

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย

**REGISTRATION FORM**

INVITATION TO BID NO. TS12-CR-03

FOR SUPPLY OF CONTROL AND PROTECTION EQUIPMENT

TRANSMISSION SYSTEM EXPANSION PROJECT NO. 12

AVAILABLE DURATION FOR PURCHASING MARCH 26, 2018 TO MAY 11, 2018

PRICE THB 500.-

COMPLETE DATA IS REQUIRED FOR THE BIDDER'S OWN BENEFITS

(โปรดกรอกรายละเอียดให้ครบถ้วนเพื่อประโยชน์ของบริษัท)

**Step 2** : Bring the payment receipt and filled-out registration Form (in English) to receive the bidding documents at Transmission System Development Area Foreign Procurement Department (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 :		e-GP Registration Date :	
LOCAL REPRESENTATIVE (ตัวแทนในประเทศ)			
ADDRESS (ที่อยู่)		TAX ID :	
ATTN. (ผู้รับผิดชอบ):		FAX NO.:	TEL.:
E-mail :			

FOR PROCUREMENT OFFICER		CHANGE OF BIDDER'S NAME	TAX ID :
BIDDER'S LETTER NO. :		DATED :	
NEW BIDDER'S NAME (ชื่อผู้ซื้อเอกสารเปลี่ยนเป็น)			
ADDRESS (ที่อยู่)		COUNTRY :	
ATTN. (ผู้รับผิดชอบ):		FAX NO.:	TEL.:
E-mail :		e-GP Registration Date :	
LOCAL REPRESENTATIVE (ตัวแทนในประเทศ)			
ADDRESS (ที่อยู่)		TAX ID :	
ATTN. (ผู้รับผิดชอบ):		FAX NO.:	TEL.:
E-mail :		e-GP Registration Date :	
FOR PROCUREMENT OFFICER		FOR PURCHASER	
Procurement Officer (ผู้ส่งมอบเอกสาร)		Document received by (ผู้รับมอบเอกสาร)	

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

FOR PURCHASER		TAX ID :
BIDDER'S NAME (บริษัทผู้ซื้อเอกสาร)		
ADDRESS (ที่อยู่)		
BID NO. <u>TS12-CR-03</u>	PRICE <u>OR</u> <u>THB 500.-</u>	DURATION FOR PURCHASING <u>March 26, 2018 TO May 11, 2018</u>



INVITATION TO BID NO. TS12-CR-03

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)** :

Schedule 1 : THB 77,500,000.-

Schedule 2 : THB 2,820,000.-

**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 neither fail to submit the Revenue and Expense Accounts nor fail to present proper and complete accounts under the Notification of National Anti-Corruption Commission Concerning Principles and Methods of Preparing Revenue and Expense Accounts of Project between Individual/Company and Government Agencies B.E. 2554 (A.D. 2011) issued on August 11, 2011 as amended from time to time ("the Notification").
3. The Bidder shall register for e-Government Procurement (e-GP) at Thai Government Procurement website ([www.gprocurement.go.th](http://www.gprocurement.go.th)) at telephone No. 0 2127 7386 – 89) of the Comptroller General's Department of Thailand.
4. 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.
5. 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.
6. 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.
7. 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 March 26, 2018 to May 11, 2018 at THB 500.- per copy, non-refundable, at the following address :

Transmission System Development Area Foreign Procurement Department  
(Room No. 1202/2, 12<sup>th</sup> Floor, Building Tor. 101)  
Foreign Supply and Procurement Division  
Electricity Generating Authority of Thailand  
Bangkrui, Nonthaburi 11130, Thailand

Fax no. 0 2433 6317, 0 2433 5523, 0 2434 4064

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/>

*Nilanah Usotpuvapisit*

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, May 24, 2018 and will be opened publicly at 10:00 hrs.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

March 15, 2018

*Nilanate Osotpavapust*

(Mrs. Nilanate Osotpavapust)  
Chief, Transmission System Development Area  
Foreign Procurement Department



**ประกาศการไฟฟ้าฝ่ายผลิตแห่งประเทศไทย  
เรื่อง ประกวดราคาซื้อ เลขที่ TS12-CR-03**

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

**สถานที่ส่งมอบ** : หน้าโรงงานผู้ผลิต

**ราคากลาง(รวมภาษีมูลค่าเพิ่ม) :**

Schedule 1 : 77,500,000.- บาท

Schedule 2 : 2,820,000.- บาท

**คุณสมบัติของผู้เสนอราคา**

1. ต้องเป็นนิติบุคคลผู้ผลิตพัสดุ หรือผู้มีอาชีพขายพัสดุที่ผลิตในประเทศไทยตามประกาศ และต้องไม่เป็นผู้ที่ทำงานซึ่งสำนักนายกรัฐมนตรีได้แจ้งเวียนชื่อไว้ หรือต้องไม่เป็นผู้ที่ กฟผ. ห้ามติดต่อหรือห้ามเข้าเสนอราคา หรือต้องไม่เป็นผู้ที่ได้รับผลของการสั่งให้นิติบุคคลหรือบุคคลอื่นเป็นผู้ที่ทำงานตามคำสั่ง กฟผ.
2. ต้องไม่อยู่ในฐานะเป็นผู้ไม่แสดงบัญชีรายรับรายจ่าย หรือแสดงบัญชีรายรับรายจ่ายไม่ถูกต้องครบถ้วนในสาระสำคัญ ตามประกาศคณะกรรมการป้องกันและปราบปรามการทุจริตแห่งชาติ เรื่อง หลักเกณฑ์และวิธีการจัดทำและแสดงบัญชีรายการรับจ่ายของโครงการที่บุคคลหรือนิติบุคคลเป็นคู่สัญญากับหน่วยงานของรัฐ พ.ศ. 2554 และที่แก้ไขเพิ่มเติม
3. ต้องเป็นนิติบุคคลที่ได้ลงทะเบียนในระบบอิเล็กทรอนิกส์ (e-Government Procurement : e-GP) ของกรมบัญชีกลางที่เว็บไซต์ศูนย์ข้อมูลจัดซื้อจัดจ้างภาครัฐ ([www.gprocurement.go.th](http://www.gprocurement.go.th)) โทรศัพท์ หมายเลข 0 2127 7386 – 89
4. ต้องไม่เป็นผู้มีผลประโยชน์ร่วมกันกับผู้เสนอราคารายอื่น ณ วันประกาศประกวดราคาครั้งนี้เป็นต้นไป หรือต้องไม่เป็นผู้กระทำการอันเป็นการขัดขวางการแข่งขันราคาอย่างเป็นธรรมในการดำเนินการประกวดราคาครั้งนี้
5. ต้องไม่เป็นที่ปรึกษาของ กฟผ. หรือมีส่วนร่วมในบริษัทที่ปรึกษาของ กฟผ. ในงานนี้ หรือต้องไม่มีผู้ปฏิบัติงาน กฟผ. เข้าไปมีส่วนร่วมในกิจการของผู้เสนอราคา ไม่ว่าจะในฐานะผู้ถือหุ้นที่มีสิทธิควบคุมการจัดการ กรรมการ ผู้อำนวยการ ผู้จัดการ พนักงาน ลูกจ้าง ตัวแทนหรือที่ปรึกษา ยกเว้น ในกรณีที่ผู้ปฏิบัติงานได้รับคำสั่งอย่างเป็นทางการจาก กฟผ. ให้ไปปฏิบัติงานหรือเข้าร่วมในกิจการของผู้เสนอราคา
6. ต้องไม่เป็นผู้ได้รับเอกลิขสิทธิ์หรือความคุ้มครอง ซึ่งอาจปฏิเสธไม่ยอมขึ้นศาลไทย เว้นแต่รัฐบาลของผู้เสนอราคาได้มีคำสั่งให้ละสิทธิ์และความคุ้มครองเช่นว่านั้น
7. ผู้ประสงค์เข้าประกวดราคาในนามของกิจการร่วมค้า (Joint Venture or Consortium) จะต้องดำเนินการทุกขั้นตอนของการประกวดราคาในนามของกิจการร่วมค้า ตั้งแต่การเสนอราคาจนถึงสิ้นสุดข้อผูกพันกับ กฟผ.

