

## General information

Active interface modules are located in every system and available in several versions. Relay interface modules are meant to separate 2 different potential levels. The control side is galvanically isolated from the load and contact side to protect inadmissible voltage. Interfaces are able to adjust various signal levels for every occasion.

With the help of active modules expensive PLC output cards can be reduced into smaller output ratings. Separation level can be realized with single or multiple modules as relay or opto-coupler. They are used as amplifier- and protection modules for switched control electronics, as well as for level adaption. EMC problems at the load side of the relay modules won't be transmitted to the input side because of the galvanically isolation. Modular modules with a minus plug link and a potential rail comb allows a quick installation on the coupler level.

Murrelektronik offers simple modules, which are used as row terminals, modules for building management systems with "HAND-O-AUTO" switches, as well as pluggable relay- and time modules with a wide time range.

## Relay features

Electromechanically relays are preferably used as interface modules between PLC and periphery components such as control-, alarm- and regulated installations. A level and load adaption, as well as a galvanically isolation takes place at the same time.

At various possibilities, in different industrial areas, it is necessary to match a suitable contact material of the output side. Several contact loads deny the usage of universal materials. Dependent on the contact load different contact materials are corresponding to the "Contact material table".

## Contact life / no. of operations

Each load comprises a resistive, capacitive and an inductive component. It is mainly the inductive component which affects the lifetime. Inductive loads such as solenoids, motors and contactors produce a voltage when switched off which is many times greater than supply voltage. This can quickly burn out the contact. In order to increase the lifetime of the contact, the load must be suppressed.

In theory, a varistor or resistor/capacitor network (RC) across the contact is possible, but dangerous leakage currents may flow to the load when the contact is open. In practice, it is better to fit the suppressor across the load, where it is not only safer but is closer to the source of interference. Murrelektronik can supply many types of universal or made-to-measure suppressors. These suppressors dampen the high voltage transient and reduce the arc at the contacts. Contact life depends upon voltage, current and the nature of the load.

More details about suppression of inductive loads in chapter 3.2

Contact material	Typical properties	Typical applications	Voltage and current levels
<b>Silver-nickel 0.15 gold flashed</b> (AgNi 0.15 hv)	Widely used general purpose material.	General purpose. Suitable for inductive loads.	≥ 12 V ≥ 10 mA
<b>Silver, gold plated</b> (Ag htv)	Gold plating resists contamination but switching loads greater than 30 V/0.2 A removes the gold. Performance reverts to silver.	General purpose. For low to mid-range loads.	≥ 100 mV ≥ 1 mA
<b>Palladium silver, Gold/Rhodium</b> (PdAg-AuRh)	High resistance against oxidation; hard material; stable transfer resistance	Low level signals to mid-range loads.	1 mV... 125 V 1 mA... 1 A
<b>Silver Tin oxide</b> (AgSnO)	Resists welding and burn-out at high voltages. minimal material erosion	Switching circuits with high on off loading.	≥ 12 V ≥ 10 mA
<b>Silver Tin oxide, gold plated</b> (AgSnO htv)	Gold plating resists contamination but switching loads greater than 30 V/50 mA removes the gold. Performance reverts to AgSnO contacts	General purpose. Suitable for small and large loads.	≥ 100 mV ≥ 1 mA