

TYPICAL SPECIFICATION FOR **ECO TIER 2 FAST TRANS – Copper Windings** **OIL IMMERSED NATURALLY COOLED (ONAN)** **FREE LIQUID LEVEL TRANSFORMER(S) TO BSEN 60076:2011/IEC 60076:2011**

Rating	315, 500, 800, 1000, 1250, 1500 and 2000 kVA.
Phases	Three Phase (Double Wound).
Frequency Hz.	50 Hertz
HV Winding	11,000 Volts.
LV Winding	433 Volts. (No Load).
HV Insulation Level	12 kV.
Power frequency	28 kV. r.m.s.
Basic Impulse Level	75 kV. Peak.
Impedance - % at 75°C	(Subject to IEC/BS Tolerances)

315kVA	500kVA	800kVA	1000kVA	1250kVA	1500kVA	2000kVA
4.75%	4.75%	4.75%	4.75%	5.0%	5.5%	6.0%

HV Tappings	± 2.5%, ±5.0% and +7.5% (6 position switch)
Tapping Selection	Externally operated "off circuit" switch. The switch handle is provided with a padlock facility and in addition a padlockable anti-vandal cover. Both switch handle and anti vandal cover suitable for use with ENATS 35-1 defined padlock dimensions - minimum hole size is 8mm
HV/LV Connections	Delta/Star N. pt.
B.S. Vector Symbol	D,yn11
Temperature Rise °C	Top Oil 60° C; Windings 65° C
Type : Outdoor/Indoor	Ground Mounted. (HV and LV flanges on opposite sides of transformer tank.)
Insulating Liquid Type	Mineral Oil to IEC 60296:2012 (also designed for use with Midel 7131 transformer fluid)

Tank Fittings:-

- Bolted on tank cover (lipped and designed to shed water)
- 4 x Lifting lugs (Painted Yellow) to enable reasonable upright lift position for transformer alone or with 350kg cabinet fitted and/or with 700kg RMU. Any appropriate pair of lifting lugs shall be capable of supporting (with a safety factor of at least two) the combined weight of the transformer when filled with oil and attached switchgear (RMU and/or Cabinet)
- Combined Drain/Sampler valve of globe type generally in accordance with IEC60076-22-7, figure 16, complete with removable and durable sealing cap
- 4 x Jacking Lugs, painted yellow, (400mm from ground level) – minimum dimensions as per ENATS 35-1 issue 6 part 2 figure 1 – clear access to engage a jack is required.
- Oil level indicator showing nominal oil level at 15°C and with a visible range of -10°C to +80°C.
- Combined rating and connection plate – including information detailed in ENA TS 35-1 issue 6 part 1 section 8. Rating plate to state compliance to ECO directive Tier 2 losses where applicable.
- Plain Breather Pipe with ½" BSP External Thread – typically as figure 2 of ENATS 35-1 issue 6 part 1 - with transport cap & label stating "Remove Breather cap prior to energise".
- Tapping switch label (figure 9 of ENATS 35-1 part 3 issue 6)
- Base skids drilled for roller axles (42mm holes for axles at each end of base skid)
- Oil filling point and cover
- Thermometer pocket with ½" BSP External Thread
- Centre of gravity of the transformer alone (i.e. not including HV & LV Switchgear weights) to be marked on two adjacent tank sides with symbol 7 of BSEN ISO 780
- 2 x earthing terminal positioned centrally below the HV & LV flanges, bolted hole to be 200mm ±5mm from ground level - stainless steel 304L minimum, dimensioned 60mm x 60mm x 10mm as per IEC 60076-22-7 earth terminal figure 5 type B4, lug to be free of paint, corrosion and grease and protected against corrosion for storage.
- HV Terminal Identification plate marked 1U 1V 1W (read left to right when facing terminals)
- LV Terminal Identification plate marked 2W 2V 2U 2N (read left to right when facing terminals)
- External nuts and bolts to be stainless steel (nuts different grade SS to bolts to ensure galling does not occur) to avoid corrosion).
- HV connection leads internal of transformer tank to be clearly labelled.
- Bolt-on Panel Radiators
- For ratings 315kVA to 1500kVA - No Radiators positioned to the Left of the LV Flange
- Copper Windings**

HV Terminations:- BS2562:1979 studed "E" type flange fitted with a 3 pole HV Monoblock (CEM 12kV 250A M12 HV Bushing Plate) and a 3 pole cable box complete with undrilled gland plate, suitable for fully insulated dry terminations and capable of accepting 1x3c 185mm² or 3x1c 300mm² cables entering from below or above. Unless specified otherwise the cable box will be assembled to accept cables from below. Insulating materials, cable glands and cable lugs are not included

LV Terminations:- BS2562:1979 studed "F" type flange fitted with a 4 pole LV Monoblock (rated for the transformer current) and a 4 pole air insulated cable box complete with undrilled gland plate, capable of accepting the number of cables per phase and neutral as shown below, up to 630mm² entering from below or above. Unless specified otherwise the cable box will be assembled to accept cables from below. Cable termination kits, glands and cable lugs are not included.

Number of LV Cables:-

315kVA & 500 kVA	800kVA, 1000kVA & 1250kVA	1500kVA	2000kVA
4 Total (one per phase & neutral)	8 Total (two per phase & two neutral)	12 Total (three per phase & three neutral)	16 Total (four per phase & four neutral)

Paint System :- To meet requirements of ISO 12944 Category **C4 Very High Durability** – Final colour Dark Admiralty Grey ref 632 of BS381C

Technical Data:-

Rated Power	315kVA	500kVA	800kVA	1000kVA	1250kVA	1500kVA	2000kVA
No Load Loss (W)	324	459	585	693	855	1015	1305
Load Loss (W)	2800	3900	6000	7600	9500	11285	15000
Sound Power dB(A)	54	56	58	59	60	61	62

Maximum Losses – zero positive tolerance