

12kV, 24kV and 36kV reclosers Product approval and audit form

Endeavour Energy use only:

Product approval officer:..... Date received:.....

Application ID no:..... Approval no:.....

Manufacturer:

Contact person and details:

Manufacturer's signature: Date:

Note to applicant: This form is to be submitted with the corresponding Product approval application form.

It shall be the responsibility of the person/organisation requesting the approval for a particular type of product to be used in Endeavour Energy's network, to have this form completed by the manufacturer and returned to Endeavour Energy for examination. This form shall contain measured values and page numbers as found on the product test reports. The information provided may be used for future audit purposes.

12kV, 24kV and 36kV reclosers to ETS 0074	Test value	Ref. Page
1. Manufacturer details		
Manufacturer		
Plant address		
Reference drawings		
Manufacturer's design no.		
Generic description, for example, code/make/ref/type		

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2. Guaranteed performance		
Applicable standard (AS/IEC/other)		
Nominal voltage rating (11/22/33kV) (kV)		
Highest system voltage (12/24/36kV) (kV)		
Expected life		
• Recloser (yrs)		
• Voltage transformer (yrs)		
• Protection relays/system (yrs)		
Current interrupting medium (SF6,Vacuum,Oil)		
Rated voltage (Ur) (kV)		
Rated insulation level – lightning impulse (Up) (kV peak)		
Rated insulation level – one (1)minute power frequency (Ud) (kV rms)		
Rated frequency (fr) (Hz)		
Rated current (Ir) (A)		
Rated line charging breaking current (A)		
Rated cable-charging breaking current (A)		
Rated single capacitor breaking current (A)		
Rated back to back capacitor breaking current (A)		
Rated small inductive breaking current (A)		
Rated short circuit breaking current (kA)		
Rated peak withstand current (Ip) (kA rms)		
Rated short time withstand current (Ik) (kA)		
Rated duration of short circuit (tk) (sec)		
Rated short line fault breaking current (kA)		
Rated short-circuit making current (kA)		
First pole to clear factor		
Rated TRV for terminal faults (kV)		
Rated operating sequence		
Total short circuit breaking time (sec)		
Rated out of phase breaking current (kA)		
Number of breaks for each pole		
Total length of break for each pole (mm)		
Type of main contact		
Recloser details		
Type of arcing contact		
Type of arc control device		
Current interrupting medium		

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Insulation medium		
Pressure of SF6 gas (if applicable) (kPa)		
Number of tanks		
Name of SF6 supplier and type number		
Quantity of SF6 for each auto-recloser (ltr/kg)		
Protective finish applied to inside of tank		
Open time		
• with zero current (sec)		
• at rated breaking current (sec)		
Arc duration time at rated breaking current (cycles)		
Closing time (sec)		
Maximum discharge level - complete unit (pC)		
Bushing		
Material		
Colour		
Total external creepage distance (mm)		
Protected creepage distance (mm)		
Flashover length (mm)		
Maximum space available for CTs (mm)		
Bushings are inter-changeable	Yes ☐ No ☐	
Protection		
Protection conforms to ETS0074 Table ???	Yes ☐ No ☐	
• If not have details of deviation been provided	Yes ☐ No ☐	
Selectable reclose time	Yes ☐ No ☐	
Instantaneous over-current (O/C) protection directional	Yes ☐ No ☐	
Definite time over-current (O/C) protection directional	Yes ☐ No ☐	
Inverse time over-current (O/C) protection directional	Yes ☐ No ☐	
Sensitive earth fault (SEF) protection - directional	Yes ☐ No ☐	
Under- and over-voltage detection	Yes ☐ No ☐	
Directional blocking	Yes ☐ No ☐	
Negative sequence over-current protection	Yes ☐ No ☐	
Cold load pick-up	Yes ☐ No ☐	
At least four (4) independent protection setting groups	Yes ☐ No ☐	
Automatic protection setting groups	Yes ☐ No ☐	

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Minimum voltage required for direction feature to operate	Yes ☐ No ☐	
Protection system has a watchdog system	Yes ☐ No ☐	
Communications		
RS232 communication port that supports asynchronous V.24 functionality	Yes ☐ No ☐	
Modem shall interface with TRIO E series digital radio or equivalent	Yes ☐ No ☐	
Possible to disconnect the RS232 to modem interface to allow local protocol and communication troubleshooting	Yes ☐ No ☐	
Remote communications for the AR support DNP 3.0, up to and including level 2	Yes ☐ No ☐	
Radio has a stand-down mode	Yes ☐ No ☐	
Control		
Trip supply voltage (V)		
Trip supply by (battery/capacitor)		
Close supply voltage (V)		
Close supply by (battery/capacitor)		
Control and protection supply voltage (V)		
Battery/ies have a <i>watchdog</i> feature	Yes ☐ No ☐	
Communication system is capable of sending a <i>low volt</i> alarm	Yes ☐ No ☐	
Radio has a separate supply	Yes ☐ No ☐	
All batteries are monitored	Yes ☐ No ☐	
All batteries have <i>low battery</i> alarm	Yes ☐ No ☐	
Maintenance free life (yrs)		
Overall width/height/depth (mm)		
Weight (kg)		
Type		
Country of origin		
Trip free	Yes ☐ No ☐	
Rated supply voltage of close and trip coils (V)		
Rated supply voltage of close spring motor (V)		
Max spring charging current (A)		
Rated supply voltage of aux. circuits (V)		
Mode of closing		
Number of trip coils		
Number of close coils		

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Power required to operate trip coil (W)		
Power required to operate close coil (W)		
Auxiliary contact rating:		
• 250Vac (A)		
• 120V dc (A)		
Dimension of control cubicle (mm)		
Weight of control cubicle (kg)		
Dehumidifier rating and thermal density		
Wiring complies with AS3000	Yes ☐ No ☐	
Wiring complies with CSA	Yes ☐ No ☐	
Wiring colour		
• Active		
• Neutral		
• +ve dc		
• -ve dc		
3. General		
Max noise level during CB operation at one (1) metre (dB)		
Max RIV at one (1) MHz (V/kV)		
Corona extinction voltage (kV)		
Degree of protection, cubicle (IP rating)		
Type of finish (galvanised/paint)		
Finished colour		
Recommended life expectancy (years/operations)		
Operating mechanism (years/operations)		
Contacts and interrupting system (years/operations)		
Control and other ancillary items (years/operations)		
Reliability/condition based maintenance system available	Yes ☐ No ☐	
Warranty period (years/operations)		
4. Type test (provide type test reports)		
Dielectric tests including lightning impulse withstand tests, power frequency voltage withstands tests, and power frequency withstand test on auxiliary circuits	Yes ☐ No ☐	
Switching tests including load switching, line and cable charging current test	Yes ☐ No ☐	
Making current capability	Yes ☐ No ☐	

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Rated symmetrical interrupting current tests	Yes ☐ No ☐	
Minimum tripping current tests	Yes ☐ No ☐	
Partial discharge tests	Yes ☐ No ☐	
Radio interference voltage tests	Yes ☐ No ☐	
Temperature rise test	Yes ☐ No ☐	
Time-current tests	Yes ☐ No ☐	
Mechanical duty test	Yes ☐ No ☐	
Control electronic elements surge withstand capability tests	Yes ☐ No ☐	
Short time withstand current and peak withstand current tests	Yes ☐ No ☐	
Verification for the degree of protection	Yes ☐ No ☐	
Control cabinet and associated electronics	Yes ☐ No ☐	