**การขายเอกสารประกวดราคา**

ผู้สนใจติดต่อขอทราบรายละเอียด เพื่อตรวจสอบคุณสมบัติของผู้เสนอราคา และขอซื้อเอกสารประกวดราคา ในราคาชุดละ 500.- บาท ได้ที่ แผนกซื้องานวิศวกรรมระบบส่ง (ห้อง 1202/2 ชั้น 12 อาคาร ท.101) กองจัดหาต่างประเทศสายงานพัฒนาระบบส่งฝ่ายพัสดุและจัดหาต่างประเทศ การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี ในวันทำการระหว่างเวลา 08:00 น. ถึง 15:00 น. ตั้งแต่วันที่ 26 มีนาคม 2561 ถึงวันที่ 11 พฤษภาคม 2561 หรือสอบถามทางโทรศัพท์ หมายเลข 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 24 พฤษภาคม 2561 เวลา 9:30 น. ถึง 10:00 น. และเปิดซองประกวดราคา เวลา 10:00 น. ณ ห้อง 1202/1 ชั้น 12 อาคาร ท.101 การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี

ประกาศ ณ วันที่ 15 มีนาคม 2561


โง่งเนง โง่งงงงงงง

(นางนิลเนตร โอสถภาณุชิต)

หัวหน้ากองจัดหาต่างประเทศสายงานพัฒนาระบบส่ง

ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง(ราคาอ้างอิง)  
ในการจัดซื้อจัดจ้างที่มีไขงานก่อสร้าง


1. ชื่อโครงการ ประกวตราค่าเลขที่ TS12-CR-03  
งานจัดซื้อ Control and Protection Equipment  
โครงการขยายระบบส่งไฟฟ้าระยะที่ 12  
/หน่วยงานเจ้าของโครงการ ฝ่ายแผนงานและโครงการระบบส่ง การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย
2. วงเงินงบประมาณที่ได้รับจัดสรร  
โครงการขยายระบบส่งไฟฟ้าระยะที่ 12 งบประมาณ 60,000 ล้านบาท
3. วันที่กำหนดราคากลาง 2 มีนาคม 2561 (วันที่ อวส. อนุมัติ )  
ราคารวมภาษีมูลค่าเพิ่มเป็นเงิน 80,320,000.00 บาท ราคา/หน่วย ตามเอกสารแนบ
4. แหล่งที่มาของราคากลาง หลักเกณฑ์การกำหนดราคากลางงานจัดซื้อจัดจ้างสายงานพัฒนาระบบส่ง
5. รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง  
น.ส.จิราภา ทรงธนศักดิ์                      หคป-พส. กวป-พส.


  
ธูนิศา เข้มอยู่  
ทชส-ท.  
15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	72,378,124.30	
<b>SUMMARY PRICE</b>		<b>Baht</b>	<b>72,378,124.30</b>
<b>IMPORT DUTY</b>		<b>Baht</b>	<b>XXXXXX</b>
<b>VAT 7%</b>		<b>Baht</b>	<b>5,066,468.70</b>
<b>SUMMARY OF BID PRICE</b>		<b>Baht</b>	<b>77,444,593.00</b>
<b>SUMMARY OF BID PRICE (ROUNDED)</b>		<b>Baht</b>	<b>77,500,000.00</b>

In case Bidder proposes price discount without specifying whether or not it includes Value Added Tax EGAT will consider it as the price discount excluding VAT

  
 สุณิศา เข้มอยู่  
 ทชส-ท.  
 15 มี.ค. 2561


  
 (นางสาวพนา สุภาวกุล)  
 อวส.  
 2 มี.ค. 61

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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	EGAT-PEA INTERFACING PANEL(4-REMOTE I/O AND ACCESSORIES)	Panel No. 71R Specification No. 1002 Dwg. Nos. SN4-E-1.2, SN4-E-2.1, SN4-E-2.3, SN4-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. Spec.No.1002 & SD-FOT-P22	1	EA	437,222.50	437,222.50
1-2	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, for being installed in PNL. 63R. Specification No. 1002. Dwg. Nos. SN4-E-1.2, SN4-E-2.1, SN4-E-2.3, SN4-E-3	1	EA	335,788.00	335,788.00
1-3	AUTO RECLOSING RELAY (79)  <div style="text-align: center;">             สุนิศา เข้มอยู่            ทชส-ท.         </div>	Supply as loose part, for being installed in PNL. 63R. Specification No. 1002. Dwg. Nos. SN4-E-1.2, SN4-E-2.1, SN4-E-2.3, SN4-E-3	1	EA	58,929.00	58,929.00

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

- Project 1-1C1 -

อวส.

๗ มี.ค. ๖๑

filename : TS12-CR-03-1 (230, 115 kV)

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-4	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part, for being installed in PNL. 63R, 64R & 70R Specification No. 1002. Dwg. Nos. SN4-E-1.2, SN4-E-2.1, SN4-E-2.3, SN4-E-3	3	EA	102,968.00	308,904.00
1-5	kWh&kVARh METER	Supply as loose part, for being installed in the existing metering panel Specification No. 1002. Dwg. Nos. SN4-E-1.2	2	EA	205,376.00	410,752.00
1-6	WATT AND VAR TRANSDUCER (W&VAR- TDR)	Supply as loose part, for being installed in PNL. 7C Specification No. 1002. Dwg. Nos. SN4-E-1.2, SN4-E-2.1	1	EA	17,804.00	17,804.00
1-7	VOLTAGE TRANSDUCER (V-TDR)  สัญญา เข้มอยู่ หขต-ท.	3 Phase Supply as loose part, for being installed in PNL. 7C Specification No. 1002. Dwg. Nos. SN4-E-1.2, SN4-E-2.1	1	EA	9,580.00	9,580.00



**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-8	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. 7C Specification No. 1002. Dwg. Nos. SN4-E-1.2, SN4-E-2.1	1	EA	9,580.00	9,580.00
1-9	230 kV LINE PROTECTION (87L, 3ph, 79)	Panel Nos. 19R and 21R. Specification No. 1002 Dwg Nos. CR-E-1.1, CR-E-2.2 SH.1, CR-E-3.1, TP-E-9.1, TP-E- 10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	444,106.00	888,212.00
1-10	230 kV LINE PROTECTION (21P, 3ph, 2-BF, DTT)  <div style="text-align: center;">             สุนิศา เข้มอยู่            หจส-ท.         </div>	Panel Nos. 20R and 22R Specification No. 1002 Dwg Nos. CR-E-1.1, CR-E-2.2 SH.1, CR-E-3.1, TP-E-9.1, TP-E- 10.1, and TP-E-11	2	EA	580,848.00	1,161,696.00

15 ส.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

- Project 1-1C3 -

2 ส.ค. 61

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-11	230/115 kV TRANSFORMER PROTECTION (5 RESTRAINS, 4-51)	Panel No. 4R. Specification No. 1002 Dwg Nos. CR-E-1.1, CR-E-2.2 SH.1, CR-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11	1	EA	775,247.00	775,247.00
1-12	TRANSDUCER PANEL	Panel No. TDR2 Includes 5-V-TDR(1ph.), 4-W&VAR-TDR, 1-A-TDR(1ph.), 1-R-TDR, 1-T-TDR (FOR TRANSFORMER) and 4-TS. Specification No. 1002 Dwg Nos. CR-E-1.1&1.2 and TP-E-10.2.	1	EA	382,650.40	382,650.40

*m*  
สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

*[Signature]*  
(นางสาวพนา สุภาวกุล)  
อวส.

- Project 1-1C4 -

2 มี.ค. 61

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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	115 kV LINE PROTECTION (87L, 21, 79, 2-BF)	Panel No. 46R. Specification No. 1002 Dwg Nos. CR-E-1.2, CR-E-2.2 SH.2, CR-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	1,149,015.00	1,149,015.00
1-14	115 kV LINE PROTECTION (87L, 21, 79, 1-BF)	Panel No. 47R. Dwg Nos. CR-E-1.2, CR-E-2.2 SH.2, CR-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	1,058,614.00	1,058,614.00
1-15	BREAKER FAILURE RELAY (50BF+62BF)  สุณิศา แยมอยู่ ทชส-ท.	Supply as loose part, for being installed in PNL. 41R. Specification No. 1002 Dwg Nos. CR-E-1.2, CR-E-2.2 SH.2 and CR-E-3.2.	1	EA	88,404.00	88,404.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

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
1-16	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part. Reserved for Thoeng Substation (THG) Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00
1-17	TRANSFORMER DIFFERENTIAL RELAY (87K, 3 restraint windings)	Supply as loose part, for being installed in PNL. 1F/1R. Specification No. 1002 Dwg Nos. TE-E-1, TE-E-2, TE-E-3	1	EA	147,708.00	147,708.00
1-18	WATT AND VAR TRANSDUCER (W&VAR- TDR)	Supply as loose part, for being installed in PNL. 1F/1R. Specification No. 1002 Dwg Nos. TE-E-1, TE-E-2, TE-E-3	1	EA	17,804.00	17,804.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

2 มี.ค. 61

- Project 1-1C6 -

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-19	VOLTAGE TRANSDUCER (V-TDR)	3 Phase Supply as loose part, for being installed in PNL. 1F/1R. Specification No. 1002 Dwg Nos. TE-E-1, TE-E-2, TE-E-3	1	EA	9,580.00	9,580.00
1-20	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in PNL. 1F/1R. Specification No. 1002 Dwg Nos. TE-E-1, TE-E-2, TE-E-3	1	EA	9,580.00	9,580.00
1-21	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. 1F/1R. Specification No. 1002 Dwg Nos. TE-E-1, TE-E-2, TE-E-3	1	EA	9,580.00	9,580.00
1-22	RESISTANCE TRANSDUCER (R-TDR) <i>m</i> ศูนย์ฯ แยกอยู่ ทชส-ท.	Supply as loose part, for being installed in PNL. 1F/1R. Specification No. 1002 Dwg Nos. TE-E-1, TE-E-2, TE-E-3	1	EA	10,814.00	10,814.00

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.


