

Operational Update

Energex – Transformer & RMU Commissioning forms

Issue # C-0010 – 22/05/2020

Target Audience:

Accredited Service Providers

Introduction:

The release and implementation of digital Completion packages will present an easier process to capture information more comprehensively. With a standardised approach to data collection for Transformer Commissioning, the following forms will capture the essential information required for future maintenance and testing.

Commissioning Documents

The following documents **SHALL** be submitted digitally with all the required information as part of the Completion Package for Subdivision and Large Customer Connection projects.

In addition, Form 2928 Transformer & RMU Commissioning sheet **SHALL** have the common earthing resistance value entered.

These following documents are also to be provided in digital format as applicable:

Form 1175 - HV Apparatus Commissioning & Maintenance Sheet

Form 1184 - Pad Mount/Ground Type/Dry Type Transformer - LV Monitoring Check Sheet

Form 1179 - Pole Top Transformer - LV Monitoring Check Sheet

Form 2928 – Transformer & RMU Commissioning Sheet

Form 1577 – Pre-Commissioning Checks – Load Break Switch

The latest revisions of these documents can be found on the Energex SWP's Online website.

Attached to this Operational Update are marked up versions of the forms and what information is expected.

For more information contact:

[E-mail contestable@energyq.com.au](mailto:contestable@energyq.com.au)

INFORMATION
REQUIRED

Site Identification No. _____

HV Apparatus Pre-Commissioning Sheet

Complete all relevant details:									
Project No:									
Location:									
Transformer Installed: (Please complete all details even if existing TX) <input type="checkbox"/> Existing <input type="checkbox"/> Replacement <input type="checkbox"/> New									
TR No.	TR Size	Serial No.	CT Ratio	Tap Position	Year of Manuf.	Date Energised			
				of		/	/		
Network Monitor Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No					Network Monitor No:				
Transformer Removed									
TR No.		TR Size			Serial No.				
High Voltage Switch Gear/LBS Installed: <input type="checkbox"/> Replacement <input type="checkbox"/> New					LBS: <input type="checkbox"/> Form 1577 completed				
Make	Serial No.	Type	Energex No.	Year of Manuf.	Date Energised				
					/	/			
High Voltage Switch Gear/LBS Removed									
Make		Serial No.			Energex No.				
Testing									
RMU Fuse Details & Resistance:		mΩ	mΩ	mΩ	Type	Rating	A		
Cable Fault Indicators:		IS	IS	IS	HV RMU Fuses Installed		<input type="checkbox"/> Yes <input type="checkbox"/> No		
Load Break Switch:		Earth Reading ≤ 30 Ω							
Common Earth Disconnected				Separate Earth Disconnected					
		Reading				Reading		Reading	
<u>SP</u>		<30Ω		<u>SP</u>		LV <10Ω		HV <30Ω	
<u>SG/SC</u>		<10Ω		<u>SG/SC</u>		LV <10Ω		HV <10Ω	
Earth Testing by Earthing Contractor: <input type="checkbox"/> Results Sighted <input type="checkbox"/> Testing completed by EnergeX									
Transformer Neutral Continuity: Padmounts – Supplied by Manufacturer					Neutral Bar – Neutral Bushing < 1 Ω				
Continuity Measurement (Ω) <small>(record actual reading)</small>				Insulation Resistance (MΩ) <small>(record actual reading)</small>					
LV φ - N		HV φ - φ		LVφ - E 500V Megger					
Aφ - N		Aφ - Bφ		HVφ - E 1000V Megger					
Bφ - N		Bφ - Cφ		HVφ - LVφ 1000V Megger					
Cφ - N		Cφ - Aφ		RMU Earth to LV MEN		<input type="checkbox"/> Tagged			
Checks and Tests Completed by:									
Name (please print)					Phone No:				
Signature					Date / /				



positive energy

Pad Mount/Ground Type/Dry Type Transformer - LV Monitoring Check Sheet

Section One - Site Details (Mandatory)

All details must be provided in section one

Substation Reference e.g. SC755-N or SG1234-G/TR1 (Include TR# if applicable)	Street
Transformer Number e.g. TR1234	Suburb
Network Monitoring ID e.g. NM00006	Work Order Number
<input type="checkbox"/> New <input type="checkbox"/> Retrofit Meter Plant # 4- _____ Modem Plant # CF _____ Installation: Meter Serial # _____ IP Address _____	
<input type="checkbox"/> De-commission Meter Plant # 4- _____ Modem Plant # CF _____	
Pre-Energisation Checks Completed by - Name (please print)	Date Completed / /

