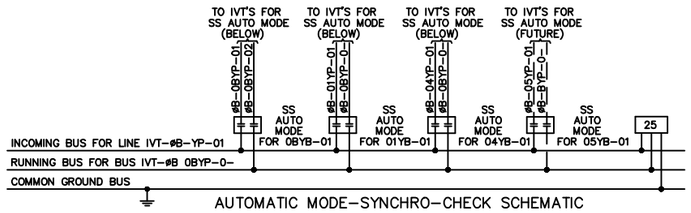
MCDP.1—HYE



AUTOMATIC MODE-SYNCHRO-CHECK SCHEMATIC

NOTES

1. 115 KV. IVT RATIO — $\frac{115,000}{\sqrt{3}} : \frac{115}{\sqrt{3}} / 115 \;//\; \frac{115}{\sqrt{3}} / 115$ V — 50VA/0.2/1.9VF, 50VA/3P/1.9VF (SIMULTANEOUS BURDEN 100 VA)

2. 115 KV. CT RATIO
   - 1800/1500/1200/900/600/300 : 1/1/1/1 A. – FOR LINE BAY — 20VA/5P20, 20VA/0.5FS5, 20VA/5P20, 20VA/5P20
   - 1800/1500/1200/900/600/300 : 1 A. – FOR TRANSFORMER BAY (CORE NO. 1) — 20VA/5P20
   - 400/300/200 : 1/1/1 A. –FOR TRANSFORMER BAY (CORE NO. 2–4) — 20VA/0.5FS5 , 30VA/5P20 , 30VA/5P20

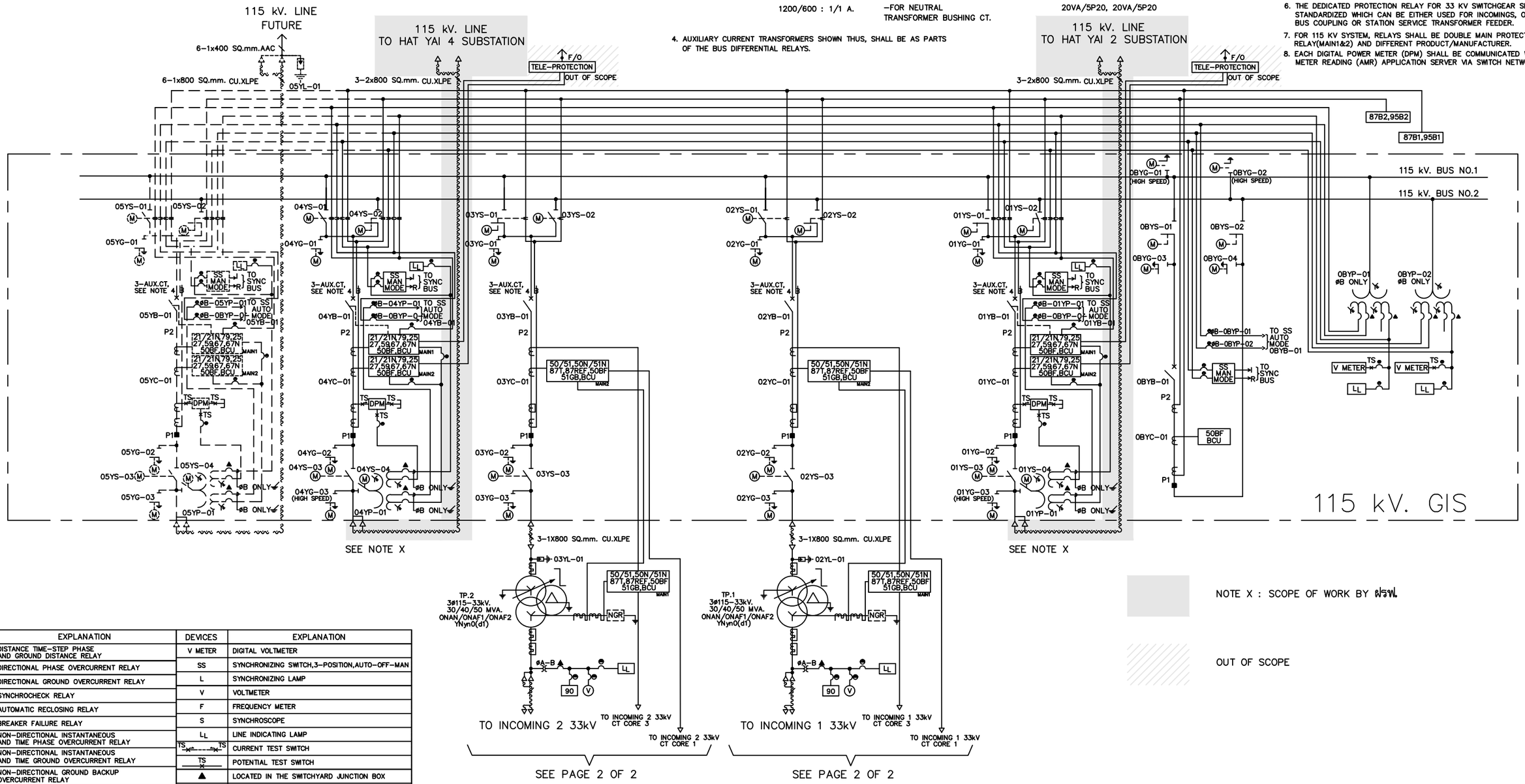
   ***PARTICULAR REQUIREMENT FOR ALL 5P20 CLASS CT's CURRENT RATIO ERROR AT 100% OF RATED CURRENT < 0.5%

   - 500/200/100 : 1 A. –FOR HIGH SIDE TRANSFORMER BUSHING CT. — 20VA/5P20
   - 1800/1500/1200/900/600/300 : 1/1/1 A. (FOR BUS COUPLER BREAKER) — 20VA/5P20, 20VA/5P20, 20VA/5P20

3. 33 KV. CT RATIO
   - 1200/600 : 1/1 A. –FOR LOW SIDE TRANSFORMER BUSHING CT. — 20VA/5P20, 20VA/0.5FS5
   - 1200/600 : 1/1 A. –FOR NEUTRAL TRANSFORMER BUSHING CT. — 20VA/5P20, 20VA/5P20

4. AUXILIARY CURRENT TRANSFORMERS SHOWN THUS, SHALL BE AS PARTS OF THE BUS DIFFERENTIAL RELAYS.

5. SYNCHRONIZING SCHEMATIC
   - 5.1 –YP–0– SHOWN THUS, REFERS TO INCOMING IVT DESIGNATIONS.
   - 5.2 0BYP–0– SHOWN THUS REFERS TO RUNNING BUS IVT FOR BUS No.1 OR No.2
   - 5.3 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.
   - 5.4 MANUAL SYNCHRONIZING BY SYNCHROSCOPE SHALL UTILIZE INCOMING AND RUNNING SECONDARY VOLTAGES OF METERING CORES FROM "PHASE B" FOR BOTH IVT'S.
   - 5.5 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.
6. THE DEDICATED PROTECTION RELAY FOR 33 KV SWITCHGEAR SHALL BE STANDARDIZED WHICH CAN BE EITHER USED FOR INCOMINGS, OUTGOING FEEDERS, BUS COUPLING OR STATION SERVICE TRANSFORMER FEEDER.
7. FOR 115 KV SYSTEM, RELAYS SHALL BE DOUBLE MAIN PROTECTIONS RELAY(MAIN1&2) AND DIFFERENT PRODUCT/MANUFACTURER.
8. EACH DIGITAL POWER METER (DPM) SHALL BE COMMUNICATED WITH AUTOMATIC METER READING (AMR) APPLICATION SERVER VIA SWITCH NETWORK.

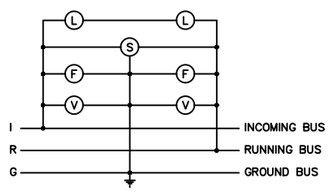


NOTE X : SCOPE OF WORK BY ฝรฟ.

OUT OF SCOPE

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
50BF	BREAKER FAILURE RELAY
50 / 51	NON–DIRECTIONAL INSTANTANEOUS AND TIME PHASE OVERCURRENT RELAY
50N / 51N	NON–DIRECTIONAL INSTANTANEOUS AND TIME GROUND OVERCURRENT RELAY
51GB	NON–DIRECTIONAL GROUND BACKUP OVERCURRENT RELAY
60G	CURRENT UNBALANCE SENSING RELAY FOR NGR
87T	TRANSFORMER DIFFERENTIAL RELAY
87REF	TRANSFORMER RESTRICTED EARTH FAULT RELAY (LOW IMPEDANCE TYPE) THIS RELAY SHALL BE INCORPORATED IN THE TRANSFORMER DIFFERENTIAL RELAY (87T)
27,59	UNDER/OVER VOLTAGE RELAYS
90	AUTOMATIC VOLTAGE REGULATOR
87B1,87B2	BUS DIFFERENTIAL RELAYS – LOW IMPEDANCE TYPE
95B1,95B2	BUS BAR SUPERVISION RELAY FOR BUSWIRE SUPERVISION FOR 87B1, 87B2
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)

DEVICES	EXPLANATION
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 TS	CURRENT TEST SWITCH
TS	POTENTIAL TEST SWITCH
▲	LOCATED IN THE SWITCHYARD JUNCTION BOX
◓	LOCATED IN THE CONTROL AND RELAY BOARD
▼	LOCATED IN THE 33 kV SWITCHGEAR JUNCTION BOX
◇	LOCATED IN 33 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
50 ARC	ARC DETECTOR RELAY FOR ARC DETECTOR SYSTEM
87L	LINE CURRENT DIFFERENTIAL RELAYS
NGR	NEUTRAL GROUNDING RESISTOR
BCU	BAY CONTROL UNIT



SYNCHRONIZING BUS

REFERENCE DRAWING

– SINGLE LINE DIAGRAM ..... DWG. NO. FA2–011/62086

HYE–M

กองออกแบบสถานีไฟฟ้า ฝ่ายงานสถานีไฟฟ้า	การไฟฟ้าส่วนภูมิภาค	ใช้แทนแบบ —
		ถูกแทนโดยแบบ —
ผู้เขียน สุวิกรม	ผู้ว่าการ (แทน)	เขียนเสร็จวันที่ 26 พ.ย. 2562
ผู้สำรวจ —		แก้แบบวันที่ —
วิศวกร สุวิกรม	สถานีไฟฟ้าหาดใหญ่ 5 จ.สงขลา	มิติเป็น —
หัวหน้าแผนก วรเวช	มิเตอร์ และ รีเลย์ไดอะแกรม	มาตราส่วน —
ผู้อำนวยการกอง		
ผู้อำนวยการฝ่าย (แทน)		
รองผู้ว่าการวิศวกรรม —	HAT YAI 5 SUBSTATION (HYE) METERING AND RELAYING DIAGRAM	แบบเลขที่ FA4–011/62109
		แผ่นที่ 1 ของจำนวน 2 แผ่น