5V R_{3-5}=2.2K		.50							volts
V_{OFF}	Voltage Between Leads 5 and 4	I_F=0 or Beam Interrupted	4.70								volts
$V_{CE(SAT)}$	Collector to Emitter Saturation Voltage	I_F=10ma, I_C=4ma				1.2		1.2			volts
		I_F=20ma, I_C=1ma								.50	volts
T_R, T_F	Rise Time, Fall Time	I_C=2ma, V_{CC}=10V R_L=100 ohms				50TYP		300TYP		5TYP	μsec
T_R	Rise Time	I_C=2ma, V_{CC}=10V R_{3-5}=2.2K		5TYP							μsec
T_F	Rise Time	I_C=2ma, V_{CC}=10V R_{3-5}=2.2K		50TYP							μsec

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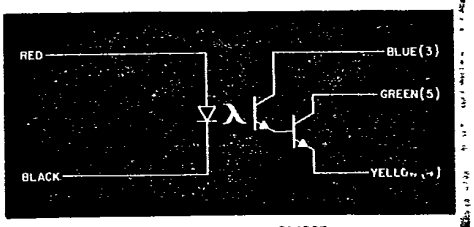
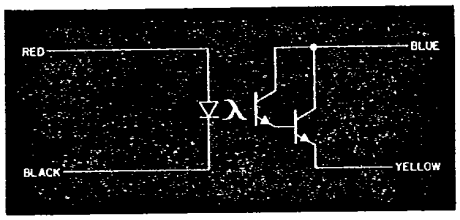
The CLI305 is the most versatile of this optical switch series. The output is an emitter follower providing fast switching speed and T²L interfacing. The available lead connections facilitate a tailored output depending upon the specific application. In addition a .005" slit is over the sensor aperature for greater target resolution.



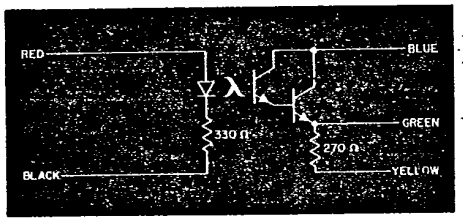
CLI305

The CLI325 provides a darlington phototransistor output. There are no biasing resistors contained within the optical switch housing thereby permitting complete freedom of circuit design and utilization of the high output current capability of the darlington. This unit was formerly the CLI55B.



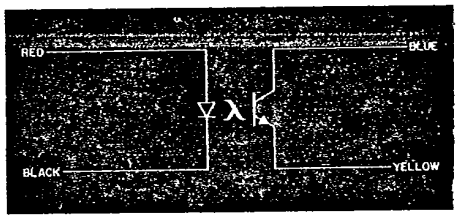
CLI325

The CLI355 has a darlington phototransistor output. The 330 ohm resistor in the IRED circuit and the 270 ohm emitter load resistor are contained within the optical switch housing. The CLI355 provides a high output sensor current compatible with T²L inputs. The CLI355 was formerly the CLI55.



CLI355

The CLI375 has a phototransistor output, providing a 1.0ma minimum sensor current along with excellent switching speeds and a low collector current saturation voltage. There are no biasing resistors contained within the optical switch housing. The CLI375 was formerly the CLI55A.



CLI375