

Description

The E-T-A Remote Power Controller E-1071-073 is an electronic ON/OFF control module with protective functions and is suitable for resistive and inductive loads such as solenoids in rolling mills and other large plant applications. It is specifically used in plant modernization where the load circuit supply should be maintained at DC 24 V.



E-1071-073

Typical applications

Control of hydraulic and pneumatic systems in production lines and chemical plants.

Features

- Solid-state relay with protective functions
- Solid-state switching avoids contact arcing and welding
- Inrush current limitation
- Overload and short-circuit proof output
- Low control power
- Control current indication by LED
- Auxiliary contact

Ordering information

Type No.	
E-1071	SSRPC
	073 with signal output
	Voltage rating of load
	DC 24 V
	Current rating
	3.0 A
E-1071 - 073 - DC 24 V - 3.0 A ordering example	

Technical data (T_{ambient} = 25 °C, U_B = DC 24 V)

Voltage rating U _N	DC 24 V
Operating voltage U _B	DC 20...48 V
Current rating I _N	3 A
Current consumption (U _B = DC 24 V, U _S = "0")	typically 17 mA
Residual ripple for all voltages	max. 5 % (3 phase bridge)
Reverse polarity protection	U _B (terminals 1 and 2)
Physical isolation	2-pole - by circuit breaker hand release - approx. 5 s after overload disconnection

Load circuit	
Load output	NPN transistor, minus switching
Load rating	DC 24 V/0.2...3 A
Voltage drop at I _N	max. 1.75 V
Overload disconnection	approx. 1.1 x I _N
Storage time t _S (at 2xI _N)	typically 20 ms (see storage time curve)
Short-circuit limitation	approx. 2.5 x I _N
Short-circuit response delay	approx. 4 μs
Load current monitoring	GREEN LED (lights at I _{load} > 0.2 A)
Current measuring terminals	2 x 2 mm dia. (0.1 Ω shunt ± 1 %)
Leakage current (U _S = "0")	max. 3 mA
Free-wheeling diode	integral

Control circuit	
Control	opto coupler in control input
Control voltage U _S	"0" = 0...5 V "1" = 8.5...35 V
Control current I _S	typically 5 mA
Switching frequency f _{max}	100 Hz
Control signal (U _S = "1")	YELLOW LED lights (IS flowing)
Protection	reverse polarity protection (diode)

Signal output	
Fault indication	auxiliary contact (N/O) - max. DC 30 V/3 A - physically isolated - closed with the circuit breaker tripped

General data	
Ambient temperature	0...+60 °C (without condensation)
Terminals	screw terminals 2 x 2.5 mm ² to DIN 46288
Housing	clamping plate: polycarbonate GV, blue cover: polycarbonate, black
Mounting	symmetric rail to EN 50022-35
Self-extinguishing properties	to UL 94: V = 0; VDE 0304: grade 1
Degree of protection (IEC 529/DIN 40050)	IP20 housing, terminals
Mounting dimensions	45 x 74 x 128 mm
Mass	approx. 240 g

Solid State Remote Power Controller E-1071-073

In principle, the E-T-A SSRPC E-1071-073 operates like conventional electro-mechanical relays, with additional protective and signal functions. The control input replaces the magnetic coil and the power transistor replaces the main contact.

Control circuit

The control current flows through the LED and the opto coupler immediately a voltage higher than 8.5 V (= control signal "1") is applied at the input terminals (6 and 7). The opto coupler transmits the signal to the load circuit, at the same time switching the load transistor on. This signal is transmitted as a status signal to all monitoring circuits. The input protection diode protects the control voltage from incorrect polarization. Control current limitation is provided by a constant current diode.

Load circuit

The load circuit is switched ON or OFF according to the control signal ("0" or "1"), with electronic circuits monitoring the load circuit for faults such as overload or short-circuit. Should one of these faults occur, the monitoring circuitry will immediately react, causing the load transistor to disconnect and the circuit breaker to trip. Transistor disconnection occurs according to the storage time characteristics. The storage time increases noise immunity avoiding disconnection of non-harmful peaks such as those caused by inrush currents from lamp load connection. Storage time is not a constant quantity but is inversely proportional to the overcurrent factor.

Status indication

Status indication is provided by 2 LEDs (yellow and green) on the front of the housing.

YELLOW LED = correct control voltage

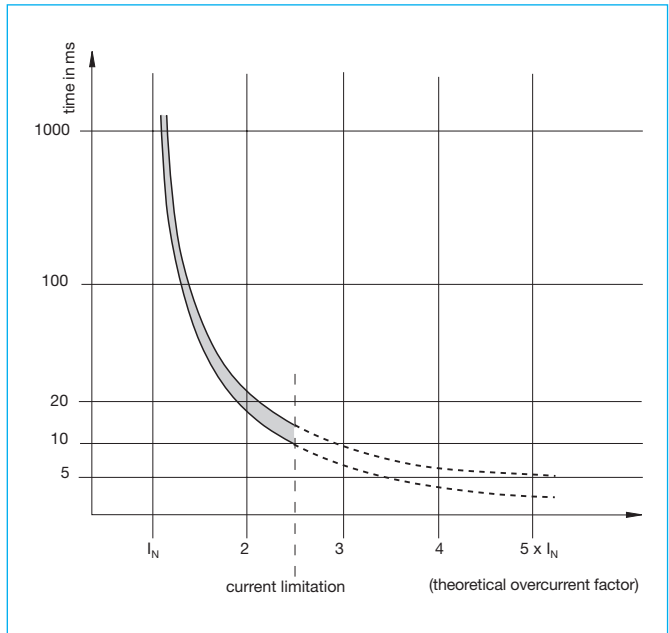
The LED indicates when the control voltage is higher than 8.5 V, with control current flowing.

