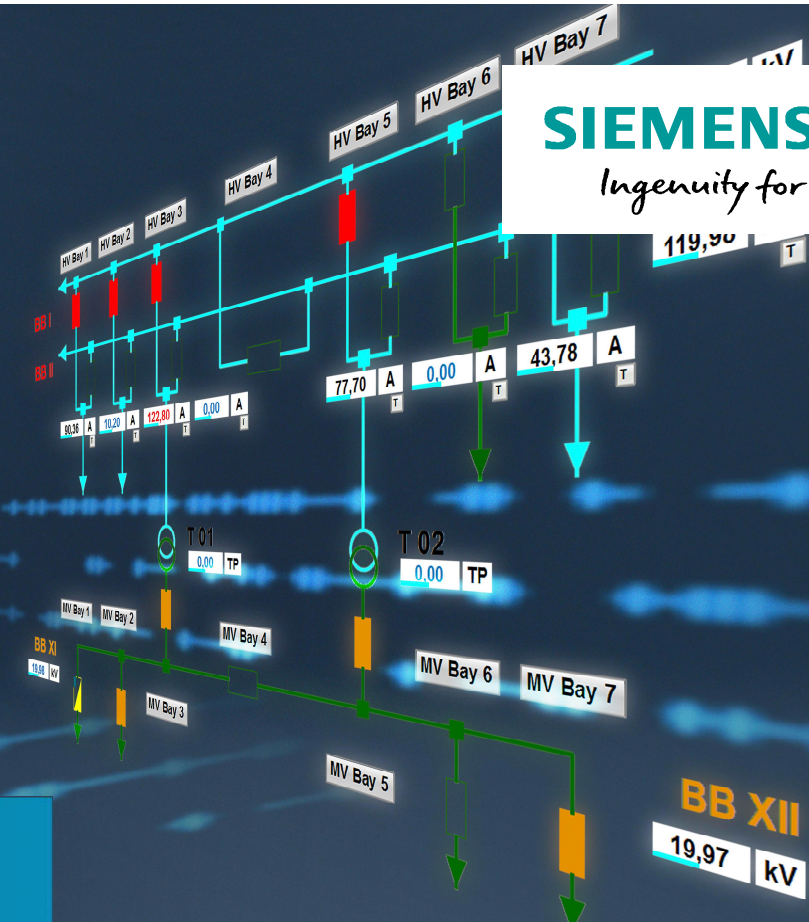


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# ŠEME POSTROJENJA

Tipične šeme

Unrestricted © Siemens 2020

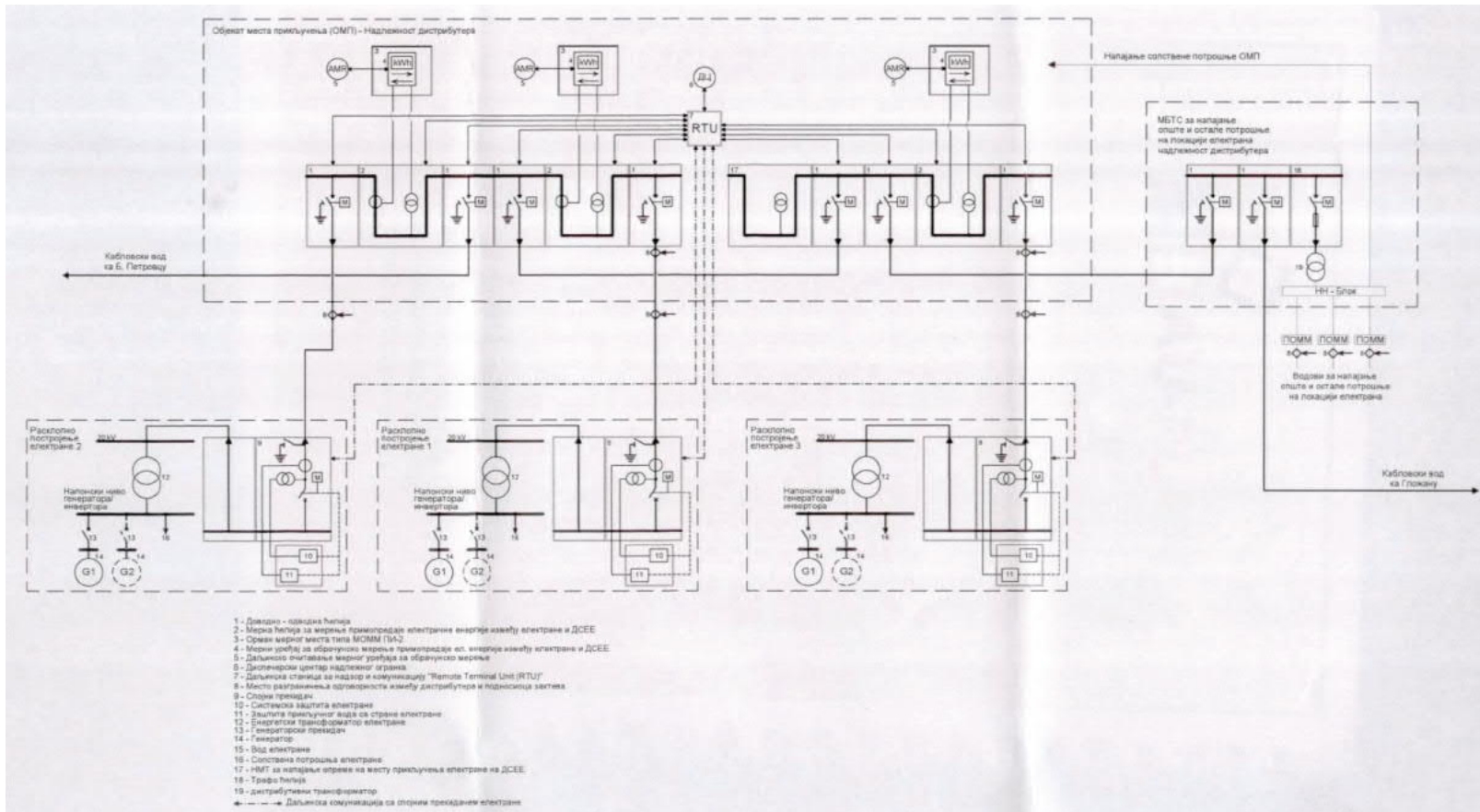
[siemens.com/energy-automation](https://www.siemens.com/energy-automation)

## Tipovi postrojenja

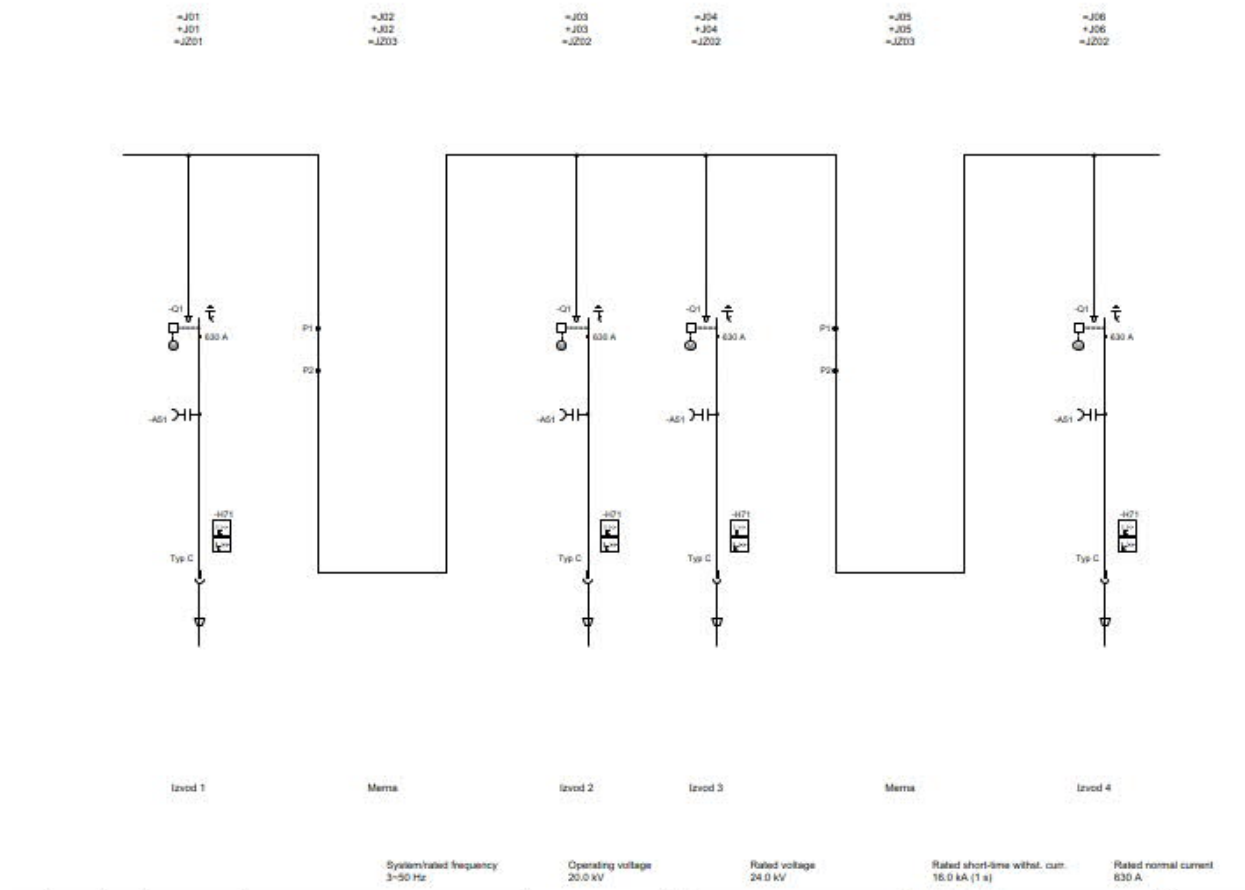


- Srednjenaponska postrojenja sekundarne distribucije
- Srednjenaponska postrojenja primerne distribucije
- Visokonaponska postrojenja H šema
- Visokonaponska prenosna postrojenja

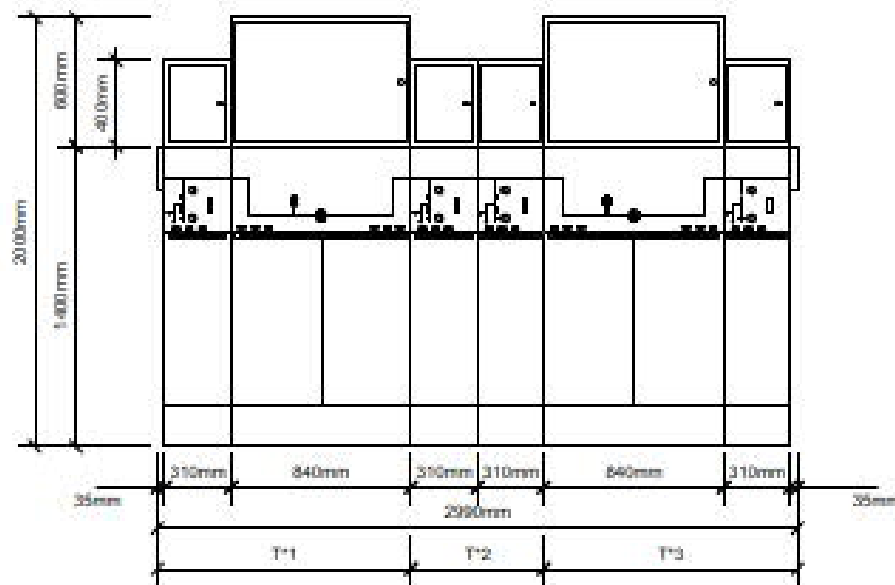
# Srednjenaponska postrojenja sekundarne distribucije



# Srednjenaponska postrojenja sekundarne distribucije



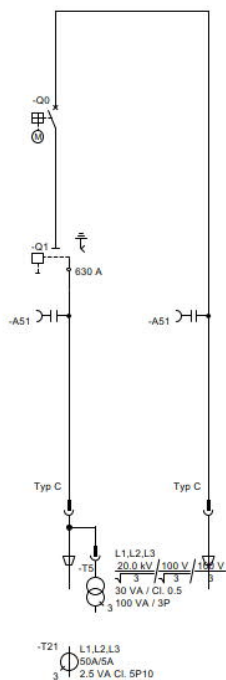
# Srednjenaponska postrojenja sekundarne distribucije



