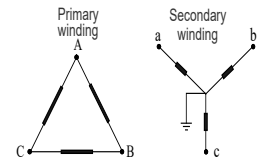


## DISTRIBUTION COMMISSIONING FORM (DCF) 3.1 – MPS Distribution transformer commissioning

The *Distribution Commissioning Forms Guideline (EDM 34137510)* must be referenced for guidance when completing this form.

**Purpose:** This form is used to record the required test results when commissioning new or replacement modular package substation (MPS) pad-mounted transformers up to 750 kVA.

**Notes:** The following tests and checks must be carried out after installation and before the transformer is put into service.



<b>Address</b>		<b>Work Package No.</b>	
<b>Manuf. Serial No.</b>		<b>SPIDAWeb Pick ID:</b>	

### 1. Insulation Resistance Test

Record the insulation resistance test results after 1 minute of testing.

	Test Connection	Test Voltage	Resistance	Expected Values
Insulation resistance test on the transformer winding (Short circuit all winding terminals of the same voltage level together.)	Primary/high voltage (HV) to tank	2.5 kV	Ω	>1 GΩ
	Primary/HV to secondary/LV	1 kV	Ω	>100 MΩ
	Secondary/LV to tank	1 kV	Ω	>100 MΩ
Insulation resistance test on the low voltage (LV) board busbar (LV fuse ways open, including the transformer LV disconnecter)	Red to white phase	1 kV	Ω	>100 MΩ
	White to blue phase	1 kV	Ω	>100 MΩ
	Blue to red phase	1 kV	Ω	>100 MΩ
	Red phase to earth	1 kV	Ω	>100 MΩ
	White phase to earth	1 kV	Ω	>100 MΩ
	Blue phase to earth	1 kV	Ω	>100 MΩ

### 2. Handover of Responsibility for the Completion of Item 1

I hereby certify that item 1 has been completed with satisfactory results.			
Tested by		BNA	
Signature		Date & Time	

### 3. Installation and Construction Checks

Inspect the following: 1. rating plate 2. tank and bushings 3. tap setting 4. oil level 5. HV terminations 6. LV terminations 7. neutral connection 8. N-E connections	Transformer installed as per construction standards and applicable design drawings.	
	Transformer matches system voltage.	
	Transformer tap is at the position as per network planning. Tap pos.	
	Transformer oil level satisfactory (if visible).	
	Transformer bushings and tank in good condition (no oil leaks).	
	HV cables properly terminated and connected. Drain wires in place. HV screens bolted to the HV earth bar.	
	The dead-end plugs are correctly installed (transformers with 2 sets of HV bushings).	
	LV cables properly terminated and connected.	
Check Neutral is connected and earthed via the N -E link connection.		
All SPIDAWeb labels fitted and numbered correctly as per SPIDAWeb sheet.		
LV lead connections to the transformer LV bushings are correct as per construction standards or phase indicator tags (recommissioning).		

#### 4. Handover of Responsibility for the Completion of Items 1 & 3

I hereby certify that item 1 and 3 have been completed with satisfactory results.			
Tested by		BNA	
Signature		Date & Time	

#### 5. Pre-energising checks

1	Ensure that the earth resistance has been tested and is acceptable. DCF 4.1 completed and attached.	
2	Ensure all electrical connections have been completed, including N-E connections.	

#### 6. Energisation of Transformer without Load

Energisation of a transformer without load (LV fuse ways open, including the transformer LV disconnecter)	Open all LV fuse ways, including the transformer disconnecter.		
	Confirm the correct HV fuse type and rating. Record rating		A
	Energise transformer as per the switching program (and check for abnormal noise). Record the <b>switching program number</b> :		
	Measured secondary voltages phase to neutral within acceptable range (226–254 V): R-N:                      volts; W-N:                      volts; B-N:                      volts		
	Measured secondary voltage between phases within acceptable range (390–440 V): R-W:                      volts; W-B:                      volts; B-R:                      volts		
	Phase rotation test: (123 or ABC or RWB)		Phase rotation test result:

#### 7. LV Phase Out Test

Phase out at points of interconnection between other transformers to ensure interconnections can be made. Expected results are given. <b>Record test results</b>	1. If the LV conductors are energised from an interconnected transformer, conduct the phase-out test at the new transformer’s LV disconnecter frame.				
	2. If the LV conductors are not energised, proceed to item 8 (ENERGISATION OF THE LV NETWORK), and conduct the phase-out test on normally open points where it can be interconnected from another transformer.				
		R	W	B	N
	R	0	415	415	240
	W	415	0	415	240
	B	415	415	0	240
N	240	240	240	0	

#### 8. Energisation of the LV Network

Energisation of a transformer with load (close the LV disconnecter before closing the fuse ways)	If applicable, ensure all short-circuiting equipment is removed from the LV network.			
	If applicable, check that the LV fuses are healthy.			
	Energise the LV circuits in accordance with the LV switching schedule. Record the switching schedule number:			
	Ensure that the measured secondary voltage for phase to neutral is within an acceptable range (226–254 V):      R-N:                      volts; W-N:                      volts; B-N:                      volts			
	Ensure that the measured secondary voltage between phases is within an acceptable range (390–440 V):      R-W:                      volts; W-B:                      volts; B-R:                      volts			
	Record final tap position (if changed)			
	Conduct a service connection test on all installations where the service connections have been disturbed.			

**9. Handover of Responsibility**

I hereby certify that all items have been completed with satisfactory results and transfer control to the network operating authority.			
Commissioned by		BNA	
Signature		Date & Time	

1. Ensure the work area is left tidy with no hazards to the public.
2. Hand over responsibility to the operating authority.
3. The completed form must be returned to the project file/work pack.