

IE5 Synchronous Reluctance Motor

CEAQ Series - With A510s Advanced Inverter



TECO 

together, we empower the Future 



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CEAQ Synchronous Reluctance Motor

Reduce energy loss and maintenance cost, improve efficiency and reliability

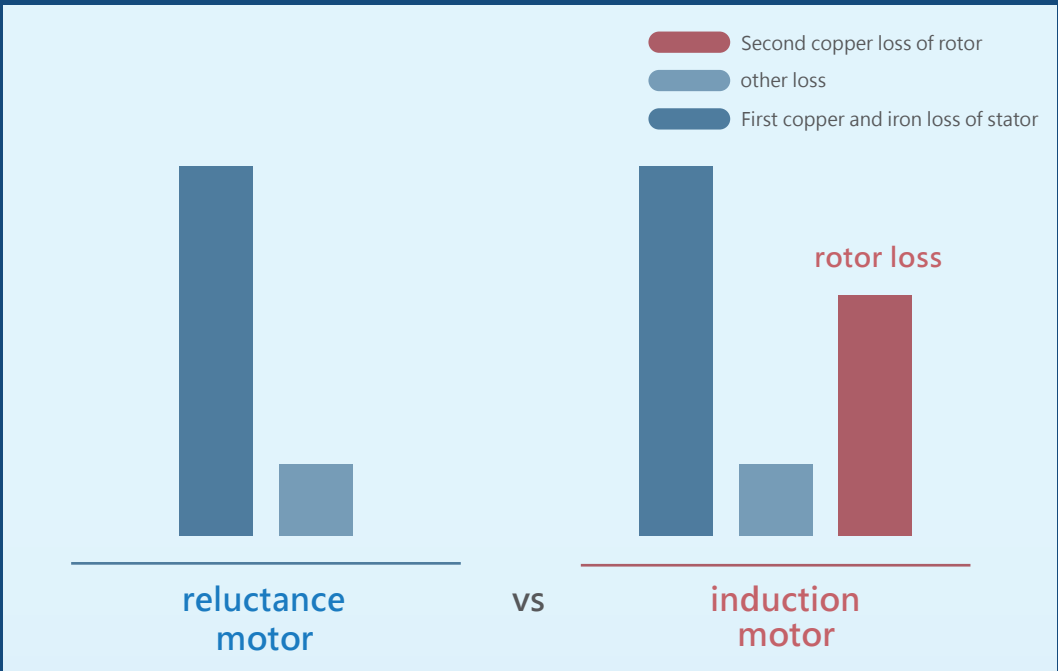
Motors account for over 45% of the world's electricity consumption, and their usage is expected to double by 2040. Since 2015, TECO has been researching synchronous reluctance motors, optimizing parameters such as rotor slot shape, magnetic barrier and conductive layer width, ribs, corner rounding, and expansion angles.

Replacing existing industrial motors with TECO's IE5 synchronous reluctance motors can reduce global electricity consumption by up to 10%. Additionally, when paired with a variable frequency drive (VFD) package, these motors can replace IE3 induction motors, lowering operating costs and reducing internal energy losses by up to 40%.

Experience the future of motor efficiency with TECO's innovative solutions.

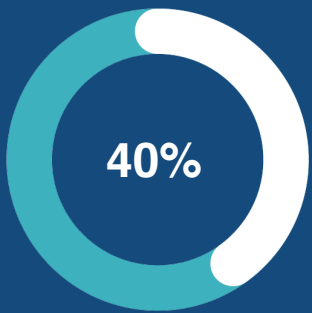


Advantages of reluctance motors >>>>



▲ Compared to induction motors, synchronous reluctance motors have no secondary copper loss in their rotors