# Srednjenaponska postrojenja sekundarne distribucije

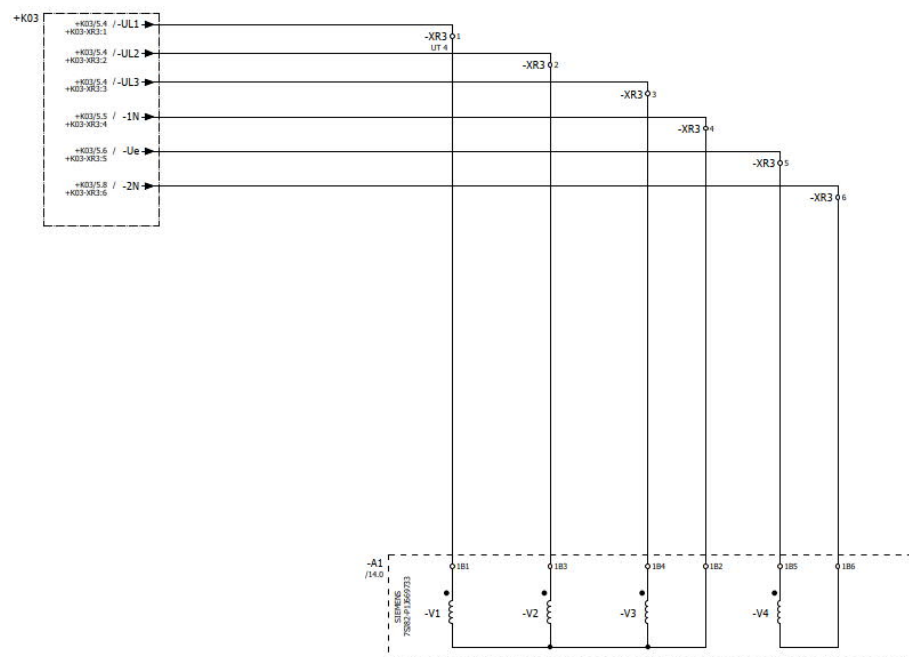
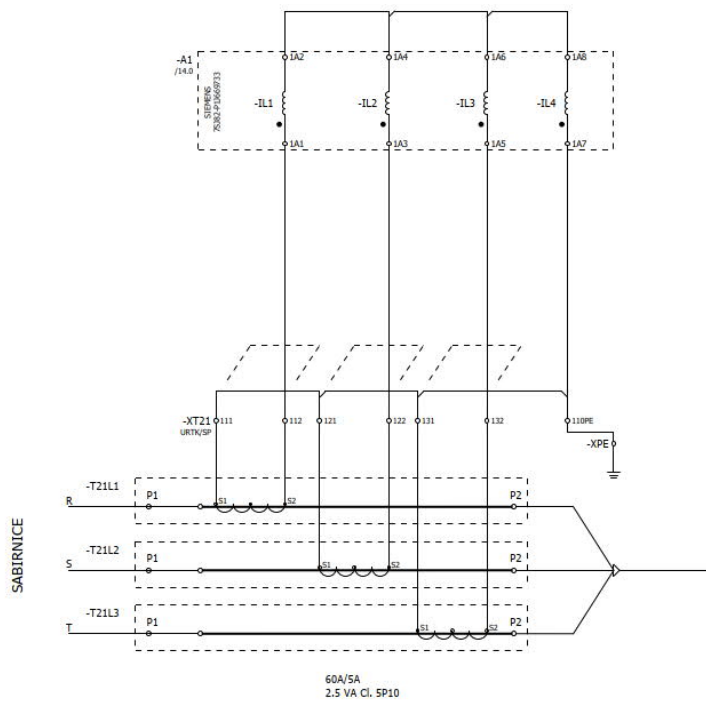


7SJ8081-5EB90-1FB0+LOS

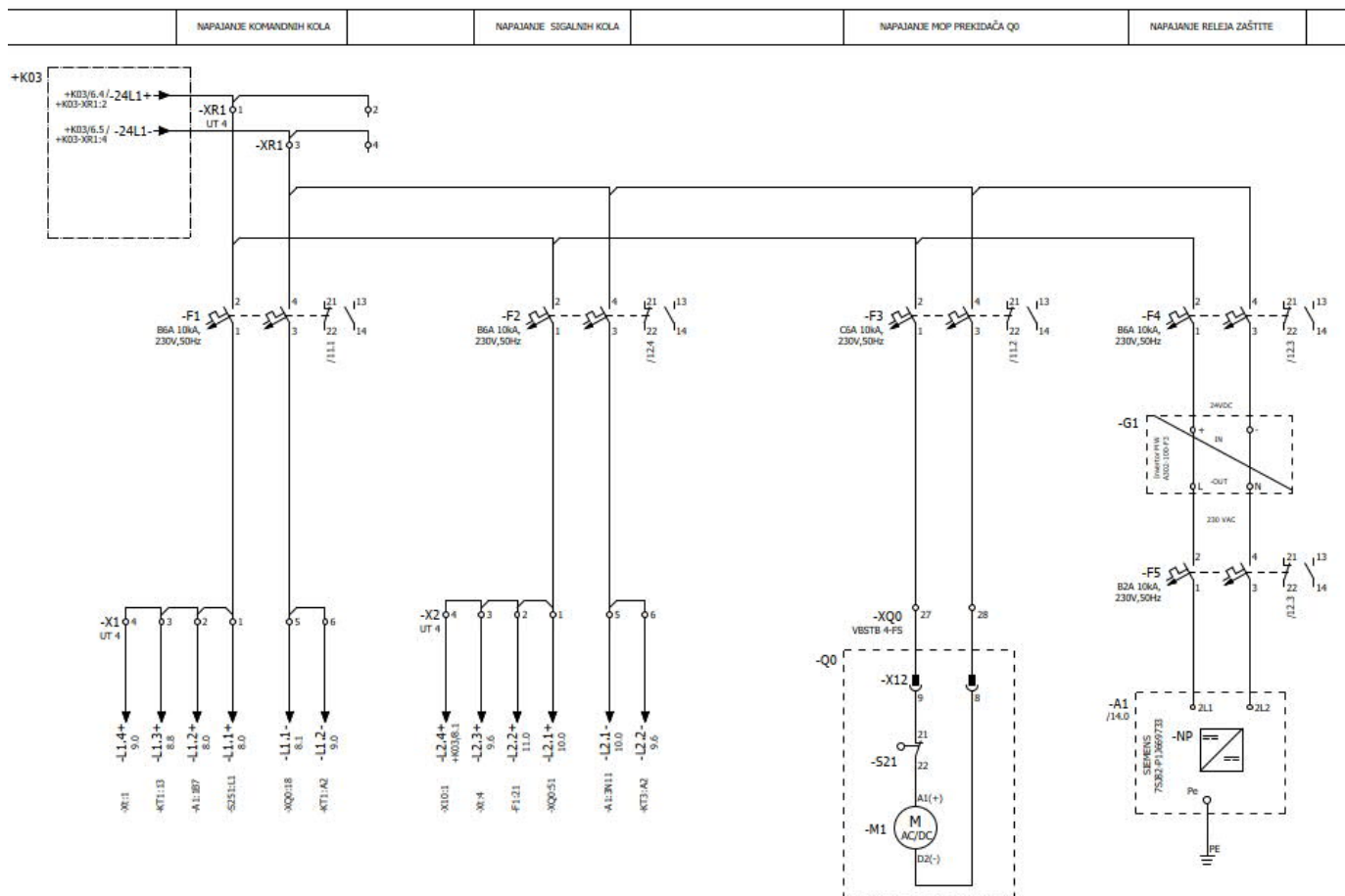


| Overcurrent Protection SIPROTEC 7SJ80 V4.74   |  | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 |
|---|--|--|
|   |  | 7SJ80 □□-□□□□□□-□□□□                   |
| <b>Basic version</b>  |  | F A <sup>3)</sup>                      |
| 50/51   | Time-overcurrent protection, phase $I>$ , $I>>$ , $I>>>$ , $I_D$   |  |
| 50N/51N   | Time overcurrent protection, ground $I_{E>}$ , $I_{E>>}$ , $I_{E>>>}$ , $I_{EP}$   |  |
| 50N(s)/51N(s) <sup>1)</sup>   | Sensitive ground fault protection $I_{EE>}$ , $I_{EE>>}$ , $I_{EEP}$   |  |
| 87N <sup>2)</sup>   | Intermittent ground fault protection   |  |
| 49  | High impedance REF   |  |
| 74TC  | Overload protection  |  |
| 50BF  | Trip circuit supervision   |  |
| 46  | Circuit-breaker failure protection   |  |
| 37  | Negative-sequence system overcurrent protection  |  |
| 86  | Undercurrent monitoring  |  |
|   | Lockout  |  |
|   | Parameter changeover   |  |
|   | Monitoring functions   |  |
|   | Control of circuit breaker   |  |
|   | Flexible protection functions (current parameters)   |  |
|   | Inrush restraint   |  |
| <b>Basic functionality + Directional sensitive ground fault, voltage and frequency protection</b> |  | F B <sup>4)</sup>                      |
| 51V   | Voltage dependent inverse-time overcurrent protection  |  |
| 67N   | Directional time-overcurrent protection, ground, $I_{E>}$ , $I_{E>>}$ , $I_{E>>>}$ , $I_{EP}$  |  |
| 67Ns <sup>1)</sup>  | Directional sensitive ground fault protection, $I_{EE>}$ , $I_{EE>>}$ , $I_{EEP}$  |  |
| 64/59N  | Displacement voltage   |  |
| 27/59   | Under/Overvoltage  |  |
| 81U/O   | Under/Overfrequency, $f<$ , $f>$   |  |
| 47  | Phase rotation   |  |
| 27R/32/55/59R/81R   | Flexible protection functions (current and voltage parameters): Protective function for voltage, power, power factor, rate-of-frequency change, rate-of-voltage change |  |

