

T-41-81

Opto-couplers

Heimann opto-coupler consist of a combination of extremely high-intensity light emitting diodes (LED) as emitters and specific photocell as detectors. Both elements are combined in a light-proof plastic housing. Emitters and detectors are completely isolated from each other. The features of opto-couplers include:

- high stability
- high insulation between input and output
- wide dynamic range

Characteristic values of opto-couplers:

a) for the input (LED)

- I_{fmax} maximum input current
- V_f forward voltage at $I_f = 20$ ma
- I_R inverse current at 4 volts inverse voltage

b) for the output (LDR)

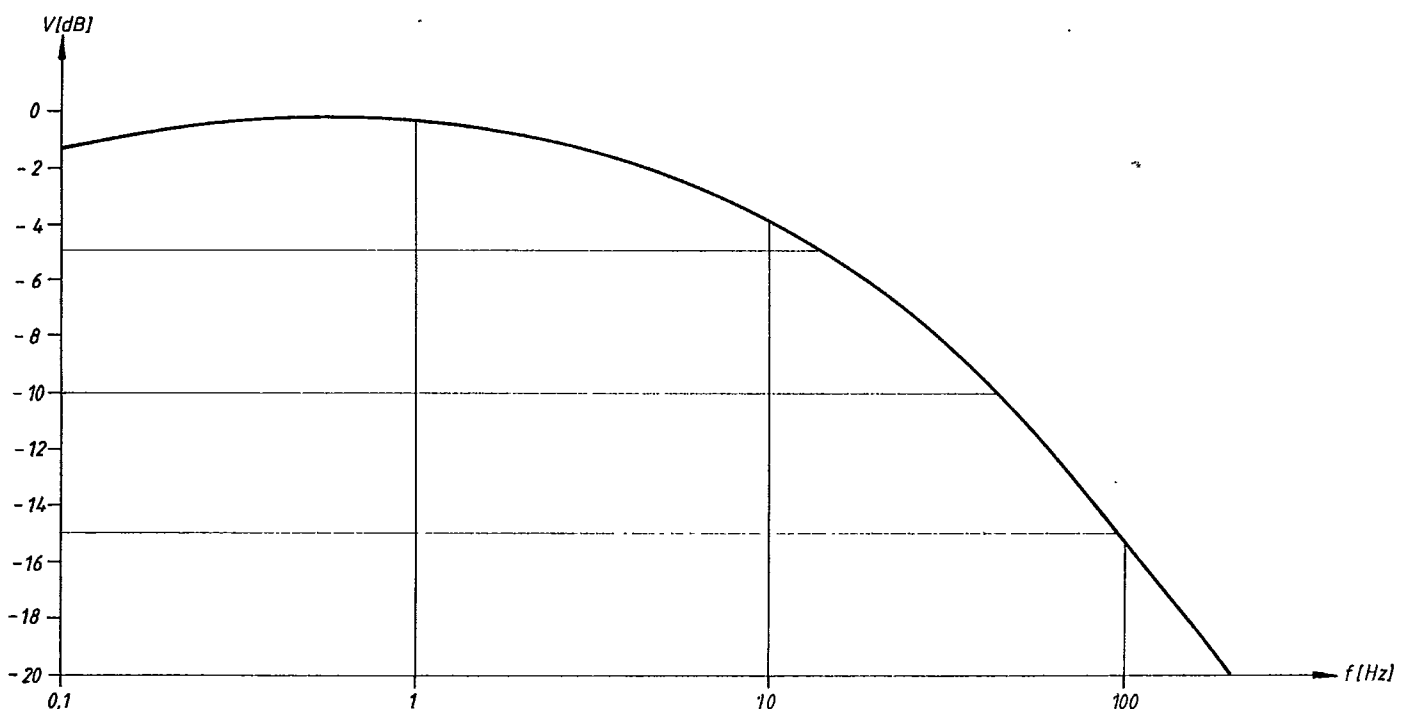
- V_{max} maximum operating voltage at $I_f = 0$
- P_{max} maximum power dissipation permissible
- C_S photoresistor capacity

c) characteristics of opto-coupler modules

- R_2 output resistance at $I_f = 2$ ma
- R_{20} output resistance at $I_f = 20$ ma
- R_{01} dark resistance after 1 second ($I_f = 0$)
- V_i isolation voltage between input and output
- C_C coupling capacity between input and output
- T_{on} Rise time of output current to 63% of its final level, input current $I_f = 20$ ma
- T_{off} decay time of output current to 37% of maximum level, after switch-off from $I_f = 20$ ma

The interdependence between the response of the photocell (detector) and the frequency of diode stimulation (emitter) is indicated in the curve hereunder.