๑ ๒ ๑ ๑ ๑

- Project 1-1C7 -

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-23	115 kV LINE PROTECTION (87L, 21, 79, 1-BF)	Panel No. 10R Specification No. 1002 Dwg. Nos. CT-E-1.2, CT-E-2.2, CT-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	1,058,614.00	1,058,614.00
1-24	115 kV LINE PROTECTION (87, 67, 79, 1-BF, DTT)	Panel No.11R Specification No. 1002 Dwg. Nos. CT-E-1.2, CT-E-2.2, CT-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11	1	EA	1,162,517.00	1,162,517.00
1-25	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, for being installed in PNL. 1R & 7R Specification No. 1002 Dwg. Nos. CT-E-1.2, CT-E-2.2, CT-E-3.2 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00

  
 สุนิศา เข้มอยู่  
 ทชส-ท.  
 15 ส.ค. 2561

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part, for being installed in PNL. 12R. Specification No. 1002 Dwg. Nos. CT-E-1.2, CT-E-2.2, CT- E-3.2	1	EA	102,968.00	102,968.00
1-27	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as loose part, for being installed in PNL. 1R & 6R. Specification No. 1002 Dwg. Nos. CT-E-1.2, CT-E-2.2, CT- E-3.2	2	EA	203,656.00	407,312.00
1-28	EGAT-PEA INTERFACING PANEL(3-REMOTE I/O AND ACCESSORIES)	Panel No. 9R Specification No. 1002 Dwg. Nos. CT-E-1.2, CT-E-2.2, CT-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. Spec.No.1002 & SD-FOT-P22	1	EA	350,981.40	350,981.40

~  
สุณิสา แอ้มอยู่

หขส-ห.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๐ ๓ ๑ ๑๓

- Project 1-1C9 -

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-29	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part Specification No. 1002 Dwg. Nos. CT-E-1.2	2	EA	17,804.00	35,608.00
1-30	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part Specification No. 1002 Dwg. Nos. CT-E-1.2	2	EA	9,580.00	19,160.00
1-31	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part. Reserved for Trat Substation (TR) Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	3	EA	335,788.00	1,007,364.00

สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

2 มี.ค. 61



## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-32	115 kV LINE PROTECTION (87L, 21, 79, 2-BF)	Panel Nos. 705R & 707R Specification No. 1002 Dwg. Nos. KNE-E-1.2, KNE-E-2.8, KNE-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	1,149,015.00	2,298,030.00
1-33	115 kV LINE PROTECTION (87L, 21, 79, 1-BF)	Panel Nos. 706R & 708R Specification No. 1002 Dwg. Nos. KNE-E-1.2, KNE-E-2.8, KNE-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	1,058,614.00	2,117,228.00
1-34	WATT AND VAR TRANSDUCER (W&VAR- TDR)	Supply as loose part. Specification No. 1002	4	EA	17,804.00	71,216.00

สุวิศา เข้มอยู่

ทชส-ท.

15 ส.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๒ ส.ค. ๖๑

- Project 1-1C11 -

filename : TS12-CR-03-1 (230, 115 kV)


**MEDIUM COST FOR BID NO. TS12-CR-03**

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

**SUPPLY OF CONTROL AND PROTECTION EQUIPMENT**

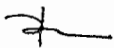
**TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price ( excluding VAT ) Baht	
					Unit Price	Amount
1-35	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part. Specification No. 1002	4	EA	9,580.00	38,320.00
1-36	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part. Reserved for Satun Substation (STU) Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00

  
สุนิศา เข้มอยู่

หขส-ห.

15 มี.ค. 2561

  
(นางสาวพนา สุภาวกุล)  
อวส.

2 มี.ค. 61

MEDIUM COST FOR BID NO. TS12-CR-03

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	115 kV LINE PROTECTION (87L, 21, 79, 1-BF)	Panel Nos. 9F/9R & 10F/10R Panel Width = 700 mm. Panel No. 9F/9R shall be supplied with the end trim with access door. Specification No. 1002 Dwg Nos. SDO-E-1, SDO-E-2, SDO-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided. Bill of Material	2	EA	1,279,248.00	2,558,496.00
1-38	115/22 kV TRANSFORMER PROTECTION (2 RESTRAINS, 2-51, 1-BF)  <i>m</i> สุนิศา เข้มอยู่ ทชส-ท. 15 มี.ค. 2561	Panel No.8F/8R Panel Width = 700 mm. Panel No. 8F/8R shall be supplied with the end trim with access door Specification No. 1002 Dwg Nos. BGS-E-1, BGS-E-2, BGS-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11 Bill of Material	1	EA	1,071,696.00	1,071,696.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-39	VOLTMETER	Supply as loose part, for 22 kV system. Installed in the existing Panel IP. Specification No. 1002 Dwg No. BGS-E-1.	1	EA	10,000.00	10,000.00
1-40	kWh&kVARh METER	Supply as loose part, for being installed in the existing Panel MP. Specification No. 1002 Dwg No. BGS-E-1.	2	EA	205,376.00	410,752.00
1-41	115/22 kV TRANSFORMER PROTECTION (2 RESTRAINS, 2-51, 1-BF)	Panel No.7F/7R Panel Width = 700 mm. Specification No. 1002 Dwg Nos. MCN-E-1, MCN-E-2, MCN-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11. Bill of Material	1	EA	1,071,696.00	1,071,696.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561


## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-42	VOLTMETER	Supply as loose part, for 22 kV system. Installed in the existing Panel IP. Specification No. 1002 Dwg No. MCN-E-1.	1	EA	10,000.00	10,000.00
1-43	kWh&kVARh METER	Supply as loose part, for being Installed in the existing Panel MP. Specification No. 1002 Dwg No. MCN-E-1	2	EA	205,376.00	410,752.00
1-44	115 kV BUS PROTECTION (LOW IMPEDANCE, NO SWITCHING ZONE, 10 feeders)	Panel 87B Dwg Nos. KNG-E-1, KNG-E-2, KNG-E-3 and TP-E-10.1	1	SET	1,812,256.00	1,812,256.00



สุนิศา แชนมอยู่

ทชส-ท.

15 มี.ค. 2561



(นางสาวพนา สุภาวกุล)

อวส.


๐ ๕ ๖ ๗

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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	115/22 kV TRANSFORMER PROTECTION (2 RESTRAINS, 2-51, 1-BF)	Panel No.1F/1R Panel Width = 700 mm. Panel No. 1F/1R shall be supplied with the end trim with access door. Specification No.1002 Dwg Nos. KNG-E-1, KNG-E-2, KNG-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11. Bill of Material	1	EA	1,071,696.00	1,071,696.00
1-46	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part, for being installed in PNL. 4FB/4RB. Specification No. 1002 Dwg Nos. KNG-E-1, KNG-E-2, KNG-E-3.	1	EA	67,618.00	67,618.00
1-47	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)  <b>สุวิศา เข้มอยู่</b> <b>หขส-ท.</b>	Supply as loose part, for being installed in PNL. 4FB/4RB. Specification No. 1002 Dwg Nos. KNG-E-1, KNG-E-2, KNG-E-3.	2	EA	63,456.00	126,912.00

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-48	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, for being installed in the existing Panel No. 4FB/4RB. Specification No. 1002 Dwg Nos. KNG-E-1, KNG-E-2, KNG-E-3.	1	EA	88,404.00	88,404.00
1-49	kWh&kVARh METER	Supply as loose part, for being installed in the existing metering panel. Specification No. 1002 Dwg No. KNG-E-1.	4	EA	205,376.00	821,504.00
1-50	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in PNL. 4FB/4RB. Specification No. 1002 Dwg Nos. KNG-E-1, KNG-E-2, KNG-E-3.	1	EA	9,580.00	9,580.00

สุณิสา เข้มอยู่

ทชส-ท

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๑ มี.ค. ๖๑

- Project 1-1C17 -

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-51	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in PNL. 2F&7F Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	9,580.00	19,160.00
1-52	VOLTAGE TRANSDUCER (V-TDR)	3 Phase Supply as loose part, for being installed in PNL. 2F&7F. Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	9,580.00	19,160.00
1-53	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part, for being installed in PNL. 2R&7R Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	67,618.00	135,236.00

