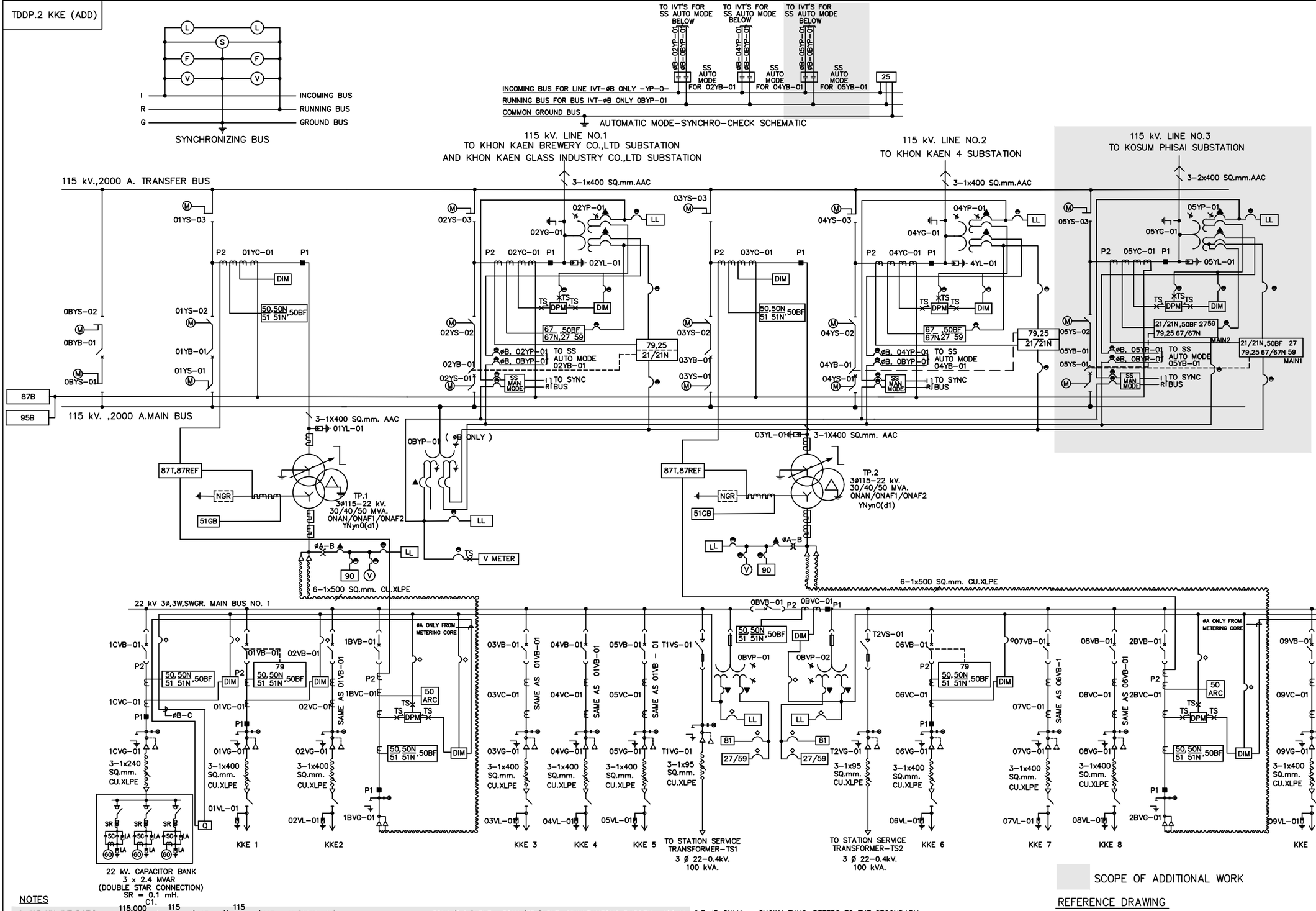
TDDP.2 KKE (ADD)