Section Two - Post Energisation Checks

	Description	Details	Result OK?
1	Verify Meter display	Display is present? L1 L2 L3 icons displayed? @ is flashing?	<input type="checkbox"/>
2	Communications	@ is flashing? Sig Strength between 13 & 35?	<input type="checkbox"/>
3	Test Block	Verify CT shorting links are not in place (must be unshorted)	<input type="checkbox"/>
4	Initiate Commissioning Checks	Goto http://xbnswws05.energex.com.au/macs/using Internet Explorer on a Toughbook or PC	

For Remote Technical Assistance Call 1300 792 611 – Select Option 1, then 3 (call if any parameters are outside guidelines)

If no answer please leave a message with your name and mobile number

Manual Commission Process (complete when commissioning via Toughbook is unavailable)

Display Set A (Press select Button to advance display numbers, hold **ENTER** for alternative)

LCD Code	Description	Guideline		Result
uoLt A	A phase voltage	220 to 260 Volts		V
ANPS A	A phase current	Should be greater than zero		kA
InSt A	A phase kW	Should not be negative	Include sign	kW
uoLT b	B phase voltage	220 to 260 Volts		V
ANPS b	B phase current	Should be greater than zero		kA
InSt b	B phase kW	Should not be negative	Include sign	kW
uoLT C	C phase voltage	220 to 260 Volts		V
ANPS C	C phase current	Should be greater than zero		kA
InSt C	C phase kW	Should not be negative	Include Sign	kW
SIGnAL	Signal Strength	Greater than 12 and less than 99	99 = no network Coverage	

Commissioning Checks Completed by - Name (please print) **Date Completed** / /

Form to be completed and faxed to (07) 3664 7891 or emailed to MeteringAssets@energex.com.au



**Place Project Label here
or complete**

Project No _____ Work Order No _____

Location _____

INFORMATION
REQUIRED

Pre-Commissioning Checks - Load Break Switch

Site Details			
Site ID	Feeder	Installed date / /	
Fix Project Label for details of the Project No, Work Order No and the location			
Switch Details			
Manufacturer	<input type="checkbox"/> NGK	<input type="checkbox"/> ILJIN	Serial No.
Type	Manual Operation with locking mechanism <input type="checkbox"/> Pole Top <input type="checkbox"/> Mid Pole	Rated Current	630 A
Functional / Mechanical Checks			
NGK LBS only - Attach "L" bracket to actuator handle on the switch			<input type="checkbox"/>
Operate the switch – open (O) / close (I). Check actuator operates freely (Check L bracket is not contacting tank). Check the SF ₆ low gas pressure indicator is not showing red and the pressure relief vent is intact.			<input type="checkbox"/>
Check the switch, including the bushings, for mechanical damage			<input type="checkbox"/>
ILJIN LBS only - Check all electrical connections including the surge arresters			<input type="checkbox"/>
Check all surge arrester leads are well separated from each other			<input type="checkbox"/>
Check all wildlife cover boots are properly fitted to bushings and bridging leads, and have no rips or other damage			<input type="checkbox"/>
Check safety bolt has been installed at end of suspension bracket			<input type="checkbox"/>
Check remote actuator handle is installed to the minimum height. Confirm correct operation and status of switch.			<input type="checkbox"/>
When using HV Live Work methods, confirm the switch is closed by measuring current flow in leads prior to opening temporary bridges			
Pre-Commissioning Checks			
Continuity / Insulation Test Results			
Continuity Measurement (Ω)	Insulation Resistance (MΩ) (5000V Insulation Tester)		
Switch Closed (I)	Switch Open (O) Insulation Resistance Across the gap	With surge arrestors connected & Switch Closed - Insulation resistance between phases & phase to frame	
0.0 Ω	>100 MΩ	>100 MΩ	>100 MΩ
Aφ - Aφ _____ Ω <input type="checkbox"/>	Aφ - Aφ _____ Ω <input type="checkbox"/>	Aφ - Bφ _____ Ω <input type="checkbox"/>	Aφ - Frame _____ Ω <input type="checkbox"/>
Bφ - Bφ _____ Ω <input type="checkbox"/>	Bφ - Bφ _____ Ω <input type="checkbox"/>	Aφ - Cφ _____ Ω <input type="checkbox"/>	Bφ - Frame _____ Ω <input type="checkbox"/>
Cφ - Cφ _____ Ω <input type="checkbox"/>	Cφ - Cφ _____ Ω <input type="checkbox"/>	Cφ - Bφ _____ Ω <input type="checkbox"/>	Cφ - Frame _____ Ω <input type="checkbox"/>
Correct Indication I <input type="checkbox"/>	Correct Indication O <input type="checkbox"/>		
Installation Checks/Readings			
Earth Installation / Connection <input type="checkbox"/> SEP Earth <input type="checkbox"/> CMEN Disconnected Earth Resistance _____ Ω			
Note The earth resistance of the disconnected earth must be <30 Ω. Refer to OHCM, Sect 7, P 603-604. Refer to WP1076 for approved earth resistance testing methods.			
Comments (Enter comments or any other relevant information)			
Pre-Commissioning Checks & Tests Completed By (Complete when installed, file with Project)			
Name (please print)			
Signature			Date / /

