

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย

**REGISTRATION FORM**

INVITATION TO BID NO. TS12-CR-08

FOR SUPPLY OF CONTROL AND PROTECTION EQUIPMENT

TRANSMISSION SYSTEM EXPANSION PROJECT NO. 12

AVAILABLE DURATION FOR PURCHASING FEBRUARY 18, 2019 TO APRIL 17, 2019

PRICE THB 500.-

**COMPLETE DATA IS REQUIRED FOR THE BIDDER'S OWN BENEFITS**

(โปรดกรอกรายละเอียดให้ครบถ้วนเพื่อประโยชน์ของบริษัท)

**Step 1** : Fill out this Registration Form in English (Typing is preferred)

**Step 2** : Submit this form for payment at Receivable Cashier Section (1<sup>st</sup> Floor, TOR 100 Bldg., Counter 4-8) Tel no. 02 436 5512

**Step 3** : Bring the payment receipt and the copy of filled-out Registration Form to receive the bidding documents at International Procurement Department - Transmission Segment (Room No. 1202/2, 12<sup>th</sup> Floor, Building Tor. 101) Tel no. 02 436 0241-42

FOR PURCHASER				TAX ID :	
NO.		RECEIPT NO. :		DATE :	PURCHASER (ผู้ซื้อ):
BIDDER'S NAME (บริษัทผู้ซื้อเอกสาร)					
ADDRESS (ที่อยู่)					COUNTRY :
ATTN. (ผู้รับผิดชอบ):			FAX NO.:		TEL.:
E-mail :					
LOCAL REPRESENTATIVE (ตัวแทนในประเทศ)					
ADDRESS (ที่อยู่)					TAX ID :
ATTN. (ผู้รับผิดชอบ):			FAX NO.:		TEL.:
E-mail :					
FOR PROCUREMENT OFFICER			CHANGE OF BIDDER'S NAME		TAX ID :
NEW BIDDER'S NAME (ชื่อผู้ซื้อเอกสารเปลี่ยนเป็น)					
ADDRESS (ที่อยู่)					COUNTRY :
ATTN. (ผู้รับผิดชอบ):			FAX NO.:		TEL.:
E-mail :					
LOCAL REPRESENTATIVE (ตัวแทนในประเทศ)					
ADDRESS (ที่อยู่)					TAX ID :
ATTN. (ผู้รับผิดชอบ):			FAX NO.:		TEL.:
E-mail :					
FOR PROCUREMENT OFFICER			FOR PURCHASER		
Procurement Officer (ผู้ส่งมอบเอกสาร)			Document received by (ผู้รับมอบเอกสาร)		



INVITATION TO BID NO. TS12-CR-08

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT  
TRANSMISSION SYSTEM EXPANSION PROJECT NO. 12

The Electricity Generating Authority of Thailand (EGAT) is calling for the subject Invitation to Bid to be financed by EGAT's fund.

**Place of Delivery** : Ex-works

**Medium Cost** (including Value Added Tax) : THB 16,000,000.-

**Eligibility of Bidders**

1. The Bidder shall be a local manufacturer or provide such locally manufactured materials and/or equipment and shall not be named in the List of Work Abandoners published by the Office of Prime Minister and/or in the Debarment List and/or in the List of Work Abandoners declared by EGAT.
2. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of the Invitation, or shall not be a person who undertakes any action as an "Obstruction of Fair Price Competition" for this Invitation.
3. The Bidder shall not either be EGAT's consultant or involve in EGAT's consultancy company under this Invitation to Bid, or shall not have EGAT's personnel involved in his business as shareholder having voting right that can control his business, director, manager, officer, employee, agent, or consultant except those who are officially ordered by EGAT to act or participate therein.
4. The Bidder shall not be the person who is privileged or protected not to be taken any legal proceedings under Thai Court; Provided that such Bidder's government declares that such special privilege is waived.
5. The Bidder who is a joint venture or consortium shall carry out all the work under such formation from the time of bidding until the fulfillment of the Contract.

**Availability of Bidding Documents**

Bidding Documents in CD-ROM will be available for examination of Bidder's Qualifications and purchase during 8:00 hrs. to 15:00 hrs., Bangkok Standard Time, as from February 18, 2019 to April 17, 2019 at THB 500.- per copy, non-refundable, at the following address :

International Procurement Department - Transmission Segment  
(Room No. 1202/2, 12<sup>th</sup> Floor, Building Tor. 101)  
Procurement and Inventory Management Division  
Electricity Generating Authority of Thailand  
Bangkruai, Nonthaburi 11130, Thailand  
Telephone no. 0 2436 0241

E-mail : [procurement.tse@egat.co.th](mailto:procurement.tse@egat.co.th)

For more details and downloading Registration Form for purchasing Bidding Documents on website :

<http://www4.egat.co.th/fprocurement/biddingeng/>

**Delivery of Bids**

Bids shall be submitted at Room No. 1202/1, 12<sup>th</sup> Floor, Building Tor. 101 during 9:30 hrs. to 10:00 hrs., Bangkok Standard Time, April 25, 2019 and will be opened publicly at 10:00 hrs.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

February 11, 2019

*Nilanate Osotpavaposit*

(Mrs. Nilanate Osotpavaposit)

Chief, International Procurement Department -  
Transmission Segment



## ประกาศการไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เรื่อง ประกวดราคาซื้อ เลขที่ TS12-CR-08

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) มีความประสงค์จะซื้อ Control and Protection Equipment ภายใต้โครงการขยายระบบส่งไฟฟ้าระยะที่ 12 โดยใช้งบประมาณ กฟผ.

**สถานที่ส่งมอบ** : หน้าโรงงานผู้ผลิต

**ราคากลาง(รวมภาษีมูลค่าเพิ่ม)** : 16,000,000.- บาท

### คุณสมบัติของผู้เสนอราคา

1. ต้องเป็นนิติบุคคลผู้ผลิตพัสดุ หรือผู้มีอาชีพขายพัสดุที่ผลิตในประเทศไทยตามประกาศ และต้องไม่เป็นผู้ที่งานซึ่งสำนักนายกรัฐมนตรีได้แจ้งเวียนชื่อไว้ หรือต้องไม่เป็นผู้ที่ กฟผ. ห้ามติดต่อหรือห้ามเข้าเสนอราคา หรือต้องไม่เป็นผู้ที่ได้รับผลของการสั่งให้นิติบุคคลหรือบุคคลอื่นเป็นผู้ที่งานตามคำสั่ง กฟผ.
2. ต้องไม่เป็นผู้มีผลประโยชน์ร่วมกันกับผู้เสนอราคารายอื่น ณ วันประกาศประกวดราคารั้งนี้เป็นต้นไป หรือต้องไม่เป็นผู้กระทำการอันเป็นการขัดขวางการแข่งขันราคาอย่างเป็นธรรมในการดำเนินการประกวดราคารั้งนี้
3. ต้องไม่เป็นที่ปรึกษาของ กฟผ. หรือมีส่วนร่วมในบริษัทที่ปรึกษาของ กฟผ. ในงานนี้ หรือต้องไม่มีผู้ปฏิบัติงาน กฟผ. เข้าไปมีส่วนร่วมในกิจการของผู้เสนอราคา ไม่ว่าจะเป็นในฐานะผู้ถือหุ้นที่มีสิทธิควบคุมการจัดการ กรรมการ ผู้อำนวยการ ผู้จัดการ พนักงาน ลูกจ้าง ตัวแทนหรือที่ปรึกษา ยกเว้น ในกรณีที่ผู้ปฏิบัติงานได้รับคำสั่งอย่างเป็นทางการจาก กฟผ. ให้ไปปฏิบัติงานหรือเข้าร่วมในกิจการของผู้เสนอราคา
4. ต้องไม่เป็นผู้ได้รับเอกลิขสิทธิ์หรือความคุ้มครอง ซึ่งอาจปฏิเสธไม่ยอมขึ้นศาลไทย เว้นแต่รัฐบาลของผู้เสนอราคาได้มีคำสั่งให้สละสิทธิ์และความคุ้มครองเช่นนั้น
5. ผู้ประสงค์เข้าประกวดราคาในนามของกิจการร่วมค้าหรือกิจการร่วม (Joint Venture or Consortium) จะต้องดำเนินการทุกขั้นตอนของการประกวดราคาในนามของกิจการร่วมค้าหรือกิจการร่วม ตั้งแต่การเสนอราคาจนสิ้นสุดข้อผูกพันกับ กฟผ.