DEVICES	EXPLANATION
21/ 21N	DISTANCE TIME-STEP PHASE AND GROUND DISTANCE RELAY
67	DIRECTIONAL PHASE OVERCURRENT RELAY
67N	DIRECTIONAL GROUND OVERCURRENT RELAY
25	SYNCHROCHECK RELAY
79	AUTOMATIC RECLOSING RELAY
50 BF	BREAKER FAILURE RELAYING
50/51	NON-DIRECTIONAL INSTANTANEOUS AND TIME PHASE OVERCURRENT RELAY
50N/51N	NON-DIRECTIONAL INSTANTANEOUS AND TIME GROUND OVERCURRENT RELAY
51GB	NON-DIRECTIONAL TIME GROUND BACKUP OVERCURRENT RELAY
87T	TRANSFORMER DIFFERENTIAL RELAY
87 REF	TRANSFORMER RESTRICTED EARTH FAULT RELAY THIS RELAY SHALL BE INCORPORATED IN THE TRANSFORMER DIFFERENTIAL RELAY (87T)
27,59	UNDER/OVER VOLTAGE RELAY
90	AUTOMATIC VOLTAGE REGULATOR
87B	BUS DIFFERENTIAL RELAY-HIGH IMPEDANCE TYPE
95B	BUSBAR SUPERVISION RELAY FOR BUSWIRE SUPERVISION FOR 87B
50 ARC	ARC DETECTOR RELAY FOR ARC PROTECTION SYSTEM
81	UNDER FREQUENCY RELAY
60	CAPACITOR CURRENT UNBALANCE SENSING RELAY
Q	POWER FACTOR CONTROLLER
DPM	DIGITAL POWER METER
DIM	DISTRIBUTED I/O MODULE (PROVIDED IN CSCS)
V METER	DIGITAL VOLTMETER
SS	SYNCHRONIZING SWITCH,3-POSITION,AUTO-OFF-MAN
L	SYNCHRONIZING LAMP
V	VOLTMETER
F	FREQUENCY METER
S	SYNCHROSCOPE
LL	LINE INDICATING LAMP
TS	CURRENT TEST SWITCH
TS	POTENTIAL TEST SWITCH
▲	LOCATED IN THE SWITCHYARD JUNCTION BOX
◓	LOCATED IN THE CONTROL OR RELAY BOARD
▼	LOCATED IN THE 22 kV SWITCHGEAR JUNCTION BOX
◇	FOR 22 kV SWITCHGEAR CONTROL & PROTECTIVE CIRCUITS
	WYE CONNECTED CT OF SECONDARY WINDING
	DELTA CONNECTED CT OF SECONDARY WINDING (IF ANY)
	TRANSFORMER BUSHING CT OF SECONDARY WINDING, WYE CONNECTED FOR PHASE OR NEUTRAL

NOTES

1. 115 KV. IVT RATIO $\frac{115,000}{\sqrt{3}} : \frac{115}{\sqrt{3}} / 115 \;//\; \frac{115}{\sqrt{3}} / 115$ V (05YP-01) — 50VA/0.2/1.5VF , 50VA/3P/1.5VF, SIMULTANEOUS BURDEN =100 VA.

2. 115 KV. CT RATIO

	1800/1500/1200/900/600/300 : 1/1/1/1 A. (05YC-01)		20VA/5P20 , 20VA/0.5FS5 , 20VA/5P20 , 20VA/5P20
	500/200/100	: 1A — FOR HIGH SIDE TRANSFORMER BUSHING CT	20VA/5P20
3. 22 KV. VT. RATIO	$\frac{22000}{\sqrt{3}} : \frac{110}{\sqrt{3}} / \frac{110}{\sqrt{3}}$ V		50VA/0.5/1.9VF , 50 VA/3P/1.9VF
4 22 KV. CT. RATIO	1800/1500/900	: 1/1/1/1 A— FOR INCOMING BREAKER	20VA/5P20 , 20VA/0.5FS5 , 20VA/5P20 , 20VA/5P20
	1800/1500/900	: 1/1 A — FOR TIE BREAKER	20VA/5P20 , 20VA/0.5FS5
	1800/900	: 1/1 A — FOR LOW SIDE TRANSFORMER BUSHING CT	20VA/5P20 , 20VA/0.5FS5
	1800/900	: 1/1 A — FOR NEUTRAL TRANSFORMER BUSHING CT	20VA/5P20 , 20VA/5P20
	600/300	: 1/1 A — FOR OUTGOING 22 KV.	20VA/0.5FS5 , 20VA/5P20
	600/300	: 1/1 A — FOR CAPACITOR BANK	20VA/0.5FS5 , 20VA/5P20

