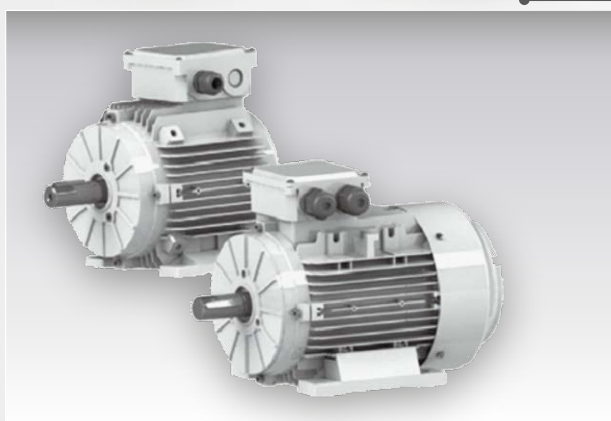
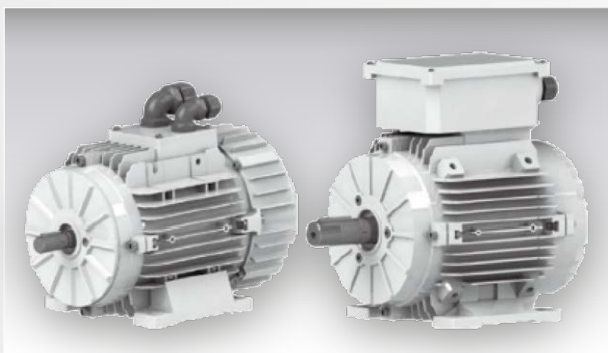




ECO-TOP POWER

electric motors
SIMOTOP
GROUP



MOTORI EC

(ELECTRONICALLY COMMUTED)

CATALOGO
italiano

rev. 05



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01. MOTORI EC

EC (Electronically Commuted o Electronically Controlled), sono motori con magneti permanenti nel rotore e sono comandati da un controllo elettronico (inverter) che serve a controllare la tensione e la frequenza applicata al motore.

Le dimensioni meccaniche sono conformi allo standard IEC, attualmente sono state sviluppate le grandezze 71, 90, 100, 132 sono in preparazione le grandezze 63, 80, 160, numero di giri massimo 3600 rpm/min., potenza massima 22Kw (132), coppia massima 70Nm.

Le serie sviluppate sono due, la serie EC e la serie ECI le due serie hanno la medesima tecnologia si differenziano solo per il driver che le alimenta. La serie EC viene alimentata da un driver esterno al motore, la serie ECI è alimentata da un driver a bordo del motore, di seguito la mappa dello sviluppo delle due serie;

MOTORI EC

Grandezza	alimentazione	potenza massima (KW)	Coppia massima (Nm)		
			1000rpm	1500 rpm	3000rpm
T63EC	3-400V/230V	0.55	2.1	2	2
T71EC	3-400V/230V	1.1	3.5	3.5	3.5
T80EC	3-400V/230V	2.2	7.1	7	7
T90EC	3-400V/230V	2.2	7.1	7	7
T100EC	3-400V/230V	5.5	19	19	17,5
T132EC	3-400V/230V	22	70	70	70
T160EC	3-400V/230V	45	150	150	150



in produzione

in produzione da settembre 2020

MOTORI ECI

Grandezza	driver	potenza massima (KW)	alimentazione	Coppia massima (Nm)		
				1000rpm	1500 rpm	3000rpm
T63ECI	E	0.45	1-230V	2	2	2
T71ECI	E	0.80	1-230V	3.5	3.5	2.6
T80ECI	E	1.5	1-230V	7	7	4.7
T90ECI	E	1.5	1-230V	7	7	4.7
T100ECI	E	4.4	3-400V/230V	19	14	7
	T		3-400V/230V	19	19	10
T132ECI	E	11	3-400V/230V	28	X	X
	T		3-400V/230V	35	26	X0



drive tipo E



drive tipo T

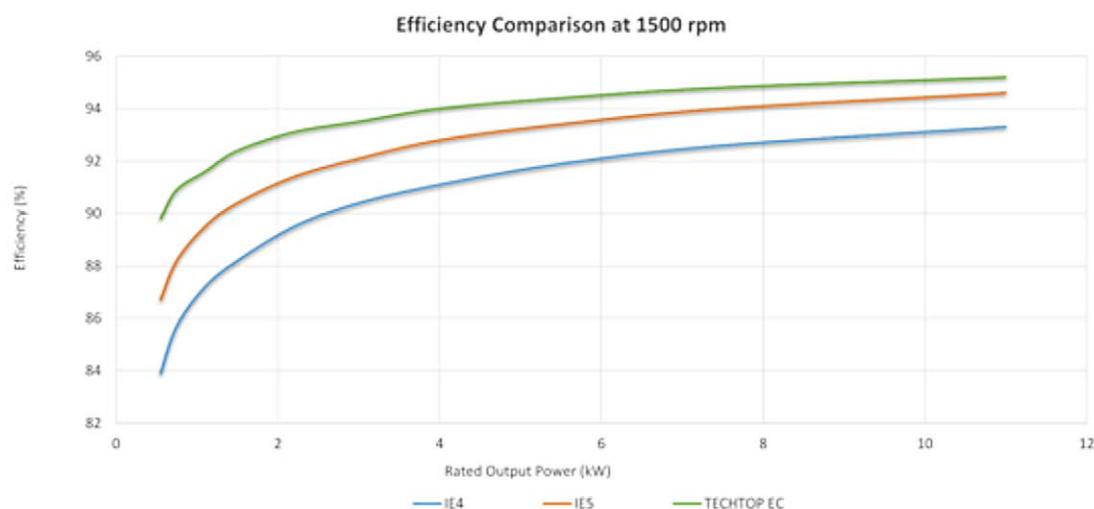
in produzione

in produzione da settembre 2020

Questi motori elettrici funzionano dall'interazione di due campi magnetici, un campo magnetico viene creato dal rotore e l'altro dallo statore. I motori EC utilizzano i magneti permanenti posizionati sul rotore per creare il campo magnetico rotorico e una serie di bobine controllate da un controllo elettronico (inverter) per creare il campo magnetico statorico.

I motori EC non hanno spazzole, quindi non hanno scintillio, il controllo elettronico dello statore riduce le perdite e non si ha dispersione di energia per indurre il campo rotorico.

I motori EC sono molto efficienti e mantengono un elevato livello di efficienza anche a tutte le velocità, risparmiano da un 30% ad un 50% in meno dell'elettricità utilizzata da un motore asincrono trifase standard a parità di potenza.



I motori EC sono motori “freddi” pertanto oltre ad avere elevata efficienza per effetto del minore riscaldamento si allunga la vita delle parti meccaniche (cuscinetti, etc.). I motori EC si dimensionano sulla coppia che devono garantire alla velocità richiesta e di conseguenza si dimensiona la potenza, questi motori garantiscono coppia costante da 0 giri al numero di giri massimo, la potenza cresce al crescere del numero di giri.

02. TECNOLOGIA

Questi motori sono stati studiati principalmente per i seguenti settori:

- ventilazione
- pompe
- compressori
- applicazioni in cui servono motori coppia a magneti permanenti

Questi motori sono progettati per applicazioni a velocità variabile, come, condizionamento, ventilazione, quando si deve variare la velocità per mantenere costante la portata/pressione, in tutte le applicazioni in cui si varia la portata al variare della velocità (compressori, pompe) questi motori garantiscono altissima efficienza alle diverse velocità garantendo, rispetto alle soluzioni tradizionali, un risparmio dell'energia consumata almeno del 30% o oltre. I motori della serie EC sono motori sincroni, all'interno sono montati magneti permanenti a terre rare del tipo NdFeB (Neodimio Ferro Boro), definiti anche super magneti con caratteristiche eccezionali, non hanno demagnetizzazione per sovraccarichi inferiori al 200% e nel tempo.

I magneti permanenti inseriti nei rotori di questi motori sono integrati all'interno del rotore e sono 6, 8 o 10 al variare della taglia del motore, meccanicamente sono perfettamente intercambiabili, a parità di grandezza, con i corrispondenti motori asincroni.

Le serie dei motori EC (EC, ECI) hanno alta efficienza (IE5 minima) per tutto il range di velocità, garantiscono un importante risparmio di energia (>30%) e quindi minori emissioni di CO2 nell'ambiente.

La serie ECI con driver (inverter) integrato possono essere controllati da remoto con il protocollo MODBUS. Un'importante applicazione dei motori delle serie EC è quando questi motori (EC, ECI) pilotano un ventilatore assiale, il motore è nelle migliori condizioni di funzionamento, in questo caso il motore può essere sovraccaricato, la coppia massima aumenta fino al 150% (varia da modello a modello) del valore nominale.

Le serie EC hanno le seguenti caratteristiche:

- Grado di Protezione: IP55 (IP56 o IP66 a richiesta)
- Temperatura Ambiente: -20°C +40°C
- Massima altitudine di funzionamento senza declassamento: 1000 msl
- Cuscinetti:

Cuscinetti a sfere lubrificati a vita

Grandezza	cuscinetto lato DE	cuscinetto lato NDE
T63EC/ECI	6201	6201
T71EC/ECI	6202	6202
T80EC/ECI	6204	6204
T90EC/ECI	6205	6205
T100EC/ECI	6206	6206
T132EC/ECI	6308	6208
T160EC	6309	6209

 in produzione

 in produzione da settembre 2020

I motori delle serie EC (EC, ECI) hanno una gamma di funzionamento ampia rispetto al tradizionale motore asincrono ad induzione, quindi un solo motore EC può sostituire un certo numero di modelli di motori AC tradizionali.

I motori EC sono più silenziosi dei motori equivalenti AC ad induzione, sono più efficienti, hanno durata maggiore e richiedono una minore manutenzione.

03. MOTORI SINCRONI SERIE EC



La gamma dei motori sincroni a magneti permanenti della serie EC, in produzione, è indicata nella tabella sottoriportata:

Tipo	Grandezza	Coppia (Nm)	Potenza 1000rpm (KW)	Potenza 1500rpm (KW)	Potenza 3000rpm (KW)	Velocità massima (rpm)
T71EC01X36	71	1.2	0.13	0.2	0.41	3600
T71EC02X36		2.4	0.27	0.41	0.82	3600
T71EC03X36		3.2	0.37	0.55	1.1	3600
T90EC03X36	90	3.2	0.37	0.55	1.1	3600
T90EC05X36		4.8	0.5	0.75	1.5	3600
T90EC07X36		7	0.75	1.1	2.2	3600
T100EC10X36	100	9.5	1.0	1.5	3	3600
T100EC14X36		14	1.46	2.2	4	3600
T100EC19X30		19.1	2	3	5.5	3000
T132EC26X30	132	25.5	2.6	4	7.5	3000
T132EC35X30		35	3.6	5.5	11	3000
T132EC48X30		47.7	5	7.5	15	3000
T132EC59X30		58.9	6	9.2	18.5	3000
T132EC70X30		70	7.3	11	22	3000

I motori sincroni a magneti permanenti serie EC devono essere alimentati tramite un driver (inverter) esterno commerciale, di seguito riportiamo i parametri di configurazione dell'inverter per poter alimentare i motori sincroni a magneti permanenti serie EC di produzione Techtop:

03. MOTORI SINCRONI SERIE EC

Parameters/Parametri	T71EC01	T71EC02	T71EC03	T90EC03		T90EC05		T90EC07		T100EC10		T100EC14	
Connection/Collegamento	Wye	Wye	Wye	Wye	Delta	Wye	Delta	Wye	Delta	Wye	Delta	Wye	Delta
Stator resistance Rs, Line-to-Starpoint [Ω]	3,76	2,39	1,62	2,67	0,89	2,15	0,72	1,45	0,48	1,85	0,62	1	0,33
Stator inductance Ld, Line-to-Starpoint [mH]	18,8	15,5	11,8	12,5	4,2	11	3,3	9,5	3,1	24,5	8,2	15	5,0
Stator inductance Lq, Line-to-Starpoint [mH]	37,6	31	24	12,5	4,2	11	3,3	9,5	3,1	50	16,7	33	11,0
Pole pairs	3	3	3	5		5		5		3		3	
Mechanical RPM [rpm]	3600	3600	3600	1800	3600	1800	3600	1800	3600	1800	3600	1800	3600
BEMF constant Ke, Line-to-Line [Vms/1000rpm]	73	82	84	150	86	165	95	167	90	200	115	185	107
Inertia [kg.m ²]	0,00055	0,00082	0,0011	0,0034		0,0036		0,0039		0,0069		0,0097	

Max shaft power [W]	400	800	1500	750	1500	1100	2200	1500	3000	2300	4600	3300	6600
Max current [Arms]	1,5	2	3,4	1,8	3,3	2,4	4,4	3,5	5,5	4,61	8,1	6,5	12

Parameters/Parametri	T100EC19		T132EC26		T132EC35		T132EC48		T132EC59		T132EC72	
Connection/Collegamento	Wye	Delta	Wye	Delta	Wye	Delta	Wye	Delta	Wye	Delta	Wye	Delta
Stator resistance Rs, Line-to-Starpoint [Ω]	0,67	0,22	0,63	0,21	0,5	0,17	0,29	0,10	0,2	0,07	0,21	0,07
Stator inductance Ld, Line-to-Starpoint [mH]	11,6	3,9	8,8	2,9	7,8	2,6	5,1	1,7	3,95	1,3	4,19	1,4
Stator inductance Lq, Line-to-Starpoint [mH]	24	8,0	18,3	6,1	16,6	5,5	10,7	3,6	8,3	2,8	8,73	2,9
Pole pairs	3		4		4		4		4		4	
Mechanical RPM [rpm]	1800	3600	1800	3000	1800	3000	1800	3000	1800	3000	1800	3000
BEMF constant Ke, Line-to-Line [Vms/1000rpm]	190	110	202	117	206	119	202	115	200	115	210	121
Inertia [kg.m ²]	0,0135		0,0267		0,0342		0,0454		0,0566		0,0603	

Max shaft power [W]	4500	9000	6000	10000	8000	13500	8900	14800	11000	18300	13000	21600
Max current [Arms]	8,75	15,7	12,6	22	15	28	17,5	31	20	35	24	40

Esempio targa motore EC

 ECHTOP[®] MOTOR 				
Serial n° :				
Model or type :				
Rate torque :				
Inverter voltage :				
Connection	Frequency	Speed	Rated current	Max.output
Distributed by SimoTop Group Spa Via Ca Bianca 320 Castel S. Pietro Terme (BO) Italy				



POWER



04. COLLEGAMENTI

I motori EC possono funzionare a coppia costante da 0 a 3600 giri, con potenza crescente, la velocità è legata alla frequenza di alimentazione del motore EC da parte dell'inverter, la relazione tra frequenza di alimentazione e velocità del motore EC è la seguente:

$$\text{rpm/min.} = \text{Frequenza(Hz)} \times K$$

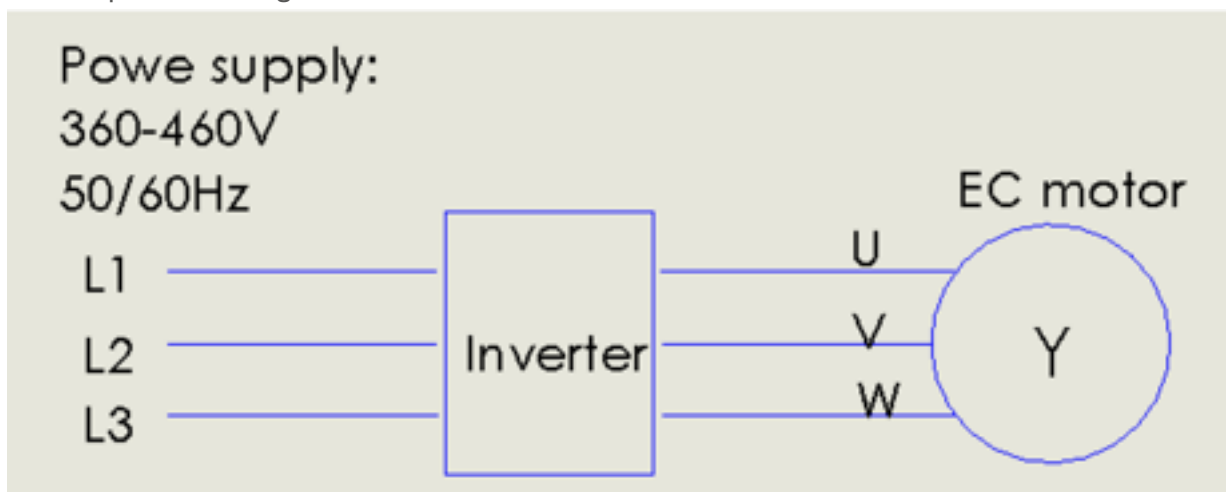
Grandezza	poli	K
71	6	20
90	10	12
100	6	20
132	8	15

COLLEGAMENTO INVERTER E MOTORE EC:

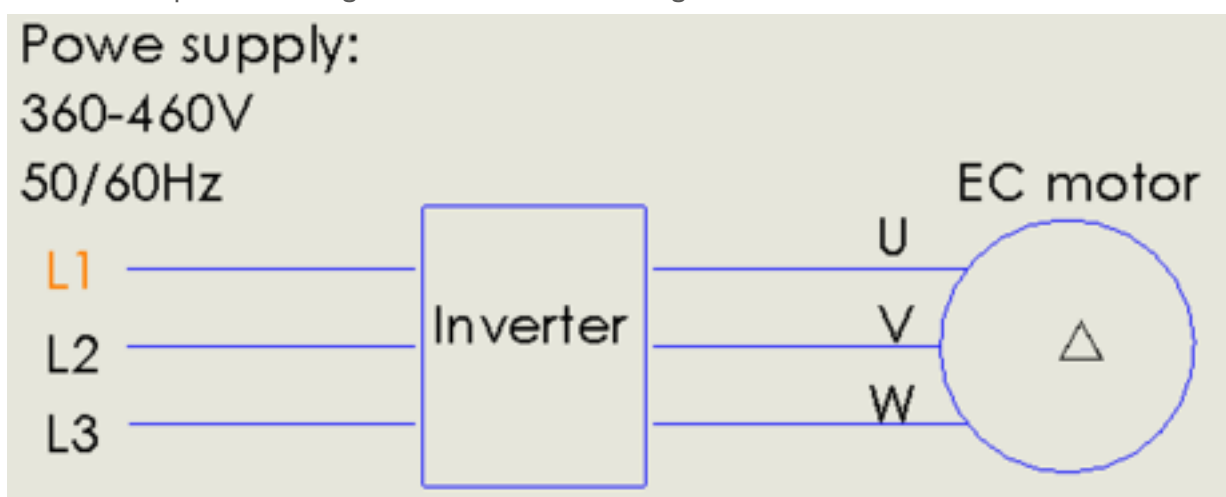
L'inverter deve essere alimentato con tensione compresa nell'intervallo tra 360V e 460V con frequenza 50Hz o 60Hz e il motore deve essere alimentato dall'inverter con la tensione indicata nelle tabelle dati e con la frequenza necessaria per il numero di giri richiesto, di norma da 0 a 1800 rpm/min. Il motore deve essere collegato a Stella (Y) da 1800 a 3600 rpm/min. Il motore deve essere collegato a triangolo (Δ). E' importante verificare sempre che al variare del numero di giri del motore a parità di potenza erogata l'inverter sia della potenza adeguata, ad esempio:

a parità di coppia 2,4Nm un motore T71EC02X36 a 1500rpm/min. ha una potenza di 0,41Kw a 3000rpm/min. ha una potenza di 0,82Kw.

0-1800 rpm/min. collegamento motore EC a stella (Y):



>1800-3600 rpm/min. collegamento motore EC a triangolo:



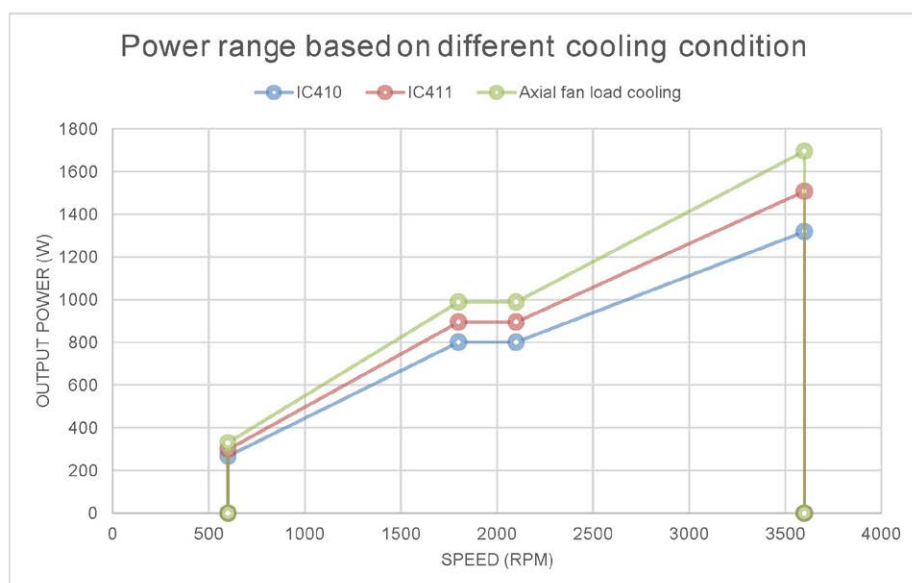
Cambiando il collegamento del motore da a Stella (Y) a Triangolo (Δ) i parametri dell'inverter devono essere cambiati, in generale devono essere cambiati la velocità massima, la frequenza, la potenza, la corrente, la resistenza, l'induttanza, il back EMF value, la variazione dei parametri deve seguire quanto indicato nella seguente tabella;

Parametri	collegamento Y	collegamento Δ
alimentazione V	V	V
max rpm	rpm	2 x rpm
max frequenza Hz	Hz	2 x HZ
corrente A	A	1,7 x A
potenza resa	P	2 x P
resistenza	R	1/3 x R
induttanza	L	1/3 x L
back EMF value	E	0,57 x E

Parametri del motore EC per il Driver (VSD): esempio per motore T90EC03

Items	Star(Y)	Delta(Δ)	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	150	300	Hz	
VSD output voltage:	360	360	V	
Rated current:	1.5	2.6	A	
Resistance:	2.67	0.89	Ohm	Phase
Ld:	12.5	4.2	mH	Phase
Lq:	12.5	4.2	mH	Phase
Back EMF value:	150	86	Vrms per 1000 rpm	

Il range di funzionamento in potenza-coppia indicato nelle tabelle e nei data sheet dei motori EC si riferiscono al servizio S1 e al sistema di raffreddamento del motore IC410 (motore senza raffreddamento, ventilazione naturale) se il motore viene dotato di ventilazione assiale IC411, oppure è collegato ad un ventilatore assiale (axial fan load cooling) le prestazioni del motore aumentano come indicato nel grafico seguente:



Nel caso di servizio S2 o altri servizi intermittenti le prestazioni aumentano.



IC 410



IC 411



IC 418

A x i a l
fan load
cooling

05. DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: 71EC03X36
 Motor type: Permanent magnet synchronous motor
 Rated torque: 3.2 N.m *No cooling condition
 Max speed: 1800 Y rpm 3600 Δ rpm
 Maximum torque: 4 N.m
 Rotor position sensor: No

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	0.8	0.73	51	78.6
	1.6	1.34	100	82.2
	2.4	1.96	152	82.6
	3.2	2.57	201	80.1
	4.0	3.20	252	77.9
900	0.8	0.73	76	77.9
	1.6	1.36	150	83.9
	2.4	2.00	226	83.8
	3.2	2.63	301	83.6
	4.0	3.29	376	82.1
1200	0.8	0.75	100	75.6
	1.6	1.38	198	82.1
	2.4	2.00	300	85.2
	3.2	2.65	404	85.7
	4.0	3.31	501	84.6
1500	0.8	0.77	123	72.7
	1.6	1.39	252	83.8
	2.4	2.03	378	86.4
	3.2	2.68	502	86.4
	4.0	3.32	628	86.6
1800	0.8	0.76	149	75.0
	1.6	1.40	300	83.3
	2.4	2.03	453	87.2
	3.2	2.68	601	87.8
	4.0	3.36	755	87.5

POWER

Performance data:

Motor connection:

Maximum speed: Δ 3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	0.8	0.78	173	72.3
	1.6	1.43	353	83.0
	2.4	2.04	529	87.9
	3.2	2.71	705	88.1
	4.0	3.38	881	88.1
2400	0.8	0.79	203	74.2
	1.6	1.43	404	83.4
	2.4	2.05	601	87.7
	3.2	2.73	804	88.5
	4.0	3.41	1007	88.6
2700	0.8	0.77	225	74.9
	1.6	1.44	449	82.8
	2.4	2.08	683	87.9
	3.2	2.74	909	89.2
	4.0	3.42	1132	89.0
3000	0.8	0.80	252	73.4
	1.6	1.45	509	84.2
	2.4	2.09	760	88.2
	3.2	2.74	1009	89.7
	4.0	3.42	1264	90.5
3300	0.8	0.80	278	74.3
	1.6	1.45	557	84.6
	2.4	2.07	832	89.4
	3.2	2.75	1106	90.0
	4.0	3.44	1378	90.0
3600	0.8	0.84	313	73.2
	1.6	1.45	607	85.0
	2.4	2.10	904	88.4
	3.2	2.78	1207	89.9
	4.0	3.45	1505	90.5

Motor parameters for VSD:

Items	Δ	Δ	Y	Note
VSD input voltage:	360-460	360-460	360-460	V
Phase numbers input:	3	3	3	Input to inverter
Pole numbers:	6	6	6	motor
Max speed:	3600	2400	1800	rpm
Max frequency:	180	120	90	Hz
VSD output voltage:	300	190	160	V
Rated current:	2.75	2.75	2.75	A
Max output power:	1200	800	600	w
Resistance:	1.62	1.62	1.62	Ohm
Ld:	11.8	11.8	11.8	mH
Lq:	24	24	24	mH
BEMF V per 1000 rpm:	50	50	50	Rms Line - Neutral

Motor running power range:

Duty cycle: S1

Cooling condition: IC410, IC411, IC 418

The motor output power can be improved based on better cooling.



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.