สุณิศา แยมอยู่

ทชต-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๒๖-๓-๖๑



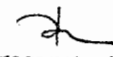
อวส.-อผก.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-54	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part, for being installed in PNL. 2R&7R Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	4	EA	63,456.00	253,824.00
1-55	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, for being installed in PNL. 2R&7R Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	88,404.00	176,808.00
1-56	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. 2F&7F Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	9,580.00	19,160.00

สุเมธิตา เข้มมอญ

ทชส-ท.  
15 มี.ค. 2561

  
 (นางสาวพนา สุภาวกุล)  
 อวส.  
 2 มี.ค. 61

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-57	FREQUENCY RELAY (81)	Supply as loose part, for being installed in PNL. 2R&7R Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	26,922.00	53,844.00
1-58	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, for being installed in PNL. 2F&7F Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	10,814.00	21,628.00
1-59	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, for being installed in PNL. 2F&7F Specification No. 1002 Dwg.No. TA1-E-1, TA-E-2 and TA1-E-3	2	EA	17,804.00	35,608.00

สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

2 มี.ค. 61

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-60	230 kV LINE PROTECTION (87L, 3ph, 79)	Panel Nos. 115R & 117R Specification No. 1002 Dwg. Nos. MM4-E-1, MM4-E-2.1, MM4-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	444,106.00	888,212.00
1-61	230 kV LINE PROTECTION (21P, 3ph, 2-BF, DTT)	Panel Nos. 116R & 118R Specification No. 1002 Dwg. Nos. MM4-E-1, MM4-E-2.1, MM4-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11	2	EA	580,848.00	1,161,696.00
1-62	MARSHALLING PANEL FOR FRS	Panel No. MP-FRS12 Specification No. 1002 Dwg. No. TP-E-10.3	1	EA	212,273.00	212,273.00
1-63	WATT AND VAR TRANSDUCER (W&VAR- TDR)  สุนิศา เข้มอยู่ หจส-ท.	Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. MM4-E-1.	2	EA	17,804.00	35,608.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-64	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. MM4-E-1.	2	EA	9,580.00	19,160.00
1-65	230 kV LINE PROTECTION (87L, 3ph, 79)	Panel Nos. 812R, 814R, 817R & 819R Specification No. 1002 Dwg. Nos. PY-E-1.1, PY-E-1.2, PY-E-2.1, PY-E-2.2, PY-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	4	EA	444,106.00	1,776,424.00
1-66	230 kV LINE PROTECTION (21P, 3ph, 1-BF, DTT)  ม ศุมนิตา เข้มอยู่ ทชส-ท.	Panel Nos. 813R, 815R, 818R & 820R Specification No. 1002 Dwg. Nos. PY-E-1.1, PY-E-1.2, PY-E-2.1, PY-E-2.2, PY-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11	4	EA	490,448.00	1,961,792.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-67	230/115 kV TRANSFORMER PROTECTION (4 RESTRAINS, 4-51, 1-BF)	Panel No. 820R Specification No. 1002 Dwg. Nos. PY-E-1.1, PY-E-1.2, PY-E-2.1, PY-E-2.2, PY-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11	1	EA	857,654.00	857,654.00
1-68	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as loose part, for being installed in PNL. 703R & 705R Specification No. 1002 Dwg No. PY-E-1.1, PY-E-1.2, PY-E-2.1, PY-E-2.2, PY-E-3	2	EA	203,656.00	407,312.00
1-69	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, for being installed in PNL. 707R Specification No. 1002 Dwg No. PY-E-1.1, PY-E-1.2, PY-E-2.1, PY-E-2.2, PY-E-3	2	EA	88,404.00	176,808.00
1-70	WATT AND VAR TRANSDUCER (W&VAR-TDR)  ศูนย์ฯ เข้มอยู่ ทชส-ท.	Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. PY-E-1.1, PY-E-1.2	5	EA	17,804.00	89,020.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-71	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. PY-E-1.1, PY-E-1.2	5	EA	9,580.00	47,900.00
1-72	TEMPERATURE TRANSDUCER (T-TDR)	Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. PY-E-1.1, PY-E-1.2	1	EA	10,814.00	10,814.00
1-73	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. PY-E-1.1, PY-E-1.2	1	EA	10,814.00	10,814.00
1-74	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part, for being installed in PNL. 5R & 7R. Specification No. 1002 Dwg No. SL-E-1, SL-E-2 & SL-E-3.	2	EA	67,618.00	135,236.00

สุวิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

อวท.-อพค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-75	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, for being installed in PNL. 5R & 7R. Specification No. 1002 Dwg No. SL-E-1, SL-E-2 & SL-E-3.	2	EA	88,404.00	176,808.00
1-76	VOLTAGE TRANSDUCER (V-TDR)	3 Phase Supply as loose part, for being installed in PNL. 5F & 7F. Specification No. 1002 Dwg No. SL-E-1, SL-E-2 & SL-E-3.	2	EA	9,580.00	19,160.00
1-77	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in PNL. 5F & 7F. Specification No. 1002 Dwg No. SL-E-1, SL-E-2 & SL-E-3.	2	EA	9,580.00	19,160.00

สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. 5F & 7F. Specification No. 1002 Dwg No. SL-E-1, SL-E-2 & SL-E-3.	2	EA	9,580.00	19,160.00
1-79	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, for being installed in PNL. 5F & 7F. Specification No. 1002 Dwg No. SL-E-1, SL-E-2 & SL-E-3.	2	EA	10,814.00	21,628.00
1-80	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, for being installed in PNL. 9R & 13R. Specification No. 1002 Dwg No. UD3-E-1.1, UD3-E-2.1 & UD3-E-3.1 In = 1 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00

~  
สุนิศา เข้มอยู่  
ทชส-ท.

15 มี.ค. 2561



๐๖๗.-๐๗๗.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-81	AUTO RECLOSING RELAY (79)	Supply as loose part, for being installed in PNL. 9R & 13R. Specification No. 1002 Dwg No. UD3-E-1.1, UD3-E-2.1 & UD3-E-3.1	2	EA	58,929.00	117,858.00
1-82	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part. Reserved for Phang Khon Substation (PHK) Specification No. 1002 In = 1 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00

๓  
สุนิสา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

- Project 1-1C27 -

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อศค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-83	230 kV LINE PROTECTION (87L, 3ph, 79)	Panel Nos. 26R & 28R Panel Width = 710 mm. Specifiation No. 1002 Dwg. Nos. SO2-E-1.1, SO2-E-2.2, SO-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	444,106.00	888,212.00
1-84	230 kV LINE PROTECTION (21P, 3ph, 1-BF, DTT)	Panel Nos. 25R & 27R Panel Width = 710 mm. Specifiation No. 1002 Dwg. Nos. SO2-E-1.1, SO2-E-2.2, SO-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11	2	EA	490,448.00	980,896.00

สุนิสา เข็มอยู่

ทชช-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-85	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. SO2-E-1.1	2	EA	17,804.00	35,608.00
1-86	VOLTAGE TRANSDUCER (V-TDR)	1 phase Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. SO2-E-1.1	2	EA	9,580.00	19,160.00
1-87	MARSHALLING PANEL FOR FRS	Panel No. MP-FRS Specification No. 1002 Dwg. No. TP-E-10.3	1	EA	212,273.00	212,273.00
1-88	MARSHALLING PANEL FOR RTU	Panel No. MP-FRS Specification No. 1002 Dwg. No. TP-E-10.3	1	EA	222,236.00	222,236.00

สุณิศา แยมอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

- Project 1-1C29 -

อวส.

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part. Reserved for Phang Khon Substation (PHK) Specification No. 1002 In = 1 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00
1-90	115 kV LINE PROTECTION (21, 21, 79, 1-BF)	Panel No.8F/8R Panel Width = 700 mm. Panel No. 8F/8R shall be supplied with the end trim with access door. Specification No. 1002 Dwg Nos. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11. Bill of Material	1	EA	1,244,120.00	1,244,120.00

สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

- Project 1-1C30 -

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-91	115 kV BUS PROTECTION (LOW IMPEDANCE, NO SWITCHING ZONE, 12 feeders)	Panel Nos. 12R & 13R Specification No. 1002 Dwg. Nos. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3, TP-E-9.1, TP-E-10.4, and TP-E-11	1	SET	1,812,256.00	1,812,256.00
1-92	INTERPOSING PANEL TYPE IP1	Panel Nos. IP1 Specification No. 1002 Dwg. Nos. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3, TP-E-6.4 sh.1/6-5/6 and TP-E-10.2	1	EA	606,342.00	606,342.00
1-93	MARSHALLING PANEL FOR DIGITAL TELEPROTECTION (115 kV)	Panel Nos. MP-TELE1 Specification No. 1002 Dwg. Nos. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3, DW-TPS-D01-120-01 sh. P1-P11	1	EA	173,015.00	173,015.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๑ มี.ค. ๖๑

- Project 1-1C31 -

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-94	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as loose part, for being installed in PNL. 7R. Specification No. 1002 Dwg No. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3	1	EA	203,656.00	203,656.00
1-95	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part, for being installed in PNL. 6R. Specification No. 1002 Dwg No. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3	1	EA	67,618.00	67,618.00
1-96	TRANSFORMER DIFFERENTIAL RELAY (87K, 3 restraint windings)	Supply as loose part, for being installed in PNL. 6R. Specification No. 1002 Dwg No. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3	1	EA	147,708.00	147,708.00

สุณิศา เข้มอยู่

ทชส-ท.

