

OPTO1-8 and OPTO1-16 coupler array

The SDG OPTO1-8 and OPTO1-16 coupler arrays has been carefully designed for the specific application of interfacing a disturbance recorder to a protection scheme, where the inputs to the opto coupler array from the protection scheme is 220/110VDC and the outputs of the opto coupler array to the disturbance recorder is 24V. (Specifically for the SIEMENS P531 fault recorder.)

The parameters important in this application has been maximised, and are as follows:

- Speed: Pick up time is 0.05ms typically. Drop off time is 0.4ms typically.
- Noise immunity: Constant drain of 40kΩ (220V model) or 20kΩ (110V model), at least half the rated voltage necessary for pick up.
- Transient withstand capability: 2.5kV, 2.5J, IEC255-5 differential pulse, 7.5kV, 2.5J, IEC255-5 common mode pulse.

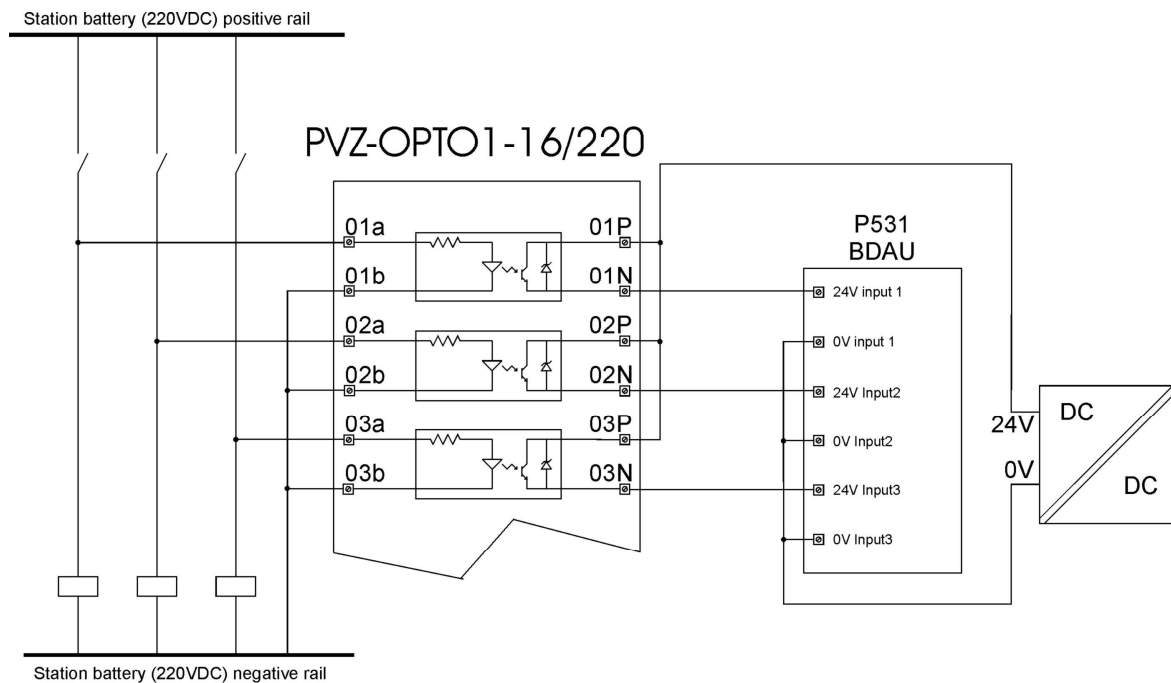
However, it was been widely used to interface DC voltage input signals to different electronic devices where the electronic input impedance is 20kΩ or more, to provide a high isolation barrier and noise immunity. In addition, contacts from the field are monitored more reliably. Typical contacts require a minimum current, and if high impedance electronic input are directly connected, they often stop detecting a closed contact after a while.

Apart from the standard 24V output, the 48V outputs are also offered.

Apart from the standard 220VDC and 110VDC inputs, we also offer 48VDC, 24VDC, 15VDC and 12VDC inputs. Each of the 16 or 8 channels is electrically isolated and independent, and may be mixed with different input voltages, if required.

The Gerotek type testing certificate numbers are CC2284 and CC2285.

Typical Application



Application information

The opto coupler units were designed for easy retrofitting by ensuring that it takes the same rail space per channel as the old dual opto couplers. No wiring changes needs to be made. The unit can easily be taken out of the base and rotated relative to the base, should the rail orientation be incorrect. To optimise noise immunity, two separate units are available for the two commonly used substation voltages, PVZ-OPTO1-16/220 for 220VDC and PVZ-OPTO1-16/110 for 110VDC.

It is recommended that all optos from a problematic bay be replaced at the same time (all 30 channels) to avoid logistical problems when analysing the faults, i.e. if all the optos from one bay is already replaced, you will know that all binary points on the recording can be trusted. If the optos are intermixed within the same bay, the problem will occur where it is thought that the specific optos giving problems were replaced, but when something out of the ordinary happens (B/U protection operated, different linking arrangement, etc.) it is realised that some more needs to be replaced. This is because the noise induced into cabling is a complex function of the specific substation configuration and the events happening at the same time.

The inputs are labelled 01a and 01b for channel 1, up to 16a and 16b for channel 16. Normally a positive voltage would be applied to the a input and a negative voltage to the b input, but the inputs are actually not polarity sensitive.

The outputs are labelled 01P and 01N for channel 1, up to 16P and 16N for channel 16. These outputs **are** polarity sensitive, but are protected against wrong polarity and overvoltage with semiconductor Tranzorb devices operating for voltages above 45V.

The unit contains 16 red LED's indicating operation of a specific channel.

Installation instructions

- Ensure that the unit is rated for the substation DC battery voltage.
Only use the PVZ-OPTO1-16/220 if the substation battery voltage is 220VDC.
Only use the PVZ-OPTO1-16/110 if the substation battery voltage is 110VDC.
- Do not change any wiring or the rail orientation! The opto coupler unit is designed to take the same amount of rail space as the old dual opto couplers. Simply disconnect all the wiring, unclip the old opto couplers, clip in the new opto coupler units and connect up the wiring.
- If the opto coupler unit clips onto the rail with the input side nearest to the output wiring, the input and output sides of the unit can be swapped as follows:
Snap out the end piece of the green base.
Slide the opto coupler unit out of the base.
Turn around the opto coupler and slide it back into the base.
Snap the end piece of the green base back into position.
- Never connect the 220VDC or 110VDC wiring from the protection scheme to the 24VDC output side of the opto coupler unit, this will damage the opto coupler unit and blow a panel fuse.
- For channel 1, the 110VDC or 220VDC inputs are labelled 01a and 01b. These inputs are not polarity sensitive.
- For channel 1, the 24VDC outputs are labelled 01P and 01N. These outputs **are** polarity sensitive.