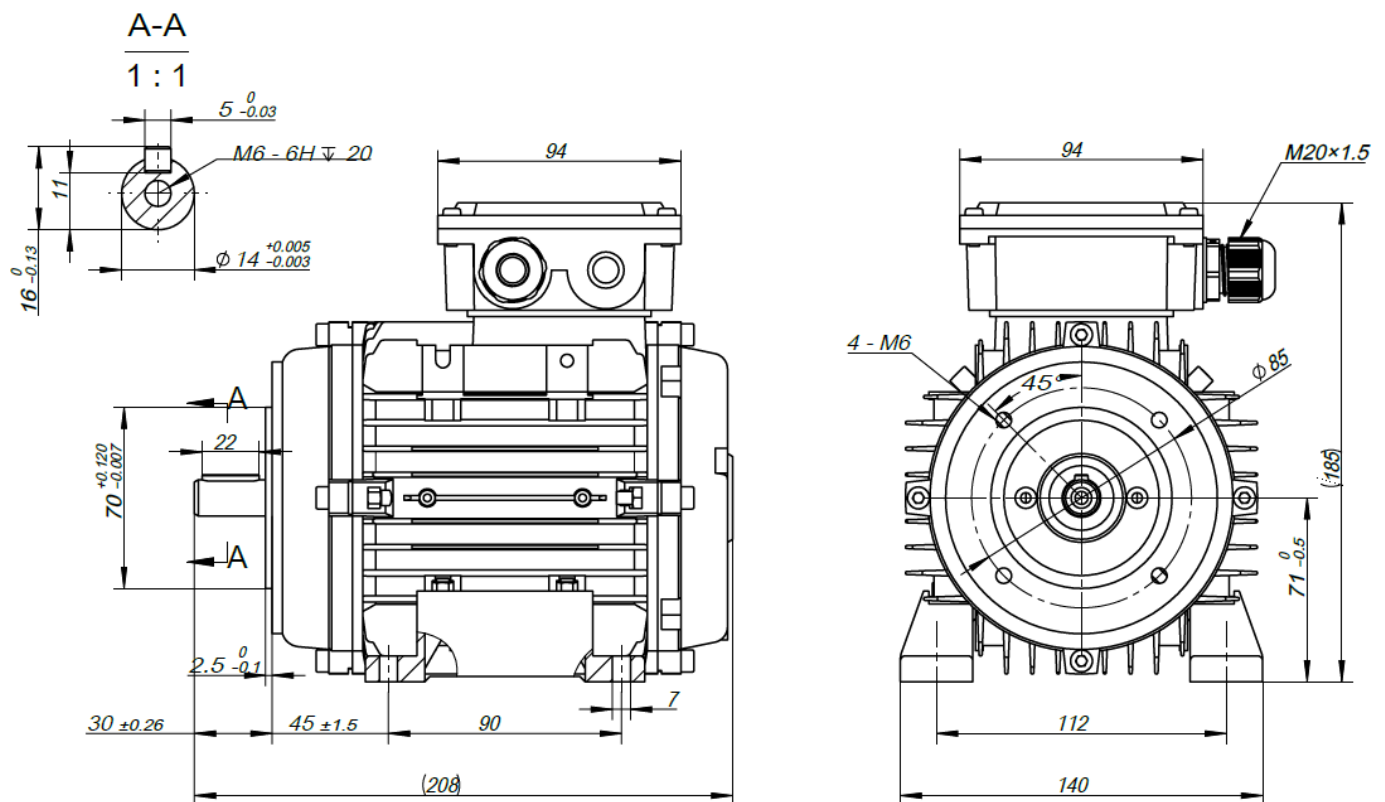
IC 410



IC 411



IC 418 Axial fan load cooling



mounting method B34 - IC410

- * The feet can be removed.
- * The mounting method can be B5 and B3.

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T90EC03X36
 Rated torque: 3.2 N.m
 Max speed: 1800 Y rpm
 Maximum torque: 7 N.m
 Rotor position sensor: No

*No cooling condition
 3600 Δ rpm

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	2.0	0.91	126	81.9
	3.0	1.32	188	83.6
	4.0	1.72	251	84.4
	5.0	2.13	314	84.1
	6.0	2.54	377	82.8
900	2.0	0.93	189	82.4
	3.0	1.33	283	84.6
	4.0	1.74	377	85.9
	5.0	2.14	471	86.3
	6.0	2.56	566	85.7
1200	2.0	0.94	251	83.0
	3.0	1.34	377	85.3
	4.0	1.74	503	86.8
	5.0	2.15	628	87.5
	6.0	2.57	754	87.4
1500	2.0	0.94	314	83.4
	3.0	1.35	471	85.9
	4.0	1.75	628	87.5
	5.0	2.16	785	88.4
	6.0	2.58	943	88.4
1800	2.0	0.95	377	83.2
	3.0	1.35	565	86.1
	4.0	1.76	754	88.0
	5.0	2.18	942	89.0
	6.0	2.59	1131	89.0

POWER

Performance data:

Motor connection:

Maximum speed: Δ 3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	2.1	1.71	456	80.9
	3.0	2.37	665	85.1
	4.0	3.06	878	87.2
	5.0	3.76	1093	88.2
	6.0	4.48	1311	88.7
2400	2.0	1.67	505	80.9
	3.0	2.36	750	85.3
	4.0	3.06	999	87.4
	5.0	3.78	1251	88.6
	6.0	4.50	1500	89.1
2700	2.0	1.67	561	80.8
	3.0	2.38	847	85.4
	4.0	3.10	1130	87.7
	5.0	3.80	1403	88.7
	6.0	4.52	1685	89.3
3000	2.0	1.74	625	78.6
	3.0	2.48	946	83.3
	4.0	3.16	1246	86.1
	5.0	3.90	1565	87.6
	6.0	4.65	1885	88.4
3300	2.0	1.85	704	76.8
	3.0	2.53	1039	82.5
	4.0	3.23	1372	85.2
	5.0	3.92	1714	87.4
	5.9	4.66	2056	88.2
3600	2.0	1.81	751	77.6
	3.0	2.52	1123	83.1
	4.0	3.23	1498	85.9
	5.0	3.97	1879	87.6
	6.0	4.72	2257	88.5

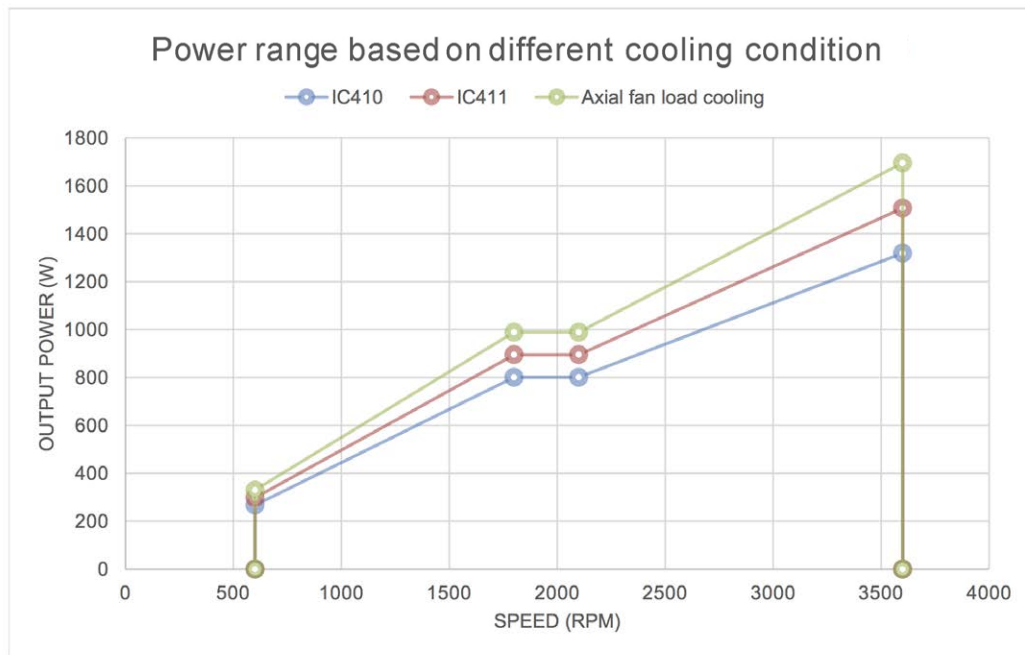
Motor parameters for VSD:

Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	150	300	Hz	
VSD output voltage:	360	360	V	
Rated current:	1.5	2.6	A	
Resistance:	2.67	0.89	Ohm	Phase
Ld:	12.5	4.2	mH	Phase
Lq:	12.5	4.2	mH	Phase
Back EMF value:	150	86	Vrms per 1000 rpm	

Motor running power range:

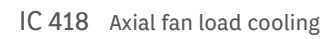
Duty cycle: S1

Cooling condition: IC410, IC411, Cooling by axial fan load



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.



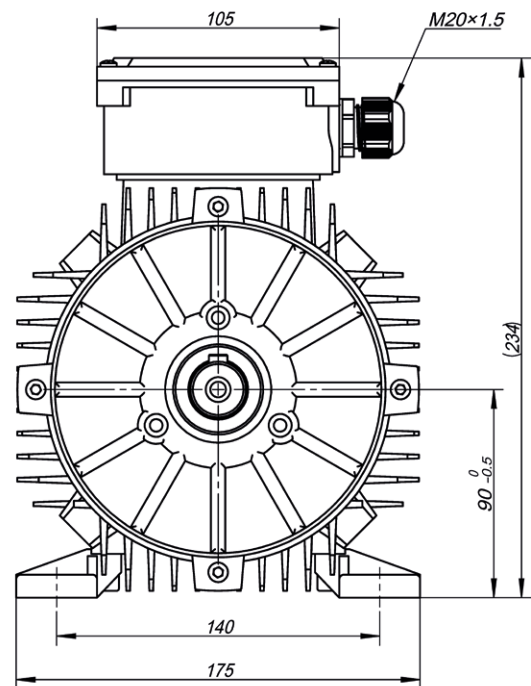
Technical drawing of a mechanical assembly, showing a cross-section A-A and a side view.

Cross-section A-A:

- Top dimension: $8 \begin{smallmatrix} 0 \\ -0.036 \end{smallmatrix}$
- Left dimension: 27
- Bottom-left dimension: $20 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$
- Bottom-right dimension: $\varnothing 24 \begin{smallmatrix} +0.009 \\ -0.004 \end{smallmatrix}$
- Feature label: M8 - 6H ∇ 19

Side View:

- Top width: 105
- Bottom width: 100
- Bottom-left dimension: 50 ± 0.35
- Bottom-middle dimension: 56 ± 1.5
- Bottom-right dimension: 10
- Total bottom dimension: (244)
- Section line A-A is indicated on the left side.



- *The feet can be removed
- *The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T90EC05X36
 Rated torque: 4.8 N.m
 Max speed: 1800 Y rpm
 Maximum torque: 10.5 N.m
 Rotor position sensor: No

*No cooling condition
 3600 Δ rpm

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	3.0	1.22	188	86.0
	4.0	1.61	251	86.3
	5.0	2.00	315	86.0
	6.0	2.37	376	85.2
	7.0	2.76	438	84.2
900	3.0	1.24	283	86.8
	4.0	1.61	375	87.9
	5.0	1.99	468	88.1
	6.0	2.38	562	87.8
	7.0	2.77	657	87.3
1200	3.0	1.24	375	87.3
	4.0	1.61	497	88.6
	5.0	2.00	624	89.1
	5.9	2.38	746	89.2
	7.0	2.77	873	89.0
1500	3.0	1.25	470	87.7
	4.0	1.63	629	89.3
	5.0	2.01	781	89.9
	6.0	2.39	935	90.1
	7.0	2.79	1093	90.0
1800	3.0	1.25	561	87.9
	4.0	1.63	748	89.6
	5.0	2.02	937	90.3
	6.0	2.41	1124	90.6
	7.0	2.80	1314	90.7

POWER

Performance data:

Motor connection:

Maximum speed: Δ 3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	3.0	2.23	659	86.8
	4.0	2.91	879	88.6
	5.0	3.57	1092	89.5
	6.0	4.27	1314	89.8
	7.0	4.96	1530	89.9
2400	3.0	2.25	756	86.8
	4.0	2.91	999	88.7
	5.0	3.58	1245	89.6
	6.0	4.27	1495	90.1
	7.0	4.98	1748	90.3
2700	3.0	2.25	840	86.4
	4.0	2.94	1124	88.5
	5.0	3.62	1405	89.6
	6.0	4.30	1684	90.2
	7.0	5.02	1970	90.4
3000	3.0	2.29	936	86.1
	4.0	2.97	1250	88.4
	5.0	3.64	1557	89.6
	6.0	4.34	1870	90.2
	6.9	5.04	2182	90.5
3300	3.0	2.31	1031	86.1
	4.0	3.00	1378	88.4
	5.0	3.69	1718	89.6
	6.0	4.37	2055	90.2
	7.0	5.09	2411	90.6
3600	3.0	2.35	1128	86.0
	4.0	3.02	1494	88.3
	5.0	3.73	1882	89.6
	6.0	4.40	2245	90.4
	6.9	5.10	2618	90.8

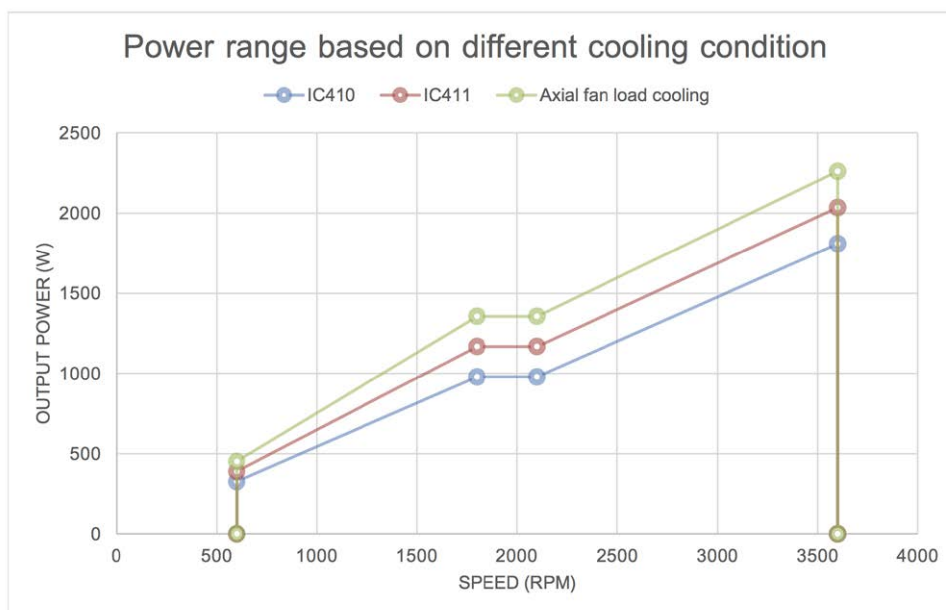
Motor parameters for VSD:

Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	150	300	Hz	
VSD output voltage:	360	360	V	
Rated current:	1.95	3.6	A	
Resistance:	2.75	0.72	Ohm	Phase
Ld:	11	3.3	mH	Phase
Lq:	11	3.3	mH	Phase
Back EMF value:	165	95	Vrms per 1000 rpm	

Motor running power range:

Duty cycle: S1

Cooling condition: IC410, IC411, Cooling by axial fan load



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.



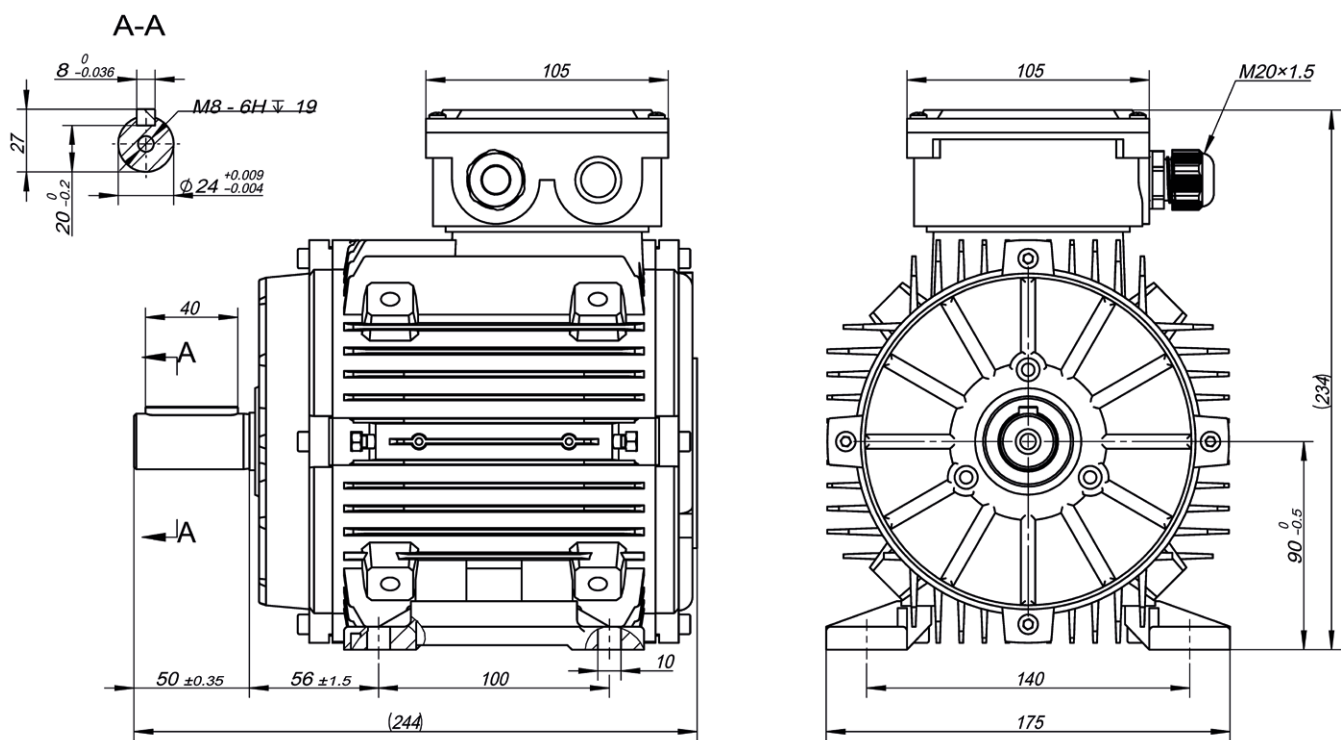
IC 410



IC 411



IC 418 Axial fan load cooling



mounting method B3 - IC410

*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T90EC07X36
 Rated torque: 7 N.m
 Max speed: 1800 Y rpm
 Maximum torque: 10.5 N.m
 Rotor position sensor: No

*No cooling condition
 3600 Δ rpm

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	3.0	1.16	186	86.8
	5.0	1.92	316	88.4
	7.0	2.63	439	87.9
	8.9	3.36	563	86.8
	10.9	4.10	688	85.3
900	3.0	1.20	284	86.7
	5.0	1.92	471	89.3
	6.9	2.64	655	89.6
	8.9	3.37	842	89.2
	10.9	4.12	1032	88.3
1200	3.0	1.21	379	87.0
	5.0	1.92	626	89.9
	6.9	2.65	874	90.6
	9.0	3.39	1126	90.5
	10.9	4.12	1371	90.0
1500	3.0	1.22	473	87.1
	5.0	1.94	784	90.3
	6.9	2.65	1090	91.2
	8.9	3.40	1406	91.4
	10.9	4.14	1715	91.0
1800	3.0	1.24	570	87.2
	5.0	1.95	942	90.6
	7.0	2.68	1315	91.7
	9.0	3.42	1690	91.9
	10.9	4.16	2059	91.7

POWER

Performance data:

Motor connection:

Maximum speed: Δ 3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	3.0	2.18	658	84.5
	5.0	3.45	1093	88.9
	7.0	4.75	1532	90.4
	8.9	6.06	1966	90.9
	10.9	7.40	2404	90.8
2400	3.0	2.21	759	84.8
	5.0	3.47	1247	89.0
	7.0	4.76	1747	90.6
	8.9	6.08	2248	91.2
	10.9	7.42	2749	91.3
2700	3.0	2.22	846	84.8
	5.0	3.49	1405	89.3
	6.9	4.78	1963	90.9
	8.9	6.09	2523	91.5
	10.9	7.42	3083	91.6
3000	3.0	2.25	944	85.0
	5.0	3.52	1559	89.3
	6.9	4.81	2183	91.1
	8.9	6.14	2808	91.7
	10.9	7.50	3440	91.8
330	3.0	2.26	1030	84.9
	5.0	3.55	1717	89.3
	7.0	4.86	2403	91.1
	8.9	6.17	3082	91.7
	10.9	7.53	3771	91.9
3600	3.0	2.31	1124	84.6
	5.0	3.59	1875	89.4
	7.0	4.91	2628	91.1
	9.0	6.25	3379	91.9
	11.0	7.62	4134	92.1

Motor parameters for VSD:

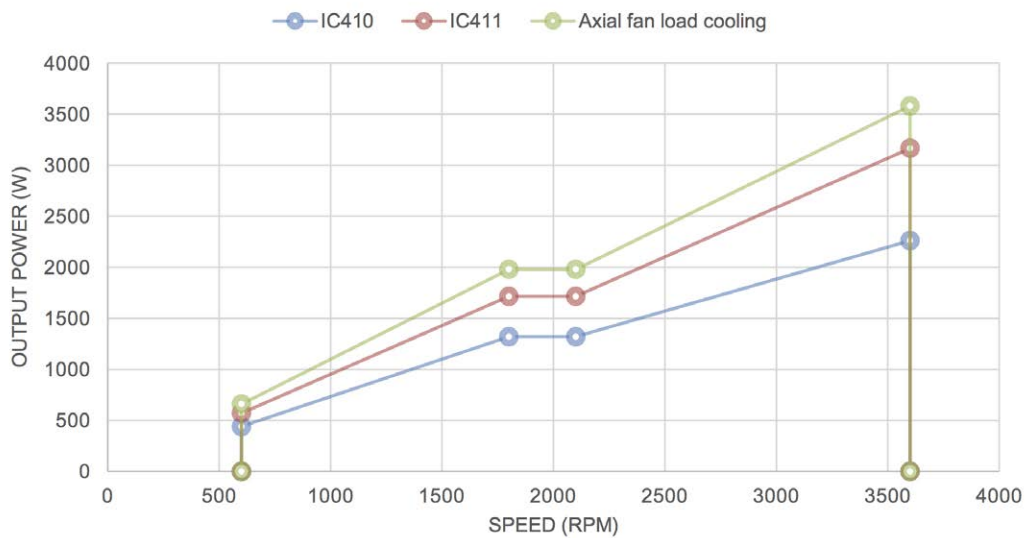
Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	150	300	Hz	
VSD output voltage:	360	360	V	
Rated current:	2.65	4.8	A	
Resistance:	1.45	0.49	Ohm	Phase
Ld:	9.5	3.1	mH	Phase
Lq:	9.5	3.1	mH	Phase
Back EMF value:	167	90	Vrms per 1000 rpm	

Motor running power range:

Duty cycle: S1

Cooling condition: IC410, IC411, IC418 Cooling by axial fan load

Power range based on different cooling condition



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.



