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HYUNDAI
INVERTER SHIELD

Inverter Shield™ Motors

Crown Triton™ Series

- 5 Year Warranty
- Premium Efficiency, TEFC Enclosure
- Inverter Duty Motors
- Corona Resistant Magnet Wire
- CSA Certified, UL, CE
- NEMA MG1 (2003) Part 31, Definite-Purpose Inverter Fed Motors

HYUNDAI
HEAVY INDUSTRIES CO.,LTD.

Experience Combined with **Technology**

Hyundai Induction Motors use Finite Element Analysis (FEA) and Computer Aided Design (CAD) methods to develop and produce the most innovative motors from state-of-the-art and fully automated manufacturing facilities.

Hyundai's Crown Triton™ cast iron frames greatly improve motor performance by maximizing heat dissipation.

The use of advanced technology to design and manufacture electric motors, results in a reasonably priced, top quality motor with superior performance characteristics.

Compared with other normal efficiency motors, Hyundai's Crown Triton™ Inverter Shield™ Premium Efficiency motors guarantee better performance.

Approvals : CSA C US, EEV mark, CE

EEV 109973

Inverter Shield™ Premium Efficiency Motors

Typical Features & Construction

- Hyundai's inverter shield insulation system
- Class F insulation with Class B temperature rise
- Low stress winding design
- Variable torque (0 to base speed)
- Constant torque (10:1)
- Suitable for 1.5 times base speed, constant HP (subject to mechanical limits)
- AC 3-phase, squirrel cage induction motor
- Totally Enclosed Fan Cooled, IP54 protection
- Premium efficiency exceeds CSA C390 and EPACT'92 efficiency requirements
- NEMA design B or C torque
- NEMA MG1 (2003), Part 31, Definite-Purpose Inverter Fed Motors
- EEMAC M1-6, CSA 390
- 60 Hz, 208-230 / 460 V and 575 V (single voltage only for 150 HP & above)
- 1.15 service factor (sine wave), 1.00 (P.W.M.)
- Continuous duty
- Supply voltage ±10%, frequency ±5%
- Wye-delta internal connection for 230 / 460 V motors
- Star internal connection for 575 V motors
- Bidirectional rotation
- Low temperature bearing grease (Mobil polyrex EM grease) allows ambient temperature of -35℃ to +75℃
- Altitude below 3,300 feet (1,000 meters)
- Rigid cast iron construction
- F-1 mounting (F-2 field modifiable)
- Oversized gasketed conduit box, with neoprene lead seal
- Oversized vacuum degassed bearings
- Corrosion resistant zinc plated hardware
- Corrosion resistant polyurethane paint
- Drive end shaft slinger
- Stainless steel name plate
- Fully tested and documented per IEEE Std. 112, method B & CSA C390
- EEV mark on nameplate

Inverter Shield™ Premium Efficiency Motors

Production Range

- Frame size : 143T to 449TZ
- Horsepower : 1 to 250 HP
- Poles : 2, 4, 6 pole
- Enclosure : TEFC, IP54 protection, rigid cast iron construction

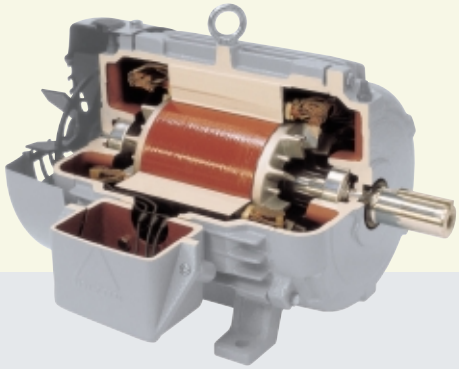
Typical Features

- Premium efficiency
- Hyundai's inverter shield insulation system
- Variable torque (0 to base speed), constant torque (10:1)
- Suitable for 1.5 times base speed, constant HP (subject to mechanical limits)
- Class F insulation (inverter duty wire)
- **5 year warranty**
- Bearings rated 100,000 hours L10 for direct coupled duty and 50,000 hours L10 for belted duty
- Quiet running : Minimizing noise and vibration
- Dual rated service factors
  - 1.15 at 40 degrees C ambient & 1.0 at 65 degrees C ambient (sine wave)
  - 1.0 at 40 degrees C ambient (P.W.M. power)
- Approvals : CSA C US, EEV mark, CE
- Exceeds NEMA MG 1 (2003), Part 31
- C-face and D-flange kits available

Frames 143T-286T

Frames 324T-326T

Frames 364T-449TZ

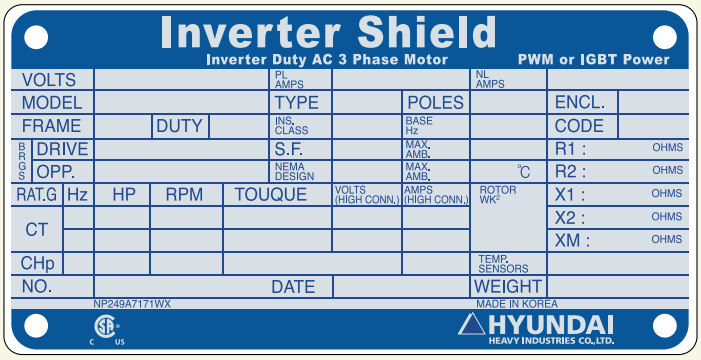


Improved and Optimized Materials with More Features & Performance Benefits

- High grade, low loss, insulated electro-magnetic steel laminations are punched and core loss is controlled for maximum efficiency.
- Multiple dips and bakes in a high solid content Class H varnish system to promote excellent heat transfer and dissipation, providing extended insulation life.
- Superior Class F non-hygroscopic insulation system, utilizing corona resistant magnet wire with a low stress winding process to protect against voltage spikes from IGBT inverters.
- Clearly numbered leads make connection easy.
- Die cast rotor of high conductivity aluminum eliminates variations in bar & end ring resistance. This assures consistent motor performance.
- Dynamically balanced rotor with half key ensures smooth operation, exceeding standard NEMA vibration requirements.
- Rotor surface is coated with corrosion resistant paint for outstanding resistance to severe environments.
- Regreasable bearings with integral grease fittings are shielded against contaminants with internal cast iron bearing caps (324T & larger).
- Drive end shaft slinger protects bearing system against contaminants.
- Oversized gasketed conduit box exceeding CSA, NEMA & NEC minimum volumes is diagonally split and fully rotatable at 90° increments.
- Neoprene lead gasket on conduit box protects motors against moisture and dust.
- Non-sparking, corrosion resistant external polypropylene fan assures maximum cooling and quieter operation.
- Removable plastic drain plugs to allow condensation to drain from the motor.
- Corrosion resistant polyurethane paint and corrosion resistant zinc plated hardware protect motors against severe environments.

Optional Features

- Cast iron fan guards
- Special voltages
- Two speed motors
- Special shaft designs and materials
- Space heaters
- Encoders
- Rotating labyrinth seal (PROTECH™)
- Auxiliary conduit boxes
- Drip canopies for vertical applications
- Thermistors
- Thermostats
- Constant speed blowers



Foot Mounted Motors

Inverter Shield™ Premium Efficiency TEFC, VFD Duty

- Variable torque (0 to base speed), Constant torque (10:1)
- Hyundai's inverter shield low stress insulation system
- Cast iron construction
- NEMA design B or C torque
- Class F insulation
- Premium efficiency, exceeds CSA C390 and EPACT'92 efficiency requirements
- NEMA MG 1 (2003), PART 31, Definite-Purpose Inverter Fed Motors

(Unit : inch)

Frame Size	Overall					Shaft					Mounting			Conduit Box		Fig.
	BA	C	D	O	P	U	N-W	Keyway			2E	2F1	2F2	AA	AB	
								R	ES	S						
143T	2.25	12.88	3.50	7.44	7.44	0.875	2.25	0.771	1.41	0.188	5.50	(5.00)	4.00	0.75	6.46	A
145T	2.25	12.88	3.50	7.44	7.44	0.875	2.25	0.771	1.41	0.188	5.50	5.00	(4.00)	0.75	6.46	
182T	2.75	14.69	4.50	9.45	9.89	1.125	2.75	0.986	1.78	0.250	7.50	4.50	-	0.75	7.40	
184T	2.75	15.69	4.50	9.45	9.89	1.125	2.75	0.986	1.78	0.250	7.50	5.50	-	0.75	7.40	
213T	3.50	18.33	5.25	11.00	11.50	1.375	3.38	1.201	2.41	0.312	8.50	5.50	-	1.00	8.59	
215T	3.50	19.83	5.25	11.00	11.50	1.375	3.38	1.201	2.41	0.312	8.50	7.00	-	1.00	8.59	
254T	4.25	23.52	6.25	13.08	13.65	1.625	4.00	1.416	2.91	0.375	10.00	8.25	-	1.25	11.30	
256T	4.25	25.25	6.25	13.08	13.65	1.625	4.00	1.416	2.91	0.375	10.00	10.00	-	1.25	11.30	
284TS	4.75	24.76	7.00	14.74	15.48	1.625	3.25	1.416	1.91	0.375	11.00	9.50	-	1.50	11.85	
284T	4.75	26.13	7.00	14.74	15.48	1.875	4.62	1.591	3.28	0.500	11.00	9.50	-	1.50	11.85	
286TS	4.75	27.00	7.00	14.74	15.48	1.625	3.25	1.416	1.91	0.375	11.00	11.00	-	1.50	11.85	
286T	4.75	28.37	7.00	14.74	15.48	1.875	4.62	1.591	3.28	0.500	11.00	11.00	-	1.50	11.85	
324TS	5.25	29.78	8.00	15.91	15.82	1.875	3.75	1.591	2.03	0.500	12.50	(12.00)	10.50	2.00	14.25	
324T	5.25	31.28	8.00	15.91	15.82	2.125	5.25	1.845	3.91	0.500	12.50	(12.00)	10.50	2.00	14.25	
326TS	5.25	29.78	8.00	15.91	15.82	1.875	3.75	1.591	2.03	0.500	12.50	12.00	(10.50)	2.00	14.25	
326T	5.25	31.28	8.00	15.91	15.82	2.125	5.25	1.845	3.91	0.500	12.50	12.00	(10.50)	2.00	14.25	
364TS	5.88	31.88	9.00	18.50	18.23	1.875	3.75	1.591	2.03	0.500	14.00	(12.25)	11.25	2.50	17.13	B
364T	5.88	34.01	9.00	18.50	18.23	2.375	5.88	2.021	4.28	0.625	14.00	(12.25)	11.25	2.50	17.13	
365TS	5.88	31.88	9.00	18.50	18.23	1.875	3.75	1.591	2.03	0.500	14.00	12.25	(11.25)	2.50	17.13	
365T	5.88	34.01	9.00	18.50	18.23	2.375	5.88	2.021	4.28	0.625	14.00	12.25	(11.25)	2.50	17.13	
404T	6.62	39.42	10.00	20.79	20.16	2.875	7.25	2.450	5.65	0.750	16.00	(13.75)	12.25	3.00	20.28	
405TS	6.62	36.42	10.00	20.79	20.16	2.125	4.25	1.845	2.80	0.500	16.00	13.75	(12.25)	3.00	20.28	
405T	6.62	39.42	10.00	20.79	20.16	2.875	7.25	2.450	5.65	0.750	16.00	13.75	(12.25)	3.00	20.28	
444TS	7.50	41.46	11.00	23.19	22.40	2.375	4.75	2.021	3.03	0.625	18.00	(16.50)	14.50	3.00	21.26	
444T	7.50	45.21	11.00	23.19	22.40	3.375	8.50	2.880	6.93	0.875	18.00	(16.50)	14.50	3.00	21.26	
445TS	7.50	41.46	11.00	23.19	22.40	2.375	4.75	2.021	3.03	0.625	18.00	16.50	(14.50)	3.00	21.26	
445T	7.50	45.21	11.00	23.19	22.40	3.375	8.50	2.880	6.93	0.875	18.00	16.50	(14.50)	3.00	21.26	
447TS	7.50	44.96	11.00	23.19	22.40	2.375	4.75	2.021	3.03	0.625	18.00	20.00	(17.99)	3.00	21.26	
447T	7.50	48.71	11.00	23.19	22.40	3.375	8.50	2.880	6.93	0.875	18.00	20.00	(17.99)	3.00	21.26	
447TZ	7.50	50.34	11.00	23.19	22.40	3.375	10.125	2.880	8.50	0.875	18.00	20.00	(17.99)	3.00	21.26	
449TS	7.50	50.08	11.00	23.19	22.40	2.375	4.75	2.021	3.03	0.625	18.00	25.00	(20.00)	3.00	21.26	
449T	7.50	53.83	11.00	23.19	22.40	3.375	8.50	2.880	6.93	0.875	18.00	25.00	(20.00)	3.00	21.26	
449TZ	7.50	55.46	11.00	23.19	22.40	3.375	10.125	2.880	8.50	0.875	18.00	25.00	(20.00)	3.00	21.26	

Note: 1. Dimension "D" Tolerance
140T-360T : +0.00, -0.03
400T-440T : +0.00, -0.06

2. Dimension "U" Tolerance
Up to 1.500 Dia. : +0.000, -0.0005
1.625 Dia.& Larger : +0.000, -0.001

FIG. A

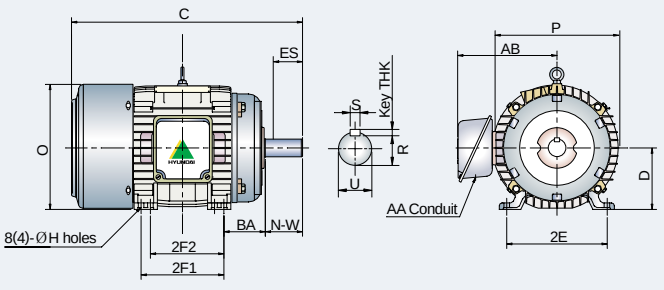
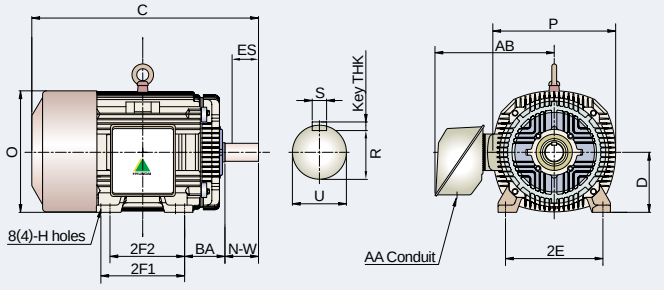


FIG. B



Performance Data

Inverter Shield™ Premium Efficiency TEFC, VFD Duty

Inverter duty, 3-phase, 230/460 V (usable on 208 V) & 575 V, Continuous duty
NEMA design B or C, Class F, 40 degrees C ambient temp
Speed range : Variable torque (0 to base speed), Constant torque (10:1)

Rated Output (HP)	Pole	Frame Size	Characteristics at Rated Output							Locked Rotor Current		Torque			Moment of Inertia WK² (lb.ft²)	NEMA Code Letter	Approx. Weight (lbs)	Brg. Sizes	
			Full Load Speed (RPM)	Efficiency			Power Factor	Full Load Current				Full Load (lb.ft)	Locked Rotor (%FLT)	Break-down (%FLT)				D.E.	N-D.E.
				Full Load		3/4 Load (%)	Full Load (%)	460 V (A)	575 V (A)	460 V (A)	575 V (A)								
				Nom. (%)	Min. (%)														
1	4	143T	1750	86.5	84.0	86.0	77.0	1.4	1.1	12.9	10.3	3.0	350	400	0.128	M	52	6205ZC3	6204ZC3
	6	145T	1145	82.5	80.0	80.0	67.5	1.7	1.3	10.2	8.2	4.6	270	320	0.138	K	52	6205ZC3	6204ZC3
1.5	2	143T	3500	85.5	83.0	84.0	85.0	1.9	1.5	19.1	15.3	2.3	300	375	0.071	M	52	6205ZC3	6204ZC3
	4	145T	1735	86.5	84.0	84.0	81.0	2.0	1.6	16.2	13.0	4.5	300	330	0.123	K	53	6205ZC3	6204ZC3
	6	182T	1170	87.5	85.5	87.1	73.0	2.2	1.8	18.3	14.6	6.7	200	290	0.266	L	71	6206ZC3	6206ZC3
2	2	145T	3500	85.5	83.0	85.0	85.0	2.6	2.1	20.8	16.6	3.0	310	320	0.071	K	52	6205ZC3	6204ZC3
	4	145T	1735	86.5	84.0	84.5	79.5	2.7	2.2	21.7	17.4	6.1	305	355	0.138	K	53	6205ZC3	6204ZC3
	6	184T	1160	88.5	86.5	88.6	74.0	2.9	2.3	21.8	17.3	9.1	210	270	0.308	K	86	6206ZC3	6206ZC3
3	2	182T	3515	87.5	86.5	86.3	86.0	3.7	3.0	26.9	21.9	4.5	200	340	0.119	J	67	6206ZC3	6206ZC3
	4	182T	1760	89.5	87.5	88.6	83.0	3.8	3.0	29.8	23.3	9.0	240	350	0.284	J	71	6206ZC3	6206ZC3
	6	213T	1170	89.5	87.5	89.7	73.0	4.3	3.4	32.0	25.4	13.5	200	280	0.853	K	119	6307ZC3	6307ZC3
5	2	184T	3500	89.5	88.5	90.2	88.0	5.9	4.8	43.4	35.0	7.5	205	320	0.147	H	82	6206ZC3	6206ZC3
	4	184T	1750	89.5	88.5	91.3	84.0	6.2	5.0	46.0	36.9	15.0	230	300	0.355	J	82	6206ZC3	6206ZC3
	6	215T	1170	89.5	88.5	89.8	74.0	7.1	5.7	46.0	36.9	22.4	200	250	1.055	J	140	6307ZC3	6307ZC3
7.5	2	213T	3530	91.0	90.2	92.6	87.0	8.9	7.1	63.5	50.5	11.2	180	320	0.479	G	115	6307ZC3	6307ZC3
	4	213T	1765	91.7	91.0	92.5	81.5	9.4	7.5	60.7	48.8	22.3	200	260	1.110	H	134	6307ZC3	6307ZC3
	6	254T	1175	91.7	90.4	92.4	75.0	10.2	8.2	63.3	50.6	33.5	210	250	2.259	H	242	6309ZC3	6309ZC3
10	2	215T	3535	91.7	91.0	93.6	88.5	11.5	9.2	75.0	59.8	14.9	190	310	0.539	G	151	6307ZC3	6307ZC3
	4	215T	1765	91.7	91.0	92.7	81.5	12.5	10.0	78.4	63.0	29.8	200	260	1.315	H	146	6307ZC3	6307ZC3
	6	256T	1175	91.7	91.0	92.7	78.0	13.1	10.5	79.4	63.3	44.7	210	250	2.432	H	267	6309ZC3	6309ZC3
15	2	254T	3555	91.7	91.0	92.0	89.0	17.1	13.7	111.9	89.7	22.2	190	230	1.262	G	267	6309ZC3	6309ZC3
	4	254T	1775	92.4	91.7	93.4	83.0	18.3	14.7	116.0	92.6	44.4	200	240	2.432	G	257	6309ZC3	6309ZC3
	6	284T	1180	91.7	91.0	92.4	82.5	18.6	14.9	116.0	92.5	66.8	200	270	4.362	G	377	6310ZC3	6310ZC3
20	2	256T	3555	92.4	91.7	93.7	89.5	22.6	18.1	141.9	113.4	29.6	180	220	1.384	G	293	6309ZC3	6309ZC3
	4	256T	1775	93.0	92.4	94.1	83.0	24.3	19.4	140.7	112.5	59.2	200	230	2.918	G	293	6309ZC3	6309ZC3
	6	286T	1175	92.4	91.7	93.6	82.5	24.6	19.7	144.2	115.4	89.4	200	270	5.434	G	403	6310ZC3	6310ZC3
25	2	284TS	3555	93.0	92.4	93.8	91.0	27.7	22.1	179.8	143.7	36.9	190	250	2.941	G	373	6310ZC3	6310ZC3
	4	284T	1775	93.6	93.0	94.0	84.5	29.6	23.7	182.5	146.2	74.0	200	230	4.619	G	386	6310ZC3	6310ZC3
	6	324T	1180	93.0	92.4	92.8	81.0	31.1	24.9	182.5	146.2	111.3	200	230	13.288	G	481	6313ZC3	6211ZC3
30	2	286TS	3555	93.0	92.4	94.1	91.5	33.0	26.4	215.7	172.4	44.3	190	240	3.087	G	406	6310ZC3	6310ZC3
	4	286T	1775	93.6	93.0	94.8	84.5	35.5	28.4	217.5	174.1	88.8	210	230	4.773	G	412	6310ZC3	6310ZC3
	6	326T	1180	93.6	92.5	93.4	82.0	36.6	29.3	217.5	174.0	133.5	200	230	17.086	G	525	6313ZC3	6211ZC3
40	2	324TS	3560	93.6	93.0	92.7	89.0	45.0	36.0	287.7	230.2	59.0	160	220	5.410	G	513	6313ZC3	6211ZC3
	4	324T	1770	94.1	93.2	93.6	84.0	47.4	37.9	279.6	223.7	118.7	190	240	9.777	G	515	6313ZC3	6211ZC3
	6	364T	1180	94.1	93.1	94.0	85.0	46.8	37.7	290.0	232.0	178.0	200	250	29.180	G	820	6314C3	6213C3
50	2	326TS	3560	93.6	93.0	92.7	89.5	55.9	44.7	362.5	290.0	73.8	160	230	6.075	G	520	6313ZC3	6211ZC3
	4	326T	1770	94.5	93.6	93.8	84.5	58.6	46.9	353.3	282.6	148.4	200	250	13.288	G	525	6313ZC3	6211ZC3
	6	365T	1180	94.1	93.1	94.1	85.0	58.5	46.4	362.5	290.0	222.5	200	250	35.120	G	860	6314C3	6213C3
60	2	364TS	3540	94.1	93.0	94.0	91.0	65.6	52.8	435.0	348.0	89.0	120	200	13.910	G	750	6213C3	6213C3
	4	364T	1775	95.0	94.1	95.2	86.0	68.8	55.3	435.0	348.0	177.5	200	250	21.000	G	820	6314C3	6213C3
	6	404T	1180	94.1	93.1	94.3	86.0	69.4	55.8	435.0	348.0	267.1	200	250	56.410	G	1190	6316C3	6313C3
75	2	365TS	3540	94.1	93.6	94.0	92.0	81.1	63.8	542.5	434.0	111.3	120	200	15.660	G	800	6213C3	6213C3
	4	365T	1775	95.0	94.5	95.2	86.0	85.9	67.6	542.5	434.0	221.9	200	250	24.170	G	860	6314C3	6213C3
	6	405T	1180	94.1	93.6	94.3	86.0	86.8	68.2	542.5	434.0	333.8	200	250	60.030	G	1190	6316C3	6313C3
100	2	405TS	3550	95.0	94.1	95.0	90.0	109.5	88.1	725.0	580.0	147.9	110	200	27.140	G	1150	6313C3	6313C3
	4	405T	1775	95.0	94.5	95.1	86.5	113.9	91.6	725.0	580.0	295.9	200	250	43.470	G	1190	6316C3	6313C3
	6	444T	1180	95.0	94.1	95.2	86.0	114.6	92.2	725.0	580.0	445.1	200	250	84.430	G	1570	NU318M	6316C3
125	2	444TS	3555	95.0	94.3	95.0	90.0	136.9	109.2	910.0	728.0	184.7	100	200	43.600	G	1550	6314C3	6314C3
	4	444T	1778	95.4	94.5	95.1	87.5	140.2	111.9	910.0	728.0	369.2	200	250	64.090	G	1570	NU318M	6316C3
	6	445T	1180	95.0	94.1	95.2	86.5	142.4	113.6	910.0	728.0	556.4	200	250	98.140	G	1750	NU318M	6316C3
150	2	445TS	3565	95.0	94.3	95.0	90.0	164.3	129.2	1085.0	868.0	221.0	100	200	49.840	G	1590	6314C3	6314C3
	4	445T	1780	95.4	94.5	95.5	88.0	167.3	131.6	1085.0	868.0	442.6	200	250	80.700	G	1750	NU318M	6316C3
	6	447TZ	1180	95.0	94.1	95.0	86.5	170.9	134.4	1085.0	868.0	667.6	200	250	117.330	G	1940	NU318M	6316C3
200	2	447TS	3565	95.4	94.5	95.2	91.0	215.7	173.5	1450.0	1160.0	294.6	100	200	56.970	G	1880	6314C3	6314C3
	4	447TZ	1780	95.8	95.0	95.4	88.0	222.1	178.7	1450.0	1160.0	590.1	200	250	86.670	G	1940	NU318M	6316C3
	6	449TZ	1180	95.4	94.1	95.5	87.0	225.6	181.5	1450.0	1160.0	890.2	200	220	178.450	G	2500	NU318M	6316C3
250	2	449TS	3565	95.4	94.5	95.5	91.5	268.2	215.1	1825.0	1460.0	368.3	100	200	81.990	G	2430	6314C3	6314C3
	4	449TZ	1780	95.8	95.0	96.0	88.5	276.1	221.5	1825.0	1460.0	737.7	200	220	130.270	G	2500	NU318M	6316C3

Note: 1. The above data are average expected values.
2. Actual minimum efficiencies can be certified by direct measurement based on ANSI/IEEE-112 test method B and CSA C 390.
3. Technical data are subject to change without notice.