COPY AND SEND TO NDS WITH AS CONSTRUCTED WORKSPLANS

No.

Transformer & RMU Commissioning Sheet

Site Details - All details to be completed in full							
Site Identification/Name		Project No.		Work Order No.			
Location							
Form 1175 - HV Apparatus Pre-Commissioning Sheet Completed: <input type="checkbox"/> YES <input type="checkbox"/> NO (complete a Form 1175)							
Ring Main Units							
Voltage Detection Output Socket Voltages							
A ϕ - E		B ϕ - E		C ϕ - E			
A ϕ - E		B ϕ - E		C ϕ - E			
A ϕ - E		B ϕ - E		C ϕ - E			
A ϕ - E		B ϕ - E		C ϕ - E			
Phase Out Between RMU Test Points		1. <input type="checkbox"/> Point L1/IS1 - L2/IS2 Different phase		1. <input type="checkbox"/> Point L1/IS1 - L1/IS2 Like Phase		2. <input type="checkbox"/> Point L2/IS1 - L1/IS2 Different Phase	
3. <input type="checkbox"/> Point L2/IS1 - L2/IS2 Like Phase		4. <input type="checkbox"/> Point L3/IS1 - L2/IS2 Different Phase		5. <input type="checkbox"/> Point L3/IS1 - L3/IS2 Like Phase		6. <input type="checkbox"/> Point L1/IS1 - L3/IS2 Different Phase	
Transformer							
Confirm correct LV bridging between Transformer bushings and LV isolation switches <input type="checkbox"/> YES							
LV Fuse locations				Fuse Rating			
Transformer Site No:				INFORMATION REQUIRED		Amp	
Site ID No.						Amp	
Site ID No.						Amp	
Site ID No.						Amp	
				Circuit Fuse (3)		Amp	
Voltages - No Load 3 phase						Voltages - No Load 1 Phase	
A ϕ - N		B ϕ - N		C ϕ - N		A ϕ - N	
A ϕ - B ϕ		B ϕ - C ϕ		C ϕ - A ϕ		N ϕ - Ind Earth	
A ϕ - Ind Earth		B ϕ - Ind Earth		C ϕ - Ind Earth		A ϕ - Ind Earth	
N ϕ - Ind Earth							
Transformer Phase Rotation				Transformer Loop Impedance			
<input type="checkbox"/> Clockwise		<input type="checkbox"/> Anticlockwise		Supply Active - Neutral Main < 0.5 Ω (Tx Neutral bridge connected to Neutral Main)		Ω	
Transformer Common Earthing Reading (all bridging and cabling connected)							
Common Earthing Resistance Value: reading to be less than 1 Ω (If greater than 1 Ω ; repair &/or contact WGL/Standby Co-ordinator)							
Network Monitor: <input type="checkbox"/> Tested <input type="checkbox"/> Commissioned				Meter Phase Rotation: <input type="checkbox"/> Clockwise <input type="checkbox"/> Anti-Clockwise			
<input type="checkbox"/> Form 1179 completed for Pole Transformers				<input type="checkbox"/> Form 1184 completed for Padmount / GT / Dry Type Transformers			
Print Name:				Signature of Tester:			
Phone No:				Date:		/ /	
Sheet checked by:							
Work Group Leader Name (print)				Signature			
				Date / /			

Note: Minimum earth readings must be achieved before energisation of site.