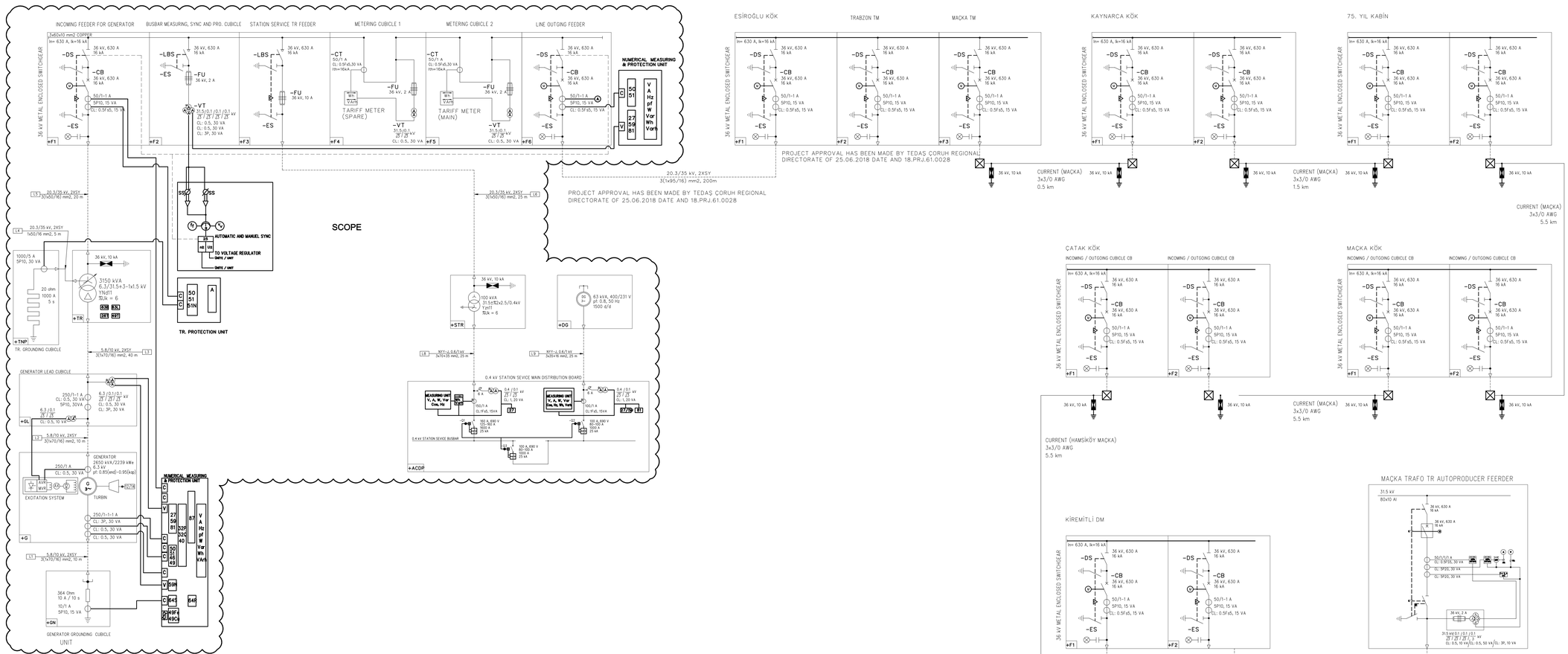

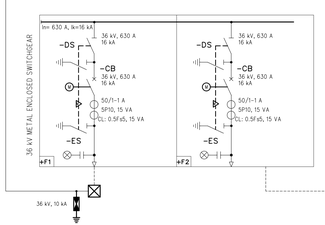

LEGEND

UNIT PROTECTION RELAYS	
50/51	GENERATOR OVER CURRENT PROTECTION RELAY
87G	GENERATOR DIFFERENTIAL PROTECTION RELAY
49	GENERATOR THERMAL IMAGE RELAY
46	GENERATOR NEGATIVE PHASE SEQUENCE RELAY
21	GENERATOR IMPEDANCE PROTECTION RELAY
32R	GENERATOR REVERSE POWER RELAY
27	GENERATOR UNDER VOLTAGE RELAY
59	GENERATOR OVER VOLTAGE RELAY
59N	STATOR EARTH FAULT PROTECTION RELAY
81	OVER AND UNDER FREQUENCY PROTECTION RELAY
51N	STATOR EARTH FAULT PROTECTION RELAY
64R	ROTOR EARTH FAULT PROTECTION RELAY
12/14	SYNCHRONOUS/OVER SPEED RELAY

TRANSFORMER PROTECTION RELAYS	
87GT	BLOCK DIFFERENTIAL PROTECTION RELAY
64T	TRANSFORMER EARTH FAULT PROTECTION RELAY
50/51	OVER CURRENT PROTECTION RELAY
63BT	BUCHHOLZ RELAY
63LT	TRANSFORMER OIL LEVEL RELAY
49T	TRANSFORMER THERMAL IMAGE RELAY
26T	TRANSFORMER OIL TEMPERATURE RELAY

LEGEND	
CT	CURRENT TRANSFORMER
VT	VOLTAGE TRANSFORMER
CB	CIRCUIT BREAKER
DS	DISCONNECTOR
ES	EARTHING SWITCH
FU	FUSE
R	EARTHING RESISTOR
LA	EARTHING RESISTOR
I	ISOLATOR

GENERATOR INCOMING FEEDER PROTECTION RELAYS	
50/51	OVER CURRENT PROTECTION RELAY
50N/51N	EARTH FAULT PROTECTION RELAY
27	UNDER VOLTAGE PROTECTION RELAY
59	OVER VOLTAGE PROTECTION RELAY
81	OVER AND UNDER FREQUENCY PROTECTION RELAY
46	UNBALANCED LOAD PROTECTION RELAY
49	THERMAL OVERLOAD PROTECTION RELAY
47	NEGATIVE SEQUENCE OVER VOLTAGE PROTECTION RELA
59N	NEUTRAL VOLTAGE DISPLACEMENT PROTECTION RELAY

LINE FEEDER PROTECTION RELAYS	
50/51	OVER CURRENT PROTECTION RELAY
50N/51N	EARTH FAULT PROTECTION RELAY
27	UNDER VOLTAGE PROTECTION RELAY
59	OVER VOLTAGE PROTECTION RELAY
81	OVER AND UNDER FREQUENCY PROTECTION RELAY
46	UNBALANCED LOAD PROTECTION RELAY
59N	NEUTRAL VOLTAGE DISPLACEMENT PROTECTION RELAY
32P	REAL OVER POWER PROTECTION RELAY
67	DIRECTIONAL OVER CURRENT PROTECTION RELAY
67N	DIRECTIONAL EARTH FAULT PROTECTION RELAY

STATION SERVICE PROTECTION	
27S	UNDER VOLTAGE PROTECTION RELAY

DIESEL-GENERATOR PROTECTION	
27S	UNDER VOLTAGE PROTECTION RELAY
59	OVER VOLTAGE PROTECTION RELAY
81	OVER AND UNDER FREQUENCY PROTECTION RELAY
25	SYNCHRONIZING DEVICE

T.C.
ENERJİ VE TABİİ KAYNAKLAR BAKANLIĞI
TEMSAN - Türkiye Elektromekanik Sanayi A.Ş.

No.	Rev.	Tarih	Revizyon Sebebi	Yapan	Kontrol Eden	Onaylayan

YETKİLİ BRANŞ MÜHENDİSİ	
PROJE MÜELLİFİ FİRMA	
LİSANS SAHİBİ FİRMA	TRABZON İÇMESUYU VE KANALİZASYON İDARESİ
TESİSİN LİSANSTAKİ ADI	ESİROĞLU HES
PAFTANIN AÇIKLAMALI ADI	SINGLE LINE SCHEMA

Yapan			Pafta Boyutu	A1
Çizen			Tarih	
Kontrol Eden			Ölçek	
Pafta No.	ESR-E-SL-001		Revizyon No.	