15 ส.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๗ ส.ค.๖๑

- Project 1-1C32 -

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-97	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part, for being installed in PNL. 6R. Specification No. 1002 Dwg No. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3	2	EA	63,456.00	126,912.00
1-98	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part, for being installed in PNL. 7F. Specification No. 1002 Dwg No. NW-E-1 sh.1-2, NW-E-2 sh.1-2, NW-E-3	1	EA	9,580.00	9,580.00
1-99	TRANSFORMER DIFFERENTIAL RELAY (87K, 2 restraint windings)	Supply as loose part, for being installed in PNL. 3R. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	67,618.00	67,618.00

สุวิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, for being installed in PNL. 3R. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	88,404.00	88,404.00
1-101	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part, for being installed in PNL. 3R. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	2	EA	63,456.00	126,912.00
1-102	FREQUENCY RELAY (81)	Supply as loose part, for being installed in PNL. 3R. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	17,804.00	17,804.00

สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

- Project 1-1C34 -

อวส.

filename : TS12-CR-03-1 (230, 115 kV)



อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, for being installed in PNL. 3F. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	9,580.00	9,580.00
1-104	VOLTAGE TRANSDUCER (V-TDR)	3 Phase Supply as loose part, for being installed in PNL. 3F. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	9,580.00	9,580.00
1-105	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in PNL. 3F. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	9,580.00	9,580.00

ม  
สุณิสตา แอ้มอยู่

หงส-ท.

15 มี.ค. 2561


(นางสาวพนา สุภาวกุล)

อวส.

- Project 1-1C35 -

filename : TS12-CR-03-1 (230, 115 kV)

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-106	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. 3F. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	9,580.00	9,580.00
1-107	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, for being installed in PNL. 3F. Specification No. 1002 Dwg No. DBN-E-1, DBN-E-2, DBN-E-3	1	EA	10,814.00	10,814.00
1-108	115/22 kV TRANSFORMER PROTECTION (1-Tx, 1-22kV FEEDER)  <div style="text-align: center;">                       สุนิสา แชนอยู่                      หนส-ท.                      15 มี.ค. 2561                 </div>	Panel Nos. 3F/3R Panel Width = 700 mm. Panel No. 3F/3R shall be supplied with the end trim with access door. Specification No.1002 Dwg Nos. PTB-E-1, PTB-E-2, PTB-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11. Bill of Material	1	EA	981,295.00	981,295.00

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	115/22 kV TRANSFORMER PROTECTION (3 RESTRAINS, 2-51, 2-BF)	Panel Nos. 41R & 42R Panel Width = 710 mm. Specification No. 1002 Dwg. Nos. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11	2	EA	694,036.00	1,388,072.00
1-110	INTERPOSING PANEL TYPE IP2	Panel Nos. IP 11 Specification No. 1002 Dwg. Nos. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3, TP-E-6.4 sh.1/6-5/6 and TP-E-10.2	1	EA	442,593.00	442,593.00
1-111	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, for being installed in PNL. 7C. Specification No. 1002 Dwg No. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3	2	EA	17,804.00	35,608.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-112	VOLTAGE TRANSDUCER (V-TDR)	3 Phase Supply as loose part, for being installed in PNL. 7C. Specification No. 1002 Dwg No. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3	2	EA	9,580.00	19,160.00
1-113	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. 7C. Specification No. 1002 Dwg No. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3	2	EA	9,580.00	19,160.00
1-114	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in PNL. 7C. Specification No. 1002 Dwg No. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3	2	EA	9,580.00	19,160.00

สุณิศร แยมอยู่

ทชต-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-115	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, for being installed in PNL. 7C. Specification No. 1002 Dwg No. PA2-E-1.2, PA2-E-2.1, PA2-E-2.2, PA2-E-3	2	EA	10,814.00	21,628.00
1-116	230 kV LINE PROTECTION (87L, 3ph, 79)	Panel Nos. 201R & 203R Specification No. 1002 Dwg. Nos. SU2-E-1.1, SU2-E-2.1, SU2-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11 Exclude 87L, which shall be supplied by EGAT during	2	EA	444,106.00	888,212.00
1-117	230 kV LINE PROTECTION (21P, 3ph, 2-BF, DTT)	Panel Nos. 202R & 204R Specification No. 1002 Dwg. Nos. SU2-E-1.1, SU2-E-2.1, SU2-E-3.1, TP-E-9.1, TP-E-10.1, and TP-E-11	2	EA	580,848.00	1,161,696.00
1-118	WATT AND VAR TRANSDUCER (W&VAR-TDR)  สุนิศา แยมอยู่ ทชส-ท.	Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. SU2-E-1.1	2	EA	17,804.00	35,608.00

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-119	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part, for being installed in the existing TDR panel. Specification No. 1002 Dwg No. SU2-E-1.1	2	EA	9,580.00	19,160.00
1-120	INTERPOSING PANEL TYPE IP5	Panel Nos. IP 3 Specifiation No. 1002 Dwg. Nos. SU2-E-1.1, SU2-E-2.1, SU2-E-3.1, TP-E-6.4 sh.1/6-5/6 and TP-E-10.2	1	EA	468,852.00	468,852.00
1-121	MARSHALLING PANEL FOR FRS	Panel No. MP-FRS2 Specification No. 1002 Dwg. No. SU-E-1.1, TP-E-10.3	1	EA	212,273.00	212,273.00
1-122	MARSHALLING PANEL FOR RTU	Panel No. MP-RTU For 230 kV Relay Building No.2 Specification No. 1002 Dwg. No. SU-E-1.1, TP-E-10.3	1	EA	222,236.00	222,236.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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	115 kV LINE PROTECTION (87L, 21, 79, 1-BF)	Panel No. 9R Specification No. 1002 Dwg. Nos. SU2-E-1.2, SU2-E-2.2, SU2-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	1,058,614.00	1,058,614.00
1-124	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part, for being installed in PNL.5R. Specification No. 1002 Dwg No. SU2-E-1.2, SU2-E-2.2, SU2-E-3.2. The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	335,788.00	335,788.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

- Project 1-1C41 -

2 ส.ค. 61

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-125	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, for being installed in the existing 115 kV TDR panel. Specification No. 1002 Dwg No. SU2-E-1.2, SU2-E-2.2, SU2-E-3.2.	1	EA	17,804.00	17,804.00
1-126	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part, for being installed in the existing 115 kV TDR panel. Specification No. 1002 Dwg No. SU2-E-1.2, SU2-E-2.2, SU2-E-3.2.	1	EA	9,580.00	9,580.00
1-127	LINE CURRENT DIFFERENTIAL RELAY (87L)  ~ สุนิศา เข้มอยู่ หขส-ท. 15 มี.ค. 2561	Supply as loose part. Reserved for Sankha Substation (SKA) Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00



อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	115 kV LINE PROTECTION (87L, 21, 79, 2-BF)	Panel Nos. 22R & 23R Panel Width = 710 mm. Specifiation No. 1002 Dwg. Nos. RE-E-1.2 sh.2, RE-E-2.2, RE-E-3.2, TP-E-9.1, TP-E-10.1, and TP-E-11 The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	1,149,015.00	2,298,030.00
1-129	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part, for being installed in the exisiting 115 kV TDR panel. Specification No. 1002 Dwg No. RE-E-1.2 sh.2.	2	EA	17,804.00	35,608.00
1-130	VOLTAGE TRANSDUCER (V-TDR)  ม สุนิศา แยมอยู่ ทชส-ท.	1 Phase Supply as loose part, for being installed in the exisiting 115 kV TDR panel. Specification No. 1002 Dwg No. RE-E-1.2 sh.2.	2	EA	9,580.00	19,160.00

15 มี.ค. 2561

อวส.-อพค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-131	MARSHALLING PANEL FOR FRS	Panel No. MP-FRS 2 Specification No. 1002 Dwg. No. TP-E-10.3	1	EA	212,273.00	212,273.00
1-132	MARSHALLING PANEL FOR RTU	Panel No. MP-RTU 2 Specification No. 1002 Dwg. No. TP-E-10.3	1	EA	222,236.00	222,236.00
1-133	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part. Reserved for PhonThong Substation (POT) Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	2	EA	335,788.00	671,576.00

~  
สุณิศา เข้มอยู่

ทชส-ท.