Output versus Frequency



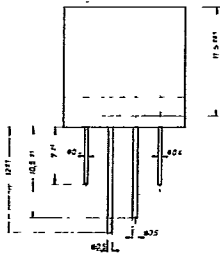
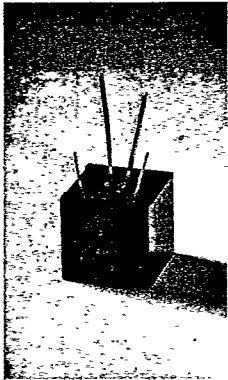
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Features:

- modular connections
- enables dip soldering
- low distortion
- short decay time

Application:

- triax controls
- noiseless switching
- automatic gain control



TYP	I_{max} [mA]	V_F [V]	I_R [μ A]	V_{max} [V]	P_{max} [mW]	C_S [pF]	R_2 [k Ω]	R_{20} [k Ω]	R_{01} [k Ω]	V_i [V]	C_C [pF]	t_{on} [ms]	t_{off} [ms]	TK [%K]
LT 1001	50	1,6	<1	100	150	2	22	2,0	500	3.000	<1	25	20	0,4
LT 1002	50	1,6	<1	200	150	2	45	4,0	1.000	3.000	<1	25	20	0,4
LT 1003	50	1,6	<1	150	150	2	72	6,6	1.000	3.000	<1	25	20	0,4
LT 1011	50	1,6	<1	100	150	2	8,2	0,6	100	3.000	<1	25	20	0,4

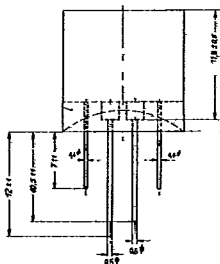
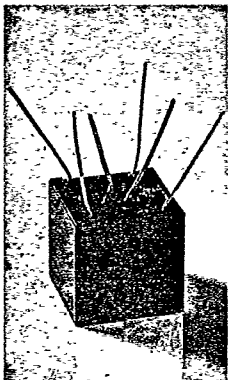
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Features:

- Dual pc cell as detector
- both cells completely isolated
- excellent synchronism of both cells

Application:

- high fidelity equipment
- dual function controls
- multipliers
- remote control systems



TYP	I_{max} [mA]	V_F [V]	I_R [μ A]	V_{max} [V]	P_{max} [mW]	C_S [pF]	R_2 [k Ω]	R_{20} [k Ω]	R_{01} [k Ω]	V_i [V]	C_C [pF]	t_{on} [ms]	t_{off} [ms]	TK [%K]
LT 2001	50	1,6	<1	100	100	2	50	3,1	300	2.500	<1	30	25	0,4
LT 2002	50	1,6	<1	100	100	2	100	5,2	1.000	2.500	<1	25	20	0,4
LT 2011	50	1,6	<1	50	100	2	8,2	1,0	150	2.500	<1	20	15	0,4

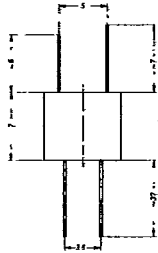
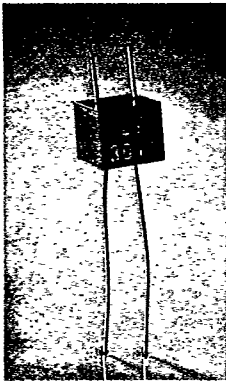
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Features:

- small dimensions
- axial connenctions
- low resistance output
- high isolation voltage

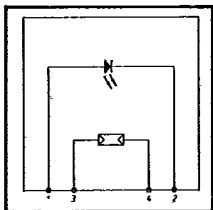
Application:

- triac controls
- automatic gain control
- shock-proof control systems

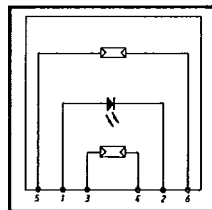


TYP	I_{max} [mA]	V_F [V]	I_R [μA]	V_{max} [V]	P_{max} [mW]	C_S [pF]	R_2 [kΩ]	R_{20} [kΩ]	R_{01} [kΩ]	V_I [V]	C_C [pF]	t_{on} [ms]	t_{off} [ms]	TK [%K]
LT 3011	50	1,6	<1	150	75	2	1,5	0,32	<100	3.000	<1	15	10	0,4

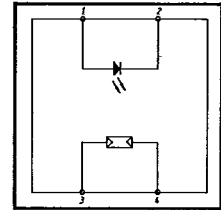
Connection diagrams for opto-couplers



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