

Single-Phase Transformers

4BT Power Transformers

General data

Technical specifications

Transformers <ul style="list-style-type: none">• Version• Performance range (with IP00)• Approvals	Type	4BT UI core > 16 ... 250 cnus
Voltage range <ul style="list-style-type: none">• Approvals for USA, Canada	V	≤ 1000 (up to 3.6 kV on request)
	V	≤ 600
Rated frequency	Hz	50 ... 60
Thermal class <ul style="list-style-type: none">• Acc. to UL/CSA		H Class 180
Ambient conditions Rated ambient temperature <ul style="list-style-type: none">• At rated power• Maximum value, after power reduction depending on load characteristics, (see "Design")• Minimum value	°C	55 80 – 25
Relative air humidity <ul style="list-style-type: none">• Mean value up to• Maximum value for 30 days/year• At 40 °C occasionally	%	80 95 100
Safety class		I
Degree of protection <ul style="list-style-type: none">• Without enclosure• With protective enclosure (according to "Selection and Ordering Data", see Catalog LV 1)• Version		IP00 IP20 or IP23 IP20, IP23: sheet-steel enclosure coated with epoxy resin, color gray RAL 7032
Installation height		Up to 1000 m above sea level (above this, power reduction is necessary)
Protective devices <ul style="list-style-type: none">• Internal• External		Can be designed with thermistor transformer protection for warning or disconnection, or warning and disconnection, see "Design". The transformers can be protected against short-circuits and overload on the primary and secondary with circuit breakers. For reliable protection against short-circuits and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 (particularly section 525) and Part 610. On request
Connection method <ul style="list-style-type: none">• Terminal arrangement• For terminal versions and connectable cross-sections (see "Project Planning Aids")		The permissible conductor cross-sections are assigned to the specified terminal types. Refer to DIN VDE 0298-4 and EN 60204 (VDE 0113-1) for the permissible conductor cross-sections for the specified current according to the installation type. Other terminal sizes than standard versions on request.
Mounting position		The permissible mounting position for each version is shown in the "Project Planning Aids".

Further technical specifications can be found on the Internet at <http://www.siemens.com/sidac>

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Operation characteristics

- According to DIN VDE 0532-6
- $t_a = 55 \text{ °C/H}$

Transformer	Rated power P_n 50 Hz ... 60 Hz 1000 m above seal level Degree of protection IP00	Core size	Voltage rise in no-load operation (operating temperature) u_A approx.	Voltage drop on rated load ¹⁾ u_R approx.	Short-circuit voltage ¹⁾ u_Z approx.	Degree of efficiency η approx.
Type	kVA		%	%	%	%
4BT45 0	18	UI 240/107	2.7	2.6	2.7	97
4BT47 0	20	UI 240/137	2.6	2.5	2.5	97
4BT47 1	22.5	UI 240/137	2.3	2.2	2.5	97
4BT47 2	25	UI 240/137	2.1	2	2.1	97
4BT51 0	28	UIS 265/107	4.3	4.1	4.8	95
4BT52 0	31.5	UIS 265/120	3.9	3.8	4.4	96
4BT53 0	35.5	UIS 265/135	3.6	3.5	4.1	96
4BT54 0	40	UIS 305/125	3.7	3.5	3.9	96
4BT54 1	45	UIS 305/125	3.3	3.2	3.8	96
4BT55 0	50	UIS 305/140	3.1	2.9	3.5	97
4BT56 0	63	UIS 305/160	2.5	2.5	3.2	97
4BT58 1	80	UIS 370/150	3.1	3	3.9	97
4BT59 0	100	UIS 370/170	2.6	2.5	3.7	97
4BT60 1	125	UIS 370/195	2.1	2.1	3.6	97
4BT62 1	160	UIS 455/175	2.1	2	3.7	98
4BT63 0	200	UIS 455/200	1.7	1.7	3.7	98
4BT65 0	250	UIS 455/260	1.5	1.5	3	98

Higher ratings and other conditions on request.

Calculation of power loss P_V

$$P_V = \frac{P_n (100 - \eta)}{\eta} \text{ [kW]}$$

¹⁾ Winding reference temperature: 115 °C.