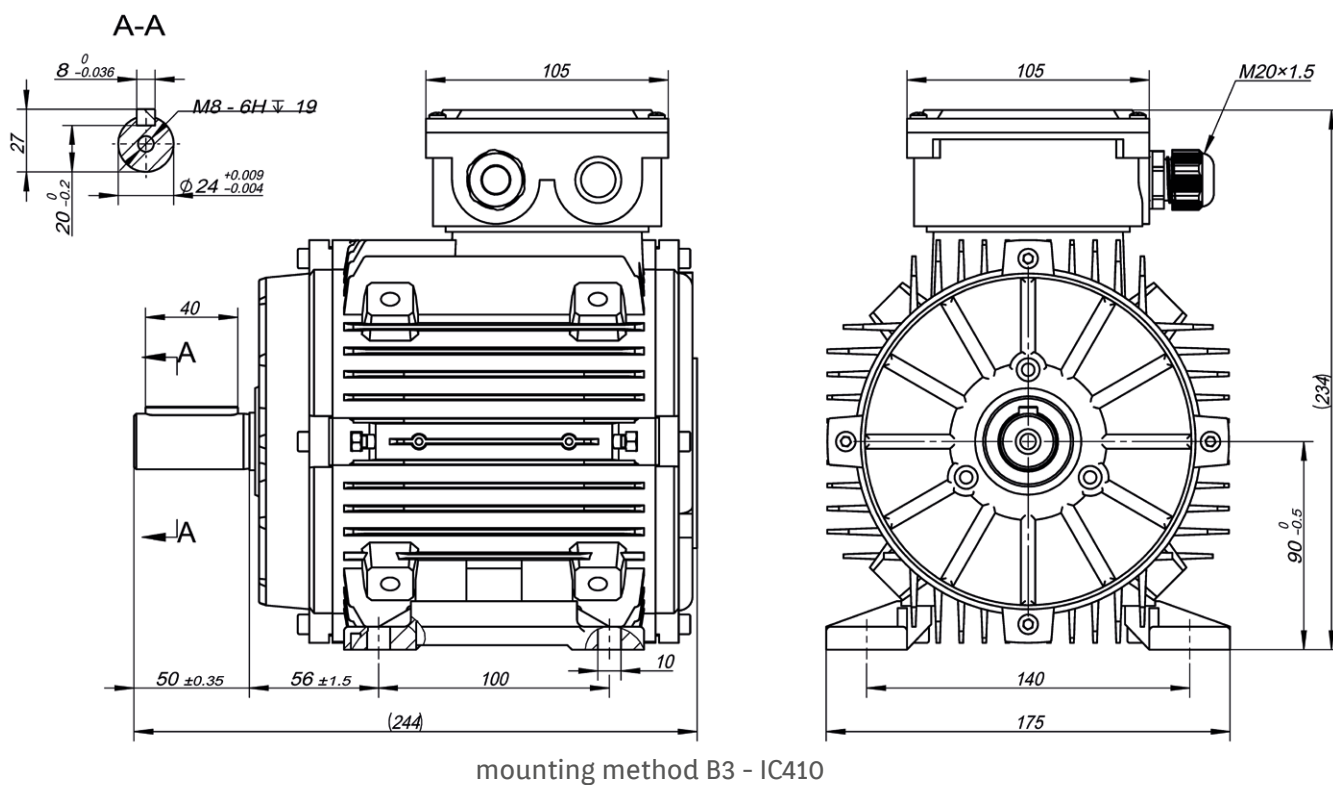
IC 410



IC 411



IC 418 Axial fan load cooling



*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T100EC10X36
 Rated torque: 10 N.m *No cooling condition
 Max speed: 1800 Y rpm 3600 Δ rpm
 Maximum torque: 12.5 N.m
 Rotor position sensor: No
 Motor type: Permanent magnet synchronous motor

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	2.5	0.97	157	86.2
	5.0	1.78	315	88.9
	7.5	2.60	472	88.4
	10.0	3.43	627	86.8
	12.5	4.31	786	85.0
900	2.5	0.99	236	85.6
	5.0	1.81	471	89.9
	7.5	2.68	707	89.9
	10.0	3.57	939	89.2
	12.5	4.51	1178	87.8
1200	2.5	0.99	314	86.1
	5.0	1.83	628	90.4
	7.5	2.70	943	91.0
	10.0	3.58	1252	90.8
	12.5	4.54	1570	89.8
1500	2.5	0.97	393	86.2
	5.0	1.84	785	90.6
	7.5	2.71	1178	91.7
	10.0	3.61	1565	91.5
	12.5	4.57	1962	91.0
1800	2.5	1.01	471	85.2
	5.0	1.85	942	91.0
	7.5	2.73	1414	92.1
	10.0	3.64	1878	92.1
	12.5	4.61	2356	91.8

POWER

Performance data:

Motor connection:

Maximum speed: Δ 3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	2.5	1.71	550	81.9
	5.0	3.15	1100	89.2
	7.5	4.66	1650	91.2
	10.0	6.22	2201	91.6
	12.5	7.80	2751	91.6
2400	2.5	1.71	628	82.4
	5.0	3.16	1257	89.5
	7.5	4.68	1885	91.6
	10.0	6.25	2514	92.2
	12.5	7.83	3142	92.2
2700	2.5	1.72	707	82.9
	5.0	3.18	1415	89.8
	7.5	4.71	2122	91.8
	10.0	6.28	2829	92.4
	12.5	7.87	3536	92.5
3000	2.5	1.75	786	82.3
	5.0	3.21	1571	89.6
	7.5	4.75	2357	91.7
	10.0	6.34	3142	92.3
	12.5	7.97	3927	92.2
3300	2.5	1.82	864	80.5
	5.0	3.26	1728	88.8
	7.5	4.81	2591	91.1
	10.0	6.43	3456	91.5
	12.5	8.00	4320	92.4
3600	2.5	1.92	942	79.4
	5.0	3.40	1885	87.5
	7.5	4.92	2827	90.8
	10.0	6.50	3769	92.0
	12.5	8.10	4711	92.6

Motor parameters for VSD:

Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	90	180	Hz	
VSD output voltage:	360	360	V	
Rated current:	4,6	8	A	
Resistance:	1.85	0.62	Ohm	Phase
Ld:	24.5	8.2	mH	Phase
Lq:	50	16.7	mH	Phase
Back EMF value (L-L) :	200	115	Vrms per 1000 rpm	
Inertia:	0.0069		kg.m ²	

Motor running power range:

Duty cycle: S1

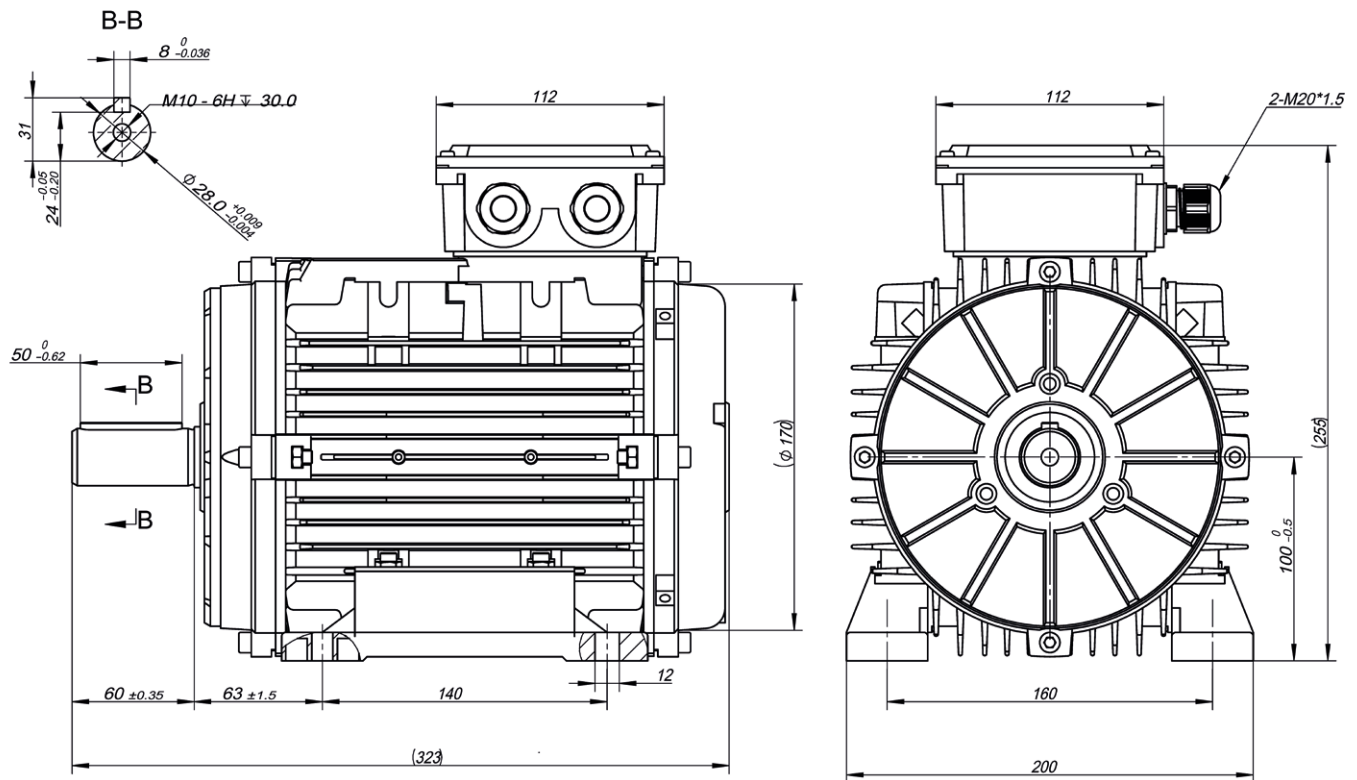
Cooling condition: IC410, IC411, IC418



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.

Motor dimension and mounting method:



mounting method B3 - IC410

*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T100EC14X36
 Rated torque: 14 N.m *No cooling condition
 Max speed: 1800 Y rpm 3600 Δ rpm
 Maximum torque: 17.5 N.m
 Rotor position sensor: No
 Motor type: Permanent magnet synchronous motor

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	3.5	1.39	220	85.2
	7.0	2.61	440	88.8
	10.5	3.87	659	88.7
	14.0	5.17	879	87.4
	17.5	6.51	1099	85.8
900	3.5	1.41	330	85.1
	7.0	2.63	660	89.4
	10.5	3.90	989	90.3
	14.0	5.20	1319	89.8
	17.5	6.55	1649	88.8
1200	3.5	1.42	440	85.0
	7.0	2.65	879	90.1
	10.5	3.92	1319	91.3
	14.0	5.23	1759	91.2
	17.5	6.58	2198	90.7
1500	3.5	1.43	550	84.8
	7.0	2.67	1099	90.3
	10.5	3.94	1649	91.9
	14.0	5.26	2198	92.1
	17.5	6.62	2748	91.7
1800	3.5	1.44	659	84.9
	7.0	2.68	1319	90.5
	10.5	3.97	1978	92.2
	14.0	5.29	2637	92.7
	17.5	6.65	3296	92.5

POWER

Performance data:

Motor connection:

Maximum speed: Δ 3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	3.5	2.48	776	82.0
	6.9	4.57	1529	88.8
	10.4	6.82	2294	90.8
	13.9	9.13	3062	91.5
	17.4	11.49	3828	91.4
2400	3.5	2.48	880	81.9
	7.0	4.64	1760	89.0
	10.5	6.92	2639	91.1
	14.0	9.24	3519	91.8
	17.5	11.62	4399	91.9
2700	3.5	2.51	990	82.2
	7.0	4.67	1981	89.2
	10.5	6.95	2971	91.4
	14.0	9.28	3961	92.2
	17.5	11.67	4951	92.4
3000	3.5	2.60	1100	80.1
	7.0	4.74	2200	88.8
	10.5	7.03	3299	91.1
	14.0	9.36	4399	92.2
	17.5	11.76	5499	92.5
3300	3.5	2.64	1210	80.1
	7.0	4.80	2419	88.4
	10.5	7.11	3629	91.0
	14.0	9.44	4839	92.2
	17.5	11.86	6047	92.5
3600	3.5	2.65	1319	80.9
	7.0	4.92	2638	87.3
	10.5	7.18	3958	90.7
	14.0	9.52	5277	92.2
	17.5	11.93	6596	92.7

Motor parameters for VSD:

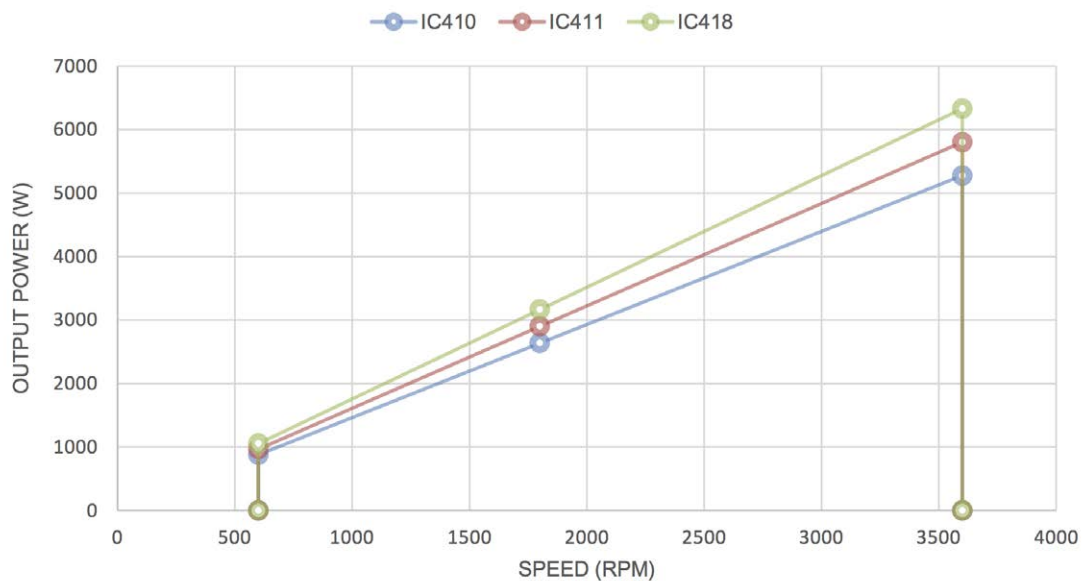
Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	90	180	Hz	
VSD output voltage:	360	360	V	
Rated current:	5.26	9.36	A	
Resistance:	1	0.33	Ohm	Phase
Ld:	15	5	mH	Phase
Lq:	33	11	mH	Phase
Back EMF value:	185	107	Vrms per 1000 rpm	
Inertia:	0.0097		kg.m ²	

Motor running power range:

Duty cycle: S1

Cooling condition: IC410, IC411, IC418

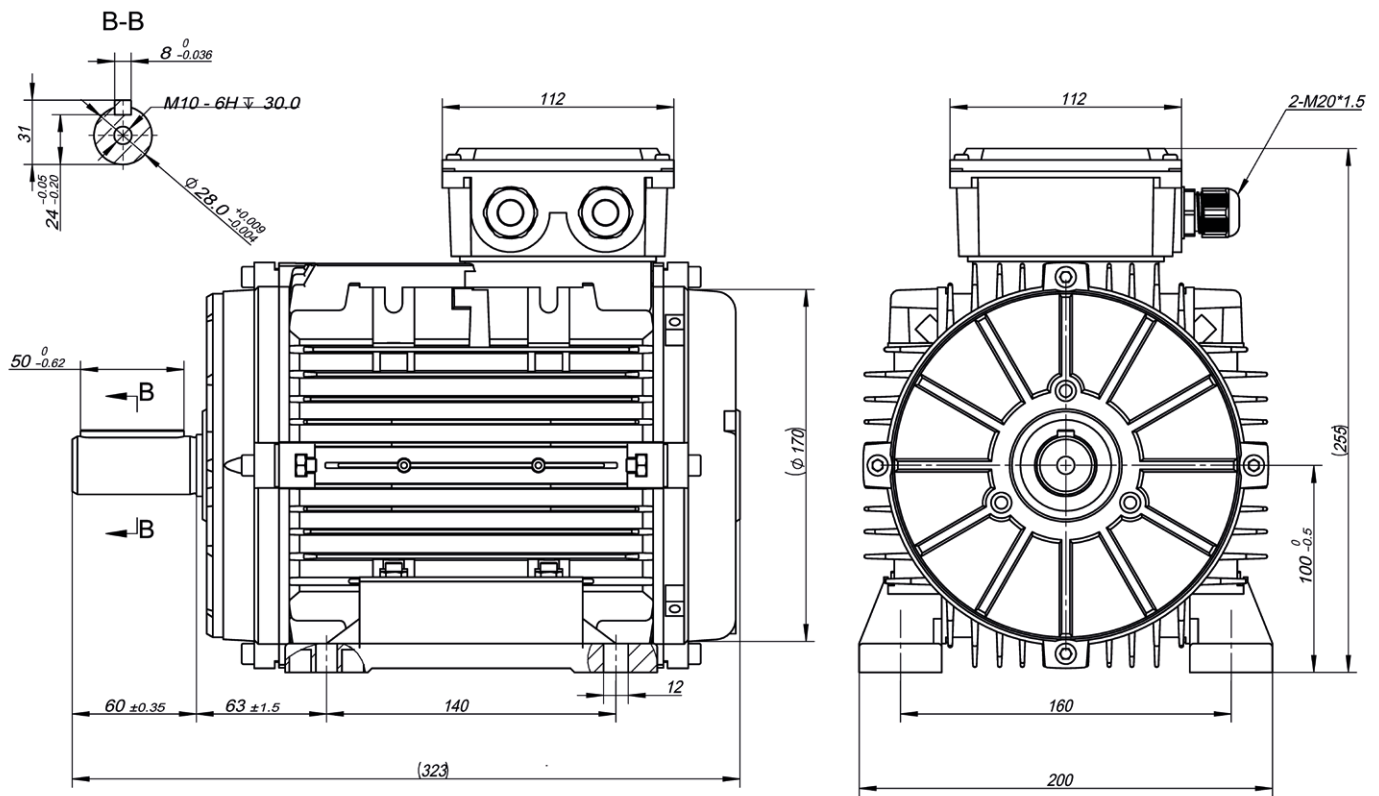
Power range based on different cooling condition



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.

Motor dimension and mounting method:



mounting method B3 - IC410

*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T100EC19X36
 Rated torque: 19.1 N.m *No cooling condition
 Max speed: 1800 Y rpm 3600 Δ rpm
 Maximum torque: 23.9 N.m
 Rotor position sensor: No
 Motor type: Permanent magnet synchronous motor

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	4.8	1.81	300	86.1
	9.6	3.42	601	89.7
	14.3	5.08	901	89.8
	19.1	6.79	1201	88.8
	23.9	8.57	1501	87.4
900	4.8	1.82	450	86.2
	9.6	3.44	900	90.6
	14.3	5.11	1351	91.4
	19.1	6.83	1801	91.1
	23.9	8.61	2251	90.3
1200	4.8	1.83	600	86.4
	9.6	3.45	1200	91.2
	14.3	5.13	1799	92.4
	19.1	6.86	2399	92.4
	23.9	8.65	2999	91.9
1500	4.8	1.84	750	86.5
	9.6	3.47	1500	91.6
	14.3	5.16	2250	93.0
	19.1	6.89	3000	93.2
	23.9	8.70	3750	92.9
1800	4.8	1.85	899	86.6
	9.6	3.49	1799	91.9
	14.3	5.19	2698	93.4
	19.1	6.94	3597	93.8
	23.9	8.75	4497	93.6

Performance data:

Motor connection:

Δ

Maximum speed:

3600 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	4.8	3.18	1050	83.6
	9.6	6.00	2100	90.2
	14.3	8.99	3149	92.1
	19.1	12.06	4199	92.7
	23.9	15.20	5249	92.6
2400	4.8	3.19	1199	84.2
	9.6	6.04	2398	90.6
	14.3	9.05	3597	92.6
	19.1	12.14	4796	93.1
	23.9	15.29	5995	93.1
2700	4.8	3.21	1350	84.7
	9.6	6.07	2700	91.0
	14.3	9.09	4049	92.9
	19.1	12.18	5398	93.6
	23.9	15.36	6748	93.6
3000	4.8	3.26	1500	84.6
	9.6	6.12	2999	91.1
	14.3	9.14	4498	93.2
	19.1	12.26	5997	93.8
	23.9	15.46	7495	94.0
3300	4.8	3.32	1649	84.1
	9.6	6.20	3298	90.8
	14.3	9.28	4947	92.6
	19.1	12.40	6596	93.6
	23.9	15.62	8243	93.9
3600	4.8	3.40	1799	83.3
	9.6	6.27	3597	90.6
	14.3	9.32	5395	92.9
	19.1	12.46	7193	93.8
	23.9	15.68	8991	94.2

Motor parameters for VSD:

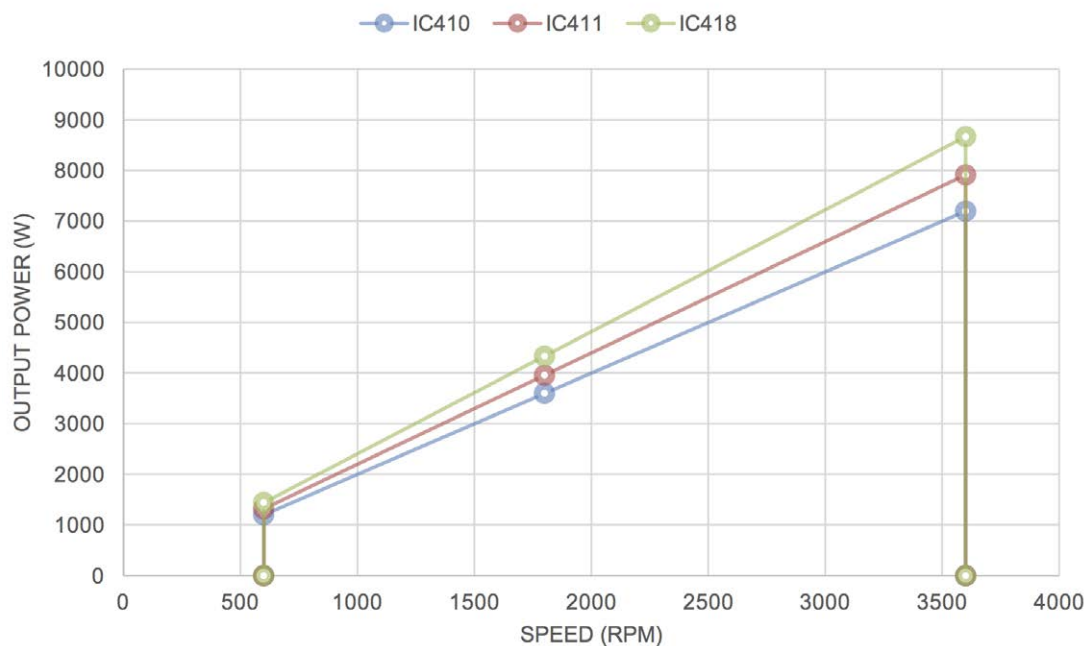
Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3600	rpm	
Max frequency:	90	180	Hz	
VSD output voltage:	360	360	V	
Rated current:	6.9	12.5	A	
Resistance:	0.67	0.33	Ohm	Phase
Ld:	11.6	3.9	mH	Phase
Lq:	24	8	mH	Phase
Back EMF value (L-L) :	190	110	Vrms per 1000 rpm	
Inertia:	0.0135		kg.m ²	

Motor running power range:

Duty cycle: S1

Cooling condition: IC410, IC411, IC418

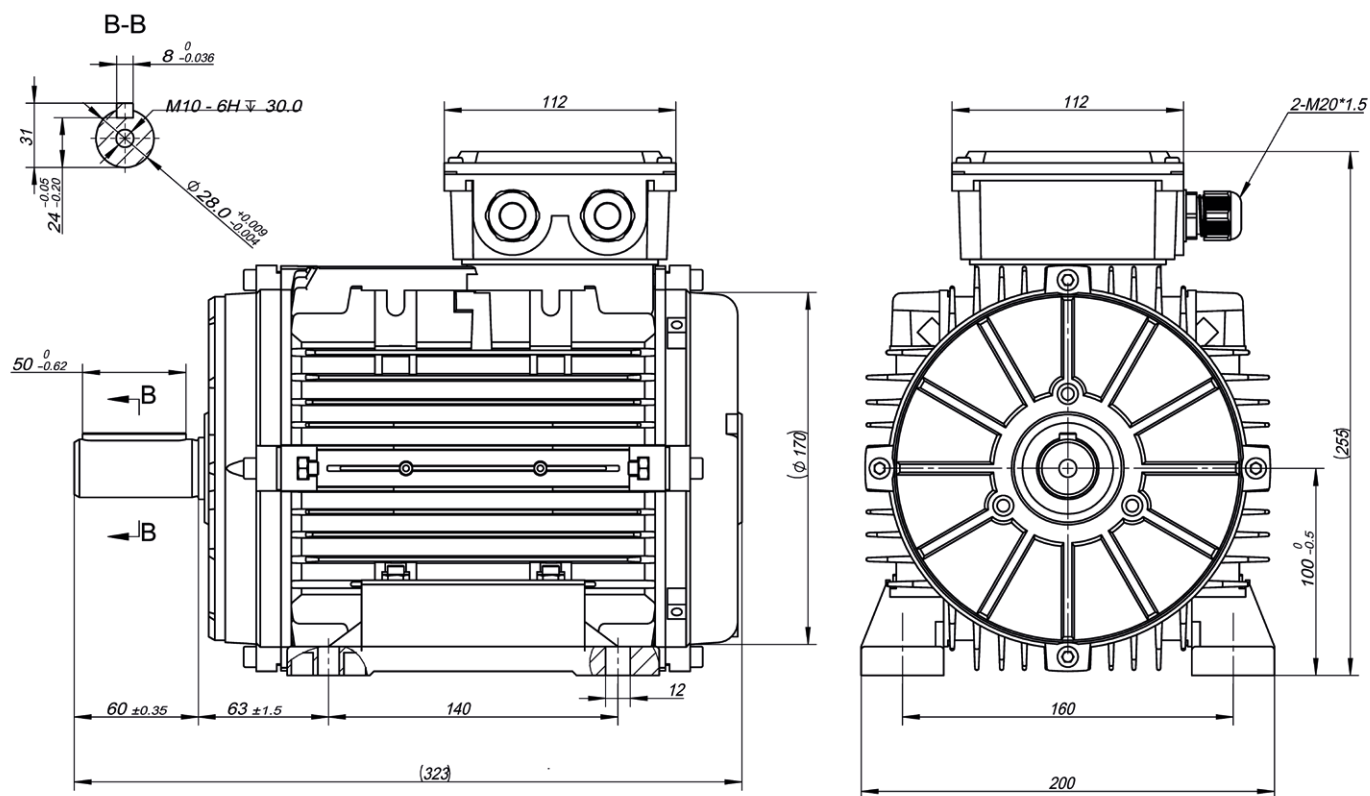
Power range based on different cooling condition



*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.