# Srednjenaponska postrojenja sekundarne distribucije

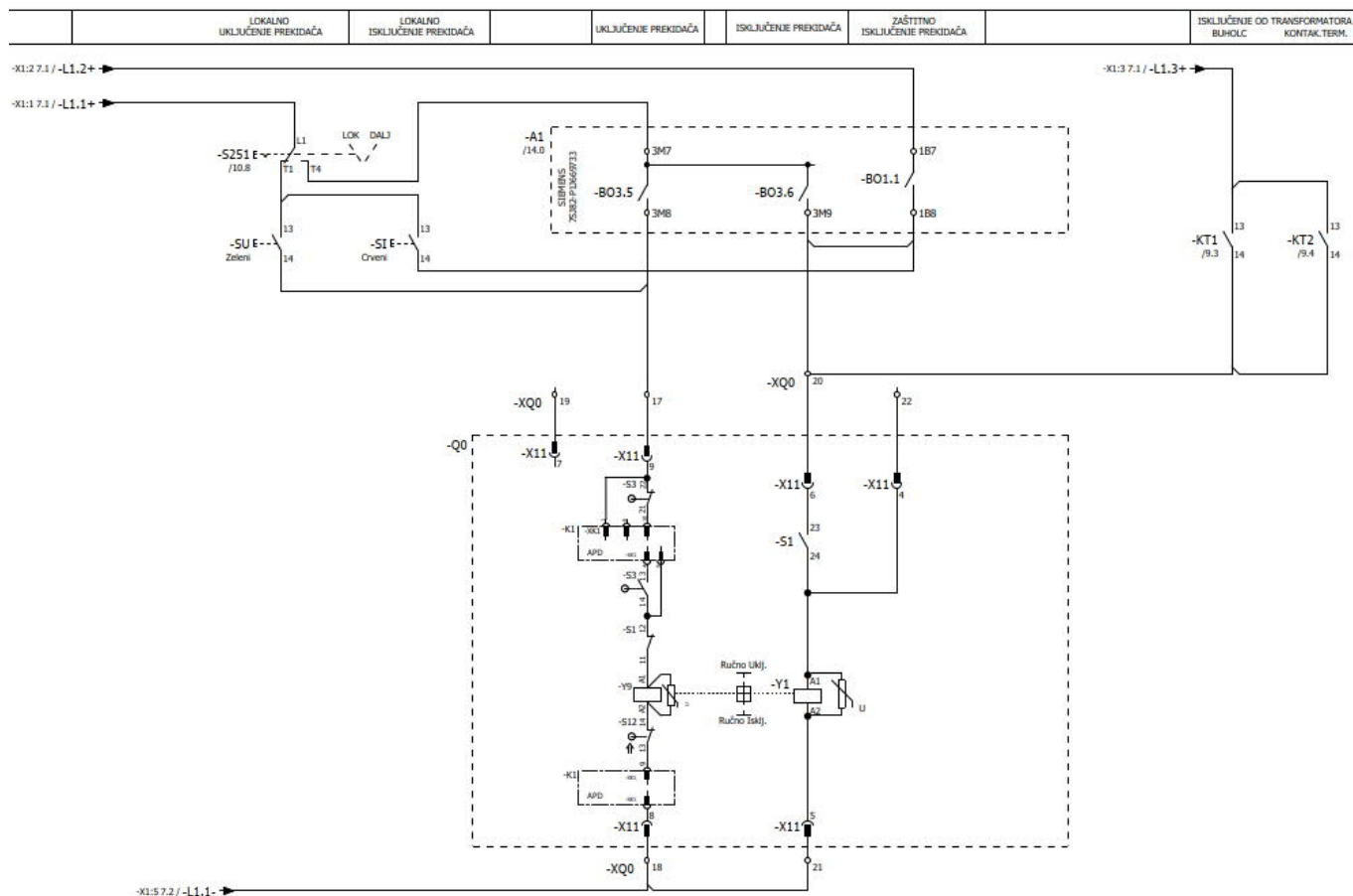


# Srednjenaponska postrojenja sekundarne distribucije



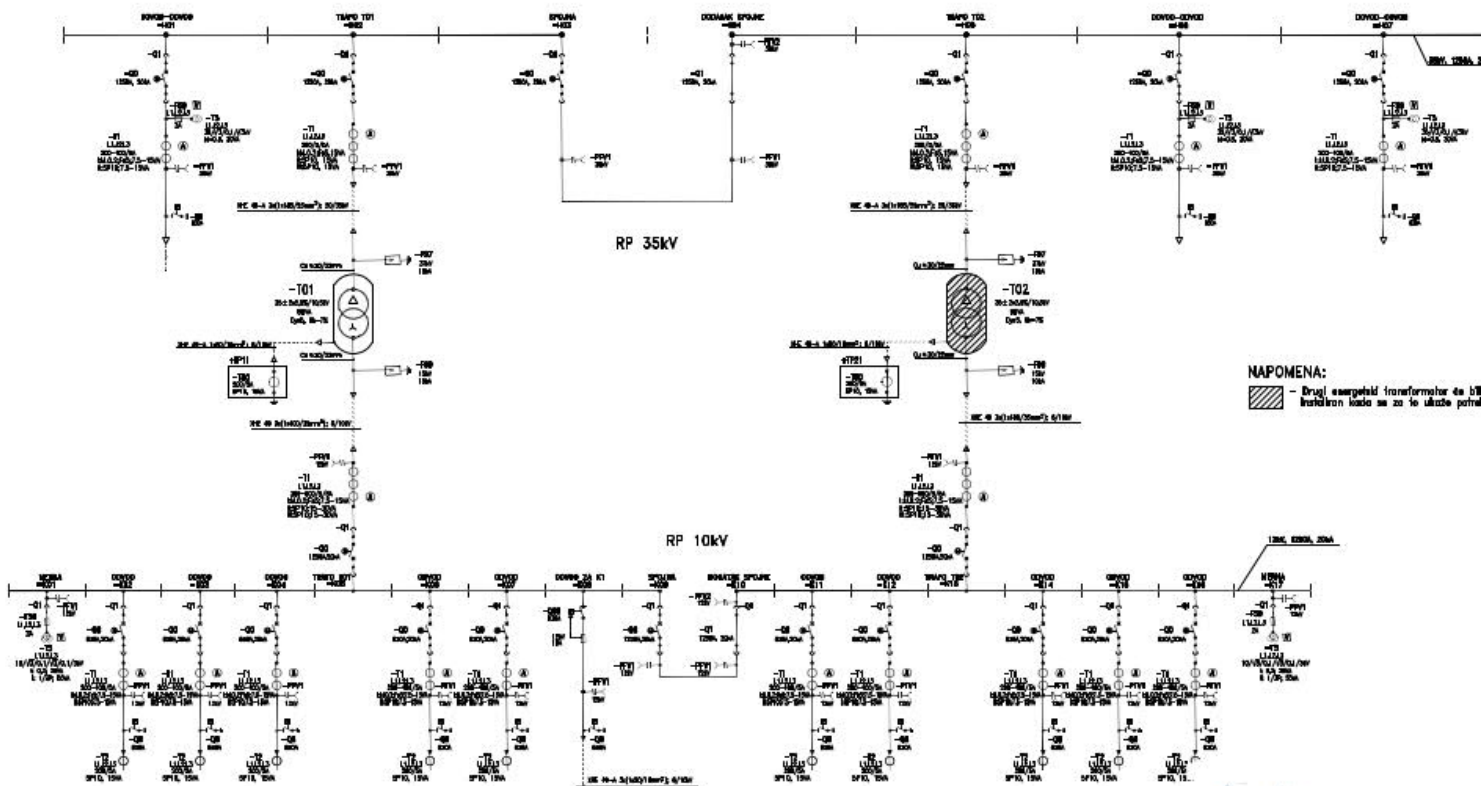


# Srednjenaponska postrojenja sekundarne distribucije



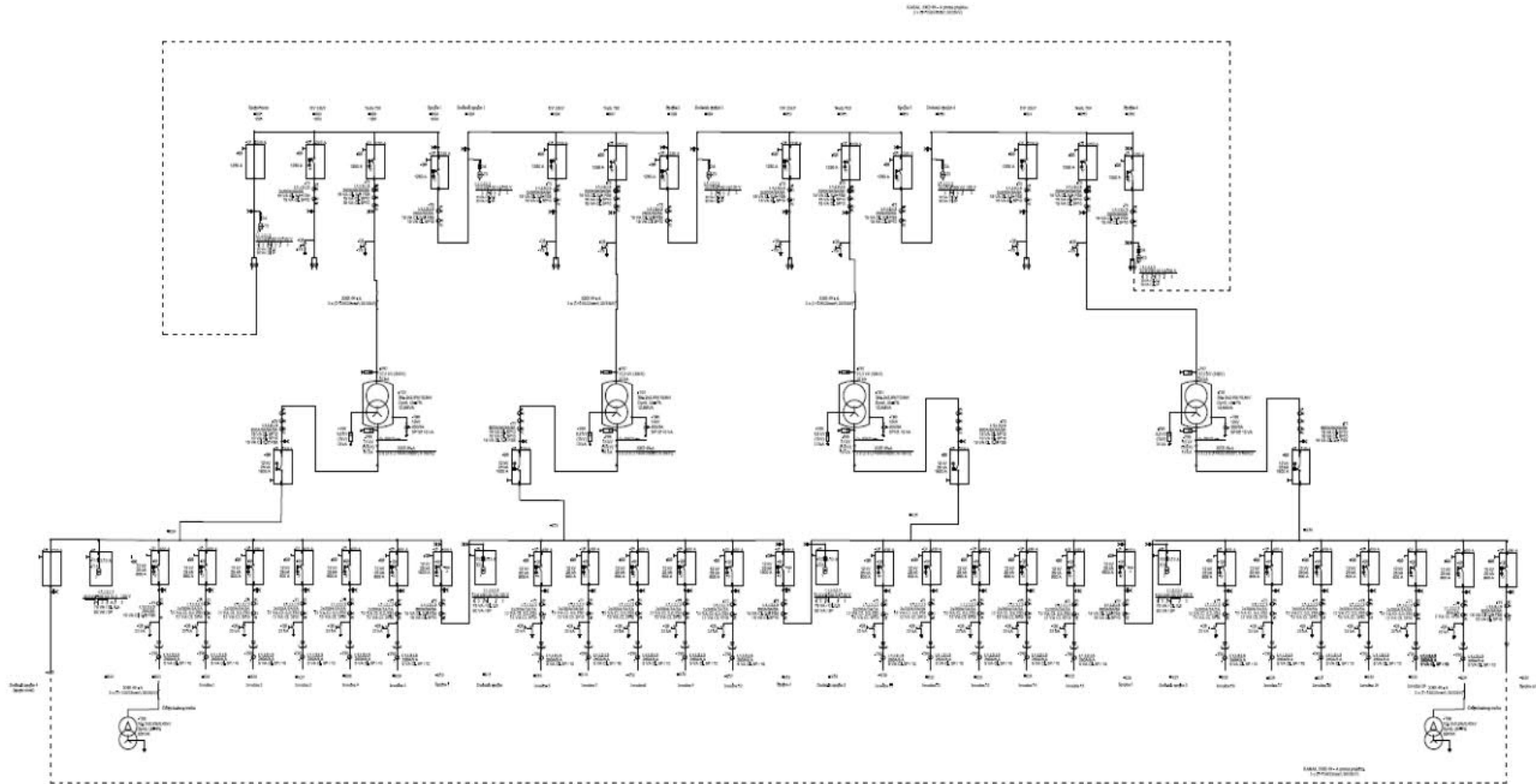
# Srednjenaponska postrojenja primarne distribucije TS 35/10kV – 2ET

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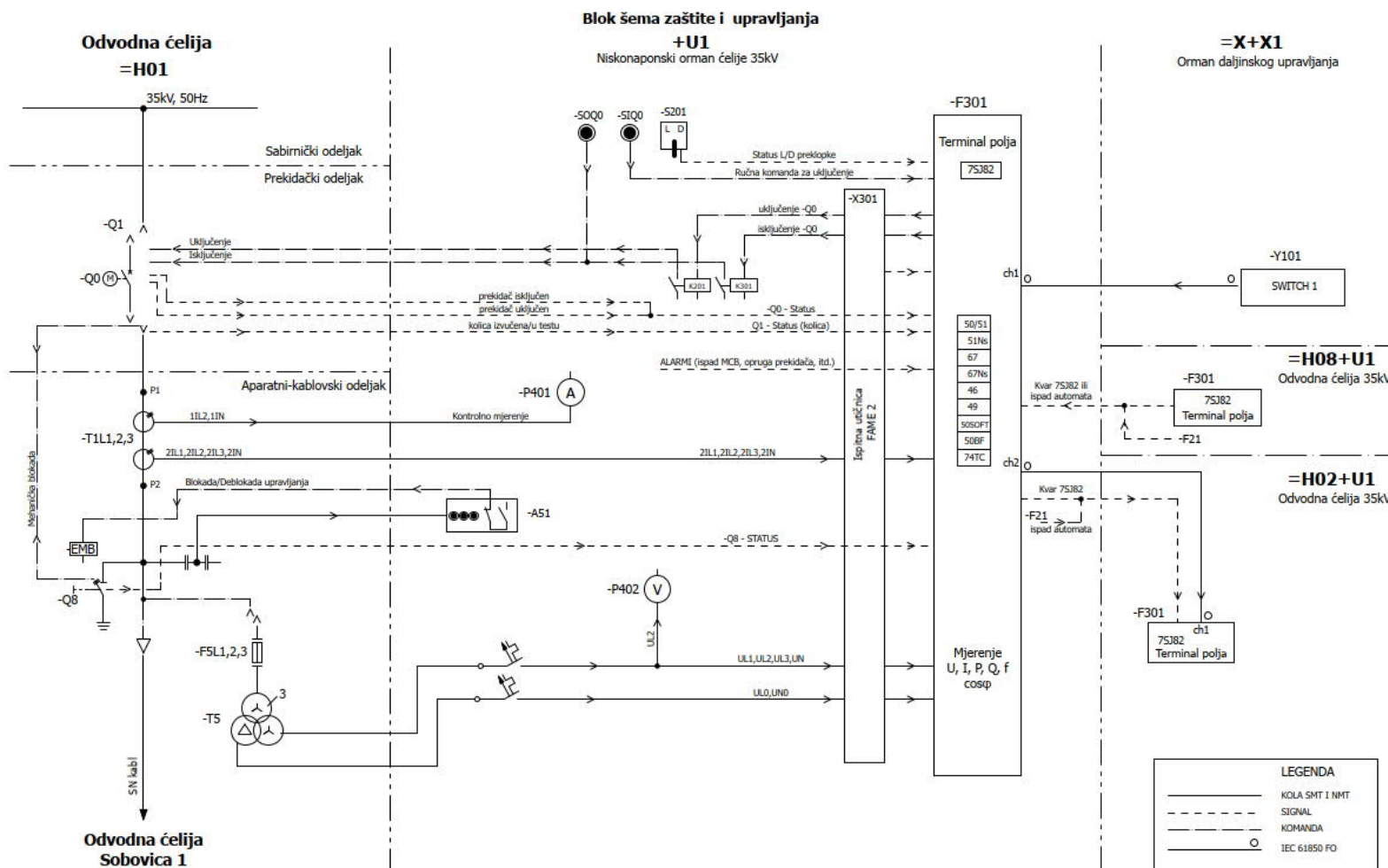


# Srednjenaponska postrojenja primarne distribucije TS 35/10 kV – 4ET

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# Srednjenaponska postrojenja primarne distribucije



# Srednjenaponska postrojenja primarne distribucije

| ZAŠTITNI UREĐAJ | MATRICA ISKLJUČENJA           |   |                               |            |    | TABELA SIGNALNIH UREĐAJA |                    |                    |
|-----------------|-------------------------------|---|-------------------------------|------------|----|--------------------------|--------------------|--------------------|
|                 | ZAŠTITNA FUNKCIJA             | OPIS FUNKCIJE                                 | DELOVANJE ZAŠTITE-ISKLJUČENJA |            |    | SIGNALIZACIJA            |                    | KOMENTAR           |
|                 |                               |   | Prekidač 35kV - Isključenje   | START ZOPa | ZS | Signalizacija na 7S1     | Lok. Signalizacija |                    |
| -F301<br>7S182  | 50                            | Kratkospojna zaštita (I>>)                    | X                             | X *        |    | X                        |                    |                    |
|                 | 51                            | Prekostrujna zaštita (I>)                     | X                             | X *        |    | X                        |                    |                    |
|                 | 50Ns/51Ns                     | Zemljospojna zaštita (Io>)                    | X                             | X *        |    | X                        |                    |                    |
|                 | 67                            | Usmerena prekostrujna zaštita I>, (VI)        | X                             | X *        | X  | X                        |                    | BLOKADA I>> **     |
|                 | 67Ns                          | Usmerena zemljospojna zaštita a) 3I0>, b) V0> | X                             | X *        |    | X                        |                    |                    |
|                 | 46                            | Zaštita od nesimetričnog opterećenja          |                               |            |    | X                        |                    |                    |
|                 | 50SOFT                        | Zaštita od uključanja na kratak spoj          |                               |            |    | X                        |                    | Blokada uključanja |
|                 | 50BF                          | Zaštita od otkaza prekidača 35kV              |                               |            |    | X                        |                    |                    |
|                 | 74TC                          | Kontrola isključnih krugova                   |                               |            |    | X                        |                    |                    |
|                 | Neregularno stanje releja 7S1 |   |                               |            |    | Live status contact      |                    |                    |
| -K301           |                               | Izvršni rele                                  | X                             | X          |    |                          |                    |                    |

## Napomene:

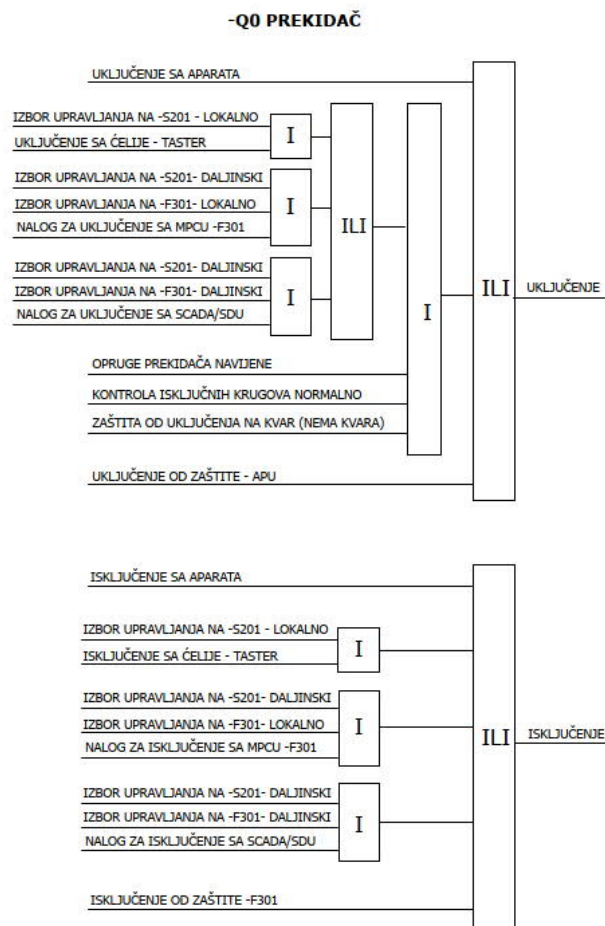
\* Start ZOP-a dovodno/odvodnog polja 35kV =H01, deluje na isključenje prekidača 35kV poljima: =H02, H03, H04