### การขายเอกสารประกวดราคา

ผู้สนใจติดต่อขอทราบรายละเอียด เพื่อตรวจสอบคุณสมบัติของผู้เสนอราคา และขอซื้อเอกสารประกวดราคา ในราคาชุดละ 500.- บาท ได้ที่ แผนกจัดซื้อต่างประเทศสายงานระบบส่ง (ห้อง 1202/2 ชั้น 12 อาคาร ท.101) กองจัดซื้อจัดจ้างต่างประเทศสายงานระบบส่ง ฝ่ายจัดซื้อจัดจ้างและบริหารพัสดุ การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี ในวันทำการระหว่างเวลา 08:00 น. ถึง 15:00 น. ตั้งแต่วันที่ 18 กุมภาพันธ์ 2562 ถึงวันที่ 17 เมษายน 2562 หรือสอบถามทางโทรศัพท์หมายเลข 0 2436 0241 หรืออีเมล [procurement.tse@egat.co.th](mailto:procurement.tse@egat.co.th) ทั้งนี้ สามารถ download แบบฟอร์มลงทะเบียนผู้ซื้อเอกสารประกวดราคาได้ที่เว็บไซต์ <http://www4.egat.co.th/fprocurement/biddingeng/>

### การยื่นซองประกวดราคา

กำหนดยื่นซองประกวดราคา ในวันที่ 25 เมษายน 2562 เวลา 9:30 น. ถึง 10:00 น. และเปิดซองประกวดราคาเวลา 10:00 น. ณ ห้อง 1202/1 ชั้น 12 อาคาร ท.101 การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี

ประกาศ ณ วันที่ 11 กุมภาพันธ์ 2562


นิพนธ์ โธมกมลกุล

(นางนิลเนตร โอสภากฤษิต)

หัวหน้ากองจัดซื้อจัดจ้างต่างประเทศสายงานระบบส่ง

ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง(ราคาอ้างอิง)  
ในการจัดซื้อจัดจ้างที่มีใช้งานก่อสร้าง

1. ชื่อโครงการ ประกวราคาเลขที่ TS12-CR-08  
งานจัดซื้อ Control and Protection Equipment  
โครงการขยายระบบส่งไฟฟ้าระยะที่ 12  
/หน่วยงานเจ้าของโครงการ ฝ่ายแผนงานและโครงการระบบส่ง การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย
2. วงเงินงบประมาณที่ได้รับจัดสรร  
โครงการขยายระบบส่งไฟฟ้าระยะที่ 12 งบประมาณ 60,000 ล้านบาท
3. วันที่กำหนดราคากลาง 24 มกราคม 2562 (วันที่ อวส. อนุมัติ )  
ราคารวมภาษีมูลค่าเพิ่มเป็นเงิน 16,000,000.00 บาท ราคา/หน่วย ตามเอกสารแนบ
4. แหล่งที่มาของราคากลาง หลักเกณฑ์การกำหนดราคากลางงานจัดซื้อจัดจ้างสายงานพัฒนาระบบส่ง
5. รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง
  - 5.1 นายเอนก วุฒยวนิช รก.หวคป-ส. กวป-ส.
  - 5.2 น.ส. จินดาหรรษา หังสาจะระ วศ.6 กวป-ส.

  
นางสุนิศา แยมอยู่  
หจตส-ท.

11 ก.พ. 2562

**MEDIUM COST FOR BID NO. TS12-CR-08**  
**SUMMARY OF BID PRICE**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

No.	Description	Supply of Equipment
		Local Supply
		Ex-works Price ( excluding VAT ) Baht
		Amount
1	Schedule 1 : 230 kV and 115 kV Control and Protection Equipment	15,030,986.00
<b>BID PRICE</b>		<b>Baht 15,030,986.00</b>
<b>IMPORT DUTY</b>		<b>Baht XXXXX</b>
<b>VAT 7%</b>		<b>Baht 1,052,169.02</b>
<b>SUMMARY OF BID PRICE</b>		<b>Baht 16,083,155.02</b>
<b>SUMMARY OF BID PRICE (ROUNDED)</b>		<b>Baht 16,000,000.00</b>

นางสุนิศา แยมอยู่  
 หจกส-ท.  
 11 ก.พ. 2562

(นางสาวพนา สุภาวกุล)  
 อวส.

24 มี.ค. 62

**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-1	115 kV LINE PROTECTION (21, 67, 79, 1-BF, DTT)	Panel No. 23R Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2, LS-E-3 and TP-E-10.1	1	EA	1,143,845.00	1,143,845.00
1-2	INTERPOSING PANEL TYPE IP1	Panel No. IP7-2 Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2, LS-E-3, TP-E-6.4 sh.1/6-5/6 and TP-E-10.2	1	EA	615,193.00	615,193.00
1-3	WATT AND VAR TRANSDUCER (W&VAR-TDR)	For 3 ph .Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg Nos. LS-E-1 and LS-E-2	1	EA	18,198.00	18,198.00
1-4	CURRENT TRANSDUCER (A-TDR)	For 3 ph. Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg Nos. LS-E-1 and LS-E-2	1	EA	9,792.00	9,792.00

นางสุวิศา แย้มอยู่

หจกส-ท.

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นางสาวพนา อุกฤษ

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-5	VOLTAGE TRANSDUCER (V-TDR)	For 3 ph. Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg Nos. LS-E-1 and LS-E-2	1	EA	9,792.00	9,792.00
1-6	TEST SWITCH (FOR METERING)	Supply as loose part, to be installed in Existing Panel 2 for MP7-1 Panel and 1 for Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1 and LS-E-2	3	EA	18,556.00	55,668.00
1-7	kWh&kVARh METER	Supply as loose part, to be installed in Panel MP7-1 Specification No. 1002 Dwg. Nos. LS-E-1 and LS-E-2	2	EA	209,936.00	419,872.00
1-8	LOCKOUT RELAY (86, 10 contacts)	Supply as loose part, to be installed in Panel 17R Specification No. 1002 Dwg. Nos. LS-E-1 and LS-E-2	1	EA	18,327.00	18,327.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-9	BREAKER CONTROL SWITCH (CS)	Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2 and TP-E-9.1 rev.9	1	EA	3,948.00	3,948.00
1-10	MANUALLY OPERATED DISCONNECTED SWITCH	Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1 and LS-E-2	4	EA	511.00	2,044.00
1-11	LL	Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1 and LS-E-2	1	EA	1,024.00	1,024.00
1-12	INDICATING LAMP (R,G,IL,LG)	1 RED, 1 GREEN Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1 and LS-E-2	2	EA	338.00	676.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-13	CUT OFF SWITCH, 4 CONTACTS (50BFC0, SS, EPS, 43RCC, 284CS)	Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2 and TP-E-9.1	1	EA	1,024.00	1,024.00
1-14	TRIP TRANSFER SWITCH (43)	Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2 and TP-E-9.1	1	EA	7,731.00	7,731.00
1-15	MCB, 0.5A, 3 POLE FOR PT	Supply as loose part, to be installed in Panel 7C Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2 and TP-E-18.1 sh.3/3	1	EA	1,853.00	1,853.00
1-16	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part, to be installed in Panel MP7-1 Specification No. 1002 Dwg. Nos. LS-E-1, LS-E-2 and TP-E-18.1 sh.3/3	2	EA	2,194.00	4,388.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price (excluding VAT) Baht	
					Unit Price	Amount
1-17	GPS RECEIVER PANEL	Panel No. GPS Receiver (Ports of Ethernet Switch shall not be less than 64 ports) See Note No.1 Specification No. 1002 and SD-FOT-P22 Dwg Nos. LS-E-2 and TP-E-10.15	1	EA	588,129.00	588,129.00
1-18	115 kV LINE PROTECTION (87L, 21, 79, 1-BF)	RELAY 87L SUPPLIED BY EGAT Panel No. 8F/8R See Bill of Materials Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2, PYK-E-3 and TP-E-10.1	1	EA	1,297,922.00	1,297,922.00
1-19	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	208,178.00	208,178.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-20	LOCKOUT RELAY (86, 10 contacts)	Supply as loose part, to be installed in Panel 2R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	18,327.00	18,327.00
1-21	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	24,669.00	24,669.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-22	INTERPOSING RELAY (CCX,CTX)	Supply as loose part, to be installed in Panel RTB Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-6.4 sh. 2/6	4	EA	221.00	884.00
1-23	LATCHING RELAY (8 contacts,79COCX)	Supply as loose part, to be installed in Panel RTB Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-6.4 sh. 2/6	1	EA	8,772.00	8,772.00
1-24	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel RTB, 7R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-6.4 sh. 2/6	3	EA	5,102.00	15,306.00
1-25	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and PYK-E-3	4	EA	5,190.00	20,760.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-26	MCB, 6A, 1 POLE FOR DC SUPPLY	Supply as loose part, to be installed in Panel RTB Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-6.4 sh. 2/6	1	EA	604.00	604.00
1-27	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	1,027.00	1,027.00
1-28	KNIFE SWITCH ISOLATOR FOR BREAKER CONTROL UNIT	Supply as loose part, to be installed in Panel RTB Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-6.4 sh. 2/6	1	EA	81.00	81.00
1-29	INDICATING LAMP (R,G,I,L,G)	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg. Nos. PYK-E-1 and PYK-E-2	2	EA	338.00	676.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-30	PUSH BUTTON	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg Nos. PYK-E-1 and PYK-E-2	1	EA	338.00	338.00
1-31	MCB, 3A, 1 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. PYK-E-1 and PYK-E-2 and TP-E-18.1 sh.2-3/3	2	EA	1,283.00	2,566.00
1-32	MCB, 0.5A, 1 POLE FOR PT	Supply as loose part, to be installed in Panel 7F, 7R and Existing RTB Panel Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2, TP- E-18.1 sh.2-3/3 and TP-E-6.4 sh. 2/6	7	EA	667.00	4,669.00
1-33	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part, to be installed in Panel 7R Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-18.1 sh.3/3	2	EA	2,194.00	4,388.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-34	MCB, 0.5A, 3 POLE FOR PT	Supply as loose part, to be installed in Panel 7F Specification No. 1002 Dwg. Nos. PYK-E-1, PYK-E-2 and TP-E-18.1 sh.3/3	1	EA	1,853.00	1,853.00
1-35	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part for 115/22 kV Transformer, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	69,119.00	69,119.00
1-36	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG, 51/51G, 51S/51SG, 51C/51CG)	Supply as loose part for 115/22 kV Transformer Protection, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	2	EA	64,864.00	129,728.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-37	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	90,366.00	90,366.00
1-38	LOCKOUT RELAY (86, 10 contacts)	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	2	EA	18,327.00	36,654.00
1-39	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	24,669.00	24,669.00
1-40	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	3	EA	5,102.00	15,306.00