Motor dimension and mounting method:



mounting method B3 - IC410

*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T132EC26X30
 Rated torque: 25.5 N.m *No cooling condition
 Max speed: 1800 Y rpm 3000 Δ rpm
 Maximum torque: 31.8 N.m
 Rotor position sensor: No
 Motor type: Permanent magnet synchronous motor

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	6.4	2.55	401	85.8
	12.8	4.88	802	87.7
	19.1	7.25	1203	87.1
	25.5	9.68	1604	85.3
	31.9	12.18	2005	83.3
900	6.4	2.59	601	85.2
	12.8	4.91	1202	89.2
	19.1	7.29	1804	89.4
	25.5	9.71	2405	88.7
	31.9	12.20	3006	87.3
1200	6.4	2.58	801	86.4
	12.8	4.92	1602	90.4
	19.1	7.33	2403	90.9
	25.5	9.79	3203	90.3
	31.9	12.34	4004	89.3
1500	6.4	2.62	1001	85.9
	12.8	4.97	2003	90.7
	19.1	7.40	3004	91.6
	25.5	9.87	4005	91.4
	31.9	12.45	5006	90.6
1800	6.4	2.66	1201	85.5
	12.8	5.02	2402	91.0
	19.1	7.46	3603	92.0
	25.5	9.96	4803	92.1
	31.9	12.60	6003	91.5

Performance data:
 Motor connection: Δ
 Maximum speed: 3000 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	6.4	4.64	1402	81.9
	12.8	8.75	2805	89.2
	19.1	13.00	4207	91.2
	25.5	17.33	5610	91.6
	31.9	21.82	7011	91.6
2400	6.4	4.68	1602	82.4
	12.8	8.86	3203	89.5
	19.1	13.14	4804	91.6
	25.5	17.46	6406	92.2
	31.9	21.92	8007	92.2
2700	6.4	4.74	1803	82.9
	12.8	8.97	3605	89.8
	19.1	13.24	5408	91.8
	25.5	17.61	7208	92.4
	31.9	22.08	9012	92.5
3000	6.4	4.80	2002	82.3
	12.8	9.04	4005	89.6
	19.1	13.36	6007	91.7
	25.5	17.75	8008	92.3
	31.9	22.22	10011	92.2

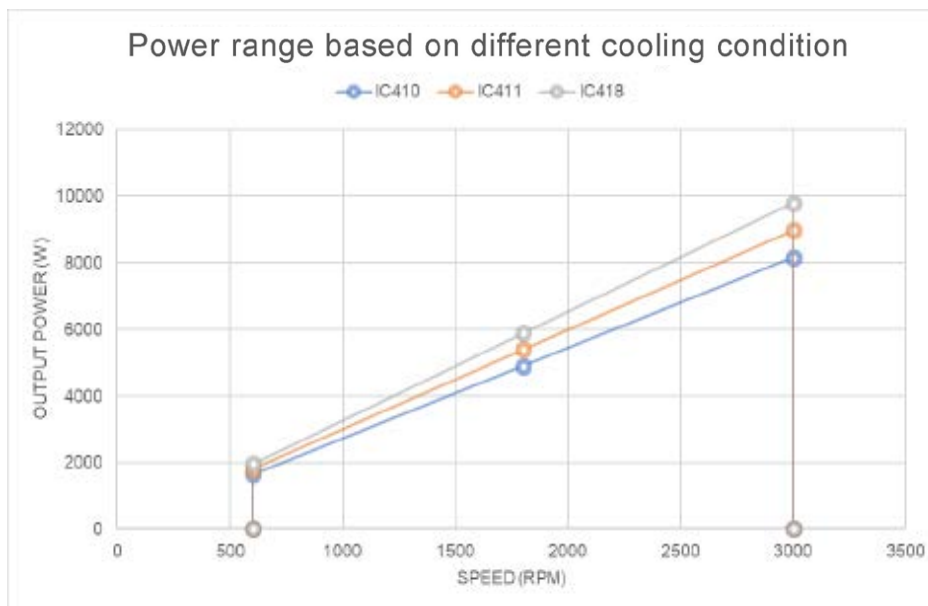
Motor parameters for VSD:

Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3000	rpm	
Max frequency:	120	200	Hz	
VSD output voltage:	280	300	V	
Rated current:	9.8	17.8	A	
Resistance:	0.63	0.21	Ohm	Phase
Ld:	8.8	2.9	mH	Phase
Lq:	18.3	6.1	mH	Phase
Back EMF value (L-L) :	202	117	Vrms per 1000 rpm	
Inertia:	0.0267		kg.m ²	

Motor running power range:

Duty cycle: S1

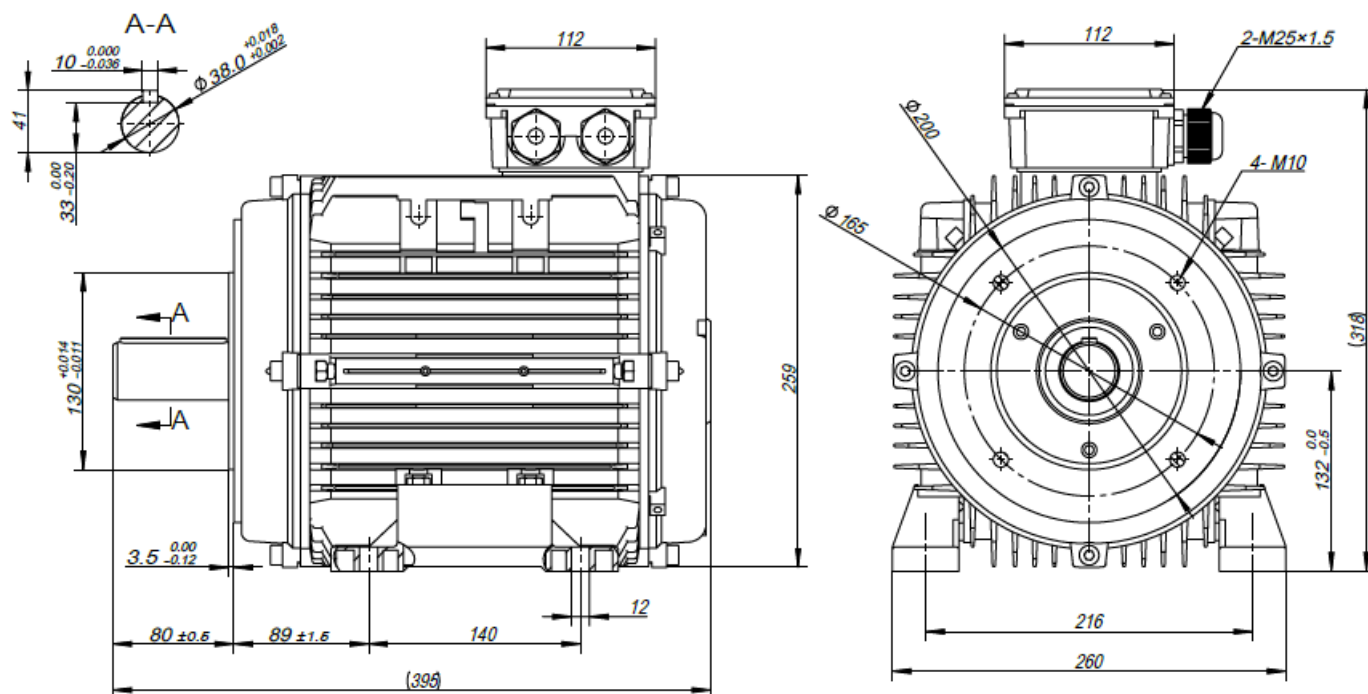
Cooling condition: IC410, IC411, IC418



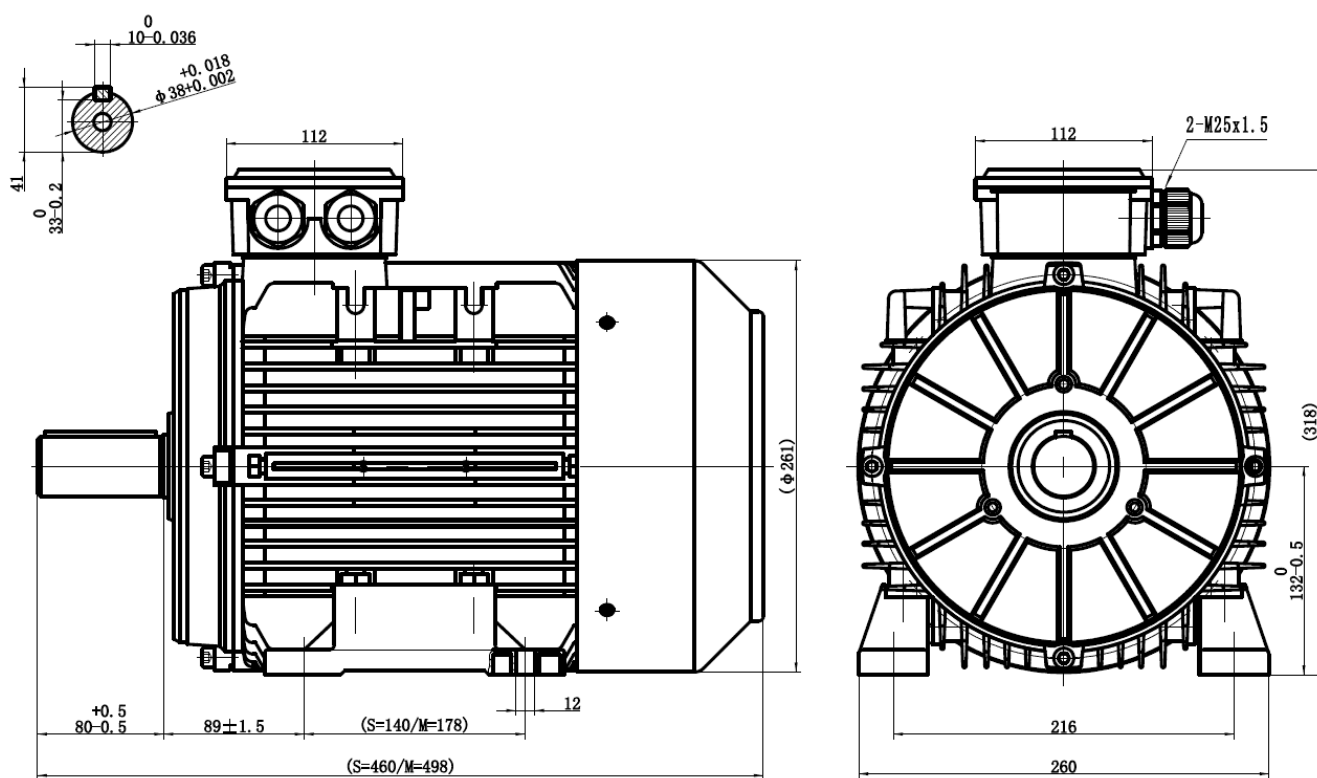
*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.

Motor dimension and mounting method:



mounting method B34-IC410



mounting method B3-IC411

*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T132EC35X30
 Rated torque: 35 N.m *No cooling condition
 Max speed: 1800 rpm Y connection 3000 rpm Δ connection
 Maximum torque: 44 N.m
 Rotor position sensor: No
 Motor type: Permanent magnet synchronous motor

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	8.8	2.89	552	90.1
	17.4	5.55	1093	91.3
	26.0	8.35	1640	90.3
	34.8	11.26	2190	88.5
	43.5	14.32	2739	86.2
900	8.8	2.92	830	90.3
	17.4	5.59	1642	92.6
	26.1	8.42	2463	92.3
	34.7	11.30	3281	91.4
	43.4	14.36	4097	89.7
1200	8.8	2.94	1109	90.5
	17.4	5.65	2190	93.2
	26.1	8.49	3277	93.3
	34.8	11.42	4370	92.7
	43.4	14.56	5459	91.6
1500	8.8	2.96	1381	90.7
	17.4	5.68	2732	93.7
	26.1	8.55	4099	94.1
	34.7	11.52	5456	93.7
	43.5	14.73	6841	92.8
1800	8.8	2.99	1663	90.8
	17.4	5.72	3279	94.1
	26.1	8.61	4915	94.6
	34.7	11.63	6550	94.3
	43.5	14.85	8194	93.6

Performance data:
 Motor connection: Δ
 Maximum speed: 3000 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
2100	8.7	5.66	1918	84.6
	17.4	10.96	3824	90.2
	26.1	16.39	5735	91.6
	34.7	22.13	7641	90.9
	43.4	28.11	9551	90.2
2400	8.8	5.81	2219	84.5
	17.4	11.09	4366	90.1
	26.1	16.62	6557	91.4
	34.7	22.26	8730	91.5
	43.5	28.35	10919	91.0
2700	8.8	5.97	2493	83.2
	17.4	11.27	4920	89.9
	26.1	16.85	7380	91.2
	34.8	22.54	9833	91.5
	43.4	28.53	12271	91.4
3000	8.8	6.08	2768	82.7
	17.4	11.44	5457	89.3
	26.1	17.04	8194	91.2
	34.8	22.82	10926	91.6
	43.5	28.86	13659	91.7

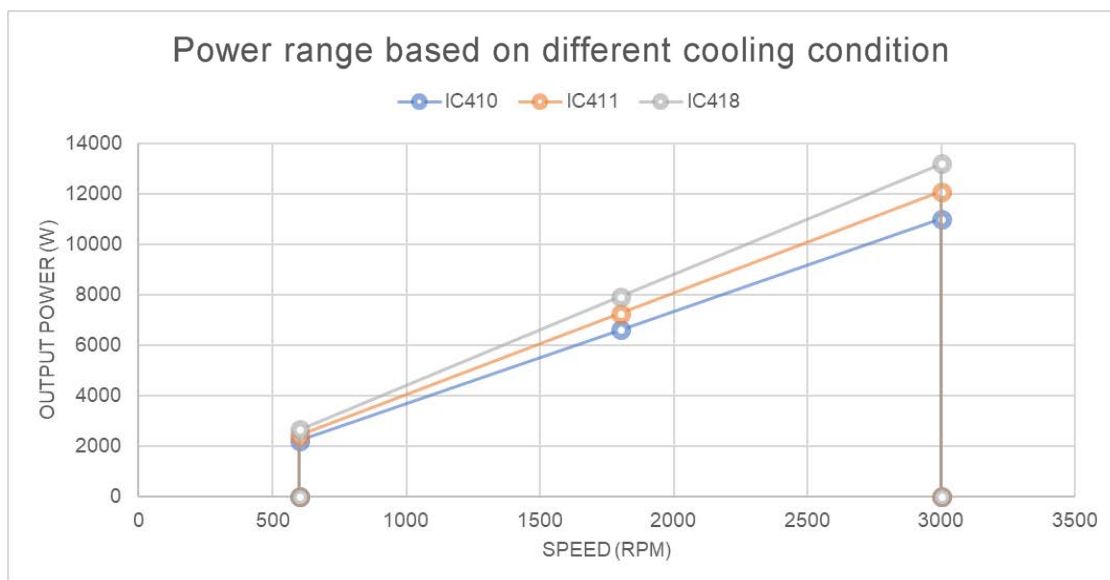
Motor parameters for VSD:

Items	Y	Δ	Unit	Note
VSD input voltage:	360-460	360-460	V	
Max speed:	1800	3000	rpm	
Max frequency:	120	200	Hz	
VSD output voltage:	340	300	V	
Rated current:	11.5	22.8	A	
Resistance:	0.5	0.17	Ohm	Phase
Ld:	7.8	2.6	mH	Phase
Lq:	16.6	1.5	mH	Phase
Back EMF value (L-L) :	206	119	Vrms per 1000 rpm	
Inertia:	0.0342		kg.m ²	

Motor running power range:

Duty cycle: S1

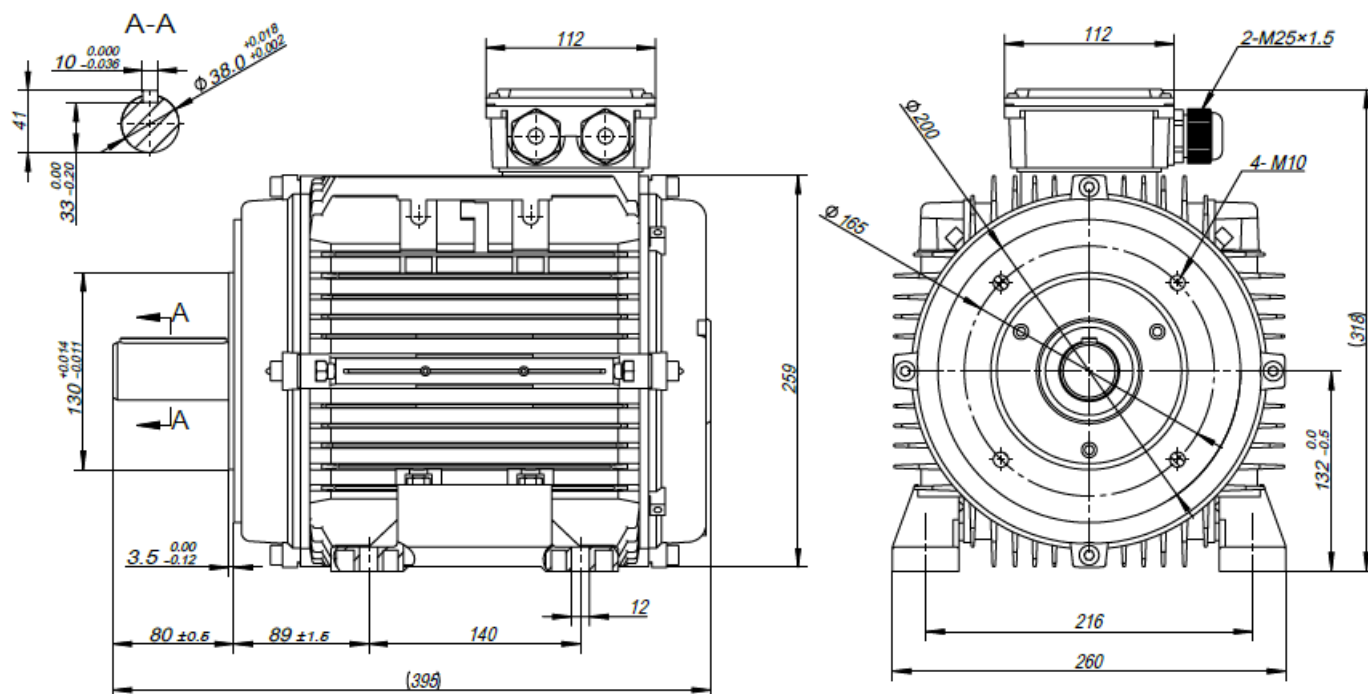
Cooling condition: IC410, IC411, IC418



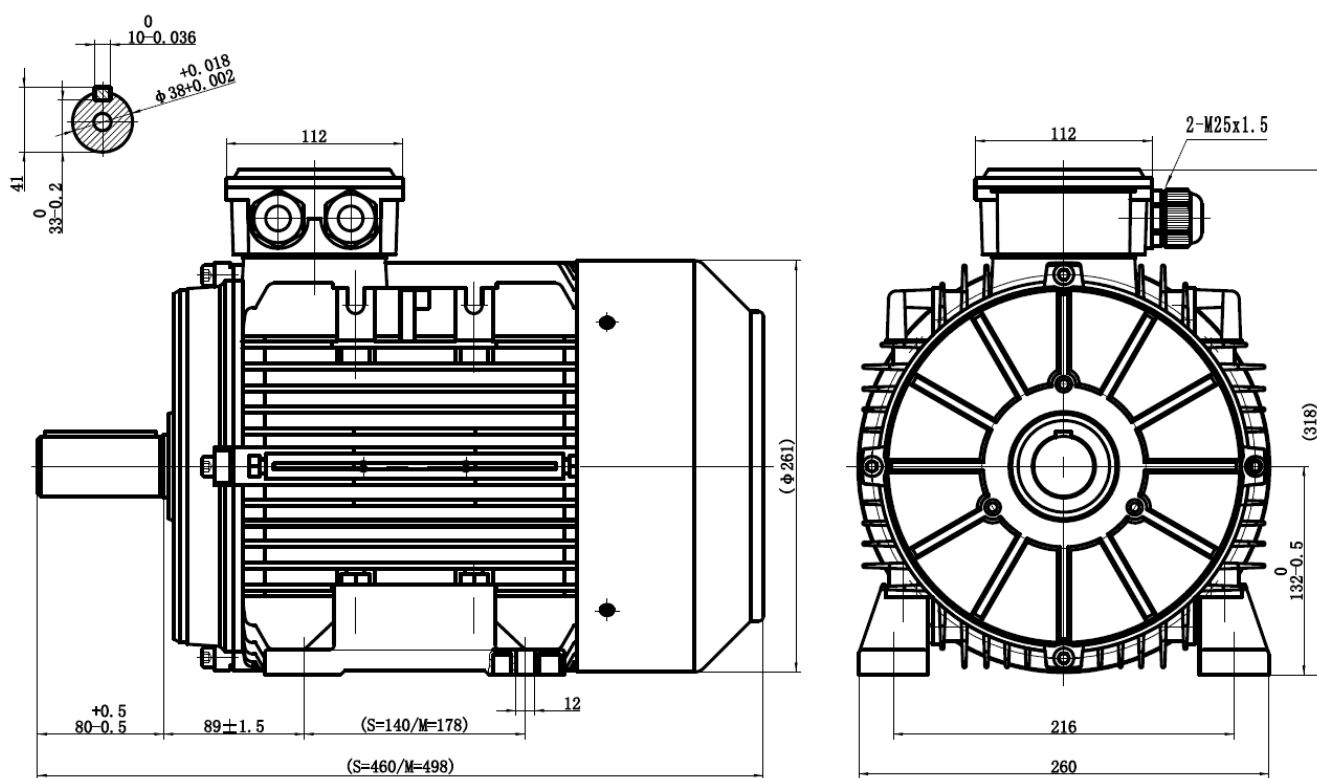
*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.

Motor dimension and mounting method:



mounting method B34-IC410



mounting method B3-IC411

*The feet can be removed

*The mounting method can be B5 and B34

DATA SHEET MOTORI EC

EC Motor Data Sheet

Typical information:

Motor model: T132EC48X18
 Rated torque: 48 N.m *No cooling condition
 Max speed: 1800 rpm Y connection
 Maximum torque: 60 N.m
 Rotor position sensor: No
 Motor type: Permanent magnet synchronous motor

Performance data:

Motor connection: Y
 Maximum speed: 1800 rpm

Speed Rpm	Torque N.m	Current A	Output Power W	Motor Eff %
600	12.0	4.25	756	89.7
	23.7	8.16	1489	91.4
	35.5	12.36	2235	90.0
	47.3	16.94	2976	88.0

900	12.0	4.28	1131	89.9
	23.7	8.23	2232	92.3
	35.5	12.44	3349	92.0
	47.4	17.09	4470	90.7

1200	12.0	4.32	1509	90.2
	23.7	8.27	2973	93.1
	35.5	12.56	4461	93.2
	47.4	17.24	5954	92.4

1500	12.0	4.31	1883	91.0
	23.7	8.31	3717	93.8
	35.5	12.62	5571	94.1
	47.4	17.37	7441	93.5

1800	12.0	4.36	2267	91.3
	23.7	8.38	4463	94.2
	35.5	12.72	6687	94.6
	47.4	17.55	8927	94.2

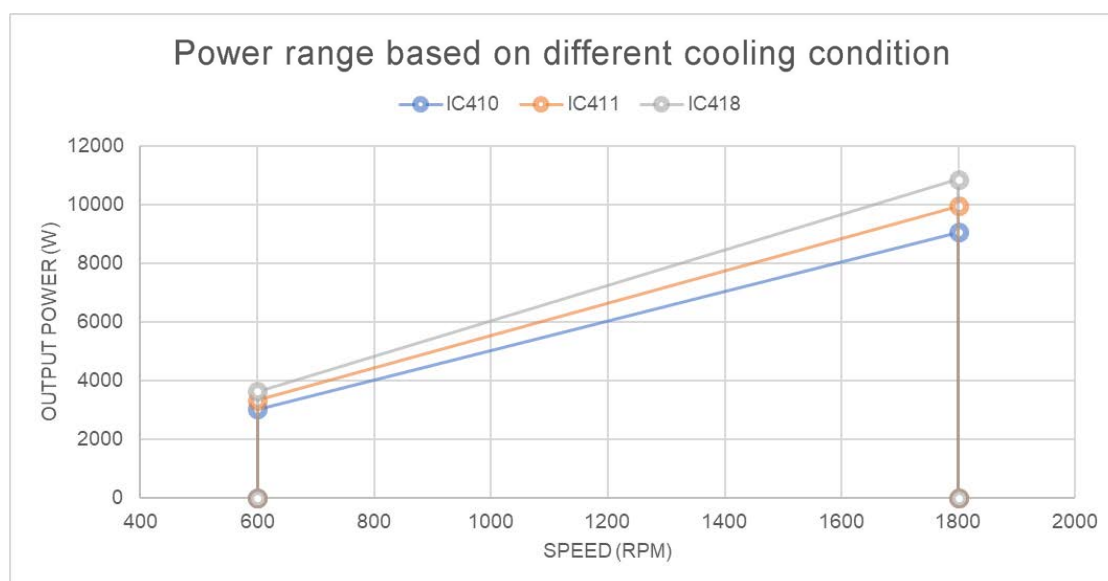
Motor parameters for VSD:

Items	Y	Unit	Note
VSD input voltage:	360-460	V	
Max speed:	1800	rpm	
Max frequency:	120	Hz	
VSD output voltage:	340	V	
Rated current:	17.3	A	
Resistance:	0.29	Ohm	Phase
Ld:	5.1	mH	Phase
Lq:	10.7	mH	Phase
Back EMF value (L-L) :	202	Vrms per 1000 rpm	
Inertia:	0.0454	kg.m ²	

Motor running power range:

Duty cycle: S1

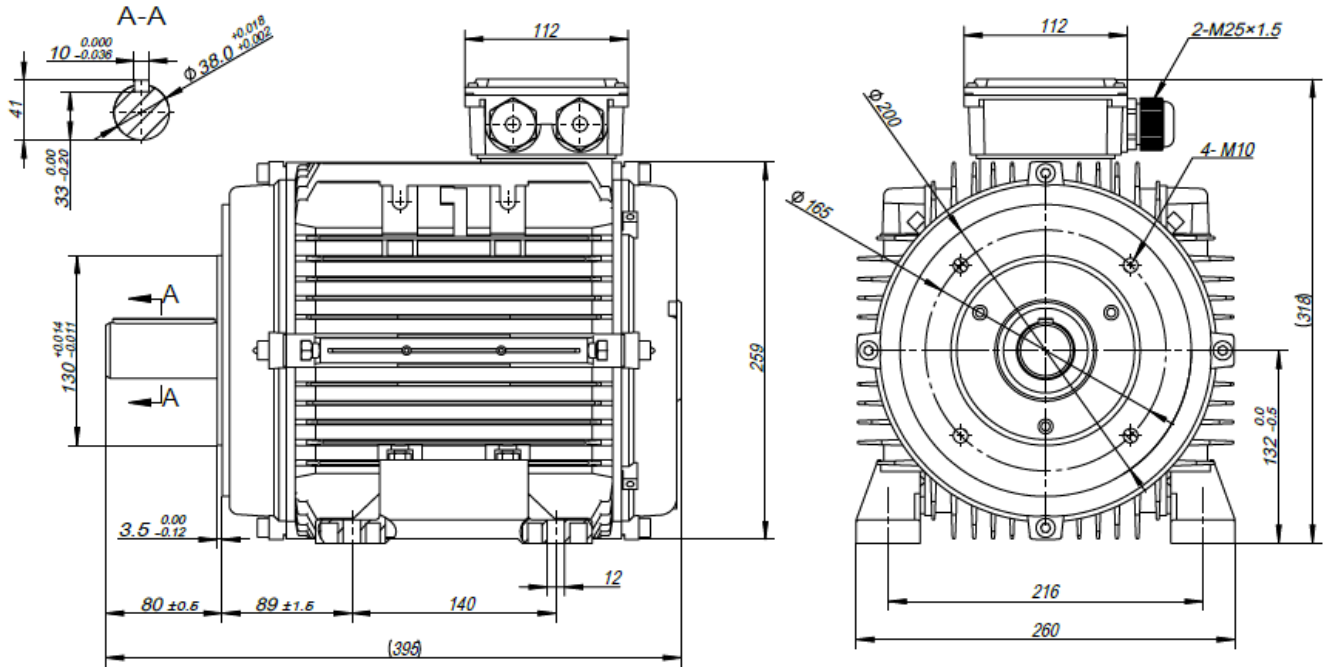
Cooling condition: IC410, IC411, IC418



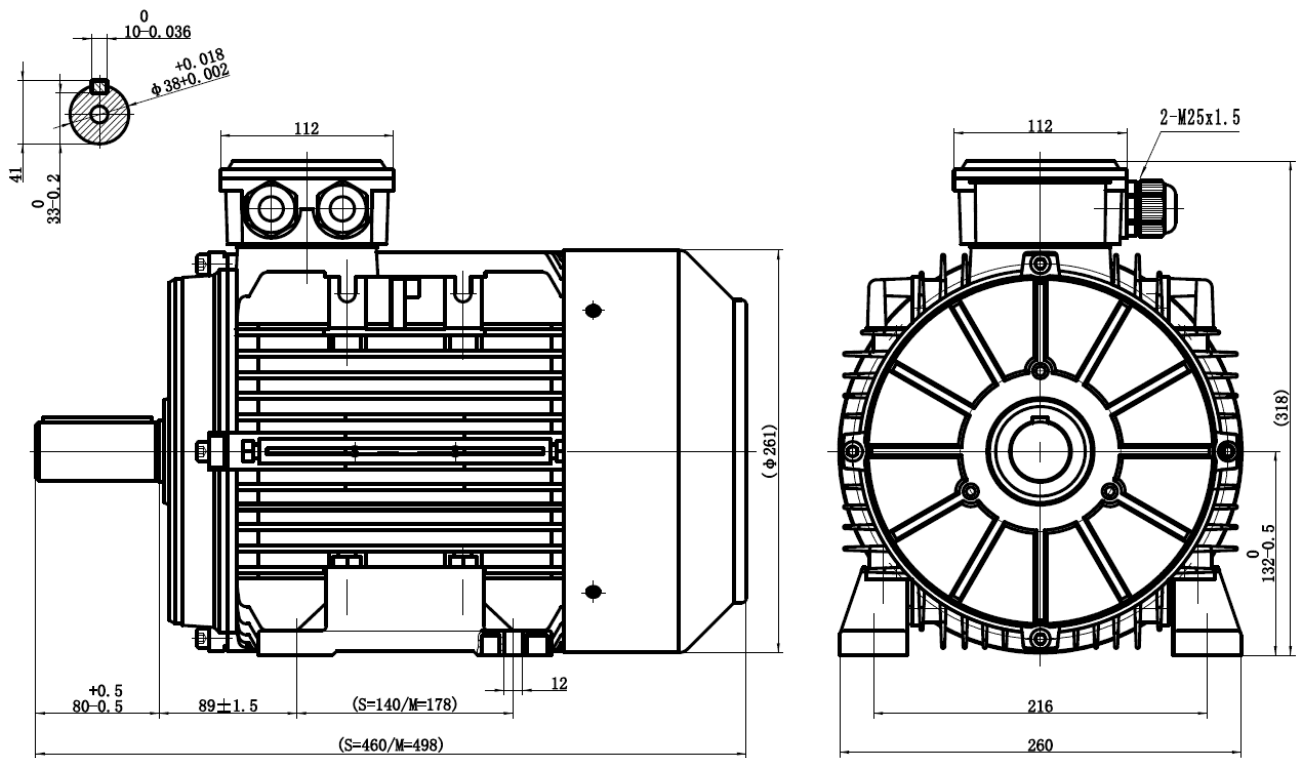
*The motor running power range is reference to choose the correct load.
The ambient temperature is based on 35 deg C.