15 มี.ค. 2561

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-134	230 kV BUS PROTECTION (LOW IMPEDANCE, SWITCHING ZONE, 6 feeders)	Panel No. 38R 87BP shall not be supplied from the same manufacture as 87BS. Specification No. 1002 Dwg. No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11	1	EA	2,072,061.00	2,072,061.00
1-135	230 kV BUS PROTECTION (LOW IMPEDANCE, SWITCHING ZONE, 6 feeders)	Panel No. 39R 87BS shall not be supplied from the same manufacture as 87BP. Specification No. 1002 Dwg. No. HY2-E-1.1, HY2-E-2.2, HY2-E-2.3, HY2-E-3, TP-E-9.1, TP-E-10.1, and TP-E-11	1	EA	2,072,061.00	2,072,061.00
1-136	TRANSFORMER DIFFERENTIAL RELAY (87K, 4 restraint windings)   สุนิศา เข้มอยู่ หจส.ห.	Supply as loose part, for being installed in the existing PNL.21R. Specification No. 1002 Dwg. No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	1	EA	160,551.00	160,551.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-137	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part, for being installed in the existing PNL.21R. Specification No. 1002 Dwg No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	4	EA	63,456.00	253,824.00
1-138	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part, for being installed in the existing PNL. 21R, 24R, 14R & 15R. Specification No. 1002 Dwg No. HY2-E-1.1, HY2-E-1.2, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	5	EA	88,404.00	442,020.00
1-139	BUS DIFFERENTIAL RELAY (Low Impedance- No Switching Zone)  <div style="text-align: center;">   <b>สุนิศา เข้มอยู่</b>  <b>ทชส-ท.</b> </div>	Supply as loose part, for being installed in the existing PNL.1R, 4R & 27R. For at least 10 Feeders. Specification No. 1002 Dwg No. HY2-E-1.2, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	3	EA	485,817.00	1,457,451.00

15 มี.ค. 2561

อวส.-อศค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-140	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part, for being installed in the existing Transducer Panel. Specification No. 1002 Dwg No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	1	EA	10,814.00	10,814.00
1-141	TEMPERATURE TRANSDUCER (T-TDR)	Supply as loose part, for being installed in the existing Transducer Panel. Specification No. 1002 Dwg No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	1	EA	10,814.00	10,814.00
1-142	WATT AND VAR TRANSDUCER (W&VAR-TDR)  ฐนิศา เข้มอยู่ ทชส-ท.	Supply as loose part, for being installed in the existing Transducer Panel. Specification No. 1002 Dwg No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	1	EA	17,804.00	17,804.00

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-143	CURRENT TRANSDUCER (A-TDR)	1 Phase Supply as loose part, for being installed in the existing Transducer Panel. Specification No. 1002 Dwg No. HY2-E-1.1, HY2-E-2.1, HY2-E-2.3, HY2-E-3.	1	EA	9,580.00	9,580.00
1-144	CURRENT TRANSDUCER (A-TDR)	3 Phase Supply as loose part, for being installed in PNL. TDR-601. Specification No. 1002 Dwg No. MM3-E-1.3.	2	EA	9,580.00	19,160.00
1-145	VOLTAGE TRANSDUCER (V-TDR)	3 Phase Supply as loose part, for being installed in PNL. TDR-601. Specification No. 1002 Dwg No. MM3-E-1.3.	2	EA	9,580.00	19,160.00

~  
สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-146	kWh&kVARh METER	Supply as loose part, for being installed in the existing metering panel. Specification No. 1002 Dwg No. MM3-E-1.3.	4	EA	205,376.00	821,504.00
1-147	LOCKOUT RELAY (86, 10 contacts)  สุณิศา แชน้อย ทชส-ท.	Supply as loose part. Reserved for: - WN 1 EA - SN4 3 EA - CT 1 EA - KNG 3 EA - TA1 2 EA - PY 2 EA - SL 4 EA - NW 2 EA - DBN 2 EA - HY2 8 EA - Reserve 2 EA Specification No. 1002	30	EA	17,930.00	537,900.00

15 มี.ค. 2561

Rev.12

- Project 1-1C49 - (นางสาวพนา สุภาวกุล)  
อวส.

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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	LOCKOUT RELAY (86, 20 contacts)	Supply as loose part. Reserved for: - CR 1 EA - TE 1 EA - TA1 2 EA - HY2 7 EA - Reserve 4 EA Specification No. 1002	15	EA	28,161.00	422,415.00

สุนิสา แฮ่มอยู่

ทชส-ท.

15 มี.ค. 2561



อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-149	TRIPPING RELAY (94P, 94BU, 51X, 79X)	At least 10 NO contacts. Supply as loose part. Reserved for: - SN4 5 EA - CT 3 EA - TA1 4 EA - PY 2 EA - UD3 6 EA - NW 2 EA - DBN 2 EA - SU2 1 EA - HY2 1 EA - Reserve 24 EA Specification No. 1002	50	EA	24,134.00	1,206,700.00

☞  
**สุนิศา เข้มอยู่**

ทชส-ท.

15 มี.ค. 2561

☞  
 (นางสาวพนา สุภาวกุล)

- Project 1-1C51 -

อวส.  
 ๕

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-150	DC UNDERVOLTAGE RELAY (27XB,27XR)	Supply as loose part. Reserved for: - WN 6 EA, - SN4 7 EA, - CR 1 EA, - TE 1 EA, - CT 4 EA, - BGS 2 EA, - MCN 2 EA, - KNG 7 EA, - TA1 8 EA, - MM4 1 EA, - PY 6 EA, - SL 6 EA, - MM3 4 EA, - UD3 4 EA, - SO2 4 EA, - NW 4 EA, - DBN 4 EA, - SU2 2 EA, - RE 5 EA, - HY2 11 EA - Reserve 21 EA Specification No. 1002	110	EA	4,992.00	549,120.00

~  
 สุนิสา เข้มอยู่  
 หขส-ท.  
 15 มี.ค. 2561

อวส.-อผค.

-SMILL

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	KNIFE SWITCH ISOLATOR FOR BREAKER CONTROL UNIT	Supply as loose part. Reserved for: - WN 2 EA - PY 1 EA - SO2 2 EA - RE 2 EA - Reserve 3 EA Specification No. 1002	10	EA	80.00	800.00

ม  
 สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๗ มี.ค. ๖๑

อวส.-อศค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-152	MCB, 6A, 2 POLE FOR DC SUPPLY  ศูนย์ฯ ศูนย์ฯ	Supply as loose part. Reserved for: - WN 1 EA - SN4 11 EA - CR 1 EA - TE 1 EA - CT 4 EA - KNE 1 EA - TA1 8 EA - MM4 1 EA - PY 6 EA - SL 6 EA - NW 7 EA - DBN 6 EA - SU2 2 EA - RE 1 EA - HY2 11 EA - Reserve 33 EA Specification No. 1002	100	EA	1,005.00	100,500.00

หขส-ท.  
15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

๗ มี.ค. ๖๑

- Project 1-1C54 -

filename : TS12-CR-03-1 (230, 115 kV)

อวต.-อศค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-153	MCB, 6A, 1 POLE FOR DC SUPPLY	Supply as loose part. Reserved for: - PY 1 EA - SO2 2 EA - RE 2 EA - Reserve 5 EA Specification No. 1002	10	EA	592.00	5,920.00
1-154	MCB, 0.5A, 1 POLE FOR PT  สุนิสตา แชน้อย ทชส-ท. 15 มี.ค. 2561	Supply as loose part. Reserved for: - SN4 2 EA - BGS 2 EA - MCN 2 EA - TA1 2 EA - SL 2 EA - SO2 2 EA - NW 5 EA - DBN 1 EA - RE 2 EA - Reserve 10 EA Specification No. 1002	30	EA	653.00	19,590.00

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	MCB, 0.5A, 3 POLE FOR PT	Supply as loose part. Reserved for: - SN4 1 EA - CT 1 EA - KNE 4 EA - KNG 4 EA - TA1 6 EA - PY 7 EA - SL 8 EA - MM3 4 EA - SO2 2 EA - NW 1 EA - DBN 1 EA - PA2 4 EA - SU2 1 EA - RE 2 EA - Reserve 4 EA Specification No. 1002	50	EA	1,814.00	90,700.00

สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

อวส.