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## MEDIUM COST FOR BID NO. TS12-CR-08

Schedule 1 : 230 kV and 115 kV Control and Protection Equipment

## SUPPLY OF CONTROL AND PROTECTION EQUIPMENT

## TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-41	CURRENT TRANSDUCER (A-TDR)	For 1 ph, Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	9,792.00	9,792.00
1-42	CURRENT TRANSDUCER (A-TDR)	For 3 ph, Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	9,792.00	9,792.00
1-43	VOLTAGE TRANSDUCER (V-TDR)	For 3 ph, Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	9,792.00	9,792.00
1-44	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	9,792.00	9,792.00
			1	EA	11,053.00	11,053.00

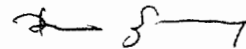
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-45	TEST SWITCH (FOR METERING)	Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	2	EA	18,556.00	37,112.00
1-46	INDICATING LAMP (R,G,I,L,G)	1 RED, Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	338.00	338.00
1-47	PUSH BUTTON	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	338.00	338.00
1-48	MCB, 0.5A, 3 POLE FOR PT	Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2, PYK-E-3 and TP-E-18.1 SH.3/3	1	EA	1,853.00	1,853.00

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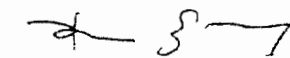
  
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-49	MCB, 0.5A, 1 POLE FOR PT	Supply as loose part, to be installed in Panel 4F Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2, PYK-E-3 and TP-E-18.1 SH.3/3	1	EA	667.00	667.00
1-50	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2, PYK-E-3 and TP-E-18.1 SH.2/3-3/3	2	EA	2,194.00	4,388.00
1-51	MCB, 3A, 3 POLE WITH AUX. INC	Supply as loose part Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2, PYK-E-3 and TP-E-18.1 SH.2/3-3/3	4	EA	2,248.00	8,992.00

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## MEDIUM COST FOR BID NO. TS12-CR-08

Schedule 1 : 230 kV and 115 kV Control and Protection Equipment

## SUPPLY OF CONTROL AND PROTECTION EQUIPMENT

## TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-52	CUT OFF SWITCH, 4 CONTACTS (50BFC0, SS, EPS, 43RCC, 284CS)	Supply as loose part, to be installed in Panel 4R Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2, PYK-E-3 and TP-E-9.1	2	EA	1,024.00	2,048.00
1-53	115/22 kV TRANSFORMER PROTECTION (2 RESTRAINS, 2-51, 1-BF)	For 115/22kV Transformer Panel No. 52R Specification No. 1002 Dwg. Nos. AT2-E-1.2, AT2-E-2.1, AT2-E-2.2, AT2-E-3.2 and TP-E-10.1	1	EA	607,886.00	607,886.00
1-54	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	18,198.00	18,198.00
1-55	CURRENT TRANSDUCER (A-TDR)	For 3 ph, Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	9,792.00	9,792.00

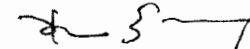
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-56	CURRENT TRANSDUCER (A-TDR)	For 1 ph, Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	9,792.00	9,792.00
1-57	VOLTAGE TRANSDUCER (V-TDR)	For 3 ph, Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	9,792.00	9,792.00
1-58	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	11,053.00	11,053.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-59	TEST SWITCH (FOR METERING)	Supply as loose part, to be installed in Existing Panel 2 for panel 2AC and 2 for panel 15C Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	4	EA	18,556.00	74,224.00
1-60	kWh&kVARh METER	Supply as loose part, to be installed in Panel 15C Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	2	EA	209,936.00	419,872.00
1-61	INTERPOSING RELAY (CCX,CTX)	Supply as loose part, to be installed in Panel IP Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1, AT2-E-2.2 and TP-E-6.4 sh. 2/6	2	EA	221.00	442.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-62	BREAKER CONTROL SWITCH (CS)	Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	3,948.00	3,948.00
1-63	MANUALLY OPERATED DISCONNECTED SWITCH	Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	3	EA	511.00	1,533.00
1-64	LL	Supply as loose part, to be installed in Panel 2AC Specification No. 1002 Dwg Nos. AT2-E-1.2, AT2-E-2.1 and AT2-E-2.2	1	EA	1,024.00	1,024.00
1-65	INDICATING LAMP (R,G,I,L,LG)	1 WHITE, Supply as loose part, to be installed in Existing Panel IP1 Specification No. 1002 Dwg. Nos. AT2-E-1.2, AT2-E-2.1	1	EA	338.00	338.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

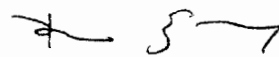
Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-66	PUSH BUTTON	Supply as loose part, to be installed in Existing Panel IP1 Specification No. 1002 Dwg. Nos. AT2-E-1.2, AT2-E-2.1	2	EA	338.00	676.00
1-67	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part, to be installed in Panel 2AC and 15C Specification No. 1002 Dwg Nos. AT2-E-1.2	3	EA	1,027.00	3,081.00
1-68	MCB, 0.5A, 3 POLE FOR PT	Supply as loose part, to be installed in Panel 2AC, C-BANK NO.2 Specification No. 1002 Dwg Nos. AT2-E-1.2 and TP-E- 18.1 SH.3/3	2	EA	1,853.00	3,706.00
1-69	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part, to be installed in Panel 15C Specification No. 1002 Dwg Nos. AT2-E-1.2 and TP-E- 18.1 SH.2/3-3/3	2	EA	2,194.00	4,388.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-70	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2, CM3-E-2.2 and CM3-E-3.1	2	EA	343,245.00	686,490.00
1-71	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2, CM3-E-2.2 and CM3-E-3.1	2	EA	52,126.00	104,252.00
1-72	LOCKOUT RELAY (86, 10 contacts)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2, CM3-E-2.2 and CM3-E-3.1	2	EA	18,327.00	36,654.00
1-73	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2, CM3-E-2.2 and CM3-E-3.1	4	EA	24,669.00	98,676.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-74	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2 and CM3-E-2.2	6	EA	5,102.00	30,612.00
1-75	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2 and CM3-E-2.2	6	EA	5,190.00	31,140.00
1-76	CUT OFF SWITCH, 8 CONTACTS (25CO, 79CO)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2, CM3-E-2.2 and TP-E-9.1	2	EA	1,585.00	3,170.00
1-77	CUT OFF SWITCH, 10 CONTACTS (DTTCO, 87CO, 86ACO, 50/51SCO)	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2, CM3-E-2.2 and TP-E-9.1	2	EA	1,844.00	3,688.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-78	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, to be installed in Existing Panel 2C and 3C Specification No. 1002 Dwg Nos. CM3-E-1.2	2	EA	18,198.00	36,396.00
1-79	CURRENT TRANSDUCER (A-TDR)	For 3 ph, Supply as loose part, to be installed in Existing Panel 2C and 3C Specification No. 1002 Dwg Nos. CM3-E-1.2	2	EA	9,792.00	19,584.00
1-80	VOLTAGE TRANSDUCER (V-TDR)	For 3 ph, Supply as loose part, to be installed in Existing Panel 2C and 3C Specification No. 1002 Dwg Nos. CM3-E-1.2	2	EA	9,792.00	19,584.00
1-81	INDICATING LAMP (R,G,I,L,LG)	4 RED, Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2 and CM3-E- 2.2	4	EA	338.00	1,352.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-82	PUSH BUTTON	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2 and CM3-E-2.2	4	EA	338.00	1,352.00
1-83	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part, to be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2	4	EA	1,027.00	4,108.00
1-84	MCB, 0.5A, 1 POLE FOR PT	Supply as loose part, To be installed in Panel 7R and 9R Specification No. 1002 Dwg Nos. CM3-E-1.2 and TP-E-18.1 SH.3/3	4	EA	667.00	2,668.00
1-85	MCB, 3A, 1 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg Nos. CM3-E-1.2 and TP-E-18.1 SH.2/3-3/3	3	EA	1,283.00	3,849.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-86	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg Nos. CM3-E-1.2 and TP-E-18.1 SH.2/3-3/3	4	EA	2,194.00	8,776.00
1-87	MCB, 3A, 3 POLE WITH AUX. 1NC	Supply as loose part Specification No. 1002 Dwg Nos. CM3-E-1.2 and TP-E-18.1 SH.2/3-3/3	2	EA	2,248.00	4,496.00
1-88	EGAT-PEA INTERFACING PANEL(2-REMOTE I/O AND ACCESSORIES)	Panel EGAT-PEA INTERFACING Spec.No.1002 & SD-FOT-P22 Dwg. Nos. CM3-E-1.2, CM3-E-2.2, CM3-E-3.1, TP-E-6.10 sh.1/2-2/2, TP-E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	275,406.00	275,406.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-89	6-WIRE CLEAT FOR COILING OPTICAL FIBER CABLE	Supply as loose part. Spec.No.1002 & SD-FOT-P22 Dwg Nos. CM3-E-1.2 and TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	1,600.00	1,600.00
1-90	2-Way Joint Boxes with Accessories for OPGW and 36 Cores Non-metallic Optical Fiber Cable	Supply as loose part. Spec.No.1002 & SD-FOT-P22 Dwg Nos. CM3-E-1.2 and TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	9,000.00	9,000.00
1-91	CUT OFF SWITCH, 4 CONTACTS (50BFC0, SS, EPS, 43RCC, 284CS)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. NK-E-1, NK-E-2 and NK-E-3	1	EA	1,024.00	1,024.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-92	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. NK-E-1, NK-E-2 and NK-E-3	1	EA	343,245.00	343,245.00
1-93	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. NK-E-1, NK-E-2 and NK-E-3	1	EA	105,254.00	105,254.00
1-94	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. NK-E-1, NK-E-2 and NK-E-3	1	EA	24,669.00	24,669.00
1-95	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. NK-E-1, NK-E-2 and NK-E-3	3	EA	5,190.00	15,570.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-96	CURRENT TRANSDUCER (A-TDR)	For 3 ph, Supply as loose part, to be installed in Panel TDR1 Specification No. 1002 Dwg. Nos. NK-E-1	1	EA	9,792.00	9,792.00
1-97	VOLTAGE TRANSDUCER (V-TDR)	For 3 ph, Supply as loose part, to be installed in Panel TDR1 Specification No. 1002 Dwg. Nos. NK-E-1	1	EA	9,792.00	9,792.00
1-98	PUSH BUTTON	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. NK-E-1 and NK-E-2	2	EA	338.00	676.00
1-99	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg Nos. NK-E-1, and TP-E-18.1 SH.2/3-3/3	1	EA	2,194.00	2,194.00

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## MEDIUM COST FOR BID NO. TS12-CR-08

Schedule 1 : 230 kV and 115 kV Control and Protection Equipment

## SUPPLY OF CONTROL AND PROTECTION EQUIPMENT

## TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-100	EGAT-PEA INTERFACING PANEL(1-REMOTE I/O AND ACCESSORIES)	Panel EGAT-PEA INTERFACING Spec.No.1002 & SD-FOT-P22 Dwg. Nos. NK-E-1, NK-E-2, NK-E-3, TP-E-6.10 sh.1/2-2/2, TP-E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	190,170.00	190,170.00
1-101	6-WIRE CLEAT FOR COILING OPTICAL FIBER CABLE	Supply as loose part Spec.No.1002 & SD-FOT-P22 Dwg Nos. NK-E-1 and TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	1,600.00	1,600.00
1-102	2-Way Joint Boxes with Accessories for OPGW and 36 Cores Non-metallic Optical Fiber Cable	Supply as loose part Spec.No.1002 & SD-FOT-P22 Dwg Nos. NK-E-1 and TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	9,000.00	9,000.00

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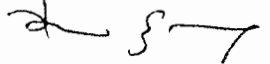
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-103	CUT OFF SWITCH, 4 CONTACTS (50BFC0, SS, EPS, 43RCC, 284CS)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	2	EA	1,024.00	2,048.00
1-104	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	1	EA	343,245.00	343,245.00

  
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-105	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	1	EA	105,254.00	105,254.00
1-106	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	1	EA	52,126.00	52,126.00
1-107	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	1	EA	90,366.00	90,366.00
1-108	LOCKOUT RELAY (86, 10 contacts)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	2	EA	18,327.00	36,654.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-109	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2, MCN-E-2.1 and MCN-E-3.1	3	EA	24,669.00	74,007.00
1-110	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2 and MCN-E-2.1	5	EA	5,102.00	25,510.00
1-111	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2 and MCN-E-2.1	6	EA	5,190.00	31,140.00
1-112	VOLTAGE TRANSDUCER (V-TDR)	For 3 ph. Supply as loose part, to be installed in Panel 8F Specification No. 1002 Dwg. Nos. MCN-E-1.2 and MCN-E-2.1	1	EA	9,792.00	9,792.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-113	PUSH BUTTON	Supply as loose part, to be installed in Panel 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2 and MCN- E-2.1	2	EA	338.00	676.00
1-114	INDICATING LAMP (R,G,IL,LG)	1 RED. Supply as loose part, to be installed in Panel 8F Specification No. 1002 Dwg. Nos. MCN-E-1.2 and MCN- E-2.1	1	EA	338.00	338.00
1-115	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. MCN-E-1.2 and TP-E- 18.1 SH.2/3-3/3	2	EA	2,194.00	4,388.00
1-116	MCB, 3A, 1 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. MCN-E-1.2 and TP-E- 18.1 SH.2/3-3/3	1	EA	1,283.00	1,283.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-117	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part. To be installed in 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2	5	EA	1,027.00	5,135.00
1-118	MCB, 0.5A, 1 POLE FOR PT	Supply as loose part. To be installed in 8R Specification No. 1002 Dwg. Nos. MCN-E-1.2 and TP-E-18.1 SH.3/3	2	EA	667.00	1,334.00
1-119	EGAT-PEA INTERFACING PANEL(1-REMOTE I/O AND ACCESSORIES)	Panel EGAT-PEA INTERFACING Spec.No.1002 & SD-FOT-P22 Dwg. Nos. MCN-E-1.2, MCN-E-2.1, MCN-E-3.1, TP-E-6.10 sh.1-2, TP-E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	190,170.00	190,170.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-120	6-WIRE CLEAT FOR COILING OPTICAL FIBER CABLE	Supply as loose part Spec.No.1002 & SD-FOT-P22 Dwg Nos. MCN-E-1.2 and TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	1,600.00	1,600.00
1-121	2-Way Joint Boxes with Accessories for OPGW and 36 Cores Non-metallic Optical Fiber Cable	Supply as loose part Spec.No.1002 & SD-FOT-P22 Dwg Nos. MCN-E-1.2 and TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	9,000.00	9,000.00
1-122	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, NR3-E-2.2 and NR3-E-3	2	EA	343,245.00	686,490.00


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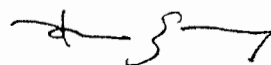
  
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-123	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, NR3-E-2.2 and NR3-E-3	2	EA	52,126.00	104,252.00

  
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-124	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, NR3-E-2.2 and NR3-E-3	4	EA	24,669.00	98,676.00
1-125	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, and NR3-E-2.2	2	EA	5,102.00	10,204.00
1-126	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, and NR3-E-2.2	4	EA	5,190.00	20,760.00
1-127	CUT OFF SWITCH, 8 CONTACTS (25CO, 79CO)	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, NR3-E-2.2 and TP-E-9.1	2	EA	1,585.00	3,170.00


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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-128	INDICATING LAMP (R,G,IL,LG)	2 RED. Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, NR3-E-2.2	2	EA	338.00	676.00
1-129	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1	2	EA	1,027.00	2,054.00
1-130	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. NR3-E-1.1 and TP-E-18.1 SH.2/3-3/3	2	EA	2,194.00	4,388.00
1-131	MCB, 3A, 1 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. NR3-E-1.1 and TP-E-18.1 SH.2/3-3/3	4	EA	1,283.00	5,132.00

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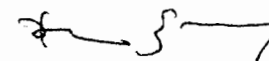
  
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-132	MCB, 0.5A, 1 POLE FOR PT	Supply as loose part, to be installed in Panel 25R, 26R Specification No. 1002 Dwg. Nos. NR3-E-1.1 and TP-E- 18.1 SH.3/3	4	EA	667.00	2,668.00
1-133	EGAT-PEA INTERFACING PANEL(2-REMOTE I/O AND ACCESSORIES)	Panel EGAT-PEA INTERFACING Spec.No.1002 & SD-FOT-P22 Dwg. Nos. NR3-E-1.1, NR3-E-1.2, NR3-E-2.2, NR3-E-3, TP-E-6.10 sh.1-2, TP-E-10.1, DW-FOT-D01- 202-02 SH.P9&P11 and DW-FOT- D01-215-01 SH.P2	1	EA	275,406.00	275,406.00
1-134	6-WIRE CLEAT FOR COILING OPTICAL FIBER CABLE	Supply as loose part. Spec.No.1002 & SD-FOT-P22 Dwg Nos. NR3-E-1.1, TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202- 02 SH.P9&P11 and DW-FOT-D01- 215-01 SH.P2	1	EA	1,600.00	1,600.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-135	2-Way Joint Boxes with Accessories for OPGW and 36 Cores Non-metallic Optical Fiber Cable	Supply as loose part. Spec.No.1002 & SD-FOT-P22 Dwg Nos. NR3-E-1.1, TP-E-6.10 sh.1/2-2/2 and DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	9,000.00	9,000.00
1-136	CUT OFF SWITCH, 4 CONTACTS (50BFC0, SS, EPS, 43RCC, 284CS)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3 and KN-E-3	2	EA	1,024.00	2,048.00
1-137	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3 and KN-E-3	1	EA	105,254.00	105,254.00
1-138	LOCKOUT RELAY (86, 10 contacts)	Supply as loose part, to be installed in Panel 7R, 9R Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3 and KN-E-3	2	EA	18,327.00	36,654.00

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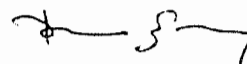
**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-139	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part. To be installed in Existing EGAT-PEA Interfacing Panel Spec.No.1002 & SD-FOT-P22 Dwg. Nos. KN-E-1, KN-E-2.3, KN-E-3, TP-E-6.10 sh.1-2 and TP-E-10.1	4	EA	24,669.00	98,676.00
1-140	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel 7R, 9R and Existing EGAT-PEA Interfacing Panel Spec.No.1002 & SD-FOT-P22 Dwg. Nos. KN-E-1, KN-E-2.3, KN-E-3, TP-E-6.10 sh.1-2 and TP-E-10.1	4	EA	5,102.00	20,408.00
1-141	INTERPOSING RELAY (CCX,CTX)	Supply as loose part. To be installed in Existing EGAT-PEA Interfacing Panel Spec.No.1002 & SD-FOT-P22 Dwg. Nos. KN-E-1, KN-E-2.3, KN-E-3, TP-E-6.10 sh.1-2 and TP-E-10.1	12	EA	221.00	2,652.00

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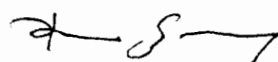
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-142	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 9R Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3 and TP-E-9.1 Rev.9	2	EA	5,190.00	10,380.00
1-143	CUT OFF SWITCH, 10 CONTACTS (DTTCO, 87CO, 86ACO, 50/51SCO)	Supply as loose part, to be installed in Panel 7R, 9R Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3 and TP-E-9.1 Rev.9	2	EA	1,844.00	3,688.00
1-144	PUSH BUTTON	Supply as loose part, to be installed in Panel 7R, 9R Specification No. 1002 Dwg. Nos. KN-E-1 and KN-E-2.3	4	EA	338.00	1,352.00

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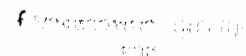
**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-145	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part, to be installed in Panel 7R, 9R and Existing EGAT-PEA Interfacing Panel Spec.No.1002 & SD-FOT-P22 Dwg. Nos. KN-E-1, KN-E-2.3, KN-E-3, TP-E-6.10 sh.1-2, TP-E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	4	EA	1,027.00	4,108.00
1-146	CURRENT TRANSDUCER (A-TDR)	For 3 ph. Supply as loose part, to be installed in Panel 9F Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3	1	EA	9,792.00	9,792.00
1-147	WATT AND VAR TRANSDUCER (W&VAR-TDR)	For 3 ph. Supply as loose part, to be installed in Panel 7F Specification No. 1002 Dwg. Nos. KN-E-1, KN-E-2.3	1	EA	18,198.00	18,198.00

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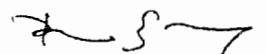



**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-148	REMOTE INPUT/OUTPUT (RIO)	Rack Mounted Type Supply as loose part. To be installed in Existing EGAT-PEA Interfacing Panel Spec.No.1002 & SD-FOT-P22 Dwg. Nos. KN-E-1, KN-E-2.3, KN-E-3, TP-E-6.10 sh.1-2, TP-E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	2	EA	28,443.00	56,886.00
1-149	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1, LLA-E-2 and LLA-E-3	3	EA	343,245.00	1,029,735.00
1-150	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1, LLA-E-2 and LLA-E-3	3	EA	52,126.00	156,378.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-151	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1, LLA-E-2 and LLA-E-3	6	EA	24,669.00	148,014.00
1-152	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1 and LLA-E-2	3	EA	5,102.00	15,306.00
1-153	TEST SWITCH (TS, for relays)	Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1 and LLA-E-2	3	EA	5,190.00	15,570.00
1-154	INDICATING LAMP (R,G,IL,LG)	3 RED, Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1 and LLA-E-2	3	EA	338.00	1,014.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-155	CUT OFF SWITCH, 8 CONTACTS (25CO, 79CO)	Supply as loose part, to be installed in Panel 6R, 12R, 16R Specification No. 1002 Dwg. Nos. LLA-E-1, LLA-E-2 and TP-E-9.1	3	EA	1,585.00	4,755.00
1-156	MCB, 0.5A, 1 POLE FOR PT	Supply as loose part Specification No. 1002 Dwg. Nos. LLA-E-1 and TP-E-18.1 SH.3/3	6	EA	667.00	4,002.00
1-157	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part Specification No. 1002 Dwg. Nos. LLA-E-1	3	EA	1,027.00	3,081.00
1-158	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. LLA-E-1 and TP-E-18.1 SH.2/3-3/3	3	EA	2,194.00	6,582.00
1-159	MCB, 3A, 1 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. LLA-E-1 and TP-E-18.1 SH.2/3-3/3	3	EA	1,283.00	3,849.00