GREEN LED = correct load current

The green LED indicates when the load current is higher than 0.2 A.

Faults such as too high a load resistance, wire break, poor contact, or overload/short-circuit, are available when only the yellow LED indicates. SSRPC E-1071-073 includes two current measuring terminals (2 mm dia.) on the front. These terminals provide for load current measurement in terms of voltage drop at the 0.1 Ω shunt in the load circuit.

Storage time characteristic curve t_s ($T_A = 25\text{ °C}$)



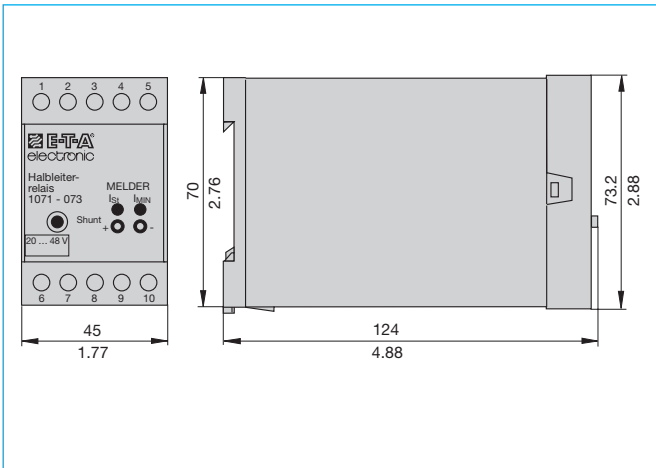
Operating modes

Operating status	Fault-free operation		Short-circuit on the load	Wire break	
	"0"	"1"		"0"	"1"
Control input U_S			"1"		
YELLOW LED - control current	0	1	1	0	1
GREEN LED - load current monitoring	0	1	0	0	0
Auxiliary contact	open	open	closed	open	open
Remarks	load OFF	load ON	circuit breaker tripped		

1 - LED indicates

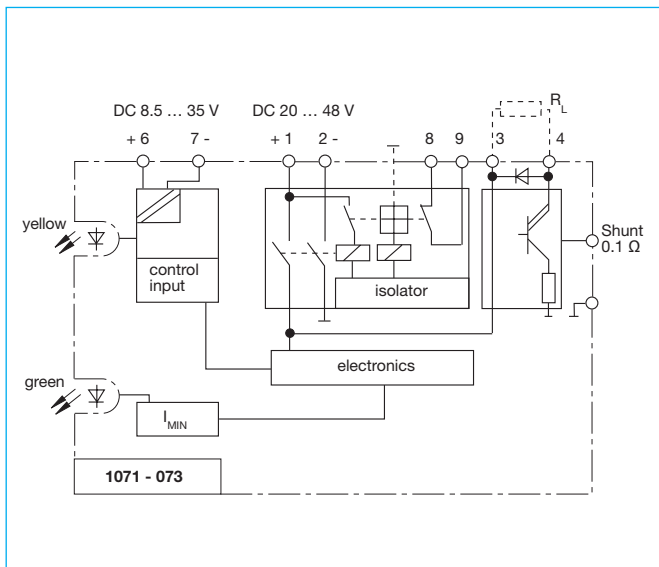
0 - LED does not indicate

Dimensions

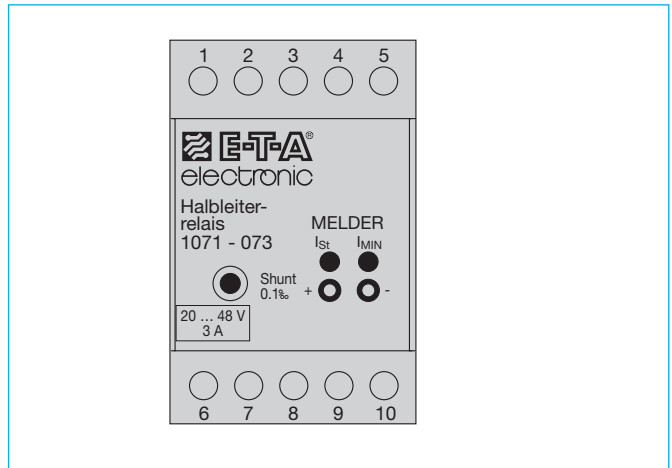


This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

Basic circuit diagram



Terminal selection



Terminal

- 1 operating voltage $+U_B$: DC 20...48 V
- 2 operating voltage $-U_B$
- 3 load (+)
- 4 load (-)
- 5 not used
- 6 control voltage $+U_S$: max. DC 35 V
- 7 control voltage $-U_S$
- 8 auxiliary contact I_{St}
- 9 auxiliary contact I_{Min}
- 10 not used