

<b>SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT (INSTALLATION)</b>					
Doc No.	SCC - RTU (INS)	Rev. No.	1	Date	5 JUNE 2020

**CONTRACT TITLE :**

**PEMBEKALAN, PEMASANGAN, PENGUJIAN DAN MULATUGAS FASILITI SCADA (RTU) UNTUK PROJEK SBU ASSET  
DEVELOPMENT DISTRIBUTION NETWORK DIVISION. TNB**

<b>CONTRACT NO. :</b>	<b>TNB130/2024</b>				
<b>CONTRACTOR :</b>	<b>HASILWAN SDN BHD</b>				
<b>DATE :</b>	<b>29-01-2026</b>				
<b>SUBSTATION NAME :</b>	<b>PE TMN SERULING JAYA (VCB)</b>				
<b>FUNCTIONAL LOCATION :</b>	<b>NSBN/PCE/J01114</b>				
<b>SUBZONE :</b>	<b>SEREMBAN</b>				
<b>STATE :</b>	<b>NEGERI SEMBILAN</b>				
<b>RTU BRAND :</b>	<b>DONG FANG</b>				
<b>RTU SERIAL NUMBER :</b>	<b>VCB BH0063</b>				
<b>RTU TYPE :</b> Tick "✓" whichever applicable	<b>VCB</b>	<input checked="" type="checkbox"/>	<b>M-RMU</b>		

SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT (INSTALLATION)					
Doc No.	SCC - RTU (INS)	Rev. No.	1	Date	5 JUNE 2020
<b>A1. SCC RTU (DURING INSTALLATION)</b>					
<b>CONTRACT NO. :</b>		TNB130/2024			
<b>FUNCTIONAL LOCATION :</b>		NSBN/PCE/J01114			
<b>SUBSTATION NAME :</b>		PE TMN SERULING JAYA (VCB)			
Check boxes as follows: (✓) OK NI : Need Improvement (Pls. give comments at 'Remark' column)					
No.	Description	OK	NI	REMARKS	
<b>1. Visual Checks on RTU Cabinet</b>					
i.	RTU cabinet is properly mounted & aligned at the wall / designated area.	✓			
ii.	QR code / label is available inside RTU Cabinet. Scan QR code and check contact (must be as per requirement in SOW). [* If available for this contract]	✓			
iii.	All wirings to the terminal blocks are terminated tightly and terminal blocks are in good condition.	✓			
iv.	All cables shall be properly glanded at the cable entry points using proper glanding and sealing (to ensure no space/gap between the cable entry points/glands and the panel).	✓			
<b>2. Visual and Physical Checks on Cablings and Terminations</b>					
i.	All non-armoured cables shall be installed in rigid high impact PVC conduits, neatly secured in position and adequately supported where necessary in an approved manner.	✓			
ii.	For armoured cables, cable supports, elbows, cleats, trays shall be used. All materials must be of galvanised type (of at least 1.2 mm in thickness).	✓			
iii.	The size of the PVC conduit shall be 25 mm in diameter and the colour of the conduit and fittings shall be orange. The conduits shall be fixed by means of saddles secured rigidly at intervals not exceeding 750 mm.	✓			
iv.	Cable supports/brackets/elbows shall be installed at intervals not greater than 1500 mm for vertical runs and not greater than 1000 mm for horizontal runs. The brackets shall be derusted, finished in a primer and coated with standard orange enamel. The brackets/elbows shall not be painted.	✓			
<b>3. Visual Checks on Installations</b>					
<b>a. RTU equipment</b>					
i.	All cablings and internal wirings for RTU modules and accessories are laid properly & neatly secured.	✓			
ii.	All spares and unused points/modules/cards are wired internally, configured and ready for terminations from Plant (complete with its terminal blocks/connectors/wires and all other necessary accessories).	✓			
iii.	All cables for I/O signal, AC, DC & Ground are laid & terminated according to RTU Technical Specification.	✓			
iv.	Anti static wrist strap need to be installed on ESD bonding points.	✓			
<b>Observations:</b>					
Checks conducted by: Contractor's Signature & Stamp:			Verified by: TNB's Representative Signature & Stamp:		
Name: HASFARUDDIN			Name:		
Date: 29-01-2026			Date: 29-01-2026		