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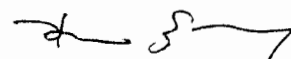
**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-160	EGAT-PEA INTERFACING PANEL(3-REMOTE I/O AND ACCESSORIES)	Panel EGAT-PEA INTERFACING Spec.No.1002 & SD-FOT-P22 Dwg. Nos. LLA-E-1, LLA-E-2, LLA-E-3, TP-E-6.10 sh.1/2-2/2, TP- E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01- 215-01 SH.P2	1	EA	360,642.00	360,642.00
1-161	6-WIRE CLEAT FOR COILING OPTICAL FIBER CABLE	Supply as loose part Spec.No.1002 & SD-FOT-P22 Dwg Nos. LLA-E-1, TP-E-6.10 sh.1/2-2/2, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01- 215-01 SH.P2	1	EA	1,600.00	1,600.00
1-162	2-Way Joint Boxes with Accessories for OPGW and 36 Cores Non-metallic Optical Fiber Cable	Supply as loose part Spec.No.1002 & SD-FOT-P22 Dwg Nos. LLA-E-1, TP-E-6.10 sh.1/2-2/2, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01- 215-01 SH.P2	1	EA	9,000.00	9,000.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-163	TRIPPING RELAY (94P, 94BU, 51X, 79X)	Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2, NS-E-2.2 and NS-E-3.2	2	EA	24,669.00	49,338.00
1-164	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2 and NS-E-2.2	2	EA	5,102.00	10,204.00
1-165	TEST SWITCH (TS, for relays)	Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2 and NS-E-2.2	4	EA	5,190.00	20,760.00
1-166	CUT OFF SWITCH, 10 CONTACTS (DTTCO, 87CO, 86ACO, 50/51SCO)	Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2, NS-E-2.2 and TP-E-9.1	2	EA	1,844.00	3,688.00
1-167	INDICATING LAMP (R,G,IL,LG)	2 RED. Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2, NS-E-2.2	2	EA	338.00	676.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**


Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-168	MCB, 6A, 2 POLE FOR DC SUPPLY	Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2	2	EA	1,027.00	2,054.00
1-169	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part Specification No. 1002 Dwg. Nos. NS-E-1.2 and TP-E-18.1 SH.2/3-3/3	2	EA	2,194.00	4,388.00
1-170	EGAT-PEA INTERFACING PANEL (WITHOUT REMOTE I/O UNIT)	Panel EGAT-PEA INTERFACING WITHOUT REMOTE I/O UNIT SEE BILL OF MATERIALS Spec.No.1002 & SD-FOT-P22 Dwg. Nos. NS-E-1.2, NS-E-2.2, NS- E-3.2, TP-E-6.10 sh.1-2, TP-E-10.1, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1	EA	218,520.00	218,520.00

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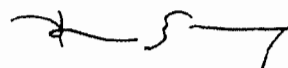
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-171	36 Cores Non-metallic Optical Fiber Cable	Supply as loose part, For: - CM3 300 Meters - NK 300 Meters - MCN 200 Meters - NR3 400 Meters - LLA 300 Meters Spec.No.1002 & SD-FOT-P22 Dwg Nos. CM3-E-1.2, NK-E-1, MCN-E-1.2, NR3-E-1.1, LLA-E-1, TP-E-6.10 sh.1/2-2/2, DW-FOT- D01-202-02 SH.P9&P11 and DW- FOT-D01-215-01 SH.P2	1500	Meters	100.00	150,000.00

  
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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-172	RIGID STEEL CONDUIT	Supply as loose part, For: - CM3 20 Meters - NK 20 Meters - MCN 20 Meters - NR3 20 Meters - LLA 20 Meters Spec.No.1002 & SD-FOT-P22 Dwg Nos. CM3-E-1.2, NK-E-1, MCN-E-1.2, NR3-E-1.1, LLA-E-1, TP-E-6.10 sh.1/2-2/2, DW-FOT- D01-202-02 SH.P9&P11 and DW- FOT-D01-215-01 SH.P2	100	Meters	600.00	60,000.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-173	EFLEX AND/OR HDPE CONDUIT WITH HOT-DIP GALVANIZED STEEL CLAMP	Supply as loose part, For: - CM3 300 Meters - NK 300 Meters - MCN 200 Meters - NR3 400 Meters - LLA 300 Meters Spec.No.1002 & SD-FOT-P22 Dwg Nos. CM3-E-1.2, NK-E-1, MCN-E-1.2, NR3-E-1.1, LLA-E-1, TP-E-6.10 sh.1/2-2/2, DW-FOT-D01-202-02 SH.P9&P11 and DW-FOT-D01-215-01 SH.P2	1500	Meters	60.00	90,000.00
1-174	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part for 115/22 kV Transformer Protection Specification No. 1002 In = 5 A Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	69,119.00	69,119.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT )	
					Baht	
					Unit Price	Amount
1-175	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part for 115 kV Specification No. 1002 In = 5 A	1	EA	343,245.00	343,245.00
1-176	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part for 115 kV Specification No. 1002 In = 1 A	1	EA	343,245.00	343,245.00
1-177	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as loose part for 115 kV Specification No. 1002 In = 5 A	1	EA	208,178.00	208,178.00
1-178	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part for 115 kV Specification No. 1002 In = 5 A	1	EA	105,254.00	105,254.00
1-179	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG, 51/51G, 51S/51SG, 51C/51CG)	Supply as loose part for 115/22 kV Transformer Protection Specification No. 1002 Dwg Nos. PYK-E-1, PYK-E-2 and PYK-E-3	1	EA	64,864.00	64,864.00

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**MEDIUM COST FOR BID NO. TS12-CR-08**  
**Schedule 1 : 230 kV and 115 kV Control and Protection Equipment**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-180	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part Specification No. 1002	1	EA	52,126.00	52,126.00
1-181	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part Specification No. 1002 In = 5 A	1	EA	90,366.00	90,366.00
1-182	TEST SWITCH (FOR METERING)	Supply as loose part Specification No. 1002	30	EA	18,556.00	556,680.00
Note: 1. GPS Receiver Panel consists of the following equipment: - 19" Rack Panel and Accessories - GPS Receiver/Antenna and Accessories - Ethernet switch - Cable and Accessories					<b>Baht</b>	
 <b>Total Price for Schedule 1</b>					<b>15,030,986.00</b>	

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**DATA SHEET**  
**for**  
**Invitation to Bid No. TS12-CR-08**

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This section consists of provisions that are specific to each procurement and supplement the information or requirements included in bidding documents.

**Provisions Regarding Foreign Equipment**

Equipment proposed for this invitation to bid/enquiry shall be manufactured locally. Any provisions regarding foreign Equipment found in the bidding documents are not applicable.

**Article B-3. Bid Security**

The amount of bid security shall be THB 800,000.-.

**Article B-4. Validity of Bids**

The validity of the bid shall be for one hundred and twenty (120) Days from the date specified for opening of bid.

**Article B-8. Information to be Submitted with Bid:**

Item n. is not applicable

**Article B-12. Evaluation and Comparison of Bids:**

The evaluation of bid prices shall be on schedule basis.

## **Article E-29. Failure to Meet Requirements and F-10. Maintenance Guarantee**

### Maintenance Guarantee Period

- For all Equipment except Shunt Reactor, 200 MVA 230 kV and above Power Transformer and 500 kV System Voltage Equipment

The Contractor shall guarantee the proper functioning of Equipment for a period of one (1) Year except the following Equipment the guarantee period of which shall be as follows :

<u>Equipment</u>	<u>Period of Guarantee (Year)</u>
- Fault Recording System	2
- Control and Protection System	2
- <u>For Shunt Reactor, 200 MVA 230 kV and above Power Transformer and 500 kV System Voltage Equipment</u>	

The Contractor shall guarantee the proper functioning of Equipment for a period of five (5) Years.

### Defective Equipment to be replaced with the whole new set

For GIS, Power Transformer, Power Circuit Breaker, Shunt Reactor, in case EGAT, at its sole discretion, requires the Contractor to replace any defected Equipment, the Contractor shall replace the Equipment with the whole new set as specified in Failure to Meet Requirements in section E and Maintenance Guarantee in section F.

## **Article F-9. Liquidated Damages for Late Delivery of Equipment**

The Liquidated Damages shall be at the rate of one-tenth of one (0.10) per cent of the price of each complete item of Equipment not timely delivered for each Day of delay. This sum is payable regardless of the actual loss and/or damages incurred, provided that the total claim of liquidated damages shall not exceed ten (10) per cent of the Contract Price of such delayed Item.

**INVITATION TO BID NO. TS12-CR-08**  
**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**  
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

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**Invitation**

The Electricity Generating Authority of Thailand (EGAT) hereby invites sealed bids for furnishing and delivering of Control and Protection Equipment under Transmission System Expansion Project No. 12 hereinafter called Equipment in accordance with the terms, conditions and Specifications described in these Bidding Documents.

**Eligibility of Bidders: General Requirements**

All Bidders shall meet the following requirements; failure to so comply shall constitute sufficient ground for rejection.

- a. The Bidder shall be a partnership, firm or company, either alone or in joint venture or in consortium.
- b. The Bidder shall be a purchaser of the bidding documents from EGAT. For a joint venture or consortium, only one (1) member of the joint venture or consortium is required to purchase the bidding documents.

In the case where the Bidder is not the purchaser of the bidding documents, the purchaser shall notify EGAT of the name of the Bidder in writing five (5) Days prior to the bid opening date.

- c. The Bidder shall be well-established and maintain a permanent place of business. For a joint venture or consortium, all members of the joint venture or consortium are required to meet this qualification.
- d. The Bidder shall not be named in the List of Work Abandoners published by the Office of the Prime Minister and/or in the Debarment List and/or in the List of Work Abandoners declared by EGAT.
- e. For the Bidder who changes name before submitting the bid, his experience records in previous name shall be considered as the experience records of the Bidder.
- f. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of this invitation to bid, or shall not be a person who undertakes any action as an "Obstruction of Fair Price Competition" as defined in Additional Regulation for this invitation.
- g. The Bidder shall not either be EGAT's consultant or involve in EGAT's consultancy company under this invitation, or have EGAT's personnel involved in his business as shareholder having voting right that can control his business, director, manager, officer, employee, agent or consultant except the ones who are officially ordered by EGAT to act or participate therein.

- h. The Bidder shall not be the person who is privileged or protected not to be taken any legal proceeding under Thai court; provided that such Bidder's government declares that such special privilege is waived.
- i. In case of a joint venture or consortium, the Bidder shall carry out all the provision of the Equipment and all Work under such formation from the time of bidding until the fulfillment of the Contract and the parties to the joint venture or the consortium shall accept joint and several liability for performing all obligations under the bid and the Contract.
- j. The Bidder shall not propose to supply the Equipment from the country under the state of war whether declared or not.
- k. The Bidder shall have adequate fund to meet financial obligations incidental to this Contract.
- l. The Bidder shall submit documentary evidence established in accordance with Article B-8. Information to be Submitted with Bid to demonstrate the Bidder's sufficient eligibility to bid and qualification to perform the Contract.

#### **Eligibility of Bidders: Technical Requirements**

- I. All Bidders shall meet the following requirements; failure to so comply shall constitute sufficient ground for rejection.**
  - a. The Bidder shall manufacture or supply the Equipment or Work as required under this invitation to bid.
  - b. If the Bidder is a new company formed by acquisition of or merger with other companies or business units before submitting the Bid, the experience records of any of such previous companies or business units that meet the requirements set forth herein are acceptable as the experience records of the Bidder.  
  
Reference records of either the parent or affiliated companies shall not be considered as the record of such Bidder.
  - c. The Bidder shall have no just or proper claims pending against him with respect to breach in the performance of Contract on other similar works awarded by EGAT.  
  
If the Bidder is a new company formed by acquisition of or merger with other companies or business units, the pending claim of any of such previous companies or business units shall be considered as pending claim of the Bidder.
  - d. The Bidder shall have sufficient capacity to carry out the Work.
  - e. The Bidder shall propose the Equipment manufactured by the qualified manufacturers who shall fulfill the following requirements:
    - 1. Being well-established and maintaining a permanent place of business.
    - 2. Regular manufacturing of Equipment of the type and similar ratings proposed.
    - 3. Being a local manufacturer.

4. For 500 kV Control and Protection System, having one of the following qualifications:

Having supply records of successful operation/use of at least three (3) units of each type of Protective Relay Panels of which the characteristics are similar to the ones specified herein in EGAT's 500 kV Transmission System for at least three (3) consecutive years.

OR

Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein.

5. For 230 kV Control and Protection System and below, having one of the following qualifications:

Having supply records of successful operation/use of at least three (3) units of each type of Protective Relay Panels of which the characteristics are similar to the ones specified herein in EGAT's or other Electricity Authorities of Thailand's 220 kV or above Transmission System for at least three (3) consecutive years.

OR

Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein.

6. If the manufacturer is a new company formed by acquisition of or merger with other companies or business units, and any of such previous companies or other business units has the experience records that meet the requirements set forth herein, such experience records are acceptable as the experience records of the new company.

7. Having no just or proper claims pending against Equipment on other similar works.

In case the manufacturer is a new company formed by acquisition of or merger with other companies or business units, the pending claim of any of such previous companies or business units shall be considered as pending claim of the manufacturer.

- f. The proposed protective relays shall be the products from the manufacturers as listed in EGAT's Specifications and shall be in compliance with the details specified in EGAT's Specifications. Type/Model of the proposed main protective relays shall be as specified in EGAT ACCEPTED MAIN RELAY LIST No. 1 which is attached at the end of Section A. Invitation to Bid.

**II. All Bidders should preferably meet the following technical requirements; failure to so comply may constitute sufficient ground for rejection.**

The proposed protective relays shall be the products from the manufacturers as listed in EGAT's Specifications and shall be in compliance with the details specified in EGAT's Specifications. Type/Model of the proposed protective relays shall be as specified in EGAT ACCEPTED MAIN RELAY LIST No. 2 which is attached at the end of Section A. Invitation to Bid.

EGAT ACCEPTED MAIN RELAY LIST No.1

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for			Notes
				500kV	230kV	115&69kV	
Current Differential	Numerical	RED670	ABB	YES	YES	YES	Only software version 1.1 is accepted.
		P543	GE	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		L90	GE	YES	YES	YES	
		SEL-311L	SEL	YES	YES	YES	
		7SD52	Siemens	YES	YES	YES	
		GRI100	Toshiba	YES	YES	YES	
		P543	Schneider Electric	YES	YES	YES	
		EF-LD	INGETAM	YES	YES	YES	
		PCS-931	NR Electric	YES	YES	YES	
Distance Protection	Numerical	REL670	ABB	YES	YES	YES	Only software version 1.1 is accepted.
		P443	GE	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		D30	GE		YES	YES	Only for three pole tripping and line protection that no need carrier scheme.
		D60	GE		YES	YES	
		ALPSDA1	GE	YES	YES	YES	
		SEL-311C	SEL			YES	Only for three pole tripping and line protection that no need carrier scheme.
		SEL-421	SEL	YES	YES	YES	For 21P, 85, 67N. The relay with auto-reclosing function can not be accepted.
		7SA522	Siemens	YES	YES	YES	
		7SA6 series	Siemens	YES	YES	YES	
		GRZ100	Toshiba		YES	YES	
		GRZ200	Toshiba		YES	YES	
		ZLV	ZIV		YES	YES	
		P443	Schneider Electric	YES	YES	YES	
		EF-ZT	INGETAM	YES	YES	YES	
		PCS-902	NR Electric	YES	YES	YES	
Transformer Differential	Numerical	RET670	ABB	YES	YES	YES	Only software version 1.1 is accepted.
		RET650	ABB	YES	YES	YES	3-restraints.
		P64x	GE	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"



## EGAT ACCEPTED MAIN RELAY LIST No.1

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for			Notes
				500kV	230kV	115&69kV	
Transformer Differential	Numerical	T35	GE		YES	YES	
		T60	GE		YES	YES	
		Duobias	Siemens		YES	YES	The manufacturer's name "Reyrolle" is changed to "Siemens"
		SEL-387	SEL		YES	YES	4-restraints.
		SEL-487E	SEL	YES	YES	YES	
		SEL-587	SEL			YES	2-restraints.
		SEL-787	SEL			YES	2-restraints.
		7UT6	Siemens	YES	YES	YES	5-restraints.
		GRT100	Toshiba	YES	YES	YES	
		GRT200	Toshiba	YES	YES	YES	
		IDV	ZIV	YES	YES	YES	
		P645	Schneider Electric	YES	YES	YES	
		EF-TD	INGETEAAM	YES	YES	YES	3-restraints.
		PCS-978	NR Electric	YES	YES	YES	
Busbar Protection	High Impedance	REB650	ABB	YES	YES	YES	
		SEL-587Z	SEL	YES	YES	YES	
		GRB150	Toshiba	YES	YES	YES	
Busbar Protection	Numerical Low Impedance	REB670	ABB	YES	YES	YES	Only software version 1.1 is accepted.
		REB500	ABB	YES	YES	YES	
		P746	GE	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		P740	GE	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		B90	GE	YES	YES	YES	
		B30	GE	YES	YES	YES	Only use in case that the bus arrangement is Breaker-and-a-half, Double-bus-Double-Breaker or Main-and-Transfer.
		P747	GE	YES	YES	YES	
		SEL-487B	SEL	YES	YES	YES	
		7SS52	Siemens	YES	YES	YES	
		7SS60	Siemens	YES	YES	YES	Only use in case that the bus arrangement is Breaker-and-a-half, Double-bus-Double-Breaker or Main-and-Transfer.

## EGAT ACCEPTED MAIN RELAY LIST No.1

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for			Notes
				500kV	230kV	115&69kV	
Busbar Protection	Numerical Low Impedance	7SS85	Siemens	YES	YES	YES	
		GRB100	Toshiba	YES	YES	YES	
		P746	Schneider Electric	YES	YES	YES	
		P740	Schneider Electric	YES	YES	YES	
Breaker Failure Protection	Numerical	RAHB411	ABB	YES	YES	YES	
		REQ650	ABB			YES	
		P141	GE	YES	YES	YES	3-phase Breaker failure function only. The manufacturer's name "ALSTOM" is changed to "GE"
		P14Nx	GE	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		C60	GE		YES	YES	
		F60	GE		YES	YES	
		SEL-501	SEL	YES	YES	YES	3-phase Breaker failure function only.
		P821	Schneider Electric		YES	YES	Only firmware version 1.F is accepted.
		7VK6 series	Siemens	YES	YES	YES	The function and the operating time for each system shall be conform to Specification nos. 1005 and 1002.
		GRC100	Toshiba		YES	YES	
		GRD200	Toshiba	YES	YES	YES	
		EF-ZT	INGETAM	YES	YES	YES	
		PCS-9611	NR Electric	YES	YES	YES	3-phase Breaker failure function only.

**Note**

- The procedures for being listed in EGAT ACCEPTED MAIN RELAY LIST can be requested from Transmission System Engineering Division.
- If any type of relay in the list is planned not to be manufactured, the manufacturer or the representative is responsible for informing EGAT at least 1 year before it is obsolete.
- The relays shall be configured to comply with all EGAT's needed functions.

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## EGAT ACCEPTED MAIN RELAY LIST No.2

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for				Notes
				500kV	230kV	69&115kV	22&33kV	
Directional Overcurrent Relay	Numerical	REQ650	ABB	YES	YES	YES	YES	
		P14Dx	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		P841	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		SEL-351A	SEL	YES	YES	YES	YES	
		SEL-451	SEL	YES	YES	YES	YES	
		SEL-751	SEL	YES	YES	YES	YES	
		GRE140	Toshiba	YES	YES	YES	YES	
		GRD200	Toshiba	YES	YES	YES	YES	
		7SJ62	Siemens	YES	YES	YES	YES	
		7SJ85	Siemens	YES	YES	YES	YES	
		IRV	ZIV		YES	YES	YES	
		EF-MD	INGETEA	YES	YES	YES	YES	
		PCS-9611	NR Electric				YES	None of line fault locator. Only use with feeder.
Overcurrent Relay	Numerical	REQ650	ABB	YES	YES	YES	YES	
		P141	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		P14Dx	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		P14Nx	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		P841	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		F60	GE	YES	YES	YES	YES	
		F650	GE	YES	YES	YES	YES	
		SR350	GE	YES	YES	YES	YES	
		P120	Schneider Electric	YES	YES	YES	YES	

## EGAT ACCEPTED MAIN RELAY LIST No.2

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for				Notes
				500kV	230kV	69&115kV	22&33kV	
Overcurrent Relay	Numerical	P122	Schneider Electric	YES	YES	YES	YES	
		SEL-351A	SEL	YES	YES	YES	YES	
		SEL-451	SEL	YES	YES	YES	YES	
		SEL-551	SEL	YES	YES	YES	YES	
		SEL-751	SEL	YES	YES	YES	YES	
		SEL-751A	SEL	YES	YES	YES	YES	
		7SJ61	Siemens	YES	YES	YES	YES	
		7SJ62	Siemens	YES	YES	YES	YES	
		7SJ85	Siemens	YES	YES	YES	YES	
		GRE140	Toshiba	YES	YES	YES	YES	
		GRD200	Toshiba	YES	YES	YES	YES	
		IRV	ZIV		YES	YES	YES	
		EF-MD	INGETEA	YES	YES	YES	YES	
		PCS-9611	NR Electric	YES	YES	YES	YES	3 pole trip only
Synchronism Check Relay	Numerical	REQ650	ABB	YES	YES	YES		
		SPAU140C	ABB	YES	YES	YES		
		P841	GE	YES	YES	YES		The manufacturer's name "ALSTOM" is changed to "GE"
		F60	GE	YES	YES	YES		
		F650	GE	YES	YES	YES		
		SEL-279H	SEL	YES	YES	YES		
		SEL-351A	SEL	YES	YES	YES		
		SEL-451	SEL	YES	YES	YES		
		SEL-751	SEL	YES	YES	YES		
		SEL-751A	SEL	YES	YES	YES		
		7VK61	Siemens	YES	YES	YES		
		7SJ85	Siemens	YES	YES	YES		
		GRD200	Toshiba	YES	YES	YES		

## EGAT ACCEPTED MAIN RELAY LIST No.2

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for				Notes
				500kV	230kV	69&115kV	22&33kV	
Synchronism Check Relay	Numerical	EF-MD	INGETEA	YES	YES	YES		
		PCS-9611	NR Electric	YES	YES	YES		
	Static	RASC	ABB	YES	YES	YES		only use in Interposing Panel.
Auto Reclosing Relay	Numerical	REQ650	ABB	YES	YES	YES		
		P841	GE	YES	YES	YES		The manufacturer's name "ALSTOM" is changed to "GE"
		F60	GE		YES	YES		3 pole reclose only
		F650	GE		YES	YES		3 pole reclose only
		DRS	GE		YES	YES		3 pole reclose only
		SEL-279H	SEL		YES	YES		3 pole reclose only
		SEL-351A	SEL		YES	YES		3 pole reclose only
		SEL-451	SEL		YES	YES		3 pole reclose only
		SEL-751	SEL		YES	YES		3 pole reclose only
		7VK512	Siemens	YES	YES	YES		
		7VK61	Siemens	YES	YES	YES		
		GRR100	Toshiba	YES	YES	YES		
		GRD200	Toshiba	YES	YES	YES		
		EF-ZT	INGETEA	YES	YES	YES		
		PCS-9611	NR Electric		YES	YES		3 pole reclose only
Overfluxing Relay	Static	RALK	ABB	YES	YES	YES		
	Numerical	7RW600	Siemens	YES	YES	YES		
		EF-TD	INGETEA	YES	YES	YES		
Frequency Relay	Numerical	P94Vx	GE	YES	YES	YES	YES	The manufacturer's name "ALSTOM" is changed to "GE"
		MIV	GE		YES	YES	YES	
		SEL-351A	SEL	YES	YES	YES	YES	
		SEL-451	SEL	YES	YES	YES	YES	
		SEL-751	SEL	YES	YES	YES	YES	

## EGAT ACCEPTED MAIN RELAY LIST No.2

Scheme	Technique	Accepted Type/Model	Manufacturer	Acceptance for				Notes
				500kV	230kV	69&115kV	22&33kV	
Frequency Relay	Numerical	SEL-751A	SEL	YES	YES	YES	YES	
		7SJ85	Siemens	YES	YES	YES	YES	
		EF-MD	INGETEA	YES	YES	YES	YES	
		PCS-9611	NR Electric	YES	YES	YES	YES	
Under/Overvoltage Relay	Numerical	MIV	GE		YES	YES	YES	
		P94V	GE	YES	YES	YES	YES	None of VT input (open delta connection) for 59N.
		SEL-351A	SEL	YES	YES	YES	YES	
		SEL-751	SEL	YES	YES	YES	YES	
		SEL-751A	SEL	YES	YES	YES	YES	
		7SJ62	Siemens	YES	YES	YES	YES	
		7SJ85	Siemens	YES	YES	YES	YES	
		GRD200	Toshiba	YES	YES	YES	YES	
		IRV	ZIV	YES	YES	YES	YES	
		EF-MD	INGETEA	YES	YES	YES	YES	
		PCS-9611	NR Electric		YES	YES	YES	C-Bank protection only

**Note**

- The procedures for being listed in EGAT ACCEPTED MAIN RELAY LIST can be requested from Transmission System Engineering Division.
- If any type of relay in the list is planned not to be manufactured, the manufacturer or the representative is responsible for informing EGAT at least 1 year before it is obsolete.
- The relays shall be configured to comply with all EGAT's needed functions.

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# EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY

Description	Manufacturer / Country
Protective Relay	ABB / Sweden, Switzerland, USA
	GE / USA, Canada, Spain, UK
	SEL / USA
	Siemens / Germany
	Reyrolle / UK
	Toshiba / Japan, Vietnam
	Schneider Electric / France, UK
	ZIV / Spain
	INGETEAAM / Spain
	NR Electric / China
	Mitsubishi / Japan

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