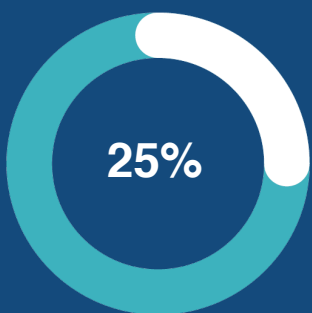
Benefits of reluctance motors >>>>



Motor copper loss reduced by 40%



Reduced electricity consumption by 30%



Save 25% on electricity consumption

Features >>>>



No rare magnets



Better efficiency performance at low speed and load



Materials are simple and easy to maintain, reducing costs and downtime



Suitable for pumps, fans, and compressors

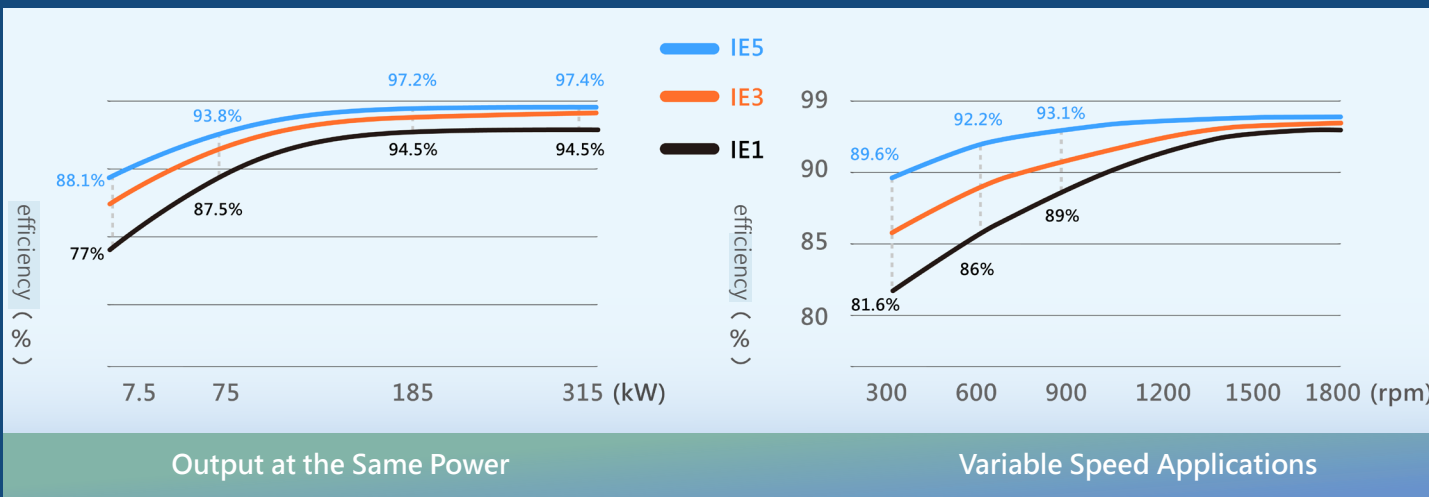


Same size, can replace induction motors



More cost-effective than permanent magnet motors

Power and speed comparison table >>>>



▲ Efficiency can increase by 3-11% at the same power

▲ Variable speed applications can increase efficiency by 4-8%

Using a dedicated inverter boosts energy efficiency

One-Touch Auto-Tuning Technology for A510s >>>>

The high-performance current vector type A510s not only features Auto-tuning technology and advanced current vector control supporting synchronous reluctance motor drive advantages, but also boasts a 60% increase in core processing capability, resulting in faster inverter response times.