<b>SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT SITE ACCEPTANCE TEST (SAT)</b>					
Doc No.	SCC - RTU (SAT)	Rev. No.	1	Date	5 JUNE 2020

**CONTRACT TITLE :**

**PEMBEKALAN, PEMASANGAN, PENGUJIAN DAN MULATUGAS FASILITI SCADA (RTU) UNTUK PROJEK SBU ASSET  
DEVELOPMENT DISTRIBUTION NETWORK DIVISION. TNB**

<b>CONTRACT NO. :</b>	<b>TNB130/2024</b>				
<b>CONTRACTOR :</b>	<b>HASILWAN SDN BHD</b>				
<b>DATE :</b>	<b>30-01-2026</b>				
<b>SUBSTATION NAME :</b>	<b>PE TMN SERULING JAYA (VCB)</b>				
<b>FUNCTIONAL LOCATION :</b>	<b>NSBN/PCE/J01114</b>				
<b>SUBZONE :</b>	<b>SEREMBAN</b>				
<b>STATE :</b>	<b>NEGERI SEMBILAN</b>				
<b>RTU BRAND :</b>	<b>DONG FANG</b>				
<b>RTU SERIAL NUMBER :</b>	<b>VCB BH0063</b>				
<b>RTU TYPE :</b> Tick "✓" whichever applicable	<b>VCB</b>	<input checked="" type="checkbox"/>	<b>M-RMU</b>		

SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT SITE ACCEPTANCE TEST (SAT)					
Doc No.	SCC - RTU (SAT)	Rev. No.	1	Date	5 JUNE 2020
<b>A1. SCC RTU (DURING INSTALLATION)</b>					
<b>CONTRACT NO. :</b>		TNB130/2024			
<b>FUNCTIONAL LOCATION :</b>		NSBN/PCE/J01114			
<b>SUBSTATION NAME :</b>		PE TMN SERULING JAYA (VCB)			
Check boxes as follows: (✓) OK NI : Need Improvement (Pls. give comments at 'Remark' column)					
No.	Description	OK	NI	REMARKS	
<b>1.</b>	<b>Visual Checks on RTU Cabinet</b>				
i.	Nameplate/Sticker with information on Serial Number, Site Acceptance Test (SAT) date & Warranty period is available in cabinet.	✓			
ii.	SAT date must be written clearly & in the correct text position on the Nameplate/Sticker.	✓			
<b>2.</b>	<b>Site Drawings &amp; Tests</b>				
i.	Hardcopy of <b>Approved Drawings</b> Documents are available & placed inside RCB / RTU panel. [Note: Any changes to the drawings shall be <b>updated in softcopy</b> and passed to TNB as As-built drawings].	✓			
ii.	Hardcopy of <b>Mastersheet &amp; Wiring List (Working Copies)</b> Any changes shall be updated/written in the Mastersheet & Wiring List & <b>verified signed and stamped by TNB supervisor / representative</b>	✓			
iii.	Check & verify all necessary tests are performed as required & have passed.	✓			
iv.	Approved Engineering Drawing at least <b>Tab 2 (RTU CONFIGURATION DRAWING)</b> , <b>Tab 3 (RTU CUBICLE INTERNAL WIRING DRAWING)</b> and <b>Tab 5 (RTU CONFIGURATION DRAWING)</b> .	✓			
<b>Test Observations:</b>					
<b>Test Result: PASS <input checked="" type="checkbox"/> FAIL <input type="checkbox"/></b>					
Checks conducted by: Contractor's Signature & Stamp:			Verified by: TNB's Representative Signature & Stamp:		
Name: HASFARUDDIN			Name:		
Date: 30-01-2026			Date: 30-01-2026		

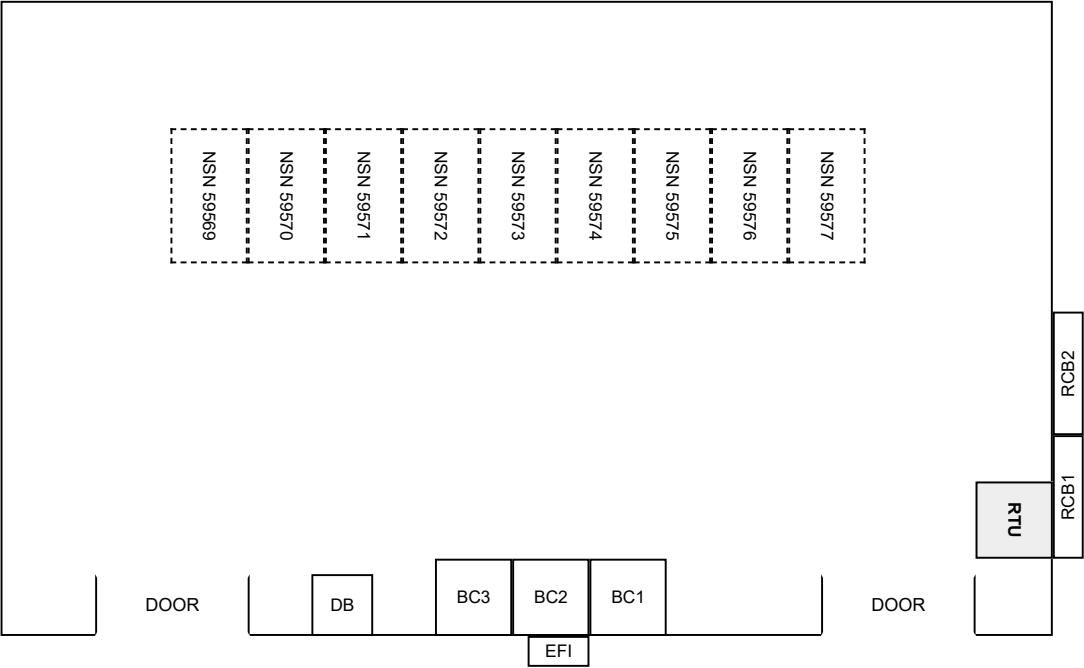
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<b>SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT SITE ACCEPTANCE TEST (SAT)</b>					
<b>Doc No.</b>	<b>SCC - RTU (SAT)</b>	<b>Rev. No.</b>	<b>1</b>	<b>Date</b>	<b>5 JUNE 2020</b>
<b>CONTRACT NO. :</b>		TNB130/2024			
<b>FUNCTIONAL LOCATION :</b>		NSBN/PCE/J01114			
<b>SUBSTATION NAME :</b>		PE TMN SERULING JAYA (VCB)			

Note: Please sketch the building layout and the location of:

- a. RCB panel
- b. Battery Charger
- c. EFIs location
- d. Switchgear Panel
- e. RTU Panel

**SITE DRAWING:**



<b>Remote Terminal Unit (RTU) SITE ACCEPTANCE TEST PROCEDURE</b>					
Doc No.	SAT TP-RTU	Rev. No.	1	Date	5 JUNE 2020

**CONTRACT TITLE :**

**PEMBEKALAN, PEMASANGAN, PENGUJIAN DAN MULATUGAS FASILITI SCADA (RTU) UNTUK PROJEK SBU ASSET DEVELOPMENT DISTRIBUTION NETWORK DIVISION. TNB**

<b>CONTRACT NO. :</b>	<b>TNB130/2024</b>			
<b>CONTRACTOR :</b>	<b>HASILWAN SDN BHD</b>			
<b>DATE :</b>	<b>30-01-2026</b>			
<b>SUBSTATION NAME :</b>	<b>PE TMN SERULING JAYA (VCB)</b>			
<b>FUNCTIONAL LOCATION :</b>	<b>NSBN/PCE/J01114</b>			
<b>SUBZONE :</b>	<b>SEREMBAN</b>			
<b>STATE :</b>	<b>NEGERI SEMBILAN</b>			
<b>RTU BRAND :</b>	<b>DONG FANG</b>			
<b>RTU SERIAL NUMBER :</b>	<b>VCB BH0063</b>			
<b>FIRMWARE VERSION :</b>	<b>DFE ENGINEER TOOLS SOFTWARE</b>		<b>RTU</b>	
	<b>Version 3.02.009 <input checked="" type="checkbox"/></b>		<b>Version 4.11.024 <input checked="" type="checkbox"/></b>	
<b>RTU TYPE :</b> Tick "✓" whichever applicable	<b>VCB</b>	<input checked="" type="checkbox"/>	<b>M-RMU</b>	

**Remote Terminal Unit (RTU)  
SITE ACCEPTANCE TEST PROCEDURE**

<b>Doc No.</b>	<b>SAT TP-RTU</b>	<b>Rev. No.</b>	<b>1</b>	<b>Date</b>	<b>5 JUNE 2020</b>
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**Remote Terminal Unit (RTU)  
SITE ACCEPTANCE TEST PROCEDURE**

Doc No.

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1

Date

5 JUNE 2020

**A2. RTU SYSTEM'S DIGITAL OUTPUT**

Test Ref:

Point Test - Digital Output

DO.1

No.	Inspection Item	Check (✓)	REMARKS
1	Isolate terminal block links at the marshalling panel. Establish communication between Protocol Analyser and RTU.	Done	
2	From Protocol Analyser, send control command to the Dummy Breaker and observe the result. Check the Digital Feedback.	Done	
3	From Protocol Analyser, send control command to the others RTU points and observe the result. Test all DO point and record in Master Sheet.	YES	

**Test Observations:**

**Test Result: PASS  FAIL**

Checks conducted by:  
Contractor's Signature & Stamp:

Verified by:  
TNB's Representative Signature & Stamp:

Name: HASFARUDDIN

Name:

Date: 30-01-2026

Date: 30-01-2026

**Remote Terminal Unit (RTU)  
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**A3. RTU SYSTEM'S DIGITAL INPUT**

Test Ref:

Point Test - Digital Input

DI.1

No.	Inspection Item	Check (✓)	REMARKS
1	Isolate terminal block links at the marshalling panel. Establish communication between Protocol Analyser and RTU.	Done	
2	Initiate status from the selected point and observe status reported at Protocol Analyser.  Test all DI points and record in Master Sheet.	YES	

**Test Observations:**

**Test Result: PASS  FAIL**

Checks conducted by:  
Contractor's Signature & Stamp:

Verified by:  
TNB's Representative Signature & Stamp:

Name: HASFARUDDIN

Name:

Date: 30-01-2026

Date: 30-01-2026

**Remote Terminal Unit (RTU)  
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Date

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**A4. RTU SYSTEM'S ANALOG INPUT**

Test Ref:

AI.1

Point Test - Analog Input

No.	Inspection Item	Check (✓)	REMARKS
1	Isolate terminal block links at the marshalling panel. Establish communication between Protocol Analyser and RTU.	Done	
2	By using current injector/process meter, inject the current source to the first point of AI module. Vary the current source from 4mA, 12mA and 20mA and observe status reported at Protocol Analyser.  Test all AI points and record in Master Sheet.	YES	

**Test Observations:**

**Test Result: PASS  FAIL**

Checks conducted by:  
Contractor's Signature & Stamp:

Verified by:  
TNB's Representative Signature & Stamp:

Name: HASFARUDDIN

Name:

Date: 30-01-2026

Date: 30-01-2026

**Remote Terminal Unit (RTU)  
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Date

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**A5. RTU SYSTEM'S GENERAL ALARM**

Test Ref:  
GE.1

RTU System's General Alarm

**Test Objective:**

1. To verify the RTU should initiate an alarm due to detection of a malfunction on the IO module.

**Test Procedure:**

No.	Inspection Item	Check (✓)	REMARKS
1	Confirm that no alarms are active and the RTU is not in program mode.	Done	
2	Disconnect the 'Link' port at an IO module to initiate a general alarm.	Done	
3	Check 'RTU Fault Alarm' indicator is lit and at DI point configured for IO module alarm.	Done	

**Test Observations:**

Test Result: **PASS**  **FAIL**

Checks conducted by:  
Contractor's Signature & Stamp:




Verified by:  
TNB's Representative Signature & Stamp:


Name: HASFARUDDIN

Name:

Date: 30-01-2026

Date: 30-01-2026

SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT (INSTALLATION)					
Doc No.	SCC - RTU (INS)	Rev. No.	1	Date	5 JUNE 2020
<b>A2. PICTURES (BEFORE &amp; AFTER DURING PRE-CABLING &amp; INSTALLATION)</b>					
<b>CONTRACT NO. :</b>		TNB130/2024			
<b>FUNCTIONAL LOCATION :</b>		NSBN/PCE/J01114			
<b>SUBSTATION NAME :</b>		PE TMN SERULING JAYA (VCB)			
<b>BEFORE INSTALLATION</b>					
					
OVERALL PICTURE OF SUBSTATION OUTER WALL (WITH SUBSTATION NAME)		DESIGNATED SPACE/WALL FOR RTU BEFORE			
<b>AFTER INSTALLATION</b>					
					
RTU AFTER INSTALLATION					

SITE COMPLETION CHECKLIST (SCC) REMOTE TERMINAL UNIT SITE ACCEPTANCE TEST (SAT)					
Doc No.	SCC - RTU (SAT)	Rev. No.	1	Date	5 JUNE 2020
<b>A2. PICTURES (BEFORE &amp; AFTER DURING PRE-CABLING &amp; INSTALLATION)</b>					
<b>CONTRACT NO. :</b>		TNB130/2024			
<b>FUNCTIONAL LOCATION :</b>		NSBN/PCE/J01114			
<b>SUBSTATION NAME :</b>		PE TMN SERULING JAYA (VCB)			
					
OVERALL PICTURE OF SUBSTATION OUTER WALL (WITH SUBSTATION NAME)	RTU AFTER INSTALLATION (WITH INSIDE PICTURE)	RTU WARRANTY STICKER (COMPLETE WITH SAT DATE)			
					
OVERALL PICTURE OF MASTERSHEET INSIDE RTU PANEL	CABLES GLAND INSIDE RTU PANEL	CABLES GLAND INSIDE RTU PANEL SECOND PIC (IF ANY)			
					
INDIVIDUAL EARTHING CONNECTIONS COMPLETED FOR I/O CABLES TO RTU EARTH BAR	INDIVIDUAL EARTHING CONNECTIONS COMPLETED FOR I/O CABLES TO EARTH STUD AT RCB PANEL	INDIVIDUAL EARTHING CONNECTIONS COMPLETED FOR I/O CABLES TO EARTH STUD AT RCB PANEL SECOND PICTURE (IF ANY)			



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**Remote Terminal Unit (RTU)  
SITE ACCEPTANCE TEST PROCEDURE**

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**A2. PICTURES (BEFORE & AFTER DURING PRE-CABLING & INSTALLATION)**

<b>CONTRACT NO. :</b>	TNB130/2024
<b>FUNCTIONAL LOCATION :</b>	NSBN/PCE/J01114
<b>SUBSTATION NAME :</b>	PE TMN SERULING JAYA (VCB)

		
<p><b>INDIVIDUAL EARTHING CONNECTIONS COMPLETED FOR I/O CABLES TO EARTH STUD AT RCB PANEL THIRD PIC (IF ANY)</b></p>	<p><b>INSTALLATION INDIVIDUAL EARTHING FOR SPD TO RTU EARTH BAR</b></p>	<p><b>ANTI STATIC WRIST STRAP NEED TO BE INSTALLED ON ESD BONDING POINTS</b></p>

**VERIFIED BY TNB**

**TNB Personnel:**

**Verified at: 06-04-2026 12:37:15**