- Project 1-1C56 -


2011

filename : TS12-CR-03-1 (230, 115 kV)

อวส.-อศค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-156	MCB, 0.5A, 3 POLE WITH AUX.	Supply as loose part. Reserved for: - SN4 5 EA - CT 2 EA - SDO 2 EA - BGS 2 EA - TA1 6 EA - PA2 4 EA - Reserve 29 EA Specification No. 1002 (2 NC contacts)	50	EA	2,147.00	107,350.00


  
สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-157	MCB, 3A, 1 POLE WITH AUX.	Supply as loose part. Reserved for: - SN4 2 EA - SDO 4 EA - BGS 1 EA - MCN 1 EA - SL 2 EA - PA2 4 EA - Reserve 6 EA Specification No. 1002	20	EA	1,256.00	25,120.00
1-158	MCB, 6A,2 POLE FOR DC SUPPLY WITH AUX.  <div style="text-align: center;">   <b>สุวิศา เข้มอยู่</b>  <b>ทพส-ท.</b> </div>	Supply as loose part. Reserved for: - BGS 2 EA - MCN 2 EA - KNG 4 EA - MM3 4 EA - Reserve 3 EA Specification No. 1002	15	EA	1,500.00	22,500.00

15 มี.ค. 2561



อวส.-อศค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-159	MCB, 3A, 3 POLE WITH AUX. 1NC	Supply as loose part. Reserved for: - SN4 3 EA - SDO 2 EA - TA1 6 EA - PY 2 EA - SL 2 EA - PA2 8 EA - Reserve 7 EA Specification No. 1002	30	EA	2,200.00	66,000.00

~  
 สุนิสา แยมอยู่  
 ทชส-ท.  
 15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	CUT OFF SWITCH, 10 CONTACTS (DTTCO, 87CO, 86ACO, 50/51SCO)	7 NO/ 3 NC Supply as loose part. Reserved for: - SN4 4 EA - TE 1 EA - CT 6 EA - KNG 1 EA - TA1 4 EA - PY 2 EA - SL 2 EA - UD3 4 EA - NW 3 EA - DBN 2 EA - SU2 1 EA - HY2 9 EA - Reserve 21 EA Specification No. 1002 Dwg. No. TP-E-9.1	60	EA	1,805.00	108,300.00

สุนิตา แยมอยู่


ทชต-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-161	CUT OFF SWITCH, 8 CONTACTS (25CO, 79CO)	Supply as loose part, for 79CO. Reserved for: - SN4 1 EA - UD3 2 EA - NW 1 EA - Reserve 6 EA Specification No. 1002 Dwg. No. TP-E-9.1	10	EA	1,551.00	15,510.00

  
**สุนิศา เข้มอยู่**

ทชส-ท.

15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-162	CUT OFF SWITCH, 4 CONTACTS (50BFC0, SS, EPS, 43RCC, 284CS)	Supply as loose part. Reserved for: - WN 1 EA - CR 1 EA - BGS 1 EA - MCN 1 EA - KNG 1 EA - TA1 2 EA - PY 2 EA - SL 2 EA - DBN 1 EA - HY2 5 EA - Reserve 3 EA Specification No. 1002 Dwg. No. TP-E-9.1	20	EA	1,002.00	20,040.00

สุณิศา เข้มอยู่

นางส.ท.

15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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	INDICATING LAMP (R,G,IL,LG)	Red Lamp Supply as loose part. Reserved for: - WN 1 EA - SN4 2 EA - TE 1 EA - CT 2 EA - CR 1 EA - TA1 4 EA - PY 5 EA - SL 4 EA - SO2 2 EA - NW 4 EA - DBN 2 EA - SU2 1 EA - RE 2 EA - HY2 8 EA - Reserve 2 EA Specification No. 1002	40	EA	332.00	13,280.00

สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-164	INDICATING LAMP (R,G,IL,LG)	Green Lamp Supply as loose part. Reserved for: - PY 1 EA - SO2 2 EA - RE 2 EA - Reserve 5 EA Specification No. 1002	10	EA	332.00	3,320.00
1-165	LL	Supply as loose part Reserved for: - SN4 1 EA - PA2 2 EA - Reserve 2 EA Specification No. 1002	5	EA	1,002.00	5,010.00

สุณิศา เข้มอชู่


ทชส-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-166	MANUALLY OPERATED DISCONNECTED SWITCH	Supply as loose part Reserved for: - SN4 1 EA - TA1 4 EA - NW 2 EA - Reserve 3 EA Specification No. 1002	10	EA	500.00	5,000.00

  
 สุนิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-167	TEST SWITCH (FOR METERING)	Supply as loose part Reserved for: - WN 1 EA - SN4 3 EA - TE 1 EA - CT 2 EA - KNE 4 EA - BGS 2 EA - MCN 2 EA - KNG 5 EA - TA1 4 EA - MM4 2 EA - PY 5 EA - MM3 4 EA - SO2 2 EA - DBN 1 EA - PA2 4 EA - SU2 3 EA - RE 2 EA - HY2 1 EA - Reserve 2 EA Specification No. 1002	50	EA	18,154.00	907,700.00

สุวิศา เข้มอยู่  
ทชส-ท.  
15 มี.ค. 2561



**MEDIUM COST FOR BID NO. TS12-CR-03**

**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	TEST SWITCH (TS, for relays)	Supply as loose part. Reserved for: - WN 1 EA - SN4 6 EA - CR 1 EA - TE 2 EA - CT 9 EA - KNG 4 EA - TA1 10 EA - PY 6 EA - SL 4 EA - UD3 14 EA - NW 8 EA - DBN 6 EA - SU2 2 EA - HY2 23 EA - Reserve 4 EA Specification No. 1002	100	EA	5,078.00	507,800.00

สุนิศา แยมอยู่

ทชส-ท.

15 มี.ค. 2561

MEDIUM COST FOR BID NO. TS12-CR-03

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
1-169	PUSH BUTTON	Supply as loose part Reserved for: - WN 1 EA - SN4 3 EA - TE 1 EA - TA1 4 EA - PY 2 EA - SL 4 EA - NW 2 EA - DBN 2 EA - HY2 8 EA - Reserve 13 EA Specification No. 1002	40	EA	332.00	13,280.00

สุณิศา แต้มอญู๋

ทชส-ท.

15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03****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
1-170	INTERPOSING RELAY (CCX,CTX)	Supply as loose part Reserved for: - WN 14 EA - KNG 2 EA - SO2 8 EA - RE 8 EA - Reserve 3 EA Specification No. 1002	35	EA	217.00	7,595.00
1-171	LATCHING RELAY (8 contacts,79COCX)	Supply as loose part Reserved for: - SO2 2 EA - RE 2 EA - Reserve 6 EA Specification No. 1002	10	EA	8,582.00	85,820.00

~  
สุณิศา เข้มอยู่

ทชส-ท.

15 มี.ค. 2561

อวส.-อผอ.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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	MCB, 0.5A, 1 POLE WITH AUX.	Supply as loose part Reserved for: - TA1 2 EA - SL 2 EA - Reserve 1 EA Specification No. 1002	5	EA	952.00	4,760.00
1-173	MCB, 0.5A, 2 POLE FOR PT	Supply as loose part Reserved for: - SDO 2 EA - TA1 4 EA - SL 4 EA - DBN 2 EA - RE 2 EA - Reserve 1 EA Specification No. 1002	15	EA	1,937.00	29,055.00


๓  
 สุนิศา เข้มอยู่

ทชส.-ท.  
 15 มี.ค. 2561

อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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
1-174	CURRENT TRANSDUCER (A-TDR)	1 Phase Shall be able to process both 1A and 5A of input current. Supply as loose part Specification No. 1002	10	EA	9,580.00	95,800.00
1-175	DISTANCE RELAY (21) FOR 230 kV, 3ph without 79/25	Supply as loose part Specification No. 1002	1	EA	212,531.00	212,531.00
1-176	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as loose part for 230 kV Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	203,656.00	203,656.00
1-177	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part for 230 kV Specification No. 1002 In = 1 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	335,788.00	335,788.00

  
 สุนิศา เข้มอยู่  
 ทชส-ท.

15 ส.ค. 2561

## MEDIUM COST FOR BID NO. TS12-CR-03

## 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
1-178	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part for 115 kV Specification No. 1002 In = 5 A The link to communication of 87L shall be E1 interface and 2 sets of coaxial cables shall be provided.	1	EA	335,788.00	335,788.00
1-179	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as loose part Specification No. 1002	1	EA	335,788.00	335,788.00
1-180	TRANSFORMER DIFFERENTIAL RELAY (87K, 5 restraint windings)	Supply as loose part for 115/69 kV or 115/22 kV Transformer Protection Specification No. 1002	1	EA	264,076.00	264,076.00
1-181	TRANSFORMER DIFFERENTIAL RELAY (87K, 3 restraint windings)	Supply as loose part for 230 kV Specification No. 1002	1	EA	147,708.00	147,708.00
1-182	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part for 115 kV Specification No. 1002	1	EA	50,994.00	50,994.00

สุณิสตา เข้มอยู่

พชส-ท  
15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

- Project 1-1C72 -

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-183	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as loose part for 230/115 kV Transformer Protection Specification No. 1002	1	EA	50,994.00	50,994.00
1-184	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part for 115/69 kV or 115/22 kV Transformer Protection Specification No. 1002	1	EA	63,456.00	63,456.00
1-185	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part for 230/115 kV Transformer Protection Specification No. 1002	1	EA	63,456.00	63,456.00
1-186	OVERCURRENT GROUND BACKUP RELAY (51GB)	Supply as loose part for 115/69 kV Transformer Protection Specification No. 1002	1	EA	63,456.00	63,456.00
1-187	OVERCURRENT GROUND BACKUP RELAY (51GB)	Supply as loose part for 230 kV Specification No. 1002	1	EA	63,456.00	63,456.00
1-188	BREAKER FAILURE RELAY (50BF+62BF) ศูนย์ฯ แม่มอยู่	Supply as loose part for 115 kV Specification No. 1002	1	EA	88,404.00	88,404.00

**MEDIUM COST FOR BID NO. TS12-CR-03**

**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
1-189	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part Specification No. 1002	1	EA	88,404.00	88,404.00
1-190	FREQUENCY RELAY (81)	Supply as loose part Specification No. 1002	1	EA	26,922.00	26,922.00
1-191	DIRECTIONAL OVERCURRENT RELAY (67/67N)	Supply as loose part Specification No. 1002	1	EA	102,968.00	102,968.00
1-192	BUS DIFFERENTIAL RELAY (Low Impedance- No Switching Zone)	For at least 10 feeders Supply as loose part Specification No. 1002 Dwg.No. HY2-E-1.2	1	EA	485,817.00	485,817.00
1-193	REMOTE INPUT/OUTPUT (RIO)	Supply as loose part Specification No. 1002	1	EA	27,826.00	27,826.00
<b>Total Price for Schedule 1</b>					<b>Baht</b>	<b>72,378,124.30</b>

สุนิสา เข้มอยู่

๗๗๘-๗.



อวส.-อผค.

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**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 2 : 500 kV Control and Protection Equipment	2,630,034.00	
<b>SUMMARY PRICE</b>		<b>Baht</b>	<b>2,630,034.00</b>
<b>IMPORT DUTY</b>		<b>Baht</b>	<b>XXXXX</b>
<b>VAT 7%</b>		<b>Baht</b>	<b>184,102.38</b>
<b>SUMMARY OF BID PRICE</b>		<b>Baht</b>	<b>2,814,136.38</b>
<b>SUMMARY OF BID PRICE (ROUNDED)</b>		<b>Baht</b>	<b>2,820,000.00</b>

In case Bidder proposes price discount without specifying whether or not it includes Value Added Tax EGAT will consider it as the price discount excluding VAT

สุณิศา เข้มมอญู


หงต-ห.

15 ส.ค. 2561

- Project 1-C1 -


(นางสาวพนา สุภาวกุล)  
 กวส

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**Schedule 2 : 500 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
2-1	500/230 kV TRANSFORMER PROTECTION (4 RESTRAINS, 1-BF)	Panel No. 57R Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3, TP-E-9.1, TP-E-10.1 and see note below.	1	EA	773,191.00	773,191.00
2-2	500/230 kV TRANSFORMER PROTECTION (4 RESTRAINS, 4-51, 24K)	Panel No. 58R Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3, TP-E-9.1, TP-E-10.1 and see note below.	1	EA	1,017,249.00	1,017,249.00
2-3	BREAKER FAILURE RELAY (50BF+62BF)  <div style="text-align: center;">             สุนิศา เข้มอยู่            หจส-ห.            15 มี.ค. 2561         </div>	Install in existing Panel No. 18R (Line No. 4 to Nava Nakhon Back Up Protection). Supply as loose part. Dwg. Nos. WN-E-1.1, WN-E-1.2, WN-E-2.2, WN-E-2.3, WN-E-2.4, WN-E-3	1	EA	88,404.00	88,404.00

อวต.-อพค.

**MEDIUM COST FOR BID NO. TSI2-CR-03**  
**Schedule 2 : 500 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
2-4	MARSHALLING PANEL FOR FRS	Panel No. MP-FRS1 Drawing Nos. WN-E-1.1 and TP-E-10.3	1	EA	212,273.00	212,273.00
2-5	WATT AND VAR TRANSDUCER (W&VAR-TDR)	Supply as loose part Dwg. No. WN-E-1.1, WN-E-1.2, WN-E-2.2, WN-E-2.3, WN-E-2.4, WN-E-3	1	EA	17,804.00	17,804.00
2-6	VOLTAGE TRANSDUCER (V-TDR)	1 Phase Supply as loose part Dwg. No. WN-E-1.1, WN-E-1.2	2	EA	9,580.00	19,160.00
2-7	CURRENT TRANSDUCER (A-TDR)  <div style="text-align: center;">             สุนิศา เข้มอยู่         </div>	1 Phase Supply as loose part Dwg. No. WN-E-1.1, WN-E-1.2	1	EA	9,580.00	9,580.00

หขส-ห.

15 มี.ค. 2561

(นางสาวพนา สุภาวกุล)

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**Schedule 2 : 500 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
2-8	TEMPERATURE TRANSDUCER (T-TDR)	Supply as loose part Dwg. No. WN-E-1.1, WN-E-1.2	3	EA	10,814.00	32,442.00
2-9	RESISTANCE TRANSDUCER (R-TDR)	Supply as loose part Dwg. No. WN-E-1.1, WN-E-1.2	1	EA	10,814.00	10,814.00
2-10	TRANSFORMER DIFFERENTIAL RELAY (87K, 4 restraint windings)	Supply as loose part Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3	1	EA	160,551.00	160,551.00
2-11	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG,51/51G,51S/51SG,51C/51CG)	Supply as loose part Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3	1	EA	63,456.00	63,456.00
2-12	BREAKER FAILURE RELAY (50BF+62BF)	Supply as loose part Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3	1	EA	88,404.00	88,404.00

สุวิสา เข้มอยู่

ทชส-ท.  
15 มี.ค. 2561

**MEDIUM COST FOR BID NO. TS12-CR-03**  
**Schedule 2 : 500 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
2-13	OVERFLUXING RELAY (24K,24L)	Supply as loose part Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3	1	EA	73,250.00	73,250.00
2-14	OVERCURRENT GROUND BACKUP RELAY (51GB)	Supply as loose part Drawing Nos. WN-E-1.1, WN-E-1.2, WN-E-2.4, WN-E-3	1	EA	63,456.00	63,456.00
		<u>Note</u> : The analog input of Transformer Differential Relay (87K) shall be available for both 1A and 5A.				
<b>Total Price for Schedule 2</b>					<b>Baht</b>	<b>2,630,034.00</b>

*m*  
 สุนิสา เข้มอยู่

ทชส-ท.  
 15 มี.ค. 2561

*sk*  
 (นางสาวพนา สุภาวกุล)

# DATA SHEET

for

## Invitation to Bid No. TS12-CR-03

---

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

### **1. 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.

### **2. Article B-3. Bid Security**

#### Schedule 1

The amount of bid security shall be THB 3,875,000.-.

#### Schedule 2

The amount of bid security shall be THB 141,000.-.

### **3. 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.

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

Item n. is not applicable

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

The evaluation of bid prices shall be on schedule basis

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

6.1 Maintenance Guarantee Period

6.1.1 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

6.1.2 For 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 five (5) Years.

6.2 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.

**7. 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-03

### SUPPLY OF CONTROL AND PROTECTION EQUIPMENT

### TRANSMISSION SYSTEM EXPANSION PROJECT NO. 12

---

#### **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. The Bidder shall neither fail to submit the Revenue and Expense Accounts nor fail to present proper and complete accounts to the Revenue Department of Thailand, in accordance with the Notification of the National Anti-Corruption Commission Concerning Principles and Methods of Preparing Revenue and Expense Accounts of



Project between Individual/Company and Government Agencies B.E. 2554 (A.D. 2011) as amended from time to time (“the Notification”).

- f. The Bidder shall register for e-Government Procurement (e-GP) at Thai Government Procurement website ([www.gprocurement.go.th](http://www.gprocurement.go.th)) at telephone No. 662 1277386 – 89) of the Comptroller General’s Department of Thailand.

Due to the fact that the e-GP system is not ready for registration for foreign Bidders who have no taxpayer identification number at this moment, foreign Bidders are, therefore, temporarily released from this qualification. However, whenever the e-GP system is ready, all foreign Bidders shall register in the e-GP system.

- g. 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.
- h. 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.
- i. 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.
- j. 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.
- k. 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.
- l. The Bidder shall not propose to supply the Equipment from the country under the state of war whether declared or not.
- m. The Bidder shall have adequate fund to meet financial obligations incidental to this Contract.
- n. 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	
		GRL100	Toshiba	YES	YES	YES	
		P543	Schneider Electric	YES	YES	YES	
		EF-LD	INGETEAM	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	INGETEAM	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	INGETEAM	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.		

N.N

## 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.

## 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	INGETEAAM	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	INGETEAAM	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	INGETEAM	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	INGETEAM	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	INGETEAM	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	

*N.P.*

## 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	INGETEAM	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	INGETEAM	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.

**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
	INGETEAM / Spain
	NR Electric / China
	Mitsubishi / Japan

tse  
เอกสารควบคุม

~.U