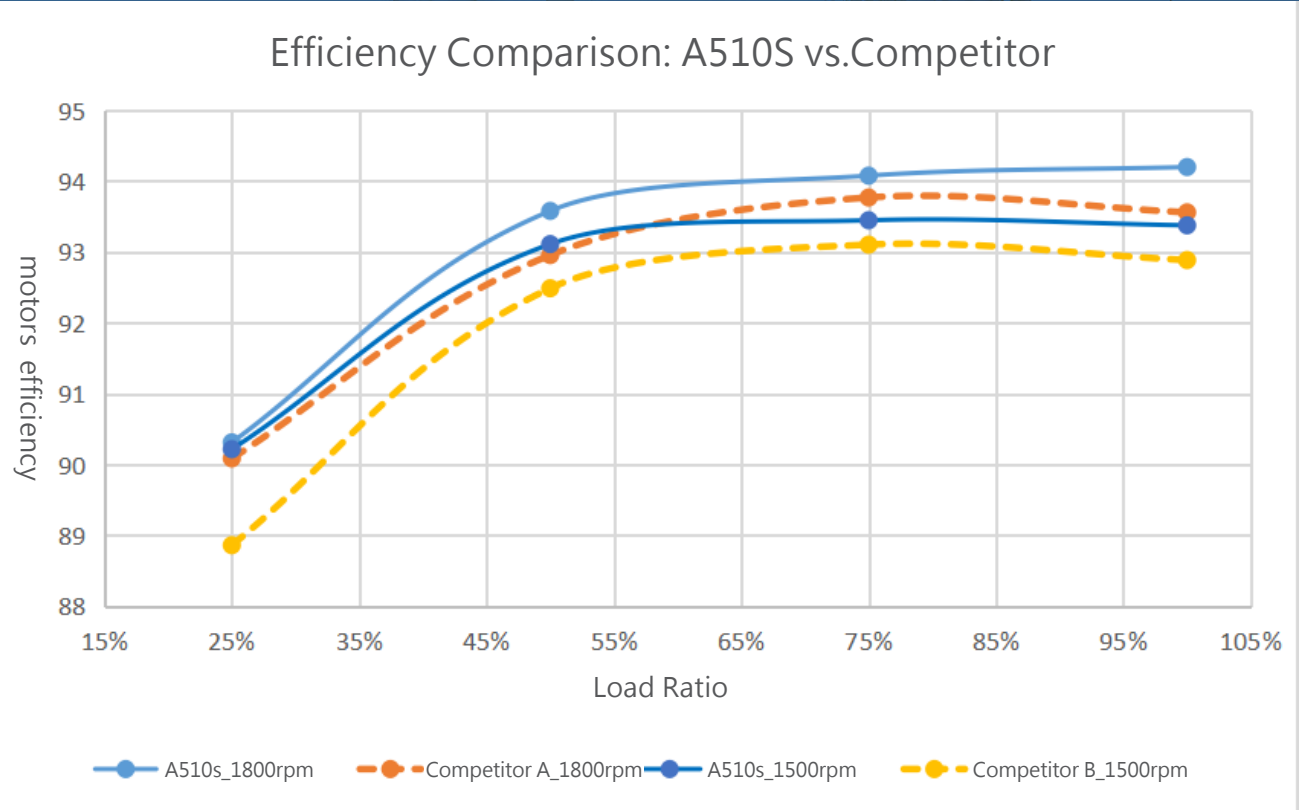
- Auto-tuning support
- Built-in PLC controller
- Supports high-power models (>315kW)
- Bluetooth remote control
- Support multiple communication cards
- Heavy duty control



Communication protocols support >>>>



Efficiency Comparison >>>>



Industrial Applications >>>>



Oil & Gas



Power plant



Semiconductor



Iron and Steel

Equipment Applications >>>>

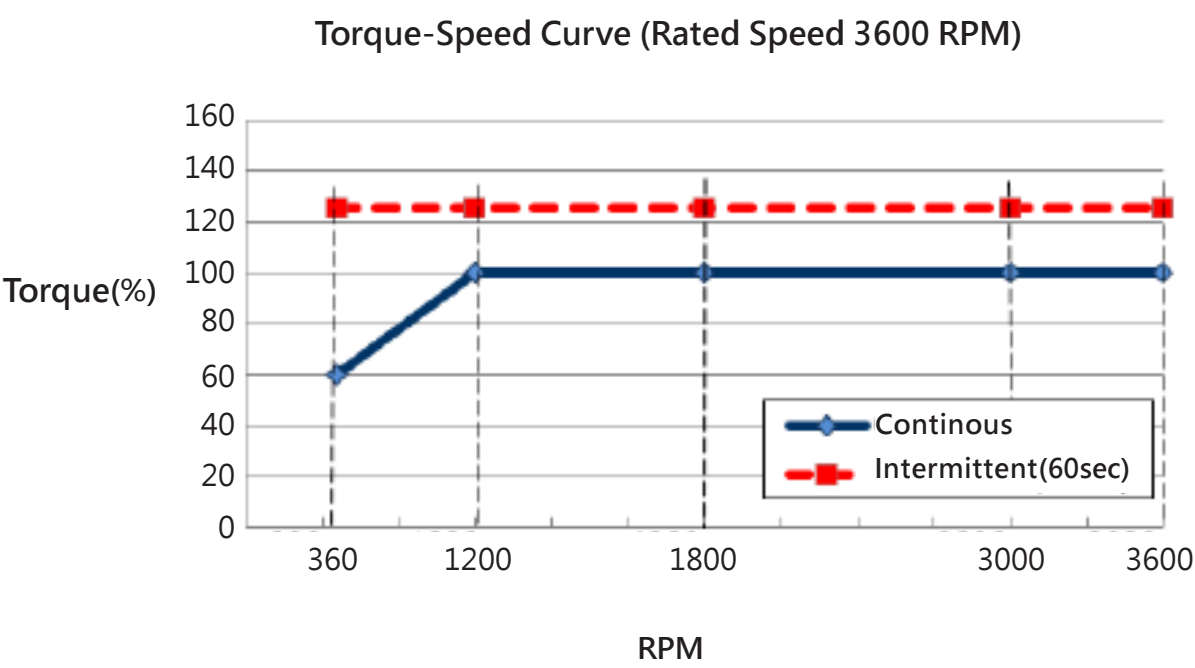
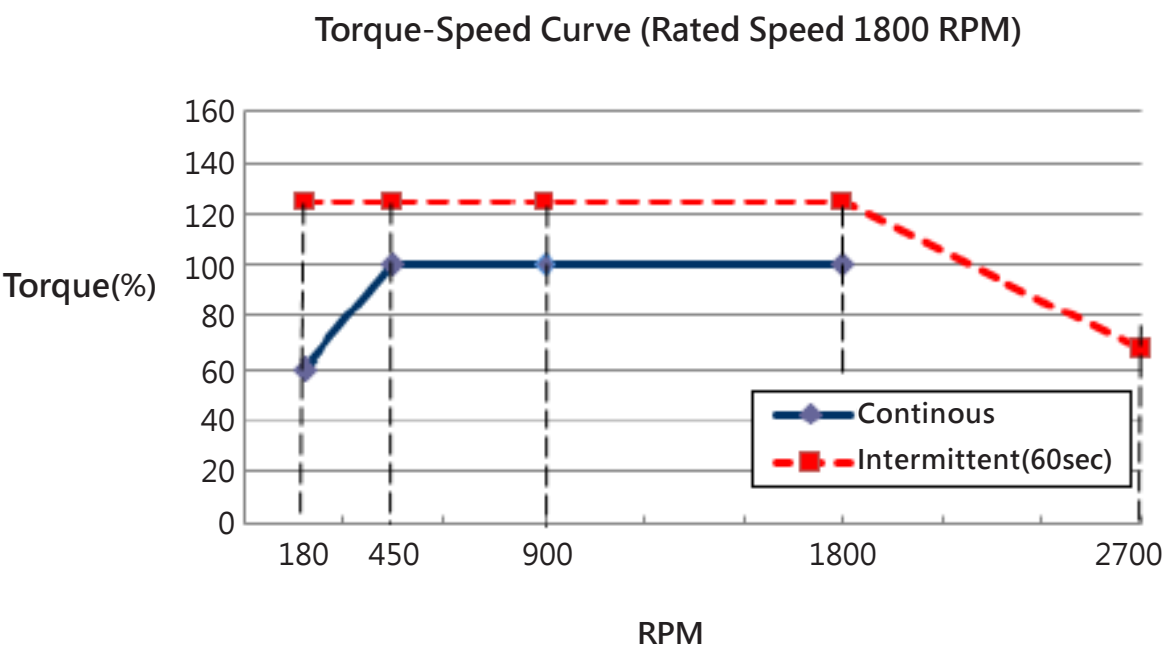