5. THE NEUTRAL GROUNDING RESISTORS (NGR) ARE INDICATED FOR FUTURE INSTALLATION.
6. SYNCHRONIZING SCHEMATIC
   6.1 -YP-0- SHOWN THUS, REFER TO INCONING IVT DESIGNATIONS.
   6.2 0BYP-01 SHOWN THUS REFERS TO RUNNING BUS IVT
   6.3 øB ONLY SHOWN THUS, REFERS TO THE SECONDARY WINDING OF IVT FOR PHASE"B" AND USING FULL TAP WINDING 115V FOR SYNCHRONIZING SYSTEM WITH ONE END OF THE WINDING CONNECTED WITH COMMON GROUND BUS.
   6.4 MANUAL SYNCHRONIZING BY SYNCHROSCOPE SHALL UTILIZE INCOMING AND RUNNING SECONDARY VOLTAGES OF METERING CORES FROM"PHASE B" FOR BOTH IVT"S.
   6.5 AUTOMATIC SYCHRONISM VERIFICATION BY SYNCHRO CHECK RELAY (25) SHALL UTILIZE INCOMING AND RUNNING SECONDARY VOLTAGES OF RELAYING CORES FROM"PHASE B" FOR BOTH IVT"S.
7. EACH DIGTAL POWER METER (DPM) SHALL BE COMMUNICATED WITH AUTOMATIC METER READING (AMR) APPLICATION SERVER VIA SWITCH NETWORK.
8. FOR 115 kV. NEW SYSTEM PROTECTION, RELAYS SHALL BE DOUBLE MAIN PROTECTION RELAY (MAIN1&2) AND DIFFERENT PRODUCT/MANUFACTURER.
9. THE DEDICATED PROTECTIVE RELAY FOR 22 kV. SWITCHGEAR SHALL BE STANDARDIZED WHICH CAN BE EITHER USED FOR INCOMING, BUS COUPLER, OUTGOING FEEDERS OR CAPACITOR BANK FEEDER.

REFERENCE DRAWING

SINGLE LINE DIAGRAM.....DWG NO. FA2-011/63024

KKE-M

กองออกแบบสถานีไฟฟ้า ฝ่ายงานสถานีไฟฟ้า	การไฟฟ้าส่วนภูมิภาค	ใช้แทนแบบ ____
ผู้เขียน ศุภชัย ผู้สำรวจ ____ วิศวกร ____ หัวหน้าแผนก วรเวช ผู้อำนวยการกอง ____ ผู้อำนวยการฝ่าย ____ (แทน)	ผู้ว่าการ ____ (แทน)	ถูกแทนโดยแบบ ____ เขียนเสร็จวันที่ 13 ส.ค. 2563 แก้แบบวันที่ ____ มิติเป็น ____ มาตราส่วน ____
รองผู้ว่าการวิศวกรรม ____	สถานีไฟฟ้าขอนแก่น 5 จ.ขอนแก่น (เพิ่มเติม) มิเตอร์ และ รีเลย์ไดอะแกรม KHON KAEN 5 SUBSTATION (ADD) METERING AND RELAYING DIAGRAM	แบบเลขที่ FA4-011/63077 แผ่นที่ 1 ของจำนวน 1 แผ่น