*S2 or other duty cycle can reach higher power based on the duty cycle value.

Motor dimension and mounting method:



mounting method B34-IC410



mounting method B3-IC411

*The feet can be removed

*The mounting method can be B5 and B34

COMPOSIZIONE DEL CODICE MOTORE EC:

T 1 90 2 EC 3 03 4 V 5 36 6 C2 7 B14 8 T1 9

Posizione	Carattere	Descrizione
1	T	Tipo
2	90	Grandezza
3	EC	EC motor
4	3	Coppia massima
5	V	Metodo di raffreddamento: G = IC411 ;V = IC410
6	36	Velocità massima = carattere x100=rpm (=3600)
7	C2	Tipo connessione alimentazione: T1=scatola morsettiera Top (A), T2= scatola morsettiera lato NDE, C1=senza scatola morsettiera uscita cavi Top(A),C2=senza scatola morsettiera uscita cavi lato NDE
8	B14	Forma costruttiva : B3,B14,B5,B34,B35
9	T1	Codice tensione di alimentazione: T1=trifase 360-460V, T2=trifase 200-240V, S1=monofase 200-240V, S2=monofase 115V

06. ECI MOTORI EC CON INVERTER INTEGRATO

ECI sono motori AC sincroni a magneti permanenti con inverter integrato rispettando gli standard IEC, questi motori garantiscono un notevole risparmio energetico, hanno efficienza oltre i valori IE4 ed IE5 (IEC60034-30-2-2016).

La gestione del motore EC con inverter integrato è estremamente semplice, non è necessario inserire i dati del motore, la scheda drive è già parametrizzata, questi motori si possono quindi gestire semplicemente come i motori asincroni standard.



E-Max 71# motor with integrated drive:



E-Max 90# motor with integrated drive:

Caratteristiche:

- Campo di applicazione: Ventilazione (carichi con coppia resistente quadratica)
- Alimentazione monofase 200-240VAC 50Hz/60Hz
- IEC 71 e 90 carcassa in alluminio
- Efficienza totale (motore+inverter) IE5 e oltre
- Velocità variabile tra 300-3600 rpm
- Collegamento diretto motore e controllo
- Controllo limite di coppia
- protezione dalle sovratemperature
- alto cos ϕ ingresso >0,95
- Filtro EMC ingresso Driver (inverter) classe C3



Model List

Model	Frame Size	Rated Torque	Output @1500 rpm (Kw)	Output @3000 rpm (Kw)	Max. Speed (rpm)
T71ECI01X36	71	1.2	0.2	0.41	3600
T71ECI02X30	71	2.4	0.41	0.82	3000
T71ECI03X18	71	3.2	0.55	-	1800
T90ECI03X36	90	3.2	0.55	1.1	3600
T90ECI05X30	90	4.8	0.75	1.5	3000
T90ECI07X18	90	7	1.1	-	1800

** I valori di dettaglio della coppia sono riportati nei data sheet.

COMPOSIZIONE DEL CODICE MOTORE:

T	90	ECI	03	V	36	C2	B14	T1
1	2	3	4	5	6	7	8	9

PARAMETRI DI CONTROLLO DEL MOTORE:

- CW/CCW rotazione
- Start-stop morsetti
- 0-10VDC controllo velocità
- RS485 Modbus-interfaccia comunicazione
- Controllo della velocità con potenziometro
- Retroazione della velocità

Posizione	Carattere	Descrizione
1	T	Tipo
2	90	Grandezza
3	ECI	ECI motor
4	3	Coppia massima
5	V	Metodo di raffreddamento: G = IC411 ;V = IC410
6	36	Velocità massima = carattere x100= rpm (=3600)
7	C2	Tipo connessione alimentazione: T1=scatola morsettiera Top (A), T2= scatola morsettiera lato NDE, C1=senza scatola morsettiera uscita cavi Top(A),C2=senza scatola morsettiera uscita cavi lato NDE
8	B14	Forma costruttiva : B3,B14,B5,B34,B35
9	T1	Codice tensione di alimentazione: T1=trifase 360-460V, T2=trifase 200-240V, S1=monofase 200-240V, S2=monofase 115V

COLLEGAMENTI DEL MOTORE:

T71ECI

1. Collegamenti di potenza del motore e collegamenti dell'inverter

Connessioni di controllo (inverter)

Speed output	White	3 puls per rev (*)
On/Off	Red	On: Red+Yellow
DC 12V output	Yellow	
DC 0-10V input	Blue	Speed control
COM	Black	
CW/CCW	Brown	CCW: Yellow+Brown
RS485 B	Green	T/R+
RS485 A	Grey	T/R-

(*) Duty cycle 50%,ampiezza 5V

Connessioni di potenza del motore

L	Brown
N	Blue
PE	Yellow/Green

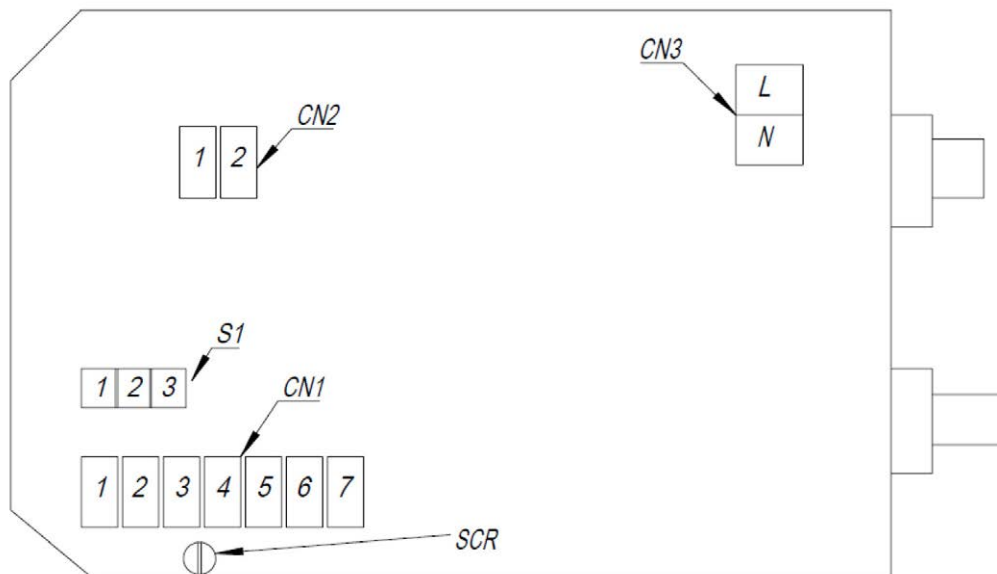
Per il collegamento delle porte di comunicazione RS485, riferirsi al manuale specifico

Esempio di targa motore T71ECI:

			
Serial n°:		1910-108001	
Model or type:		T71ECI01V36C1B3	
Voltage/Frequency/Phase:		220-277 50/60Hz 1PH	
Rated torque:		1,2Nm	
Speed (min/max):		300-3600 rpm	
Rated power/current:		0,45kW 3,50A	
Power terminal and cable		Control terminal and cable	
Insulation class:	F	IP:	IP55
Line:	Brown	Speed output:	White
Neutral:	Blue	ON/OFF:	Red
PE:	Yellow/Green	12V DC output:	Yellow
ON/OFF Control:	Red+Yellow	0-10V DC input:	Blue
CW/CCW Control:	Brown+Yellow	Common:	Black
Distributed by SimoTop Group Spa Via Ca Bianca 320 Castel S. Pietro Terme (BO) Italy			

T90ECI (due opzioni)

Opzione1. Connessioni scatola morsettieria (connessioni dirette sulla scheda inverter del motore)



Morsettiera connessioni e definizioni

Connessioni morsettiera-specifiche

CN1	1	Speed output	3 puls per revolution (*)
	2	On/Off	2 and 3 connect mean On; 2 and 3 disconnect mean Off
	3	DC 12V output	DC 12V supplier
	4	DC 12V output	DC 12V supplier
	5	DC 0-10V input	Speed control by 0-10V; Speed control by potentiometer connect terminal 4 and 6
	6	GND	GND
	7	Speed control by manual	The potentiometer (SCR) in the terminal box control the speed by connect 5 to 7
CN2	1	RS485 B	When RS485 connect On/Off will not work
	2	RS485 A	
CN3	1	L	Single phase power terminal
	2	N	
S1	1,2,3	Rotated direction	1-2 CCW, 2-3 CW

(*) Duty cycle 50%,ampiezza 5V

Opzione 2. Connessione di potenza e di controllo (cavi uscenti dalla scatola morsettieria del motore)

Connessioni di controllo (inverter)

Speed output	White	3 puls per rev (*)
On/Off	Red	On: Red+Yellow
DC 12V output	Yellow	
DC 0-10V input	Blue	Speed control
GND	Black	
RS485 B	Green	T/R+
RS485 A	Gray	T/R-

(*) Duty cycle 50%,ampiezza 5V

Connessioni di potenza (motore)

L	Brown
N	Blue
PE	Yellow/Green

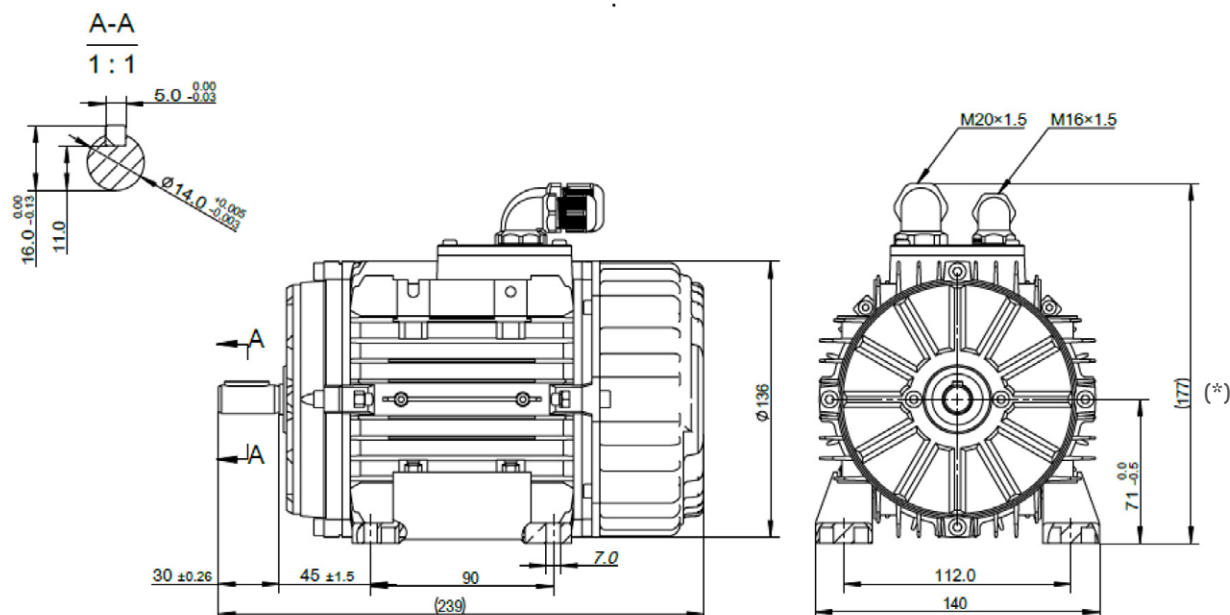
Per il collegamento delle porte di comunicazione RS485, riferirsi al manuale specifico

Esempio di targa motore T90ECI:

TECHTOP [®] MOTOR CE	
Serial n°:	1910-108006
Model or type:	T90ECI07V18T1B3
Voltage/Frequency/Phase:	220-277 50/60Hz 1PH
Rated torque:	7Nm
Speed (min/max):	300-1800 rpm
Rated power/current:	1,3kW 12,0A
Power terminal and cable	
Insulation class:	F
Line:	Brown
Neutral:	Blue
PE:	Yellow/Green
ON/OFF Control:	Red+Yellow
CW/CCW Control:	/
Control terminal and cable	
IP:	IP55
Speed output:	White
ON/OFF:	Red
12V DC output:	Yellow
0-10V DC input:	Blue
Common:	Black
Distributed by SimoTop Group Spa	
Via Ca Bianca 328 Castel S. Pietro Terme (BO) Italy	

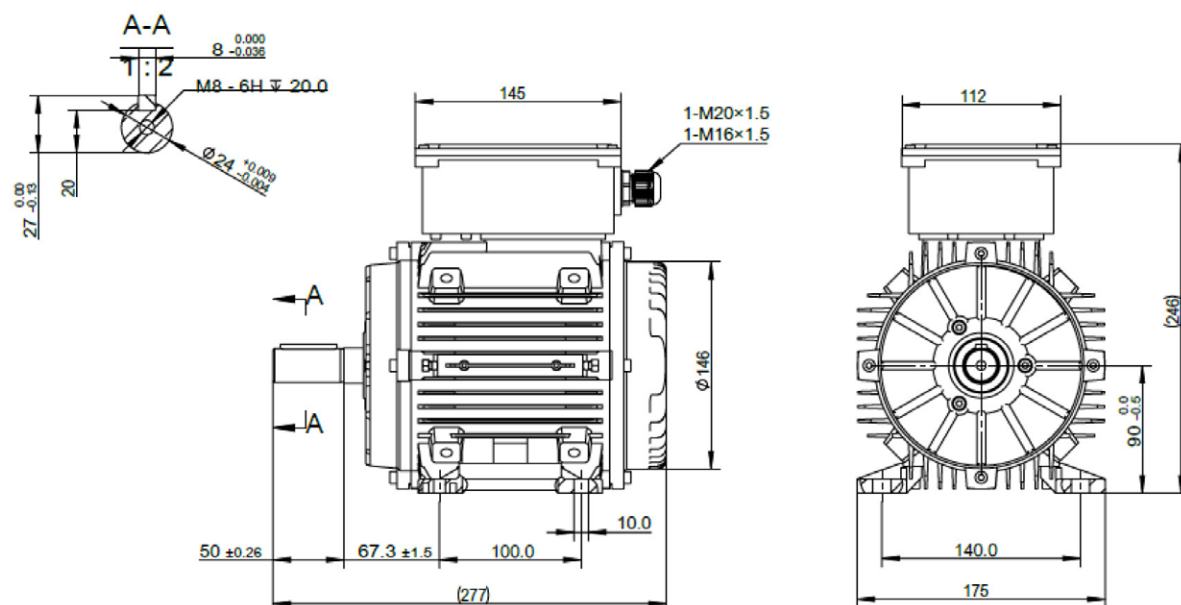
DIMENSIONI MECCANICHE MOTORI CON INVERTER INTEGRATO - ECI (mm)

T71ECI MOTORE CON INVERTER INTEGRATO (B3)



(*) con diversi pressa-cavi l'altezza può essere 169 anziché 177

T90ECI MOTORE CON INVERTER INTEGRATO (B3)



* B14, B5 a richiesta

07. DATA SHEET MOTORI ECI

ECI Motor Data Sheet

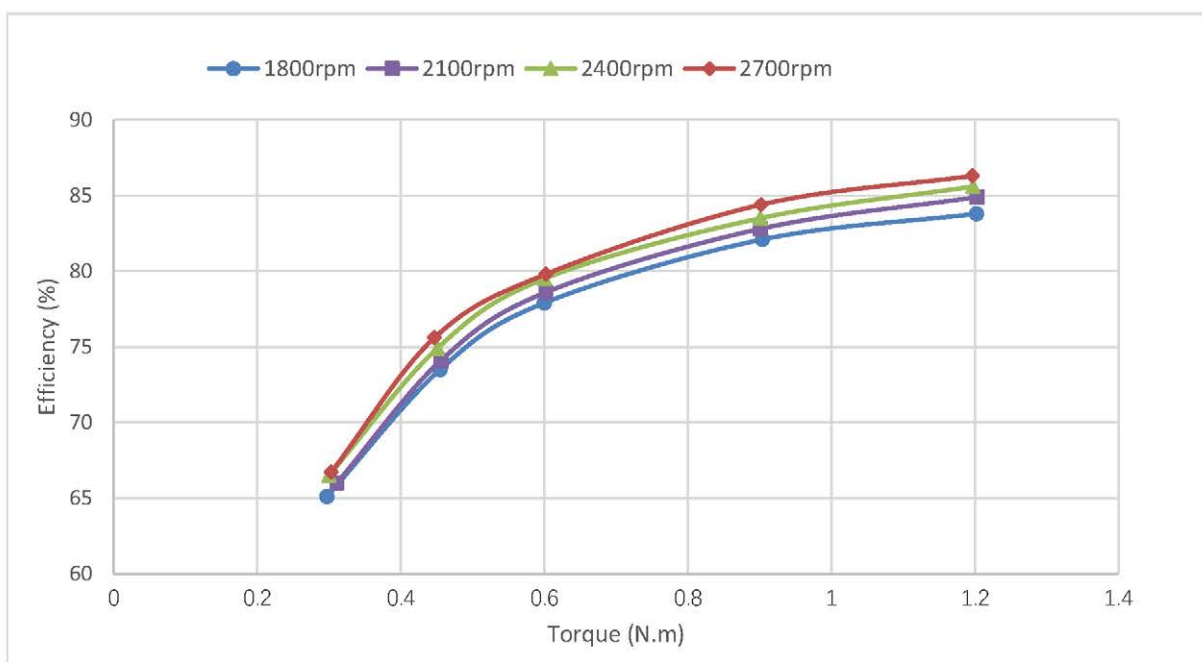
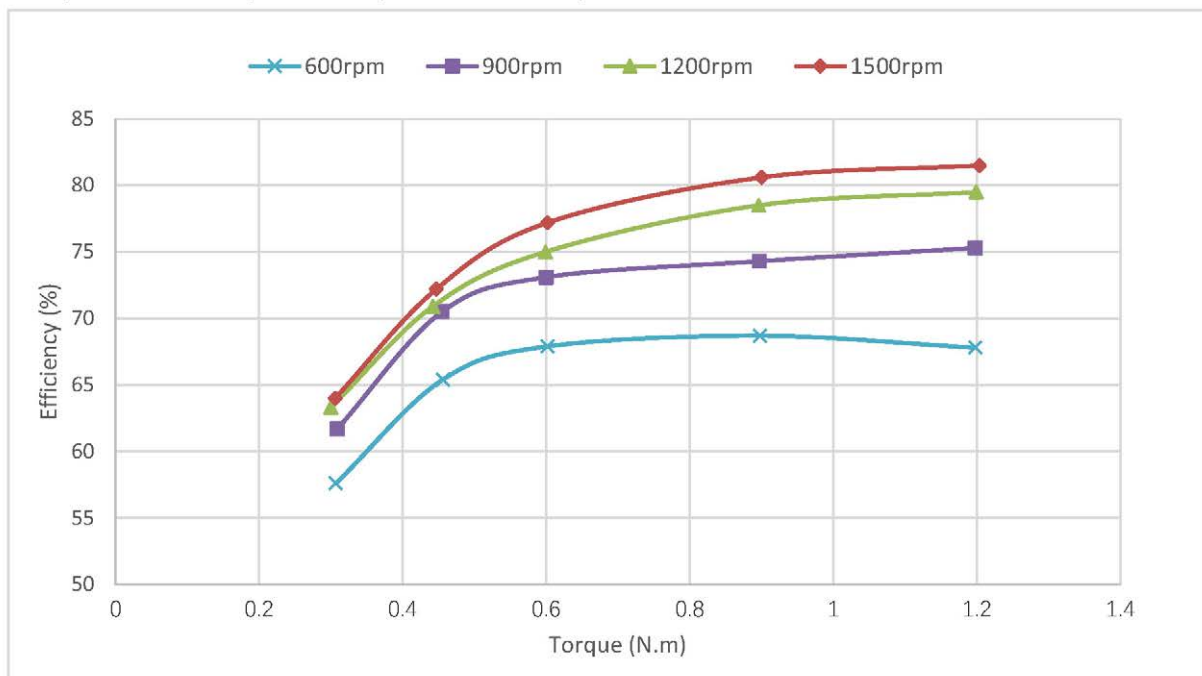
Typical information:

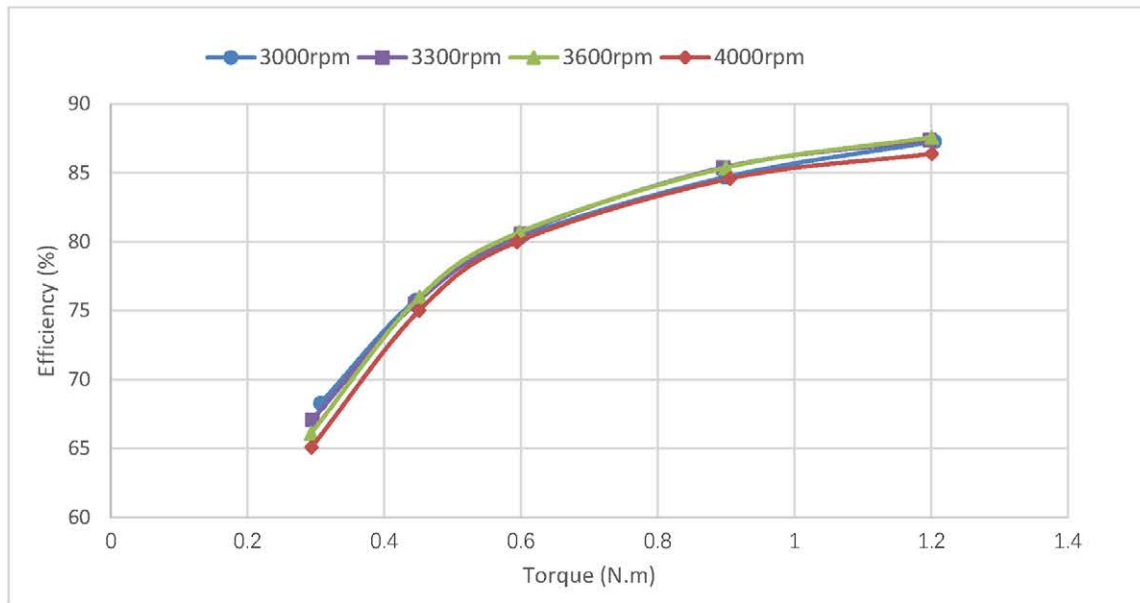
Motor model: T71ECI01X36 (Integrated drive model)
 Input Voltage: 200-240 V 50/60 Hz
 Rated torque: 1.2 Max N.m *No cooling condition
 Max speed: 4000 Max rpm
 Max. torque: 1.8 Max N.m
 Max. current: 3.6 A

Performance data:

Maximum speed: 4000 rpm

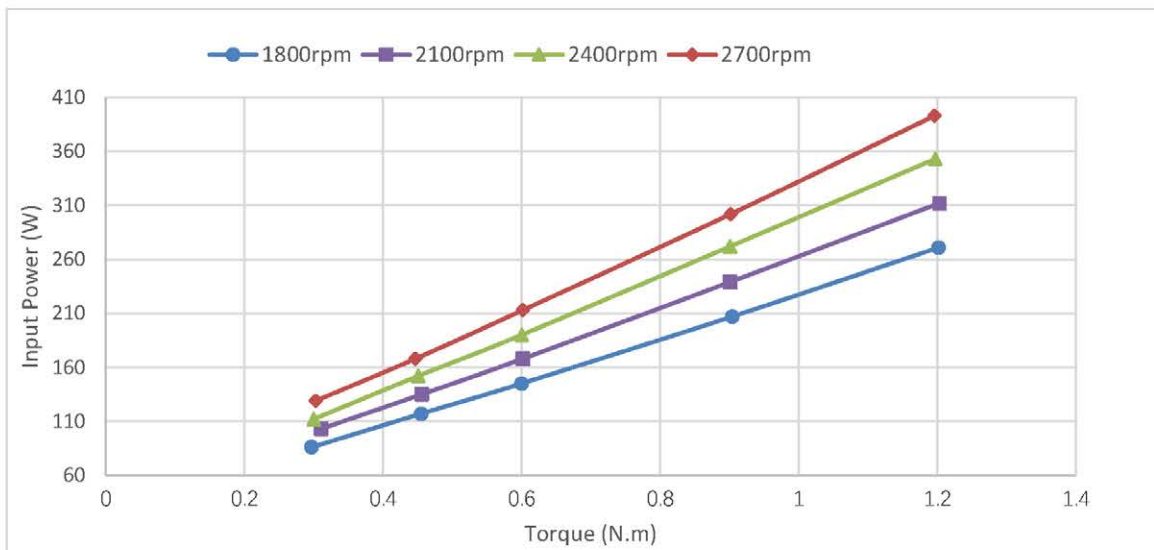
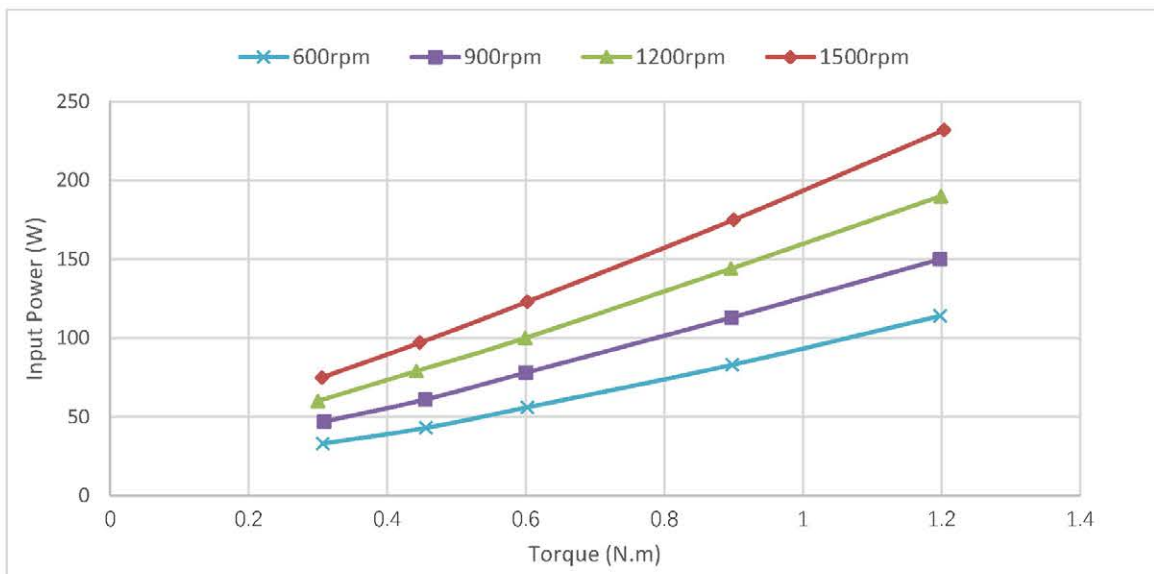
a. System efficiency V.S. Torque at different speed

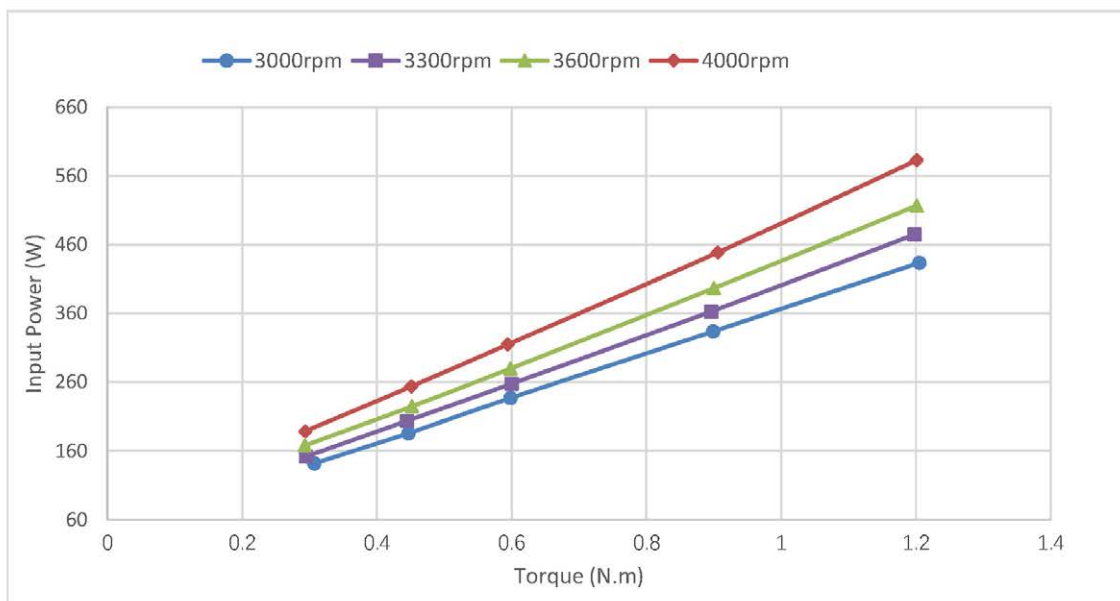




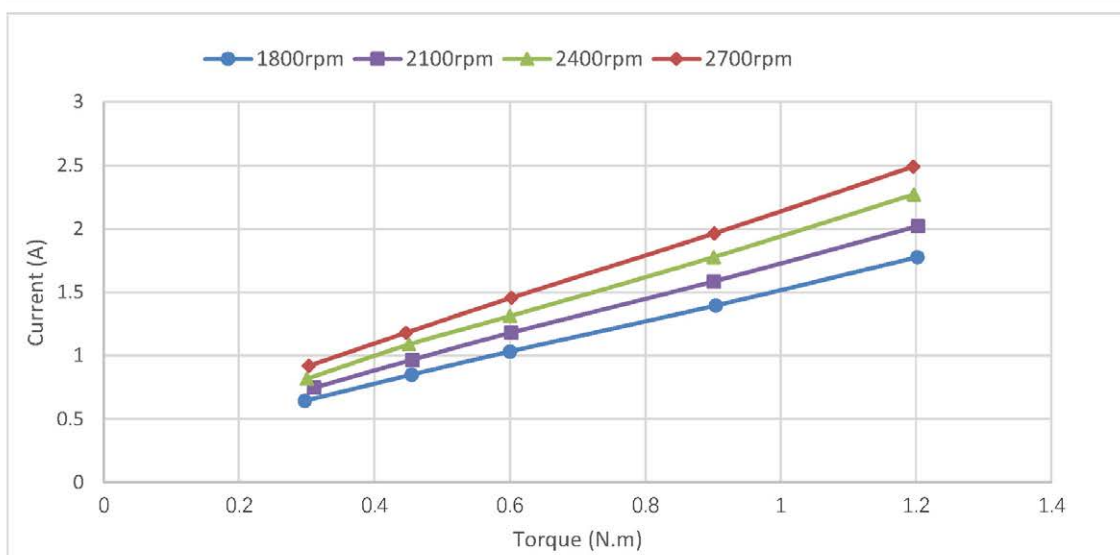
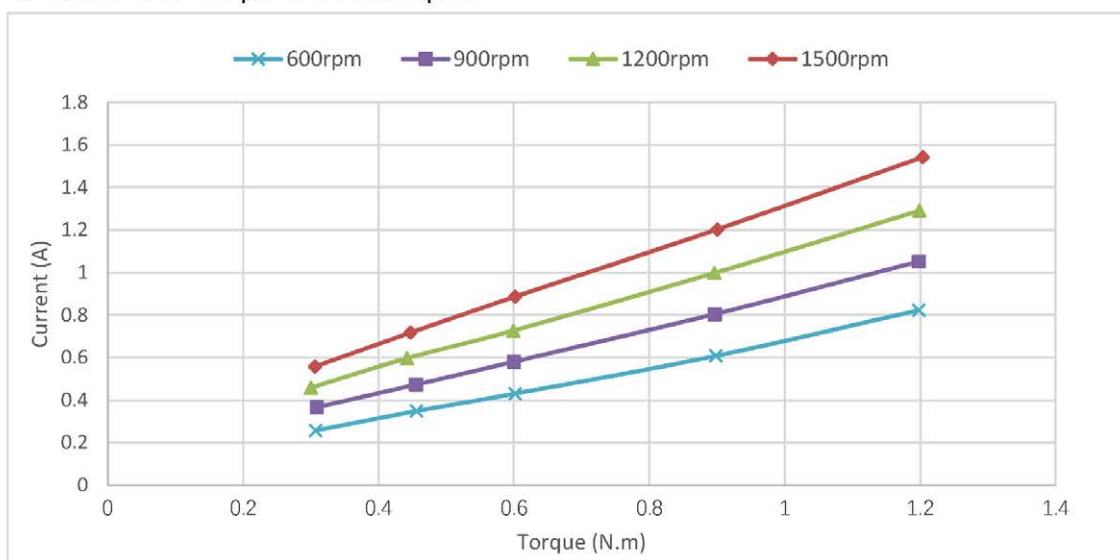
* Total efficiency include motor and drive.

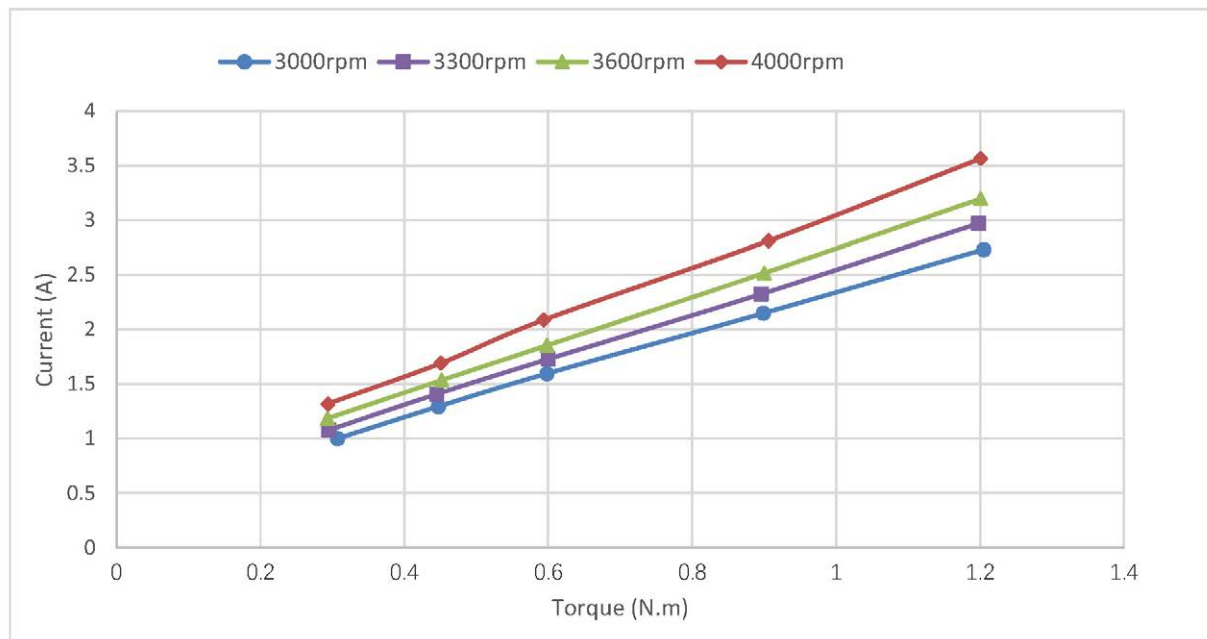
b. Input power V.S. Torque @ different speed



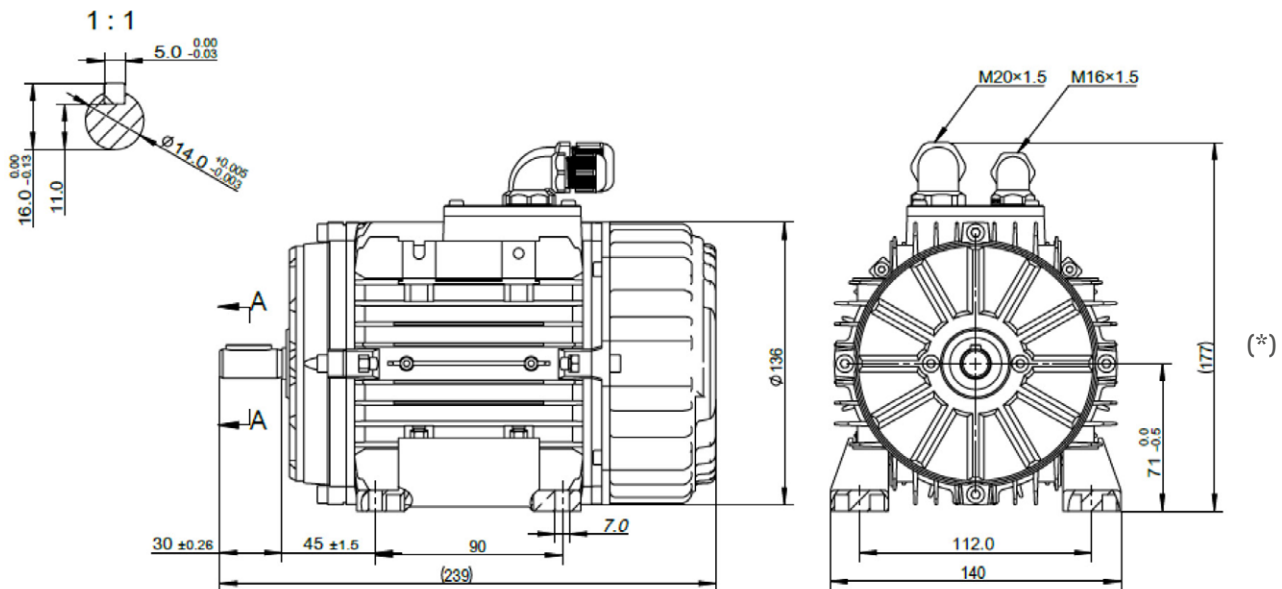


c. Current V.S. Torque at different speed





Motor dimension and mounting method:



(*) con diversi pressa-cavi l'altezza può essere 169 anzichè 177

B3 mounting method - IC410

*The feet can be removed.

*The mounting method can be B5 and B14.

MOTOR CONTROL AND CONNECTION

1: Power and control cable connection

+ Control cable

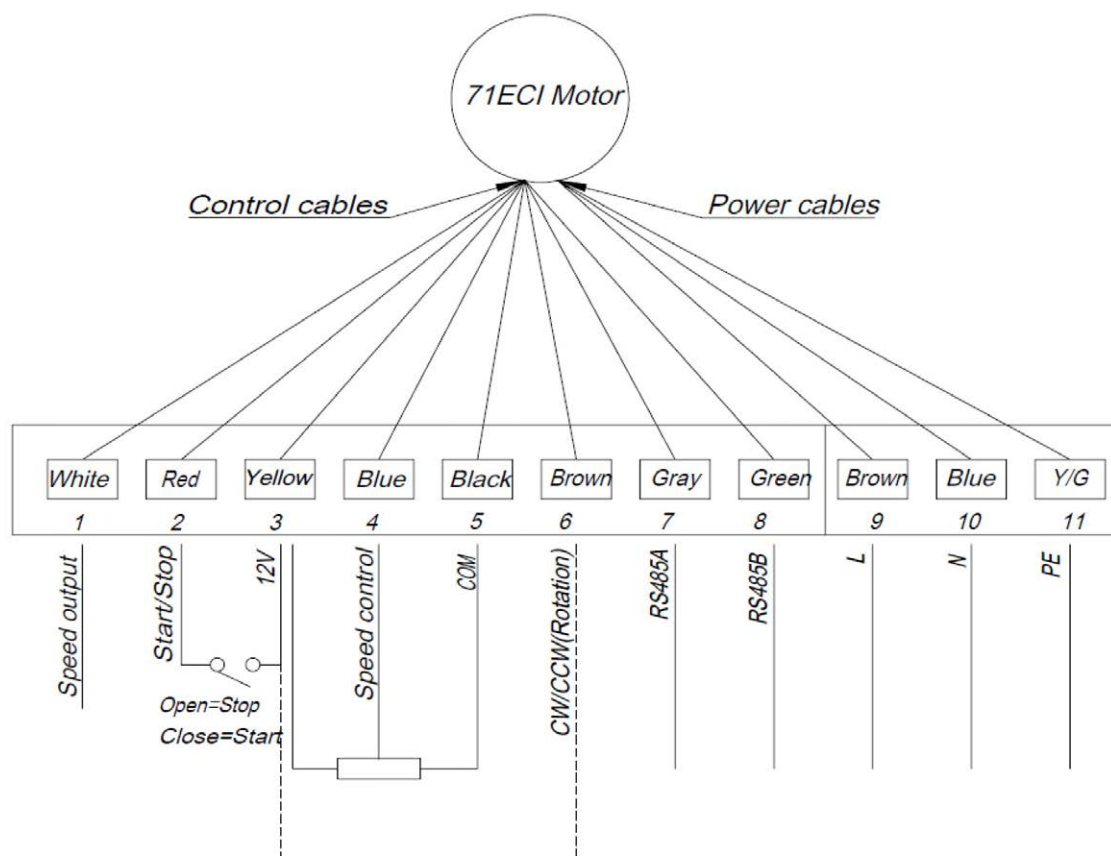
Item	Function	Wire color	Note
1	Speed output	White	3 puls per rev (*)
2	Start/Stop	Red	Start: Red+Yellow
3	DC 12V output	Yellow	
4	DC 0-10V input	Blue	Speed control
5	COM	Black	
6	CW/CCW	Brown	CW: Brown, CCW: Brown+Yellow
7	RS485 B	Grey	T/R+
8	RS485 A	Green	T/R-

(*) Duty cycle 50%, ampiezza 5V

+ Power cable

Item	Function	Wire color
9	L	Brown
10	N	Blue
11	PE	Yellow/Green

2: Customer side connection



pin 4 e 5 riferimento esterno 0-10Vdc

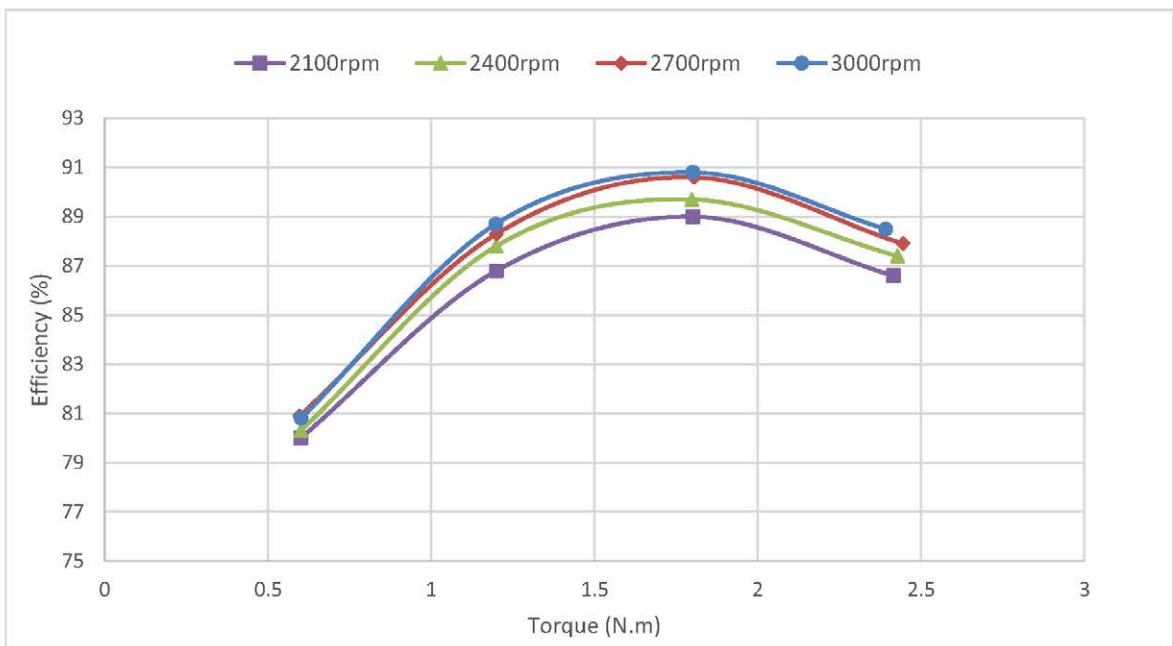
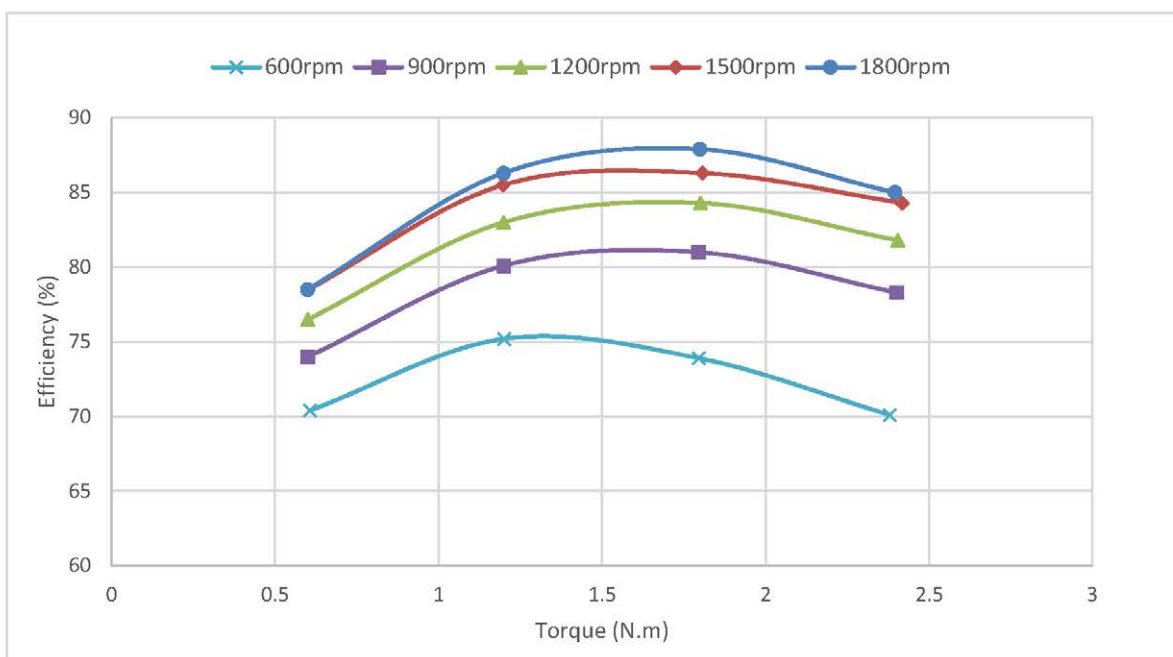
ECI Motor Data Sheet

Typical information:

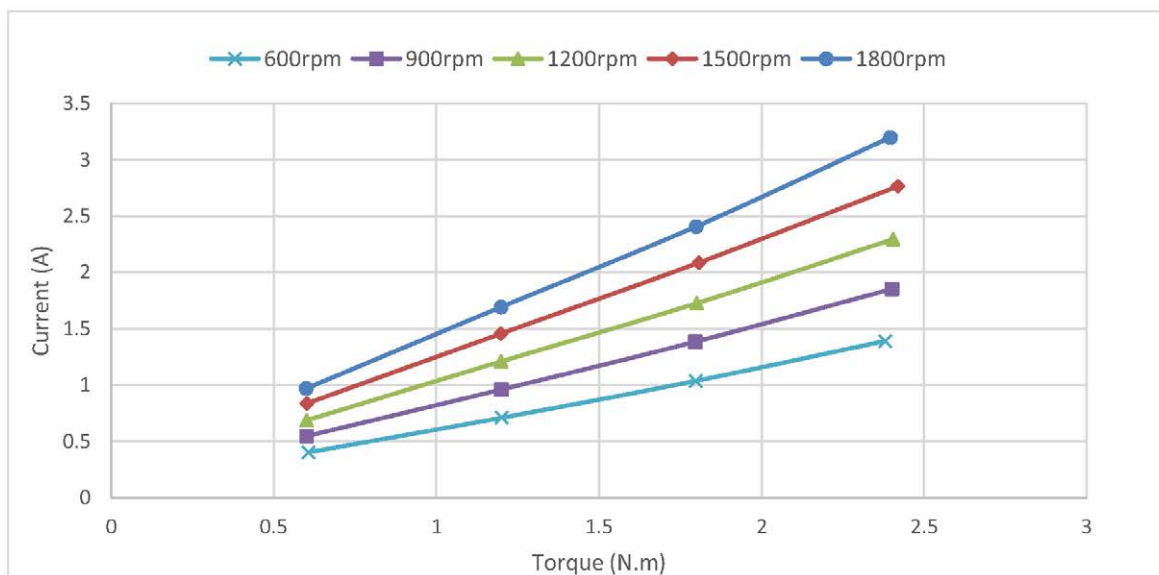
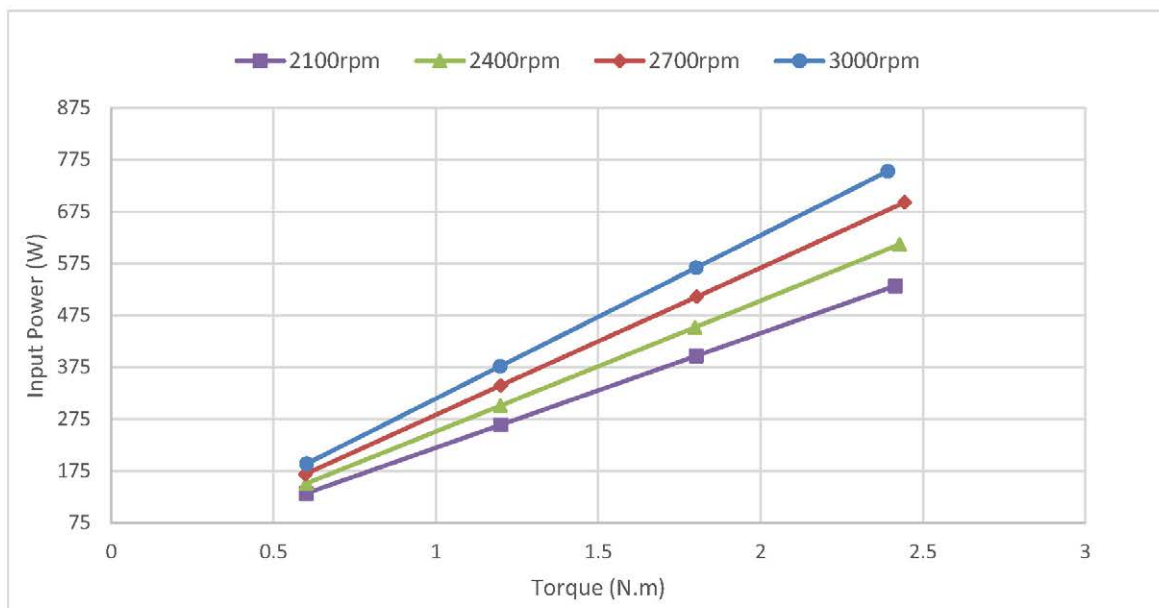
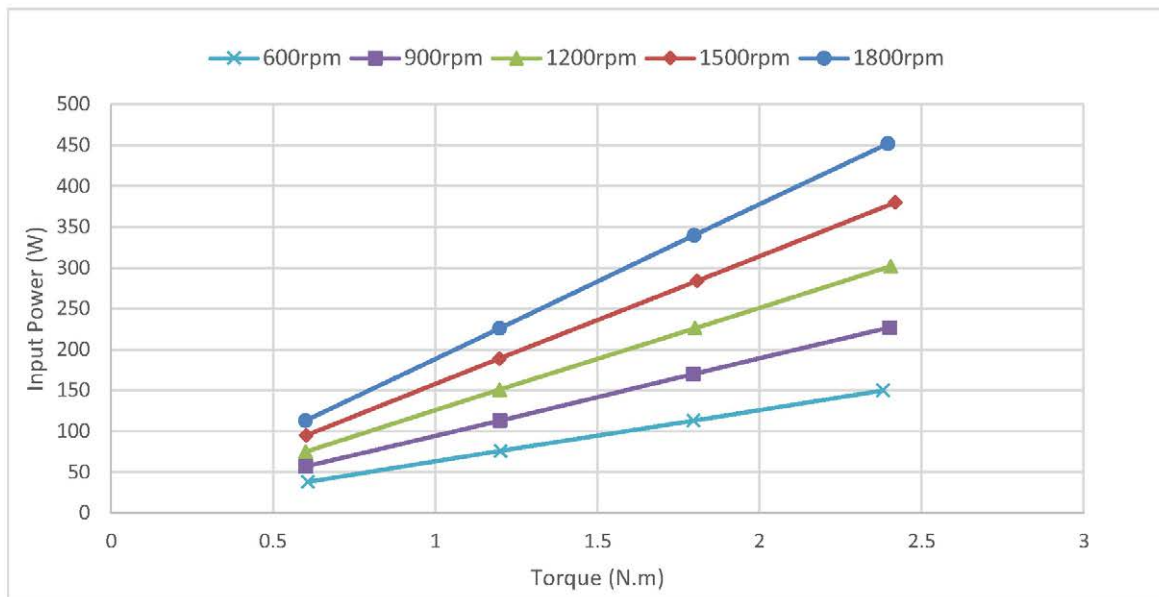
Motor model: T71ECI02X30 (Integrated drive model)
 Input Voltage: 200-240 V 50/60 Hz
 Rated torque: 2.4 N.m *No cooling condition
 Max speed: 3000 rpm
 Max. torque: 3 N.m
 Max. current: 4.9 A