Fan



Pump

RATING	Kind of Motor	Synchronous Reluctance Motor (SynRM)
	Design Standards	NEMA MG-1, MG-13
	Voltages	380V ~ 480V
	Frequency	Rated at 60 & 120Hz
	Output Range	7.5HP~30HP
	R.P.M. (Syn.)	1800 ~ 3600 R.P.M.
	Time Duty	Continuous. S1, S.F. 1.0
	Frame Nos.	NEMA 213T~286T
	Protection Enclosure	Totally Enclosed (IP 54) · Optional IP 55
	Cooling Method	Self External Fan, Surface Cooling (IC 411)
	Mounting	Horizontal Foot Mounting B3 (IM 1001)
APPLICATION	Power Condition	Place : Shadow , Non - Hazardous Ambient Temperature : -20℃ ~ 40℃ Relative Humidity : Less than 90%RH (Non - Condensation) Altitude : Less than 3300 ft.
	Drive Method	Belt Service or Direct-Coupling
	Direction of Rotation	Bi - Directional
	Method of Starting	VFD, Recommend TECO A510s
CONSTRUCTION	Frame	High Grade Cast Iron
	End Bracket	High Grade Cast Iron
	Bearing	Grease Pre-Packed Shielded Rolling BearingsBracket Mounting Vacuum De-Gassed High Quality Open Bearing for Frame Size of 284TS and 286TS
	Stator Insulation	Class F Insulation System
	Name Plate	Stainless Steel Plate
PERFORMANCE	Temperature Rise	Not to Exceed 80℃ Resistance Method at S.F. 1.0 .
	Over Speed & Torque	100~150% Rated Torque for 60 Sec . (1800rpm) 125~150% Rated Torque for 60 Sec . (3600rpm)



Frame 213T / 215T

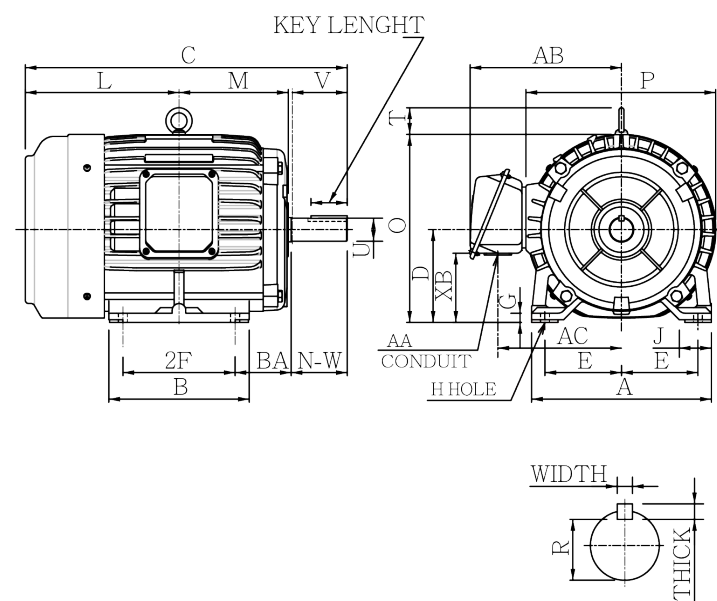


FIG.1

Dimension in inches

Output(HP)		FRAME SIZE	FIG. NO.	Mounting				A	B	C	D	G	J	L	M	O
1800 rpm	3600 rpm			E	2F	H	BA									
7.5	7.5	213T	FIG.1	4.25	5.50	0.43	3.50	9.85	6.90	18.09	5.25	0.49	1.65	8.46	6.06	10.80
10	10	215T		4.25	7.00	0.43	3.50	9.85	8.35	19.59	5.25	0.49	1.65	9.21	6.81	10.80
15	15															
-	20															

FRAME SIZE	P	T	L			Keyseat	Shaft Extension			Terminal Housing				Bearings	
			WIDTH	THICK	LENGTH		N-W	U	V	AA	AB	AC	XB	DRIVE END	OPPOSITE DRIVE END
213T	11.10	1.46	0.312	0.312	2.41	1.201	3.38	1.375	3.30	1.38	8.83	7.06	3.19	6308ZZ	6306ZZ
215T	11.10	1.46	0.312	0.312	2.41	1.201	3.38	1.375	3.30	1.38	8.83	7.06	3.19	6308ZZ	6306ZZ

Note:

1. Dimension D tolerance : +0.00 inches, -0.03 inch.
2. Dimension U tolerance : +0.000 inches, -0.0005 inches.
3. Dimension R tolerance : +0.000 inches, -0.015 inches.
4. Dimension V is length of straight part of shaft.

Frame 254T ~ 286T

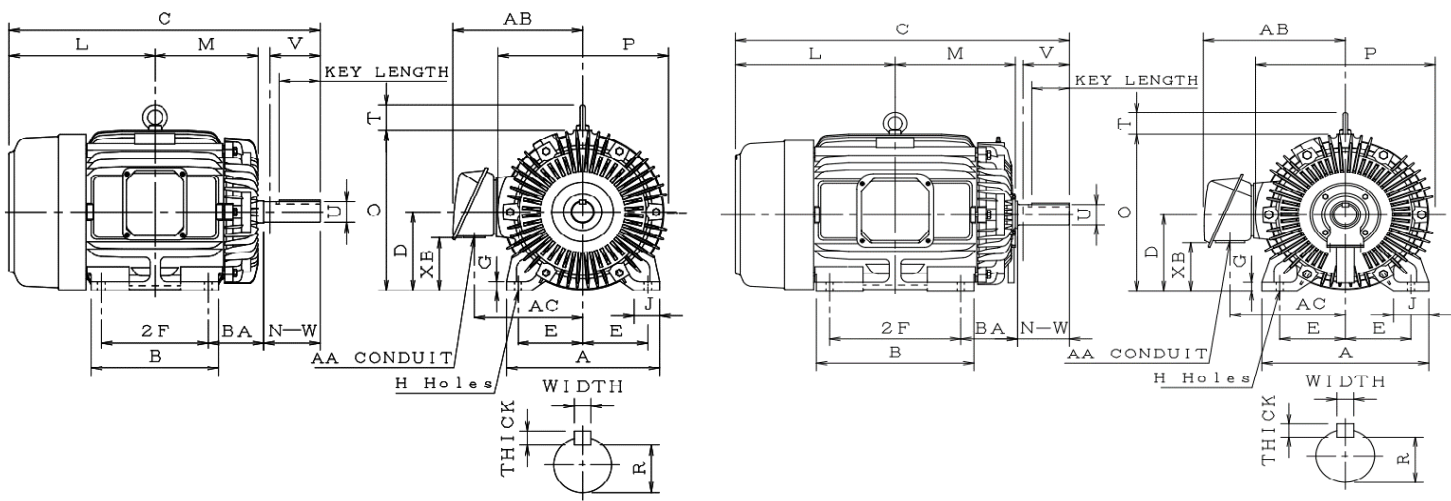


FIG.2

FIG.3

Dimension in inches

Output(HP)		FRAME SIZE	FIG. NO.	Mounting				A	B	C	D	G	J	L	M	O
1800 rpm	3600 rpm			E	2F	H	BA									
15	15	254T	FIG.2	5.00	8.25	0.53	4.25	11.80	9.05	23.60	6.25	0.65	1.95	11.22	8.06	12.83
20	20	256T		5.00	10.00	0.53	4.25	11.80	11.80	25.33	6.25	0.65	1.95	12.08	8.94	12.83
25	-	284T		5.50	9.50	0.53	4.75	14.00	11.70	26.74	7.00	0.78	2.95	12.62	9.23	14.52
-	25	284TS	FIG.3	5.50	9.50	0.53	4.75	14.00	11.70	25.37	7.00	0.78	2.95	12.62	9.31	14.52
30	-	286T	FIG.2	5.50	11.00	0.53	4.75	14.00	13.20	28.24	7.00	0.78	2.95	13.37	9.98	14.52
-	30	286TS	FIG.3	5.50	11.00	0.53	4.75	14.00	13.20	26.87	7.00	0.78	2.95	13.37	10.06	14.52

FRAME SIZE	P	T	L			Keyseat	Shaft Extension			Terminal Housing				Bearings	
			WIDTH	THICK	LENGTH		N-W	U	V	AA	AB	AC	XB	DRIVE END	OPPOSITE DRIVE END
254T	13.15	2.01	0.375	0.375	2.91	1.416	4.00	1.625	3.90	1.38	10.35	8.58	4.09	6309ZZ	6307ZZ
256T	13.15	2.01	0.375	0.375	2.91	1.416	4.00	1.625	3.90	1.38	10.35	8.58	4.09	6309ZZ	6307ZZ
284T	15.04	2.36	0.500	0.500	3.28	1.591	4.62	1.875	4.50	2.05	12.01	9.84	4.40	6311ZZ	6310ZZ
284TS	15.04	2.36	0.375	0.375	1.93	1.416	3.25	1.625	3.20	2.05	12.01	9.84	4.40	6211C3	6211C3
286T	15.04	2.36	0.500	0.500	3.28	1.591	4.62	1.875	4.50	2.05	12.01	9.84	4.40	6311ZZ	6310ZZ
286TS	15.04	2.36	0.375	0.375	1.93	1.416	3.25	1.625	3.20	2.05	12.01	9.84	4.40	6211C3	6211C3

Note: 1. Dimension D tolerance : +0.00 inches, -0.03 inches / 2. Dimension U tolerance : +0.000 inches, -0.0005 inches
3. Dimension R tolerance : +0.000 inches, -0.015 inches / 4. Dimension V is length of straight part of shaft

Dedicated Inverter A510s

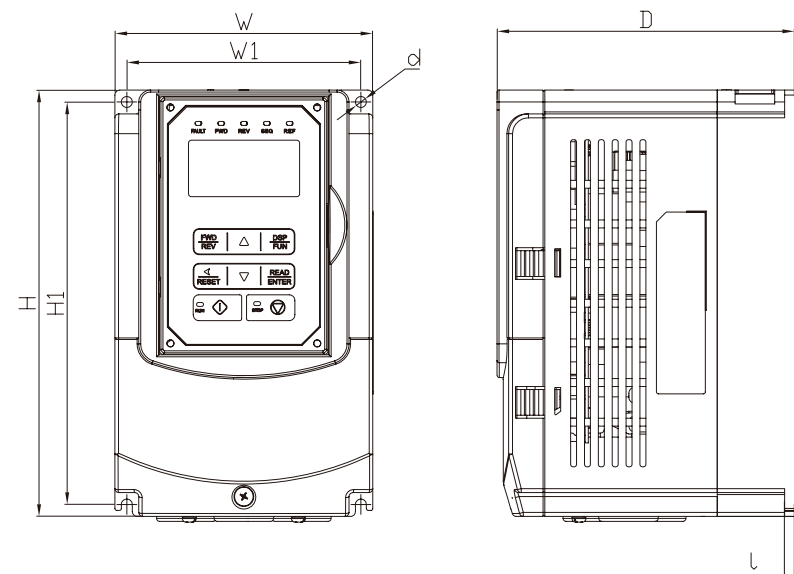


FIG. A

FIG	FRAME	Catalog NO.	Dimensions(mm)							Protection Enclosure	Applicable Motor Output (kW)	Rated Output Current (A)
			W	H	D	W1	H1	t	d			
A	Frame 1	A510-4001-SE3	130	215	150	118	203	5	M5	IP20	0.75	3.4
		A510-4002-SE3									1.5	4.2
		A510-4003-SE3									2.2	5.5

Dedicated Inverter A510s

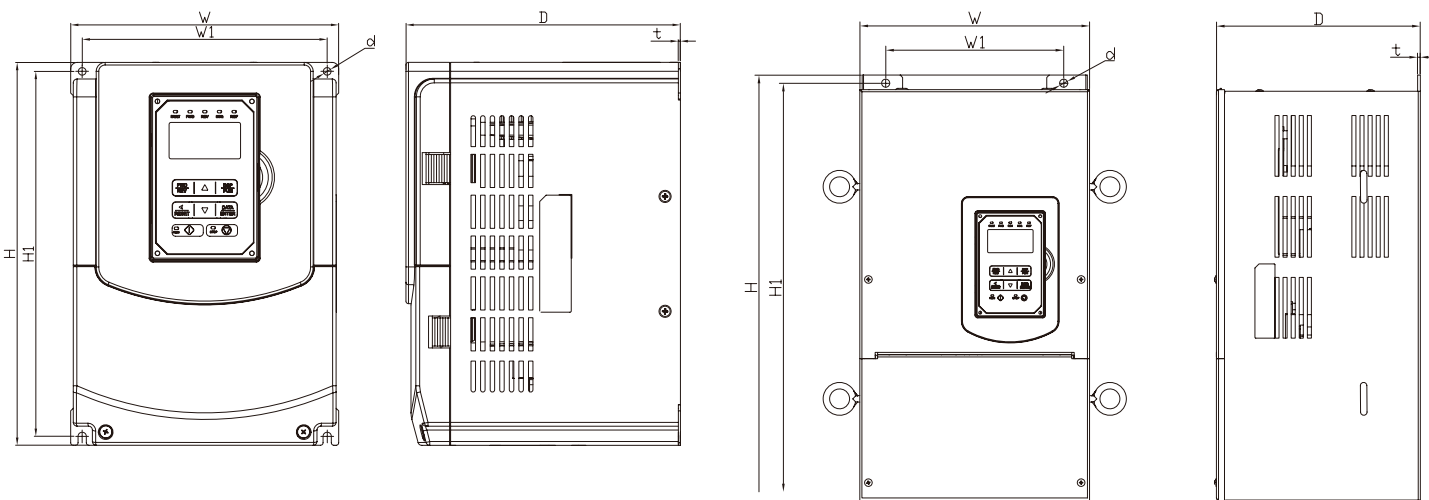


FIG. B

FIG. C

FIG	FRAME	Catalog NO.	Dimensions(mm)							Protection Enclosure	Applicable Motor Output (kW)	Rated Output Current (A)
			W	H	D	W1	H1	t	d			
B	Frame 2	A510-4005-SE3	140	279	181	122	267	1.2	M6	IP20	3.7	9.2
		A510-4008-SE3									5.5	14.8
	Frame 3	A510-4010-SE3	210	300	215	192	286	1.6	M6		11	24
		A510-4015-SE3									15	31
		A510-4020-SE3									18.5	39
C	Frame 4	A510-4025-SE3	265	360	225	160	505	3.3	M8	IP20	22	45

NOTE



(EN)CEAQ_20250407



For more information,
please visit TECO website.