\*\* Delovanje usmerene zaštite (67) u smeru od sabirnica u polju =H01 blokira delovanje kratkospojnih zaštita u poljima =H02 i H03, kao i u poljima =H06, H07 i H08 u slučaju da je zatvoren sekcioni prekidač u polju =H04

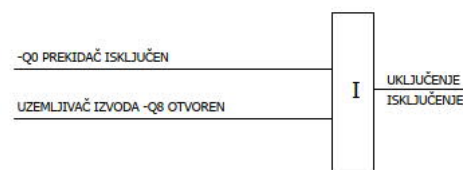
Slanje signala ZOP-a i ZS-a ka ostalim relejima biće realizovano GOOSE protokolom

# Srednjenaponska postrojenja primarne distribucije

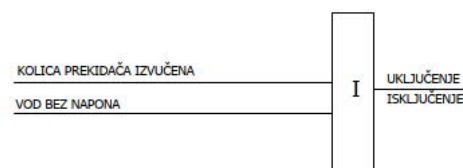
## Logičke šeme dovodno/odvodne ćelije



## -Q1 KOLICA PREKIDAČA

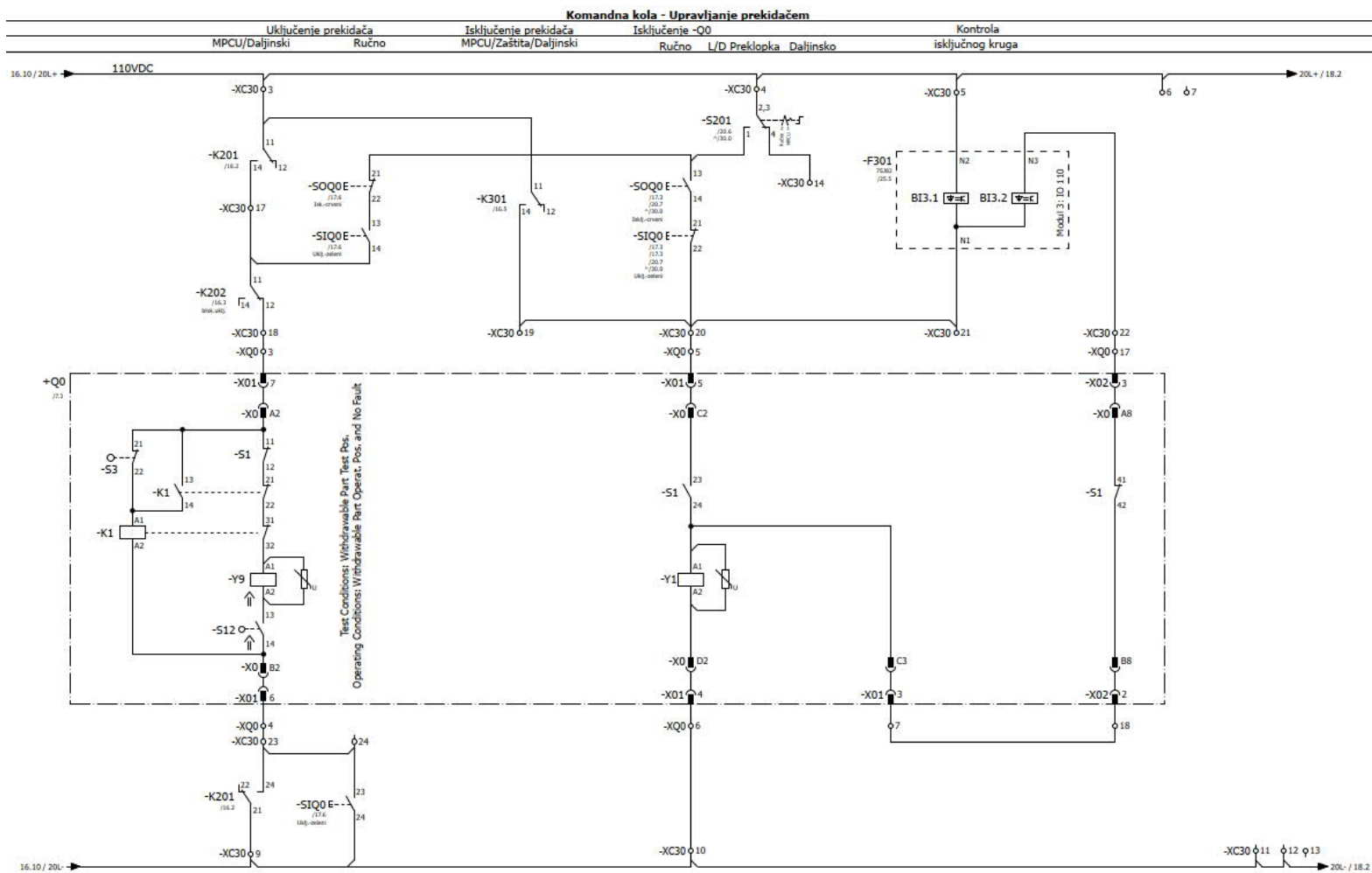


## -Q8 - UZEMLJIVAČ IZVODA 35kV

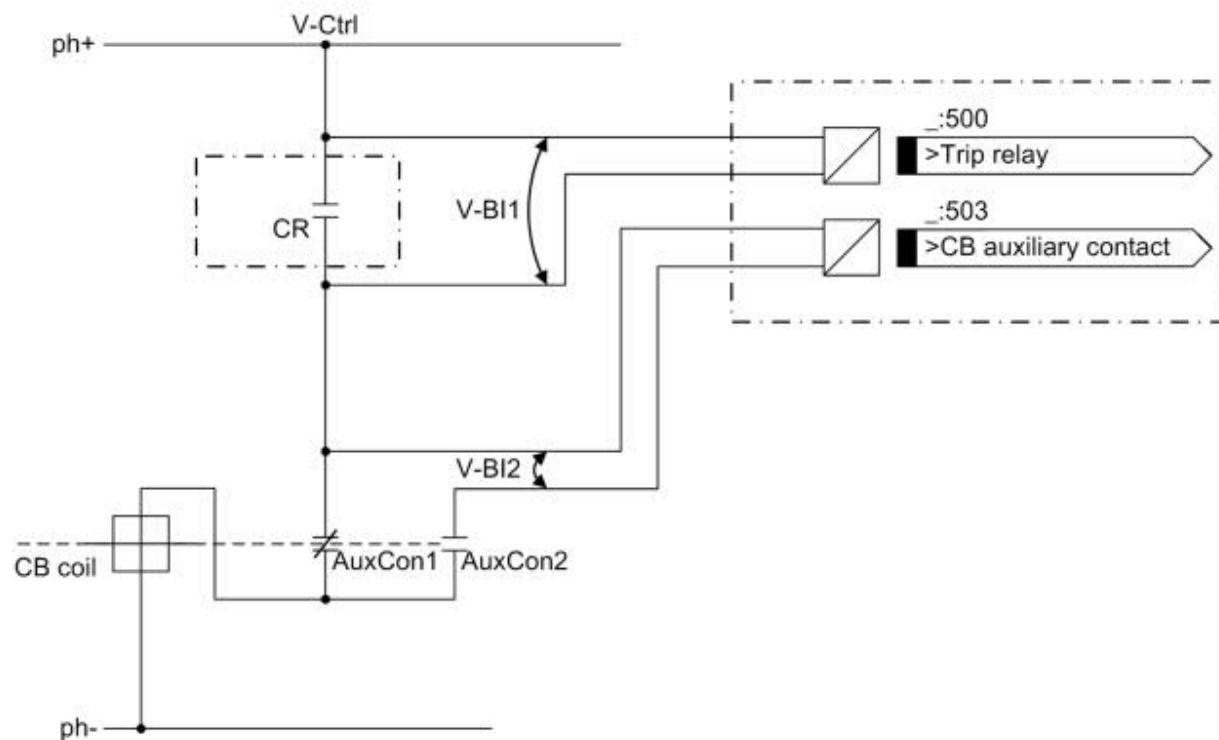


**NAPOMENA:**  
Kada se uzemlji (preko uzemljivača i prekidača), obezbediti ćeliju:  
Isključiti MCB koji napaja motor prekidača  
i zaključati NV omaric

# Srednjenaponska postrojenja primarne distribucije



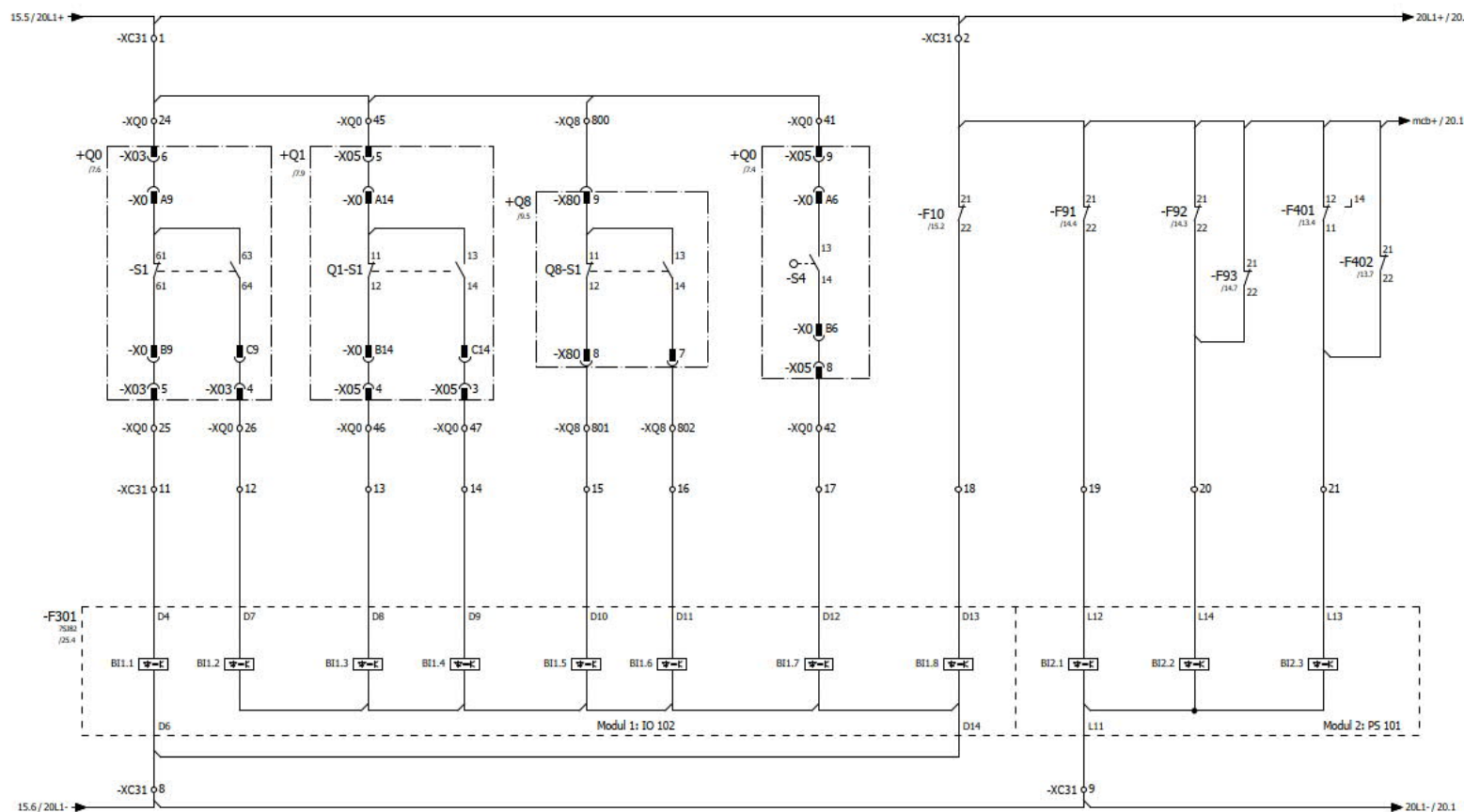
# Srednjenaponska postrojenja primarne distribucije





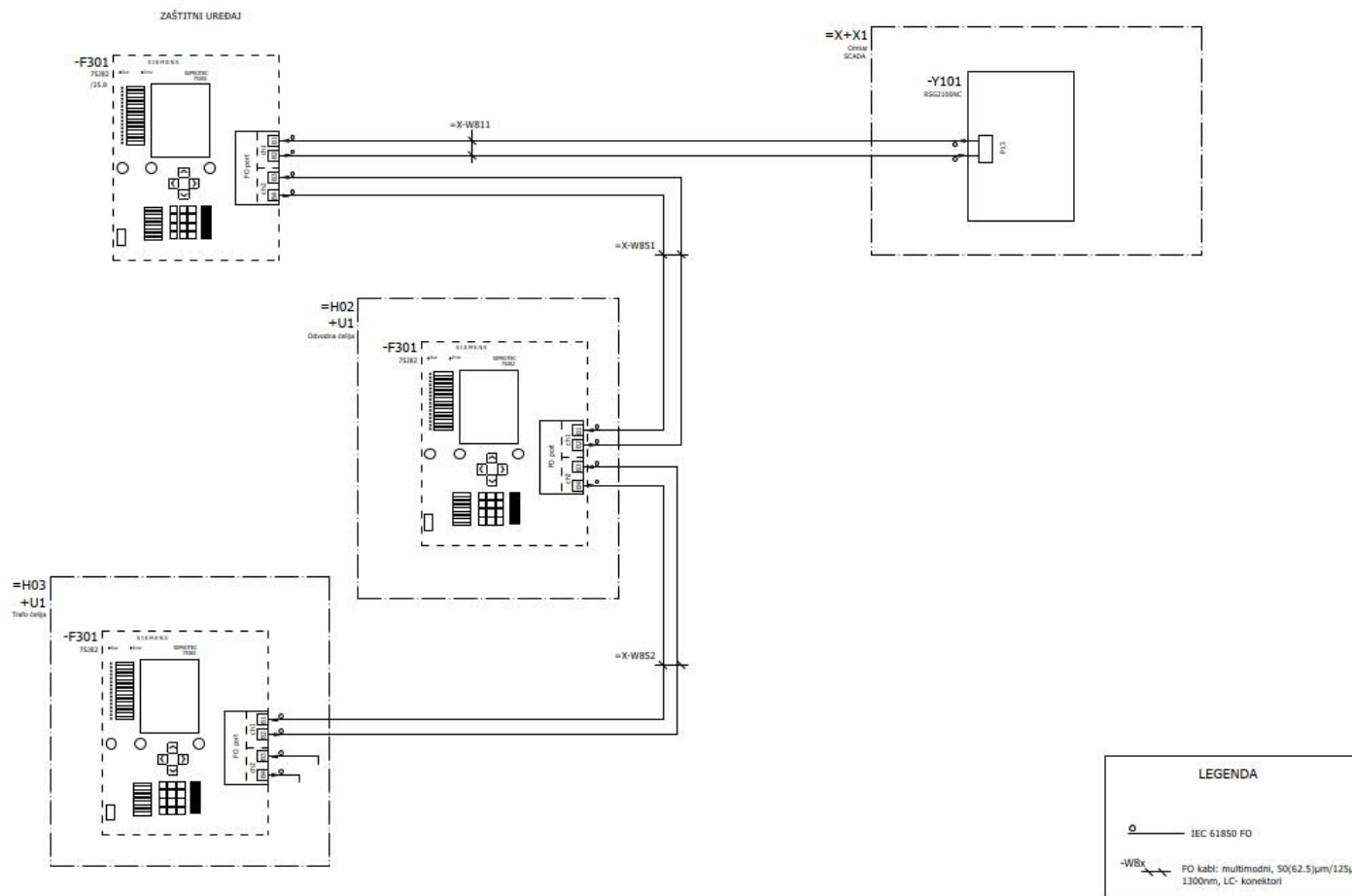
# Srednjenaponska postrojenja primarne distribucije

| Binarni ulazi zaštitnog uređaja |          |                          |          |                   |          |                  |                |                      |                                     |                |
|---------------------------------|----------|--------------------------|----------|-------------------|----------|------------------|----------------|----------------------|-------------------------------------|----------------|
| Status prekidača                |          | Položaj kolica prekidača |          | Zemljospojnik -Q8 |          | Opruga prekidača | Ispad automata | Ispad automata       | Ispad automata                      | Ispad automata |
| Isključen                       | Uključen | Ispitni                  | Pogonski | Isključen         | Uključen | navijena         | MOP prekidača  | za napajanje grejača | Osvjetljenje i utičnica u NN ormanu | Naponskih kola |

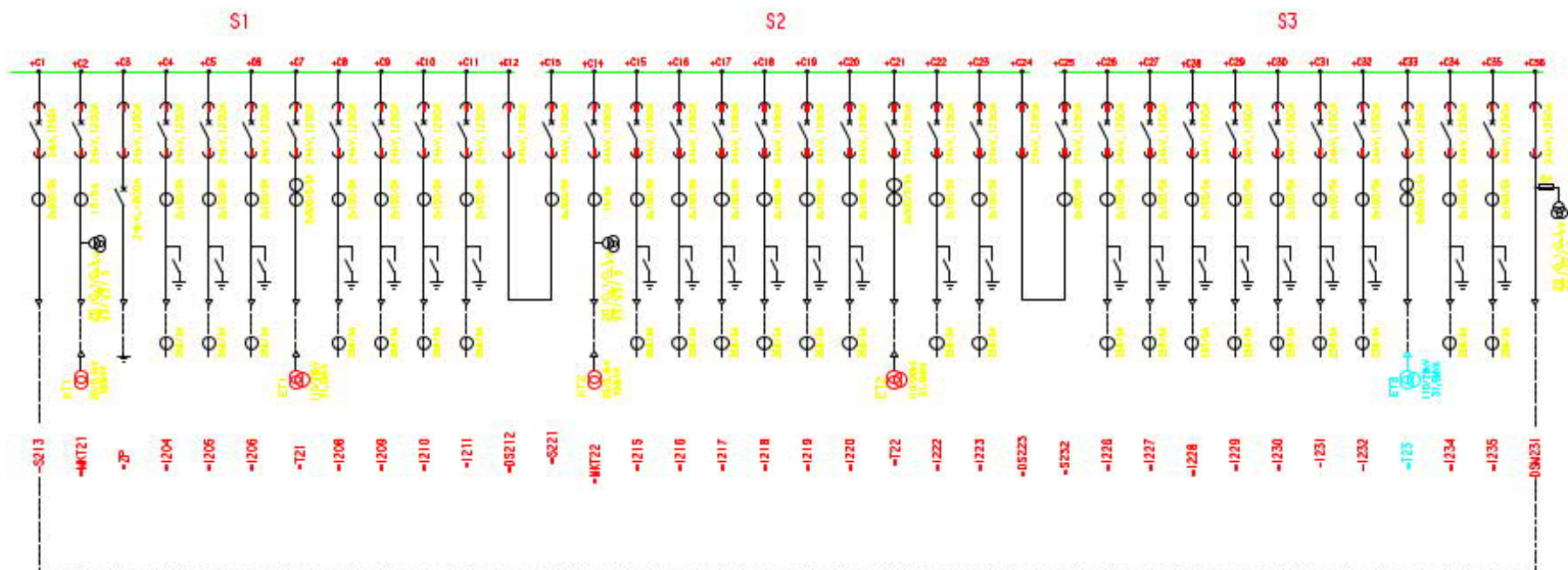


# Srednjenaponska postrojenja primarne distribucije

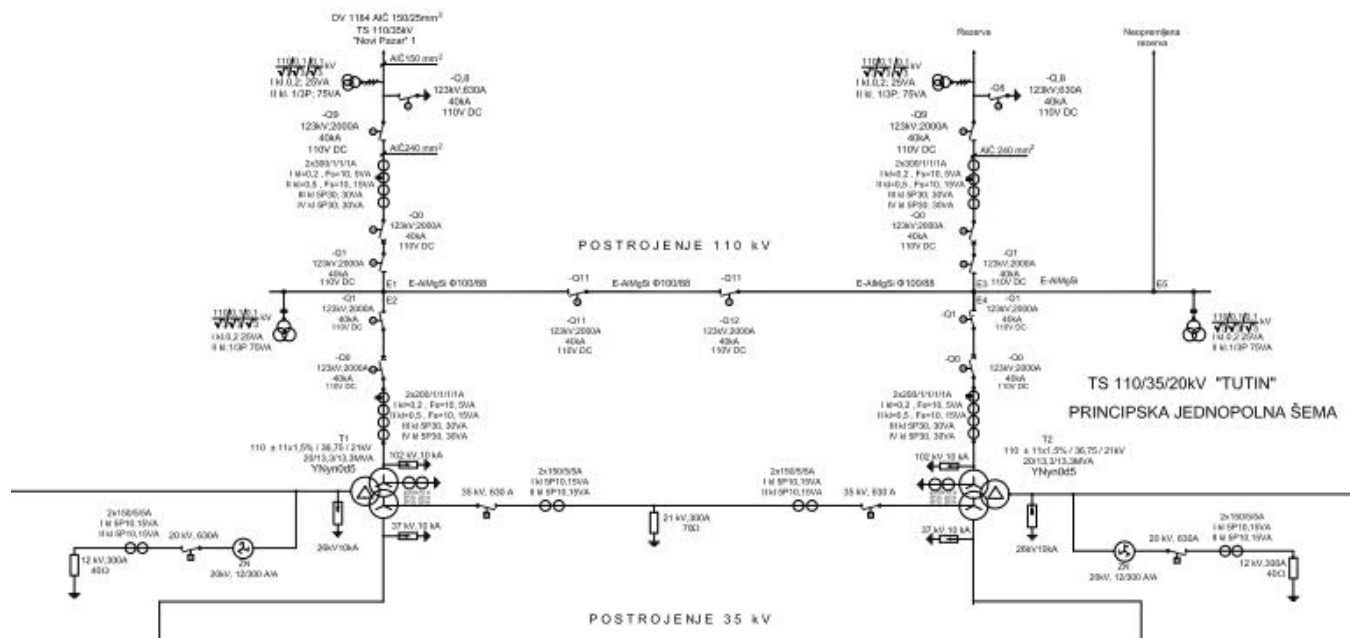
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# Srednjenaponska postrojenja primarne distribucije TS 110/20kV – 3ET



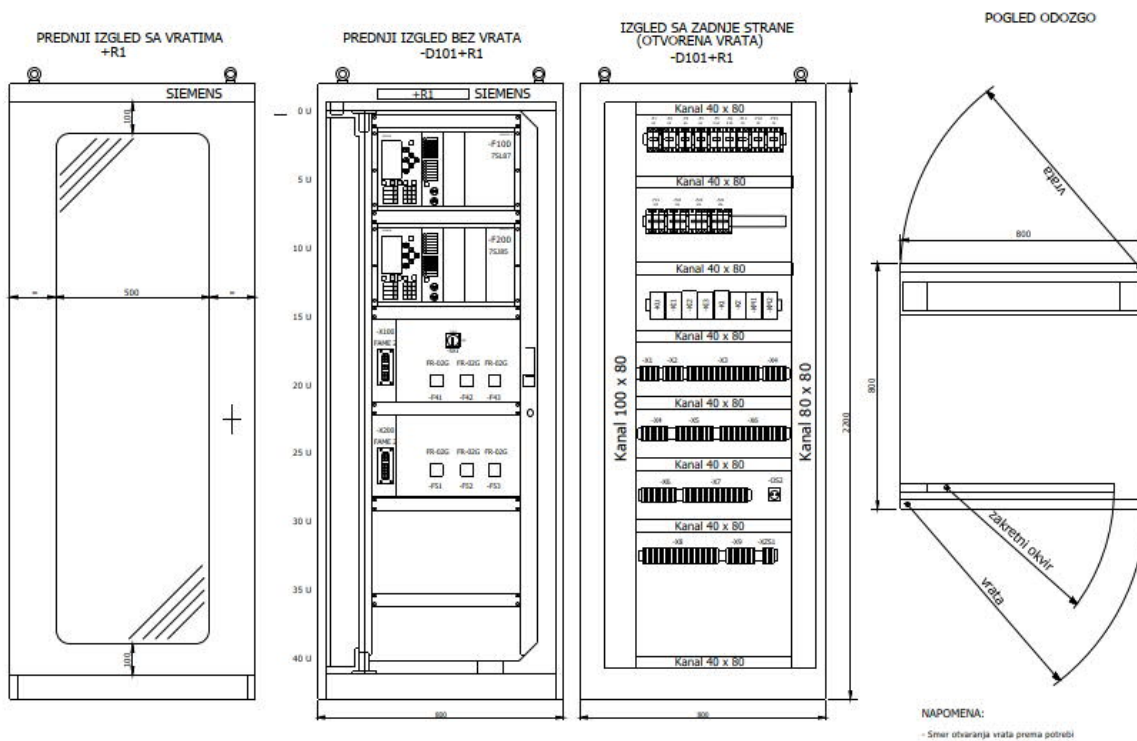
# Visokonaponska postrojenja



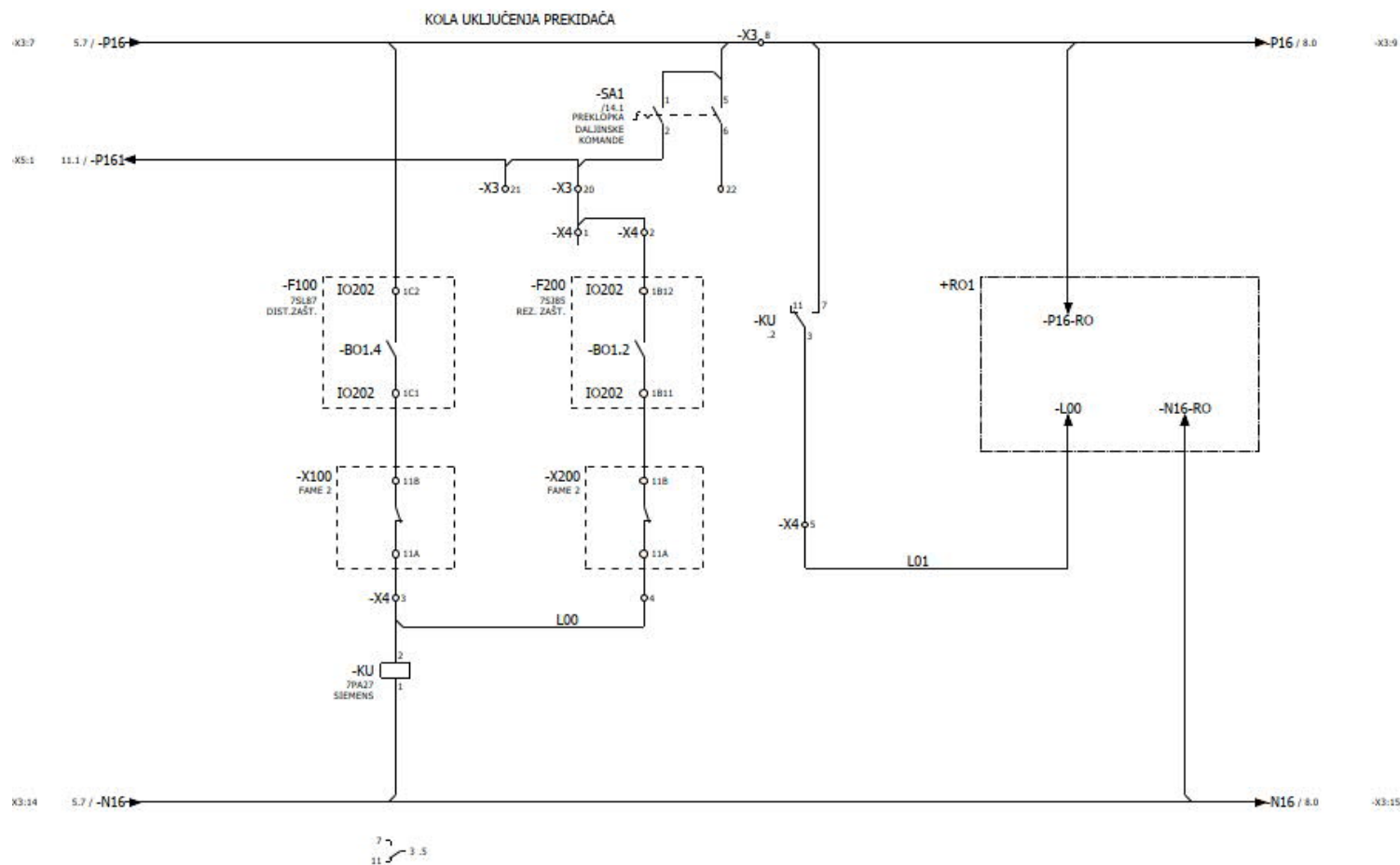
# Visokonaponska postrojenja



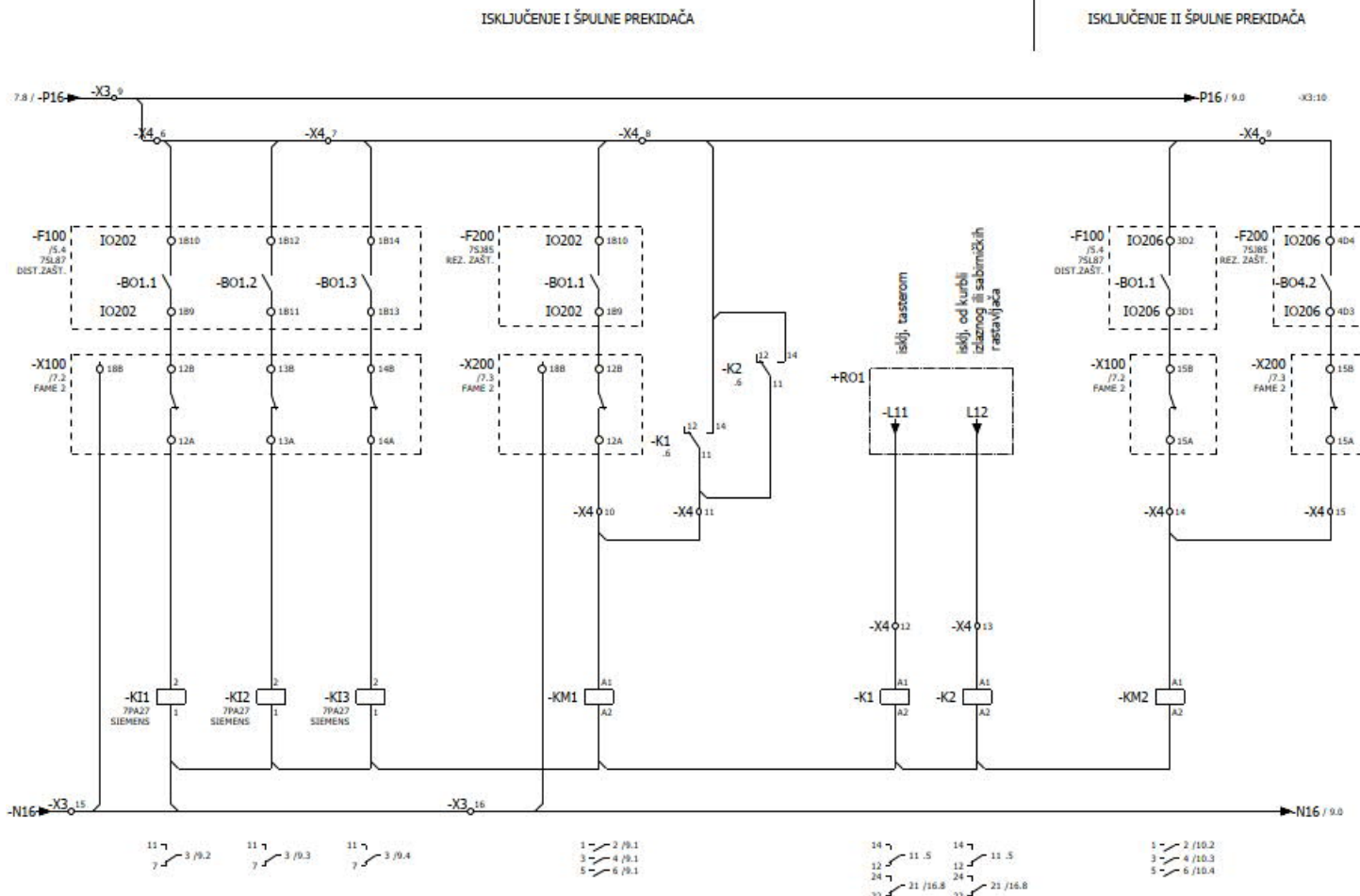
## ORMAN ZAŠTITE DV POLJA 110kV =D101+R1



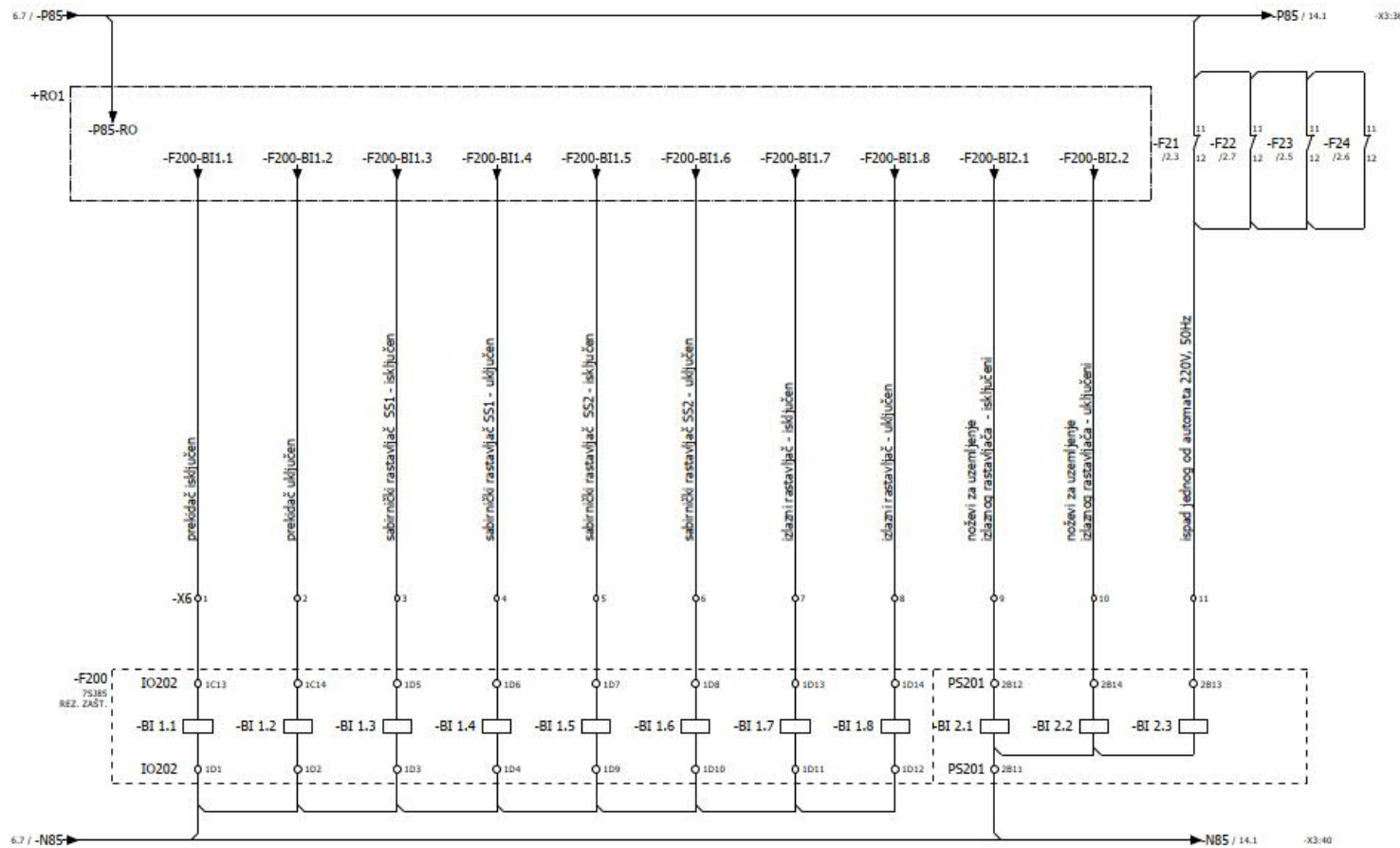
# Visokonaponska postrojenja



# Visokonaponska postrojenja

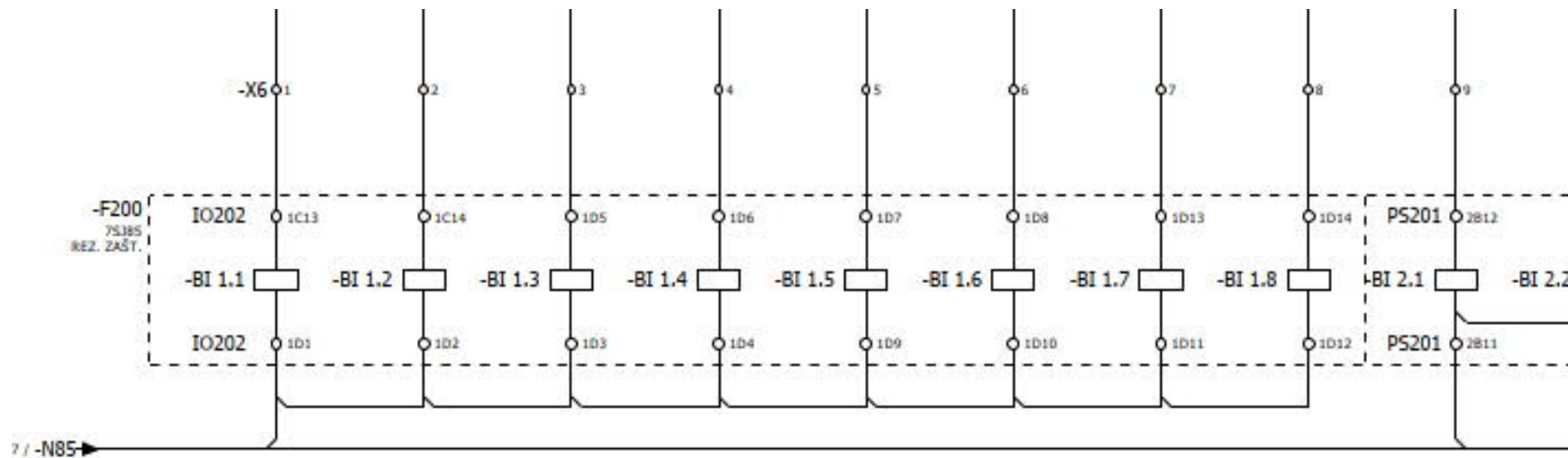


# Visokonaponska postrojenja

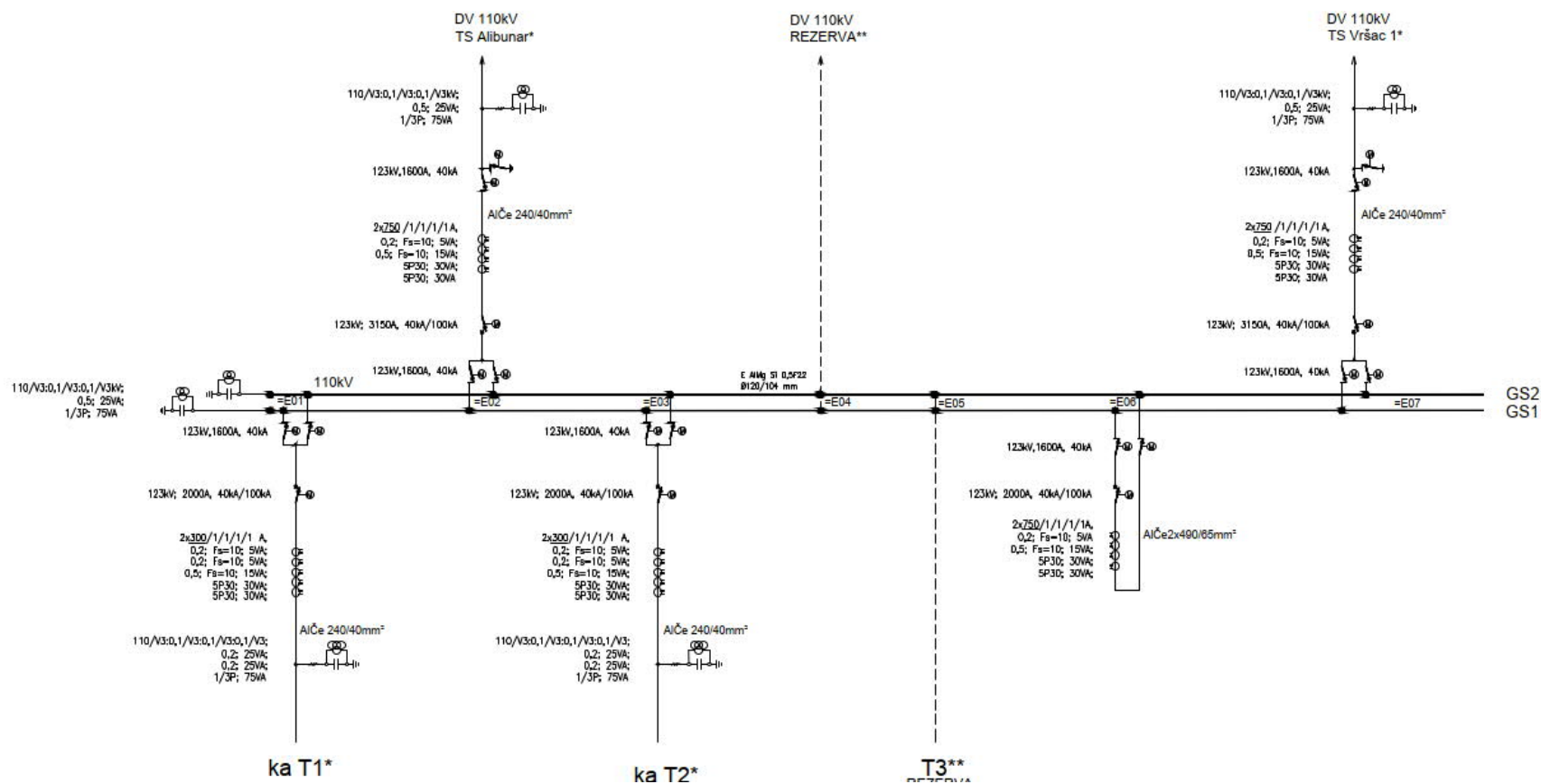




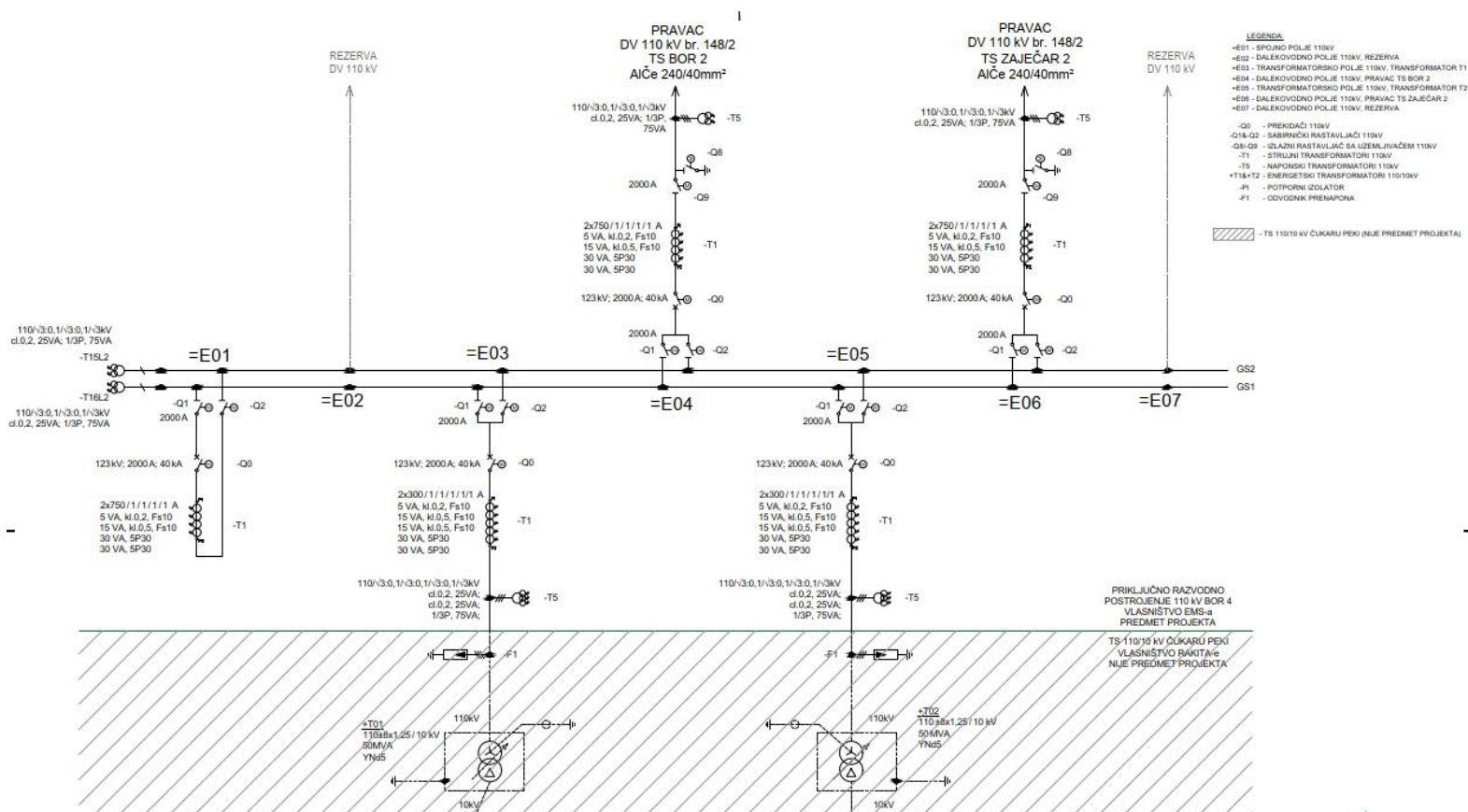
# Visokonaponska postrojenja



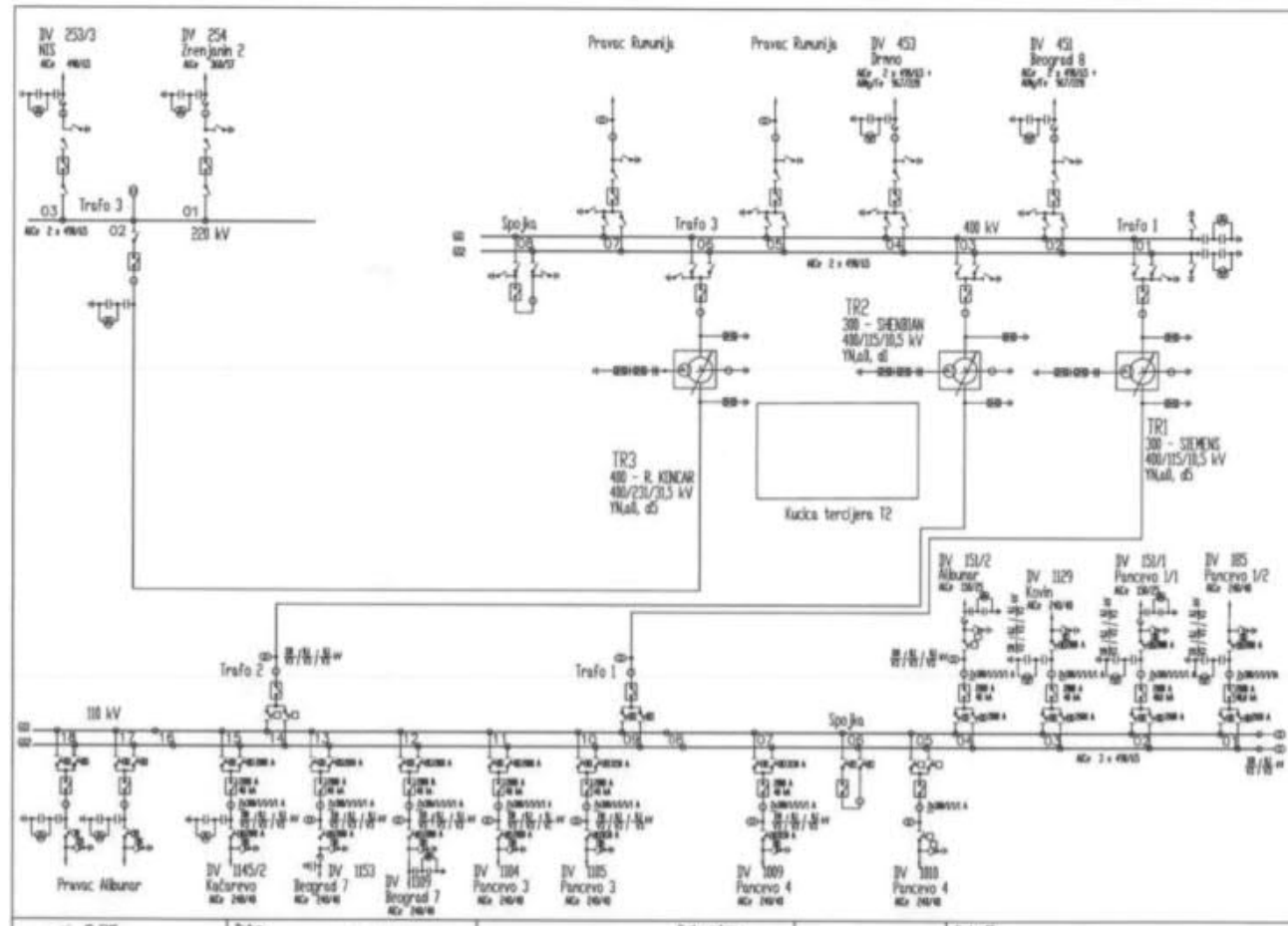
# Visokonaponska postrojenja RPP VP Košava



# Visokonaponska postrojenja RPP TS BOR4

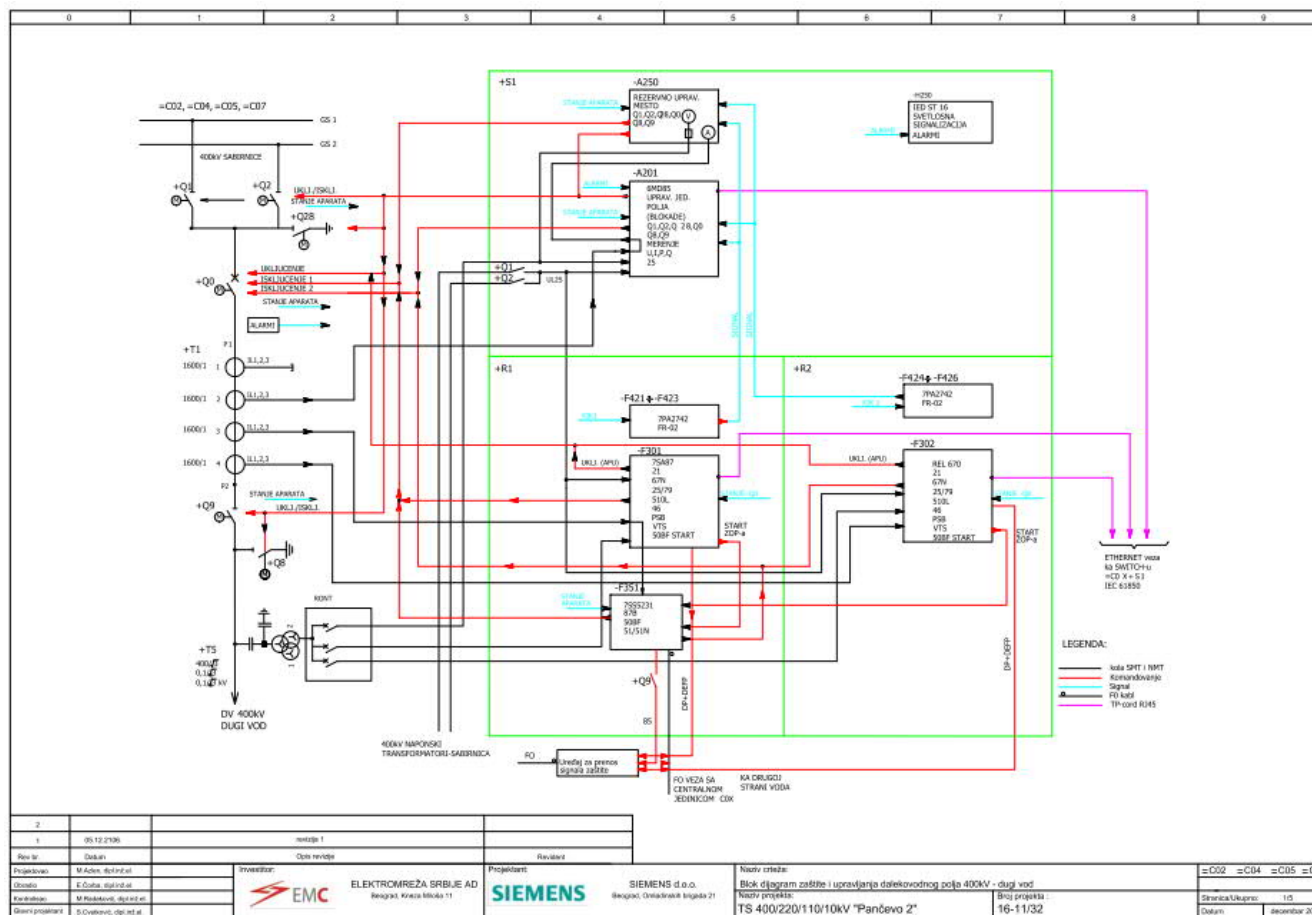


# Visokonaponska postrojenja



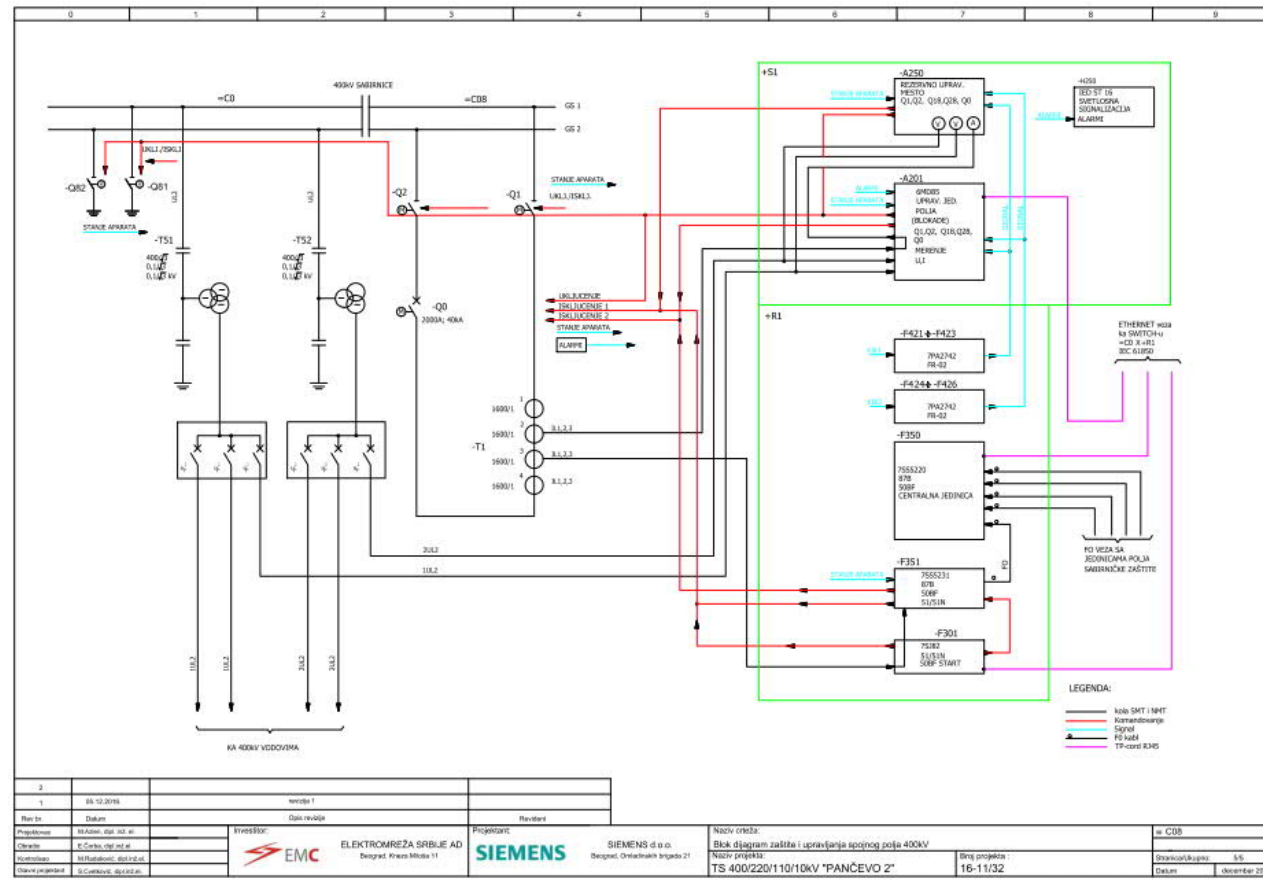
# Visokonaponska postrojenja

## Blok šema DV polja 400kV



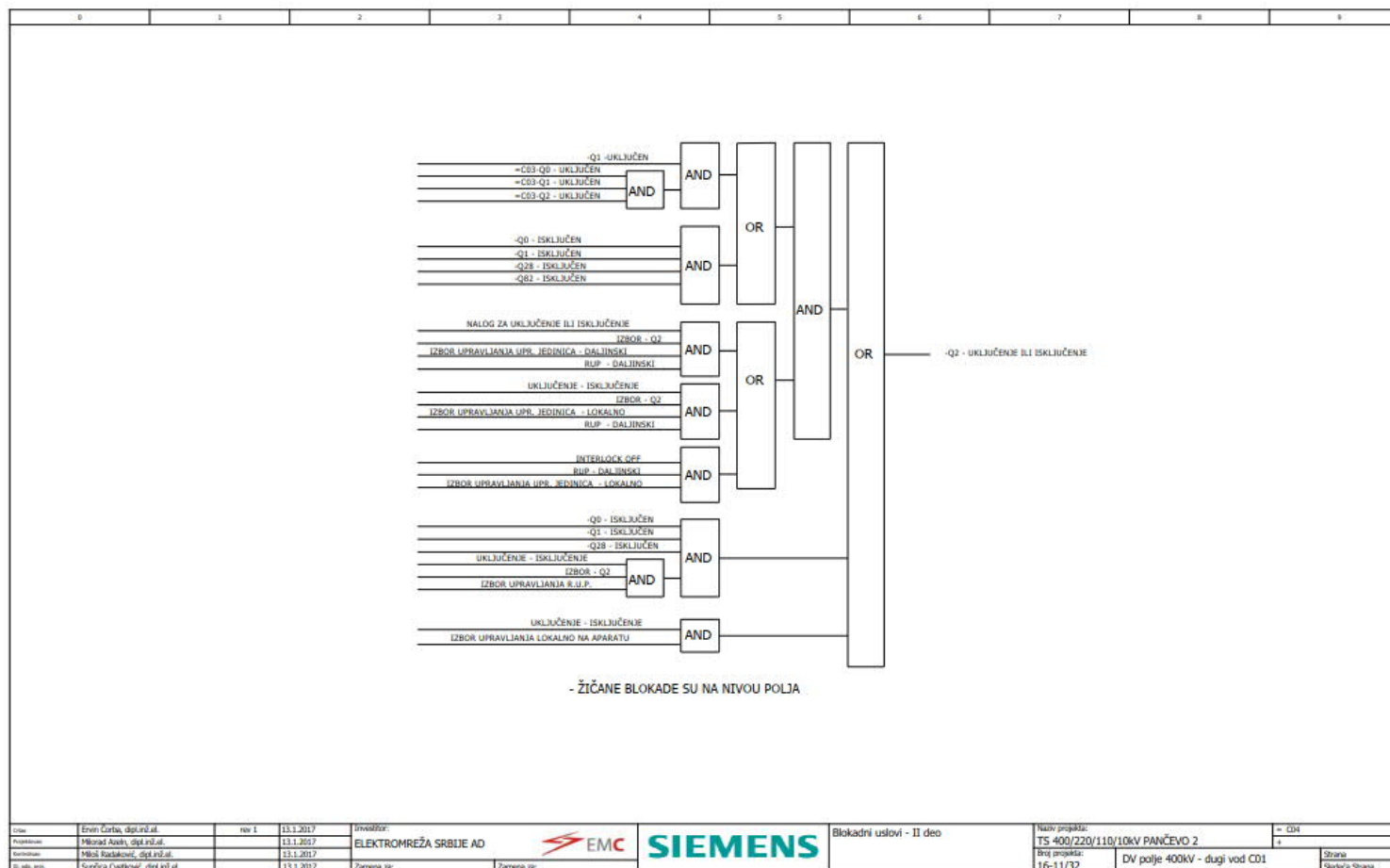
# Visokonaponska postrojenja

## Blok šema spojnog polja 400kV

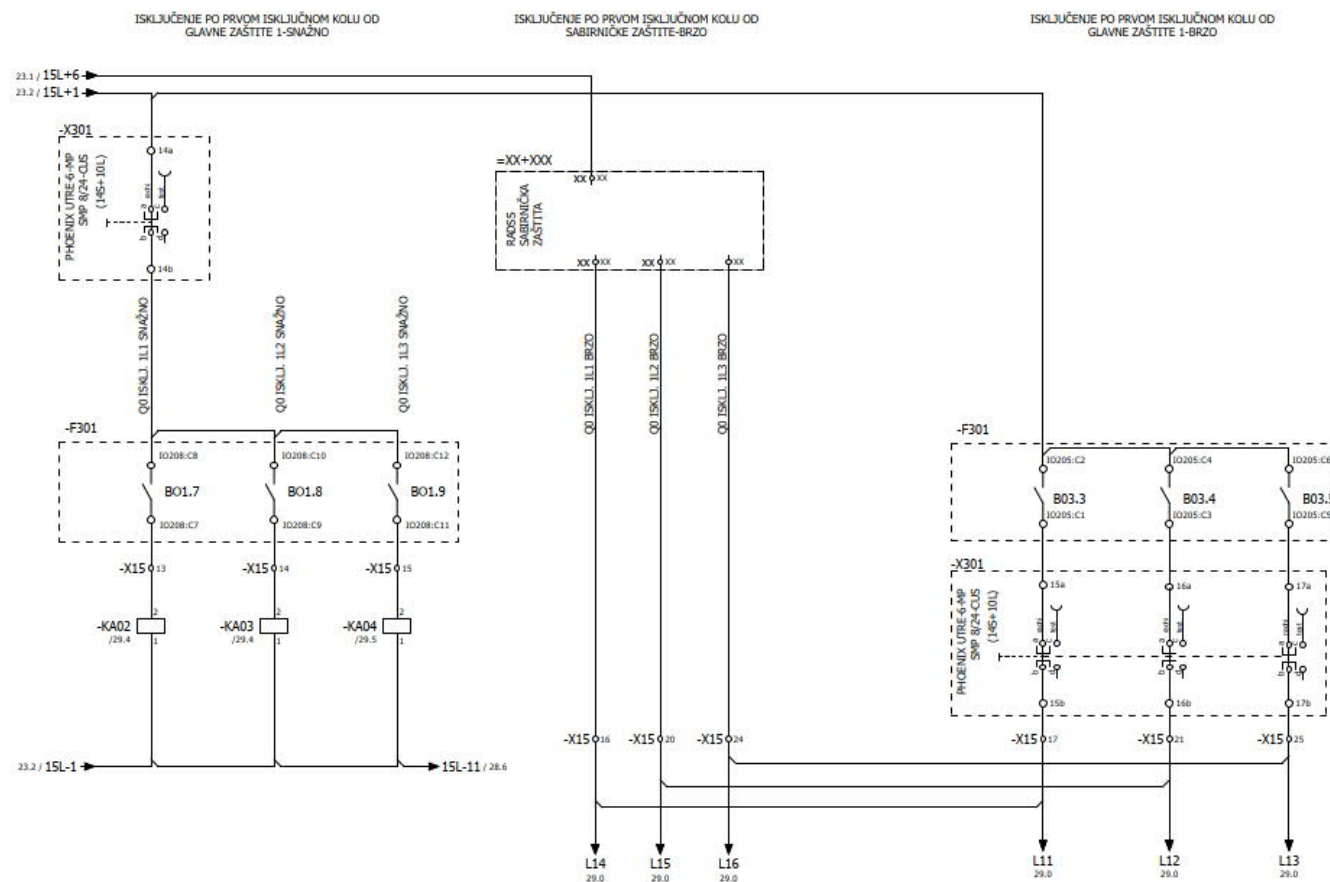


# Visokonaponska postrojenja Blokade DV polja 400kV

Blokade  
žičane na nivou  
polja  
GOOSE na nivou  
TS

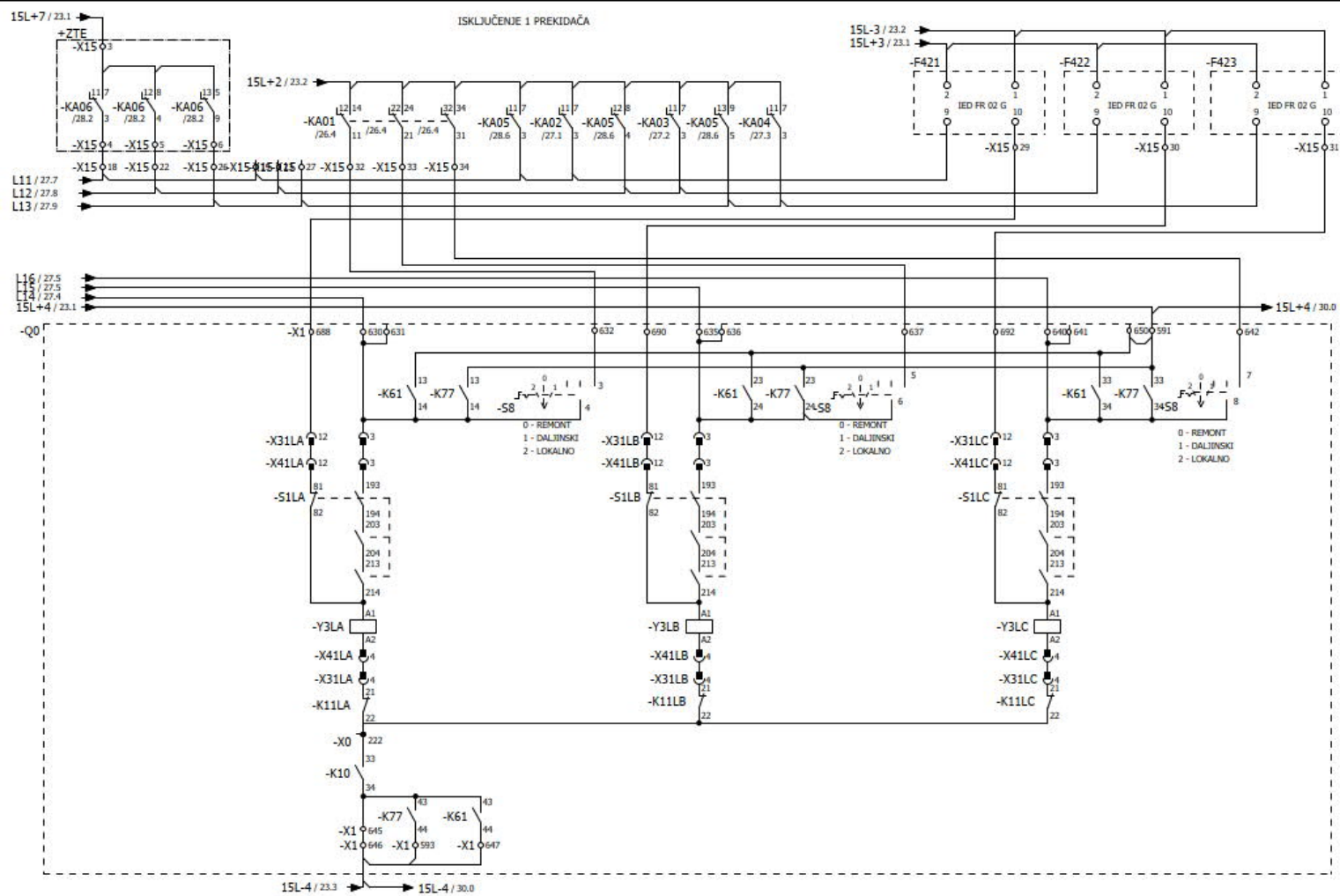


# Visokonaponska postrojenja





# Visokonaponska postrojenja



## Kontakt

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