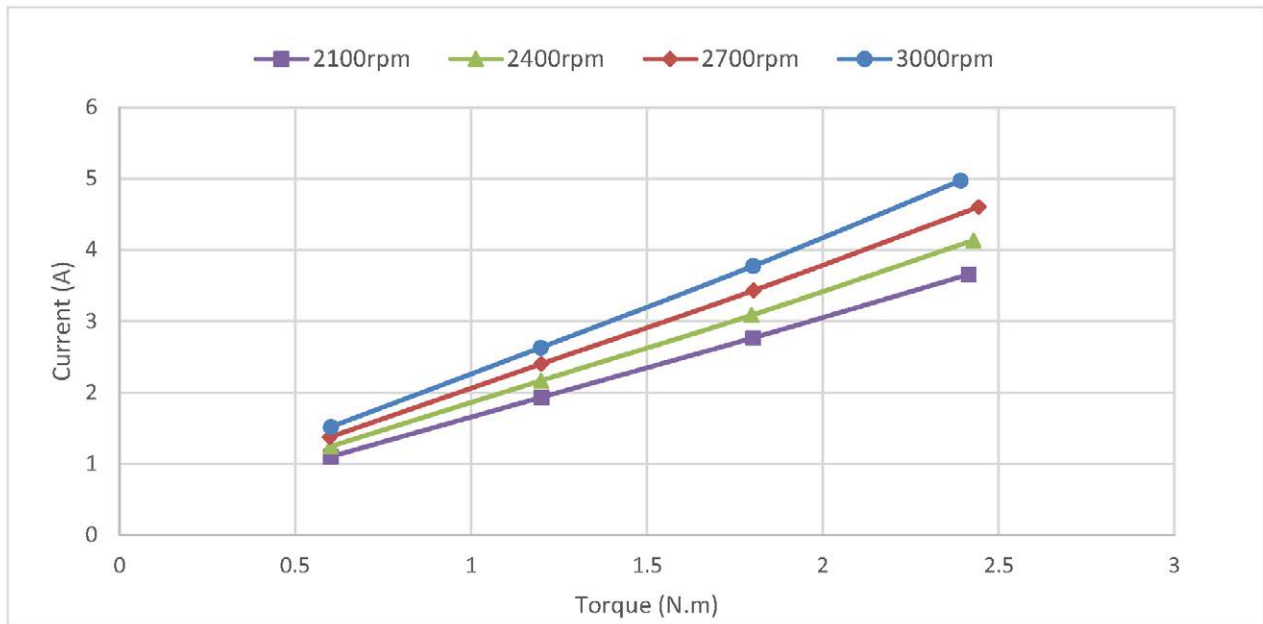
Performance data:

Maximum speed: 3000 rpm Tested data 20190226

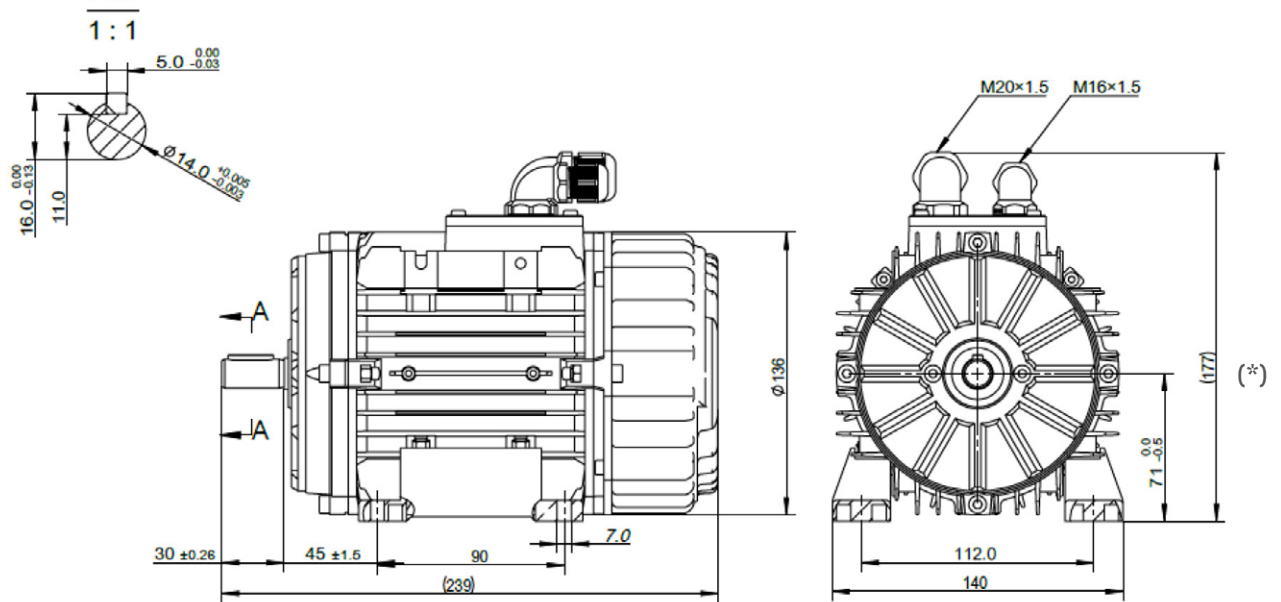


* Total efficiency include motor and drive.





Motor dimension and mounting method:



(*) con diversi pressa-cavi l'altezza può essere 169 anzichè 177

B3 mounting method - IC410

*The feet can be removed.

*The mounting method can be B5 and B14.

MOTOR CONTROL AND CONNECTION

1: Power and control cable connection

+ Control cable

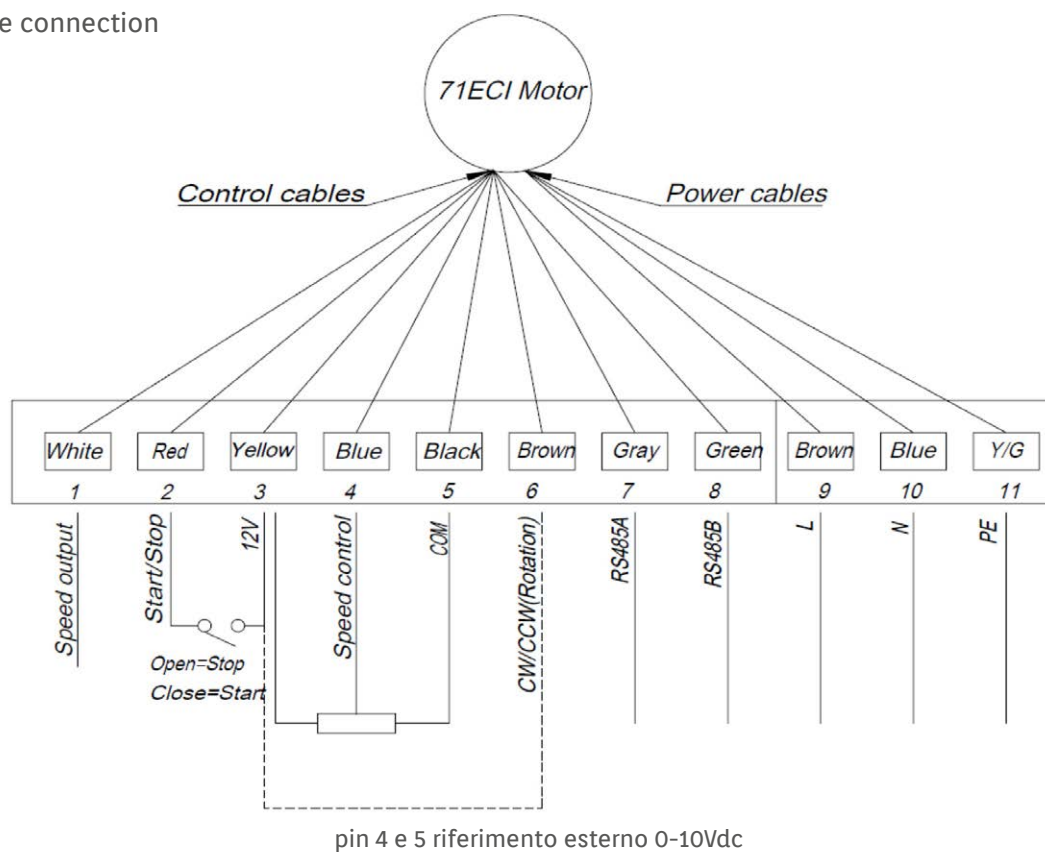
Item	Function	Wire color	Note
1	Speed output	White	3 puls per rev (*)
2	Start/Stop	Red	Start: Red+Yellow
3	DC 12V output	Yellow	
4	DC 0-10V input	Blue	Speed control
5	COM	Black	
6	CW/CCW	Brown	CW: Brown, CCW:Brown+Yellow
7	RS485 B	Green	T/R+
8	RS485 A	Gray	T/R-

(*) Duty cycle 50%, ampiezza 5V

+ Power cable

Item	Function	Wire color
9	L	Brown
10	N	Blue
11	PE	Yellow/Green

2: Customer side connection



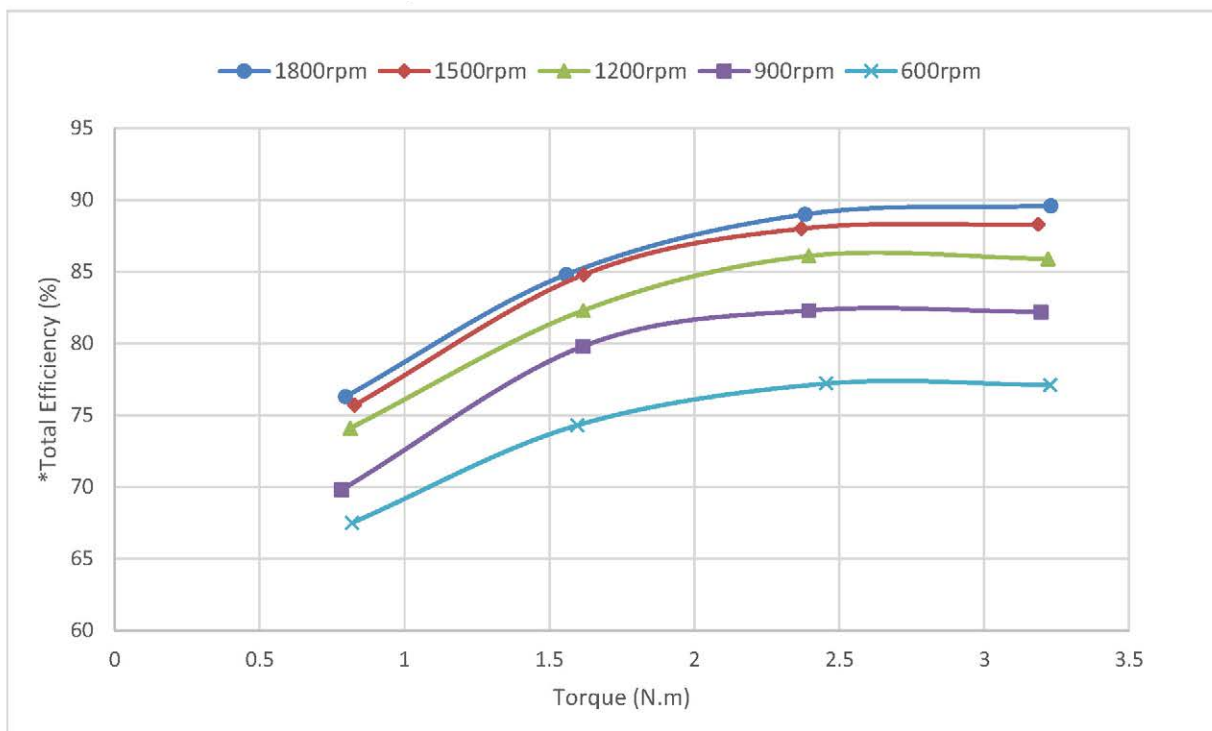
ECI Motor Data Sheet

Typical information:

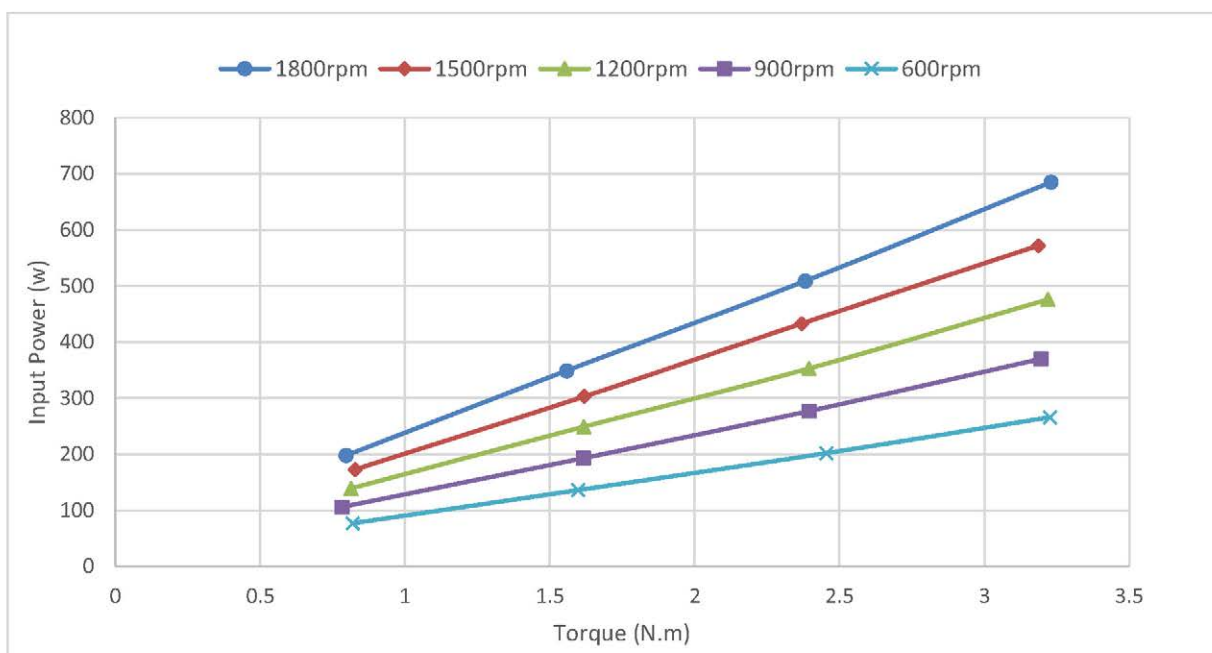
Motor model: T71ECI03X18 (Integrated drive model)
 Input Voltage: 200-240 V 50/60 Hz
 Rated torque: 3.2 N.m *No cooling condition
 Max speed: 1800 rpm
 Max. torque: 4 N.m
 Max. current: 4.1 A

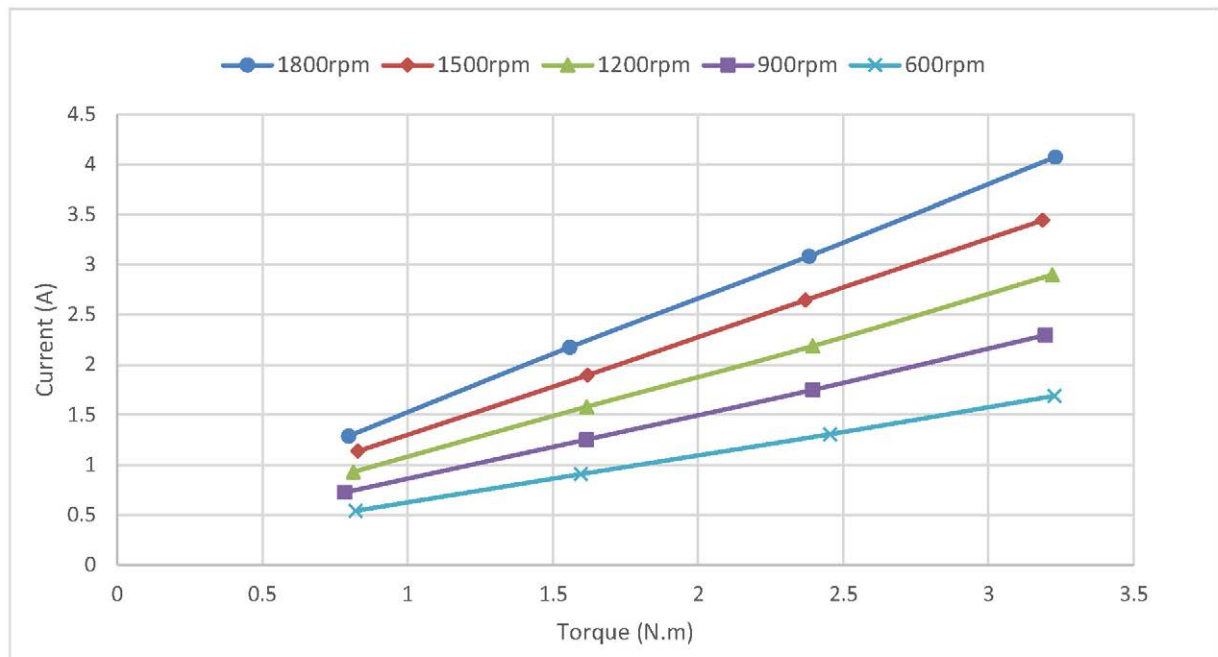
Performance data:

Maximum speed: 1800 rpm

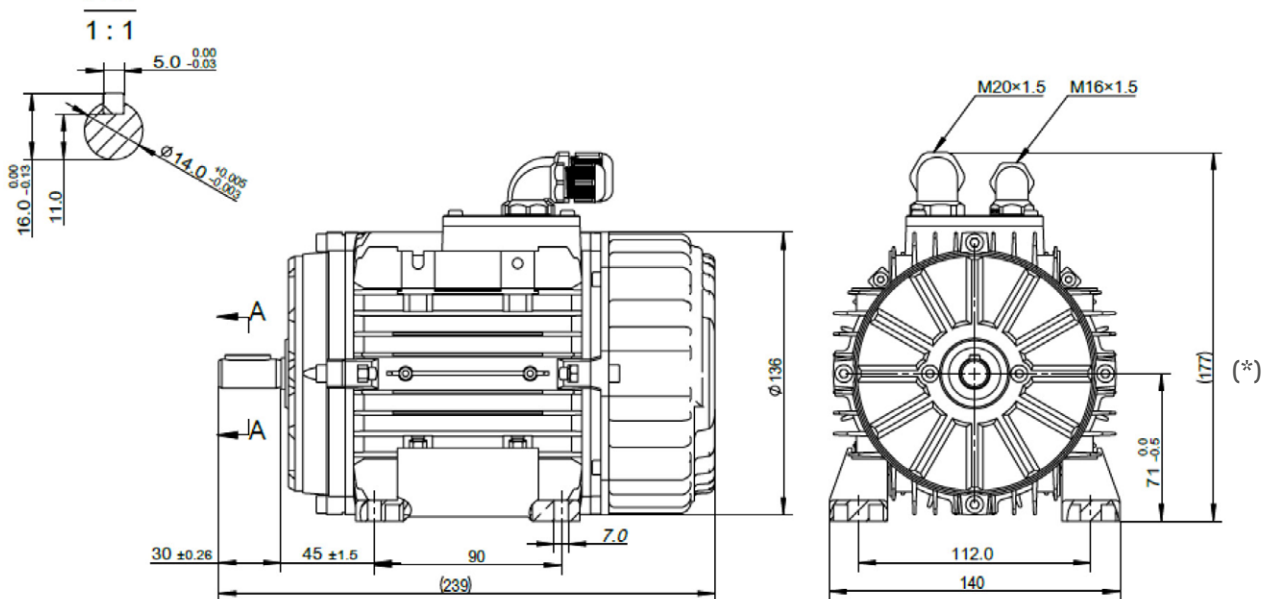


* Total efficiency include motor and drive.





Motor dimension and mounting method:



(*) con diversi pressa-cavi l'altezza può essere 169 anzichè 177

B3 mounting method - IC410

*The feet can be removed.

*The mounting method can be B5 and B14.

MOTOR CONTROL AND CONNECTION

1: Power and control cable connection

+ Control cable

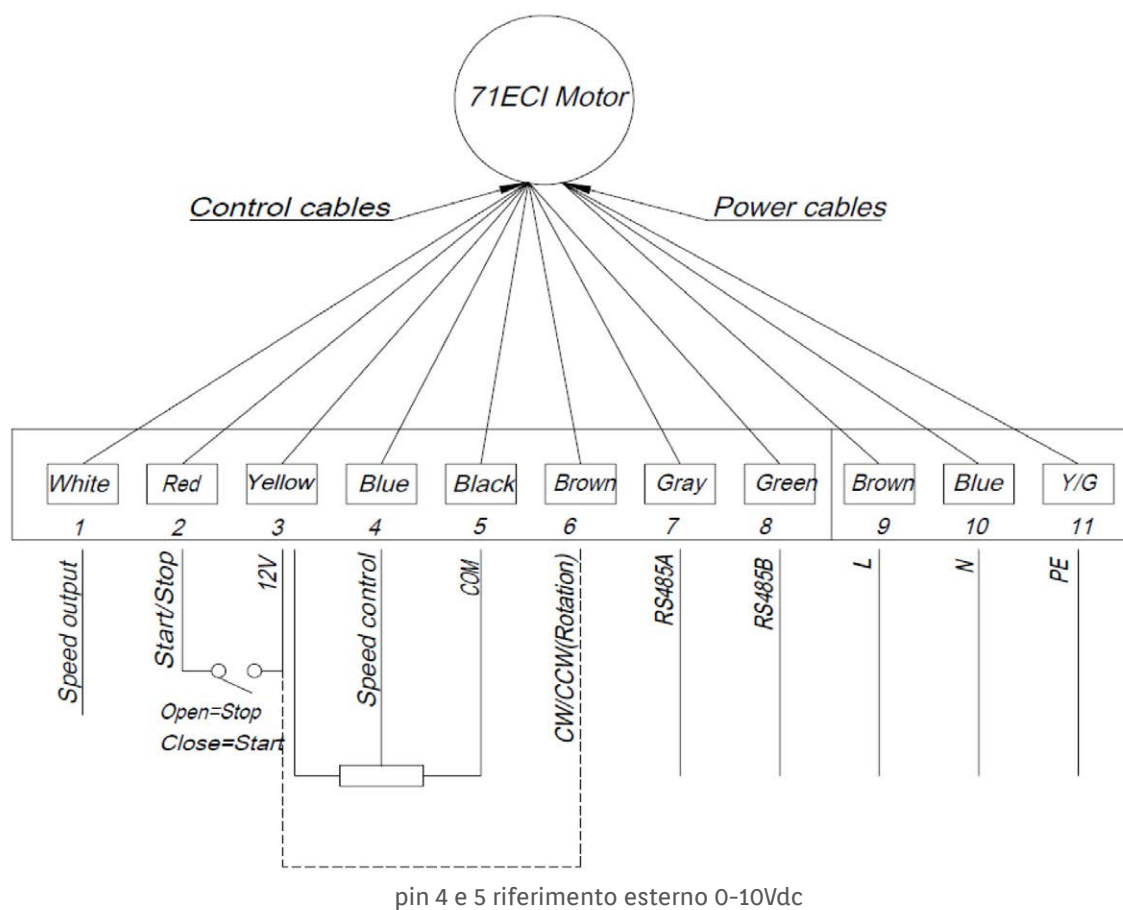
Item	Function	Wire color	Note
1	Speed output	White	3 puls per rev (*)
2	Start/Stop	Red	Start: Red+Yellow
3	DC 12V output	Yellow	
4	DC 0-10V input	Blue	Speed control
5	COM	Black	
6	CW/CCW	Brown	CW: Brown, CCW: Brown+Yellow
7	RS485 B	Green	T/R+
8	RS485 A	Gray	T/R-

(*) Duty cycle 50%, ampiezza 5V

+ Power cable

Item	Function	Wire color
9	L	Brown
10	N	Blue
11	PE	Yellow/Green

2: Customer side connection



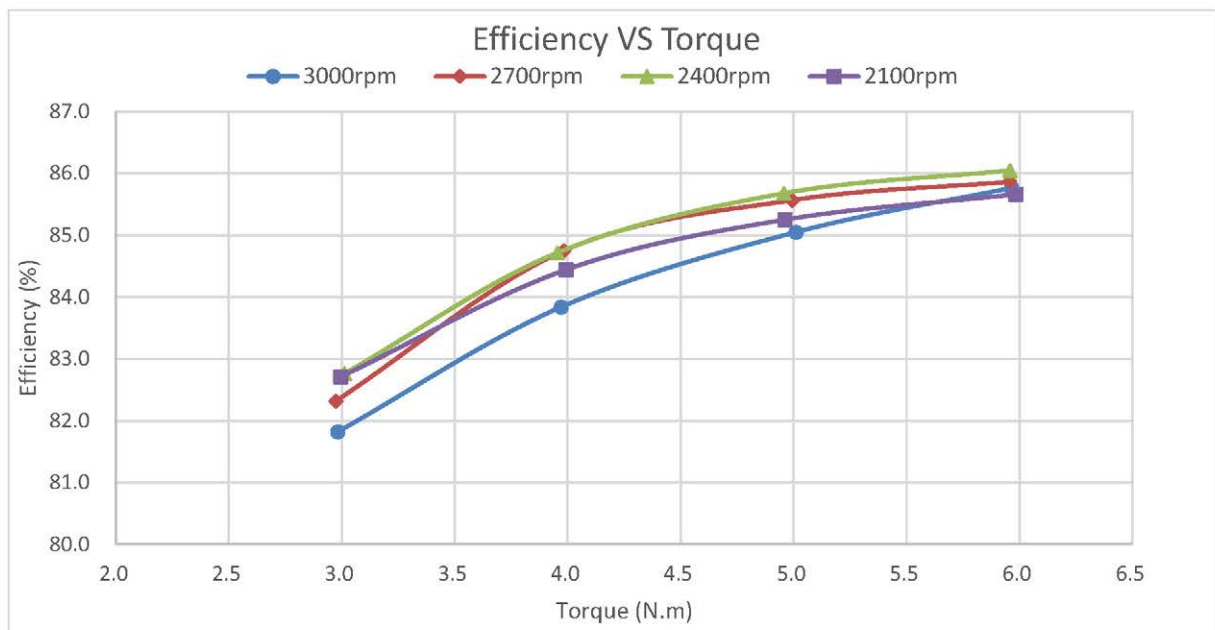
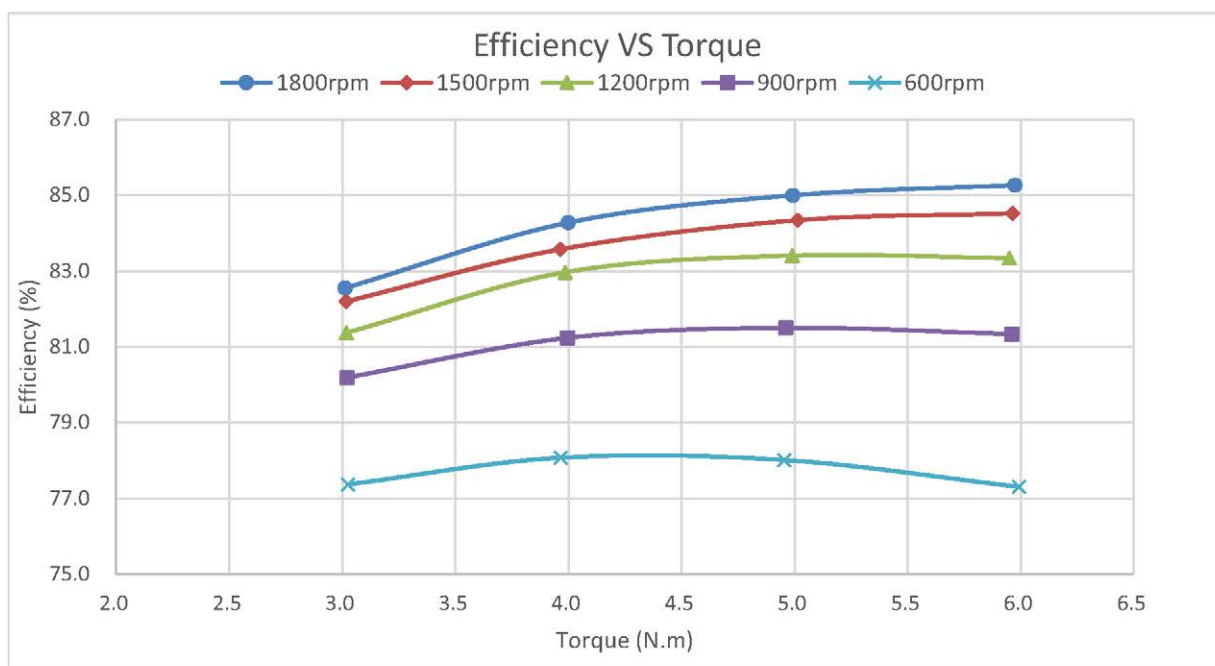
ECI Motor Data Sheet

Typical information:

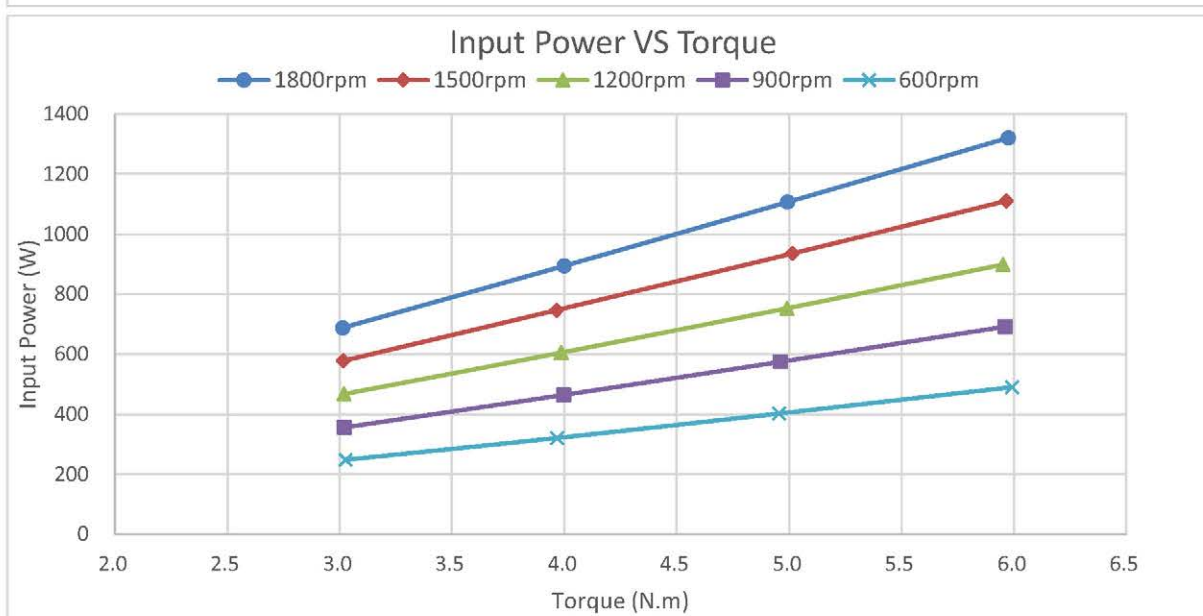
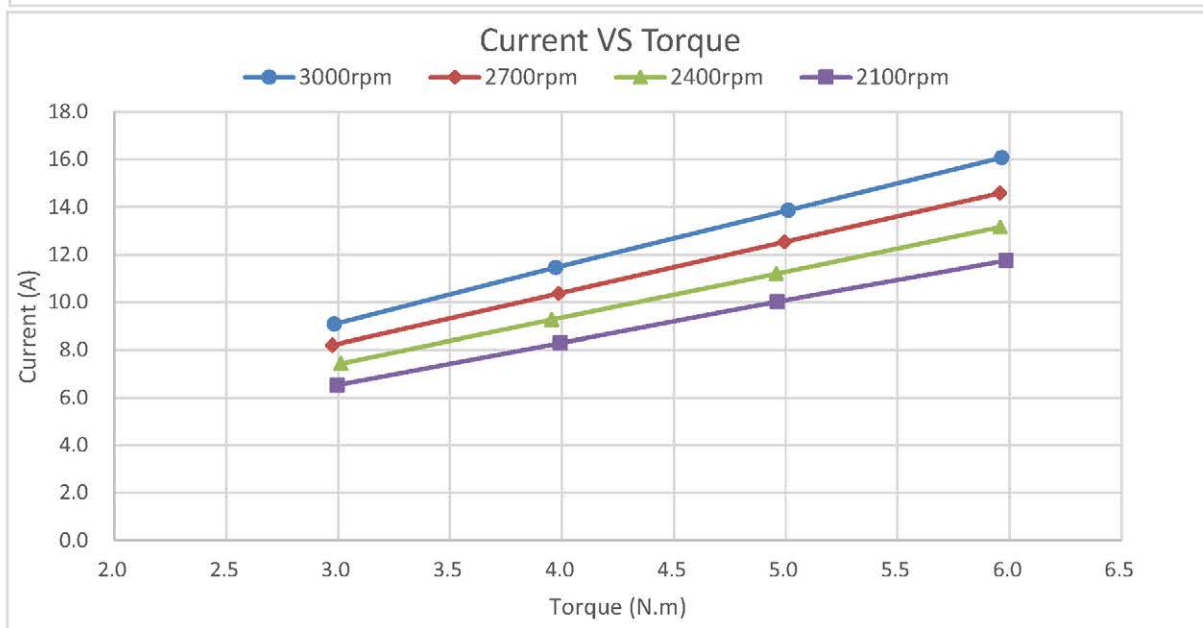
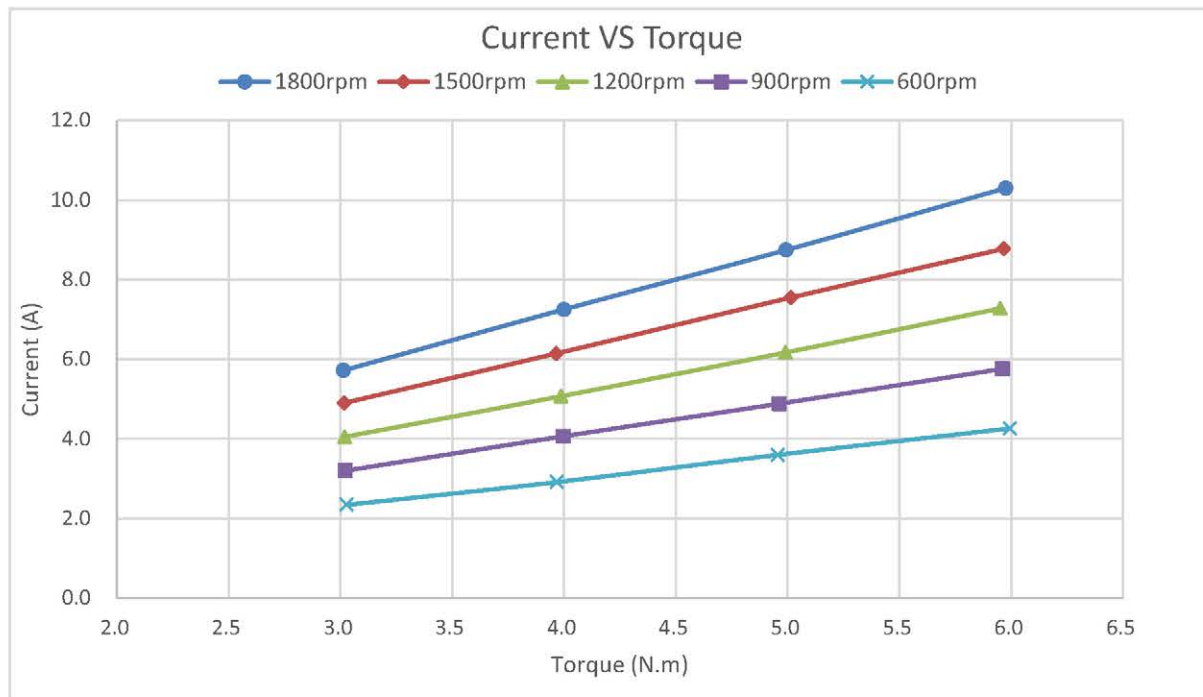
Motor model:	T90ECI05X30	(Integrated drive model)	
Input Voltage:	200-240	V	50/60 Hz
Rated torque:	4.8	N.m	*No cooling condition
Max speed:	3000	rpm	
Max. torque:	6	N.m	
Max. current:	13	A	

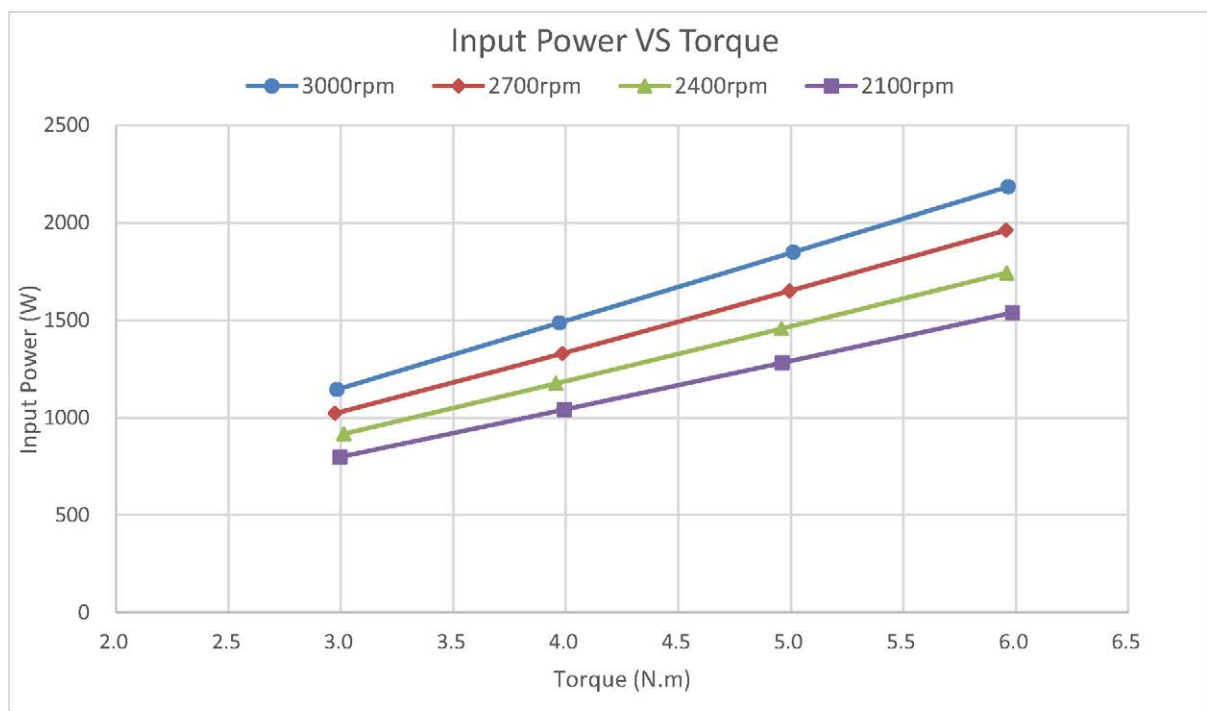
Performance data:

Maximum speed: 3000 rpm

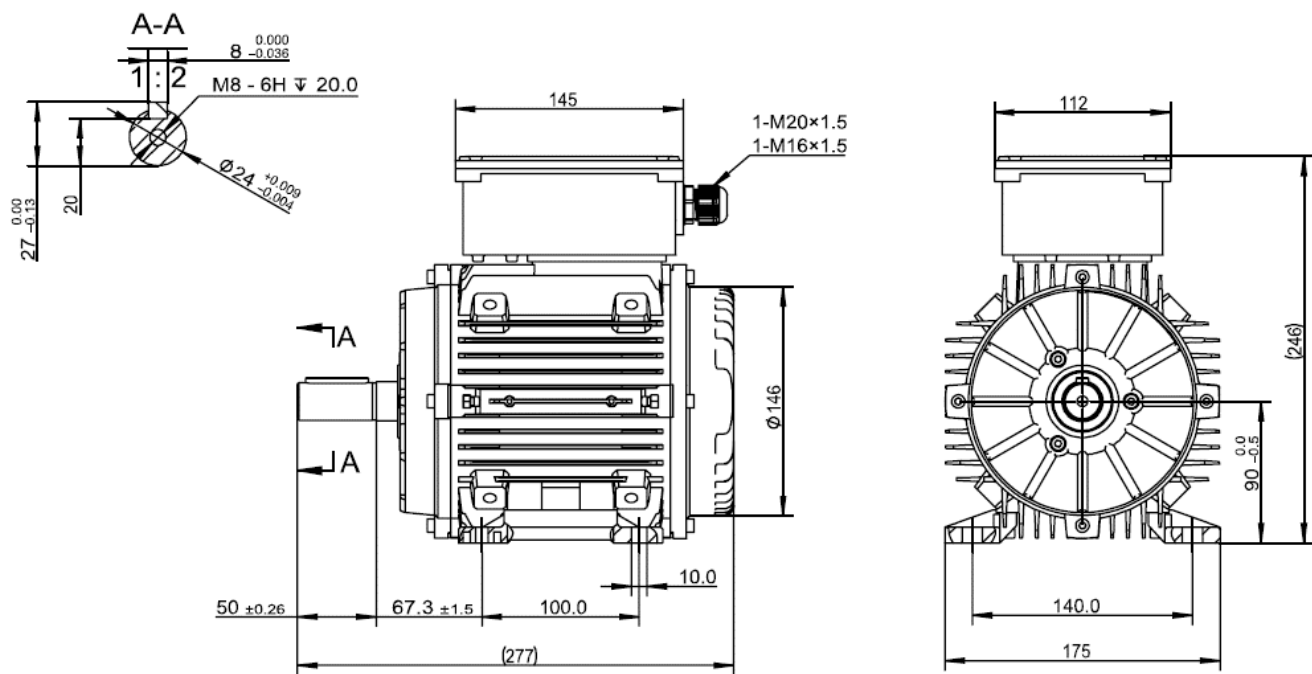


* Total Eff include the VSD loss.





Motor dimension and mounting method:



B3 mounting method - IC410

*The feet can be removed.

*The mounting method can be B5 and B14.

MOTOR CONTROL AND CONNECTION

1: Power and control cable connection

+ Control cable

Item	Function	Wire color	Note
1	Speed output	White	3 puls per revolution (*)
2	On/Off	Red	On/Off connect to 12VDC to work
3	DC 12V output	Yellow	DC 10V supplier
4	DC 12V output	Yellow	DC 10V supplier
5	DC 0-10V input	Blue	Speed control by 0-10V
6	GND	Black	GND
7	RS485 B	GREEN T/R+	When RS485 connect On/Off won't work
8	RS485 A	GRAY T/R-	

(*) Duty cycle 50%, ampiezza 5V

+ Power cable

Item	Function	Wire color	Note
9	L	Brown	Single phase power
10	N	Blue	
11	PE	Yellow/Green	

+ Dip switch

There are two dip switches in the terminal box PCB.

Please see right circle in the picture.

Switch #1 is the rotated direction switch.

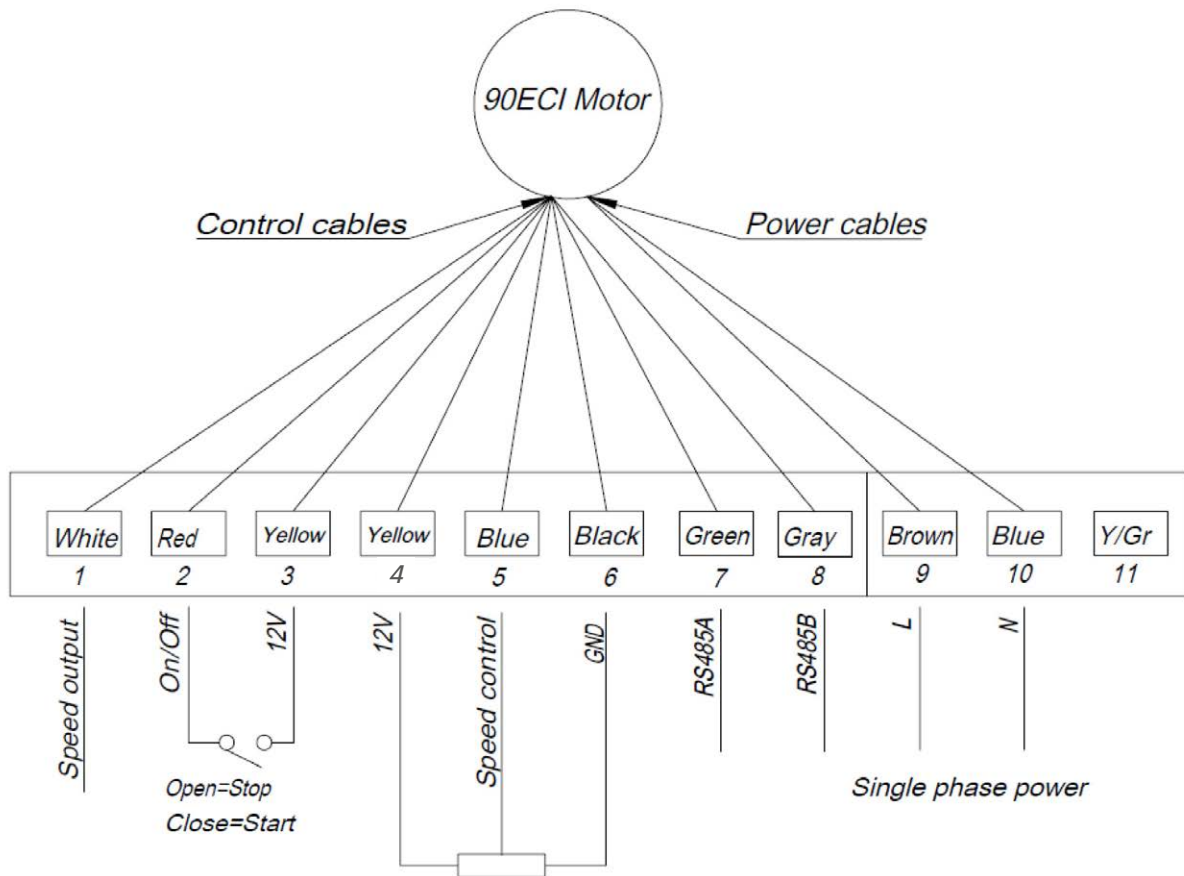
- On mean clock wise rotation.
- Off mean counter clock wise rotation.

Switch #2 mean local speed control.

- On mean speed control by outside control.
- Off mean speed control by local potentiometer in the PCB.



3: Customer side connection



pin 4 e 5 riferimento esterno 0-10Vdc

pin 11 = PE



POWER



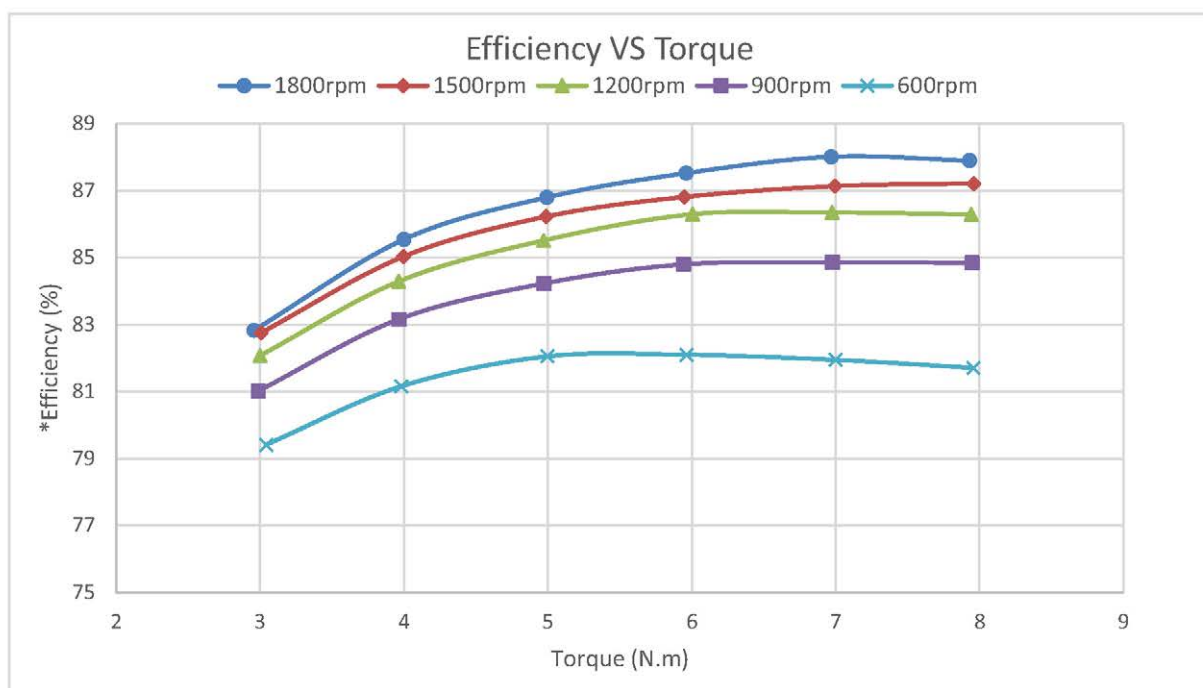
ECI Motor Data Sheet

Typical information:

