

**ABSTRAK**  
**ANALISIS SETTING OVER CURRENT RELAY**  
**PADA SMART RING MAIN UNIT UNTUK POMPA SUMP**  
**TAMBANG AIR LAYA UTARA**

( 2025 : 72 Halaman + 14 Daftar Pustaka + 2 Daftar Isi + 18 Daftar Gambar + 8 Daftar Tabel + 10 Daftar Lampiran )

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Over Current Relay (OCR) pada Smart Ring Main Unit Tambang Air Laya Utara dihitung untuk menentukan nilai setting proteksi berdasarkan beban serta data aktual sistem. Perhitungan mencakup arus nominal, arus setting, arus gangguan, impedansi transformator, dan impedansi kabel. Waktu tunda operasi relay ditentukan menggunakan kurva inverse standar IEC, dengan variasi arus gangguan 1x, 4x, dan 20x arus setting. Hasil menunjukkan arus setting pada outgoing 1 sebesar 49,80 A (0,24 p.u) dan outgoing 2 sebesar 74,71 A (0,37 p.u). Waktu tunda pada kelipatan 1x arus setting tidak terhingga, sementara pada 4x dan 20x masing-masing sebesar 1,49 s dan 0,68 s. Dibandingkan dengan data eksisting di lapangan, terdapat selisih arus setting sebesar 72,69% pada outgoing 1 dan 15,11% pada outgoing 2. Perbedaan ini terjadi karena setting eksisting tidak memperhitungkan variasi beban. Waktu tunda operasi pada kelipatan 4x dan 20x menunjukkan kesesuaian, sedangkan pada kelipatan 1x berbeda signifikan (212,36 s). Hasil ini menunjukkan bahwa perhitungan dengan menggunakan variasi beban dan data sistem aktual dapat meningkatkan akurasi pengaturan proteksi

**Kata kunci :** Over Current Relay, Arus Setting, Waktu Tunda Operasi, Sistem Proteksi.

**ABSTRACT**  
**ANALYSIS OF OVER CURRENT RELAY SETTINGS**  
**ON THE SMART RING MAIN UNIT FOR THE SUMP PUMP**  
**AT TAMBANG AIR LAYA UTARA**

( 2025 : 72 Page + 14 Reference + 2 List of Content + 18 List of Picture + 8 List of Table + 10 Enclosure )

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The Over Current Relay (OCR) at the Smart Ring Main Unit of North Laya Water Mine is calculated to determine the protection setting value based on the load and actual system data. The calculation includes nominal current, setting current, fault current, transformer impedance, and cable impedance. The relay operation delay time is determined using the IEC standard inverse curve, with a variation of 1x, 4x, and 20x fault current of the setting current. The results show the setting current at outgoing 1 is 49.80 A (0.24 A per unit) and outgoing 2 is 74.71 A (0.37 A per unit). The delay time at multiples of 1x setting current is infinite, while at 4x and 20x it is 1.49 s and 0.68 s, respectively. Compared to the existing data in the field, there is a difference in setting current of 72.69% at outgoing 1 and 15.11% at outgoing 2. This difference occurs because the existing settings do not take into account load variations. The operating delay time at multiples of 4x and 20x shows conformity, while at multiples of 1x it is significantly different (212.36 s). These results show that calculations using load variations and actual system data can improve the accuracy of protection settings.

**Keywords:** Over Current Relay, Current Setting, Operation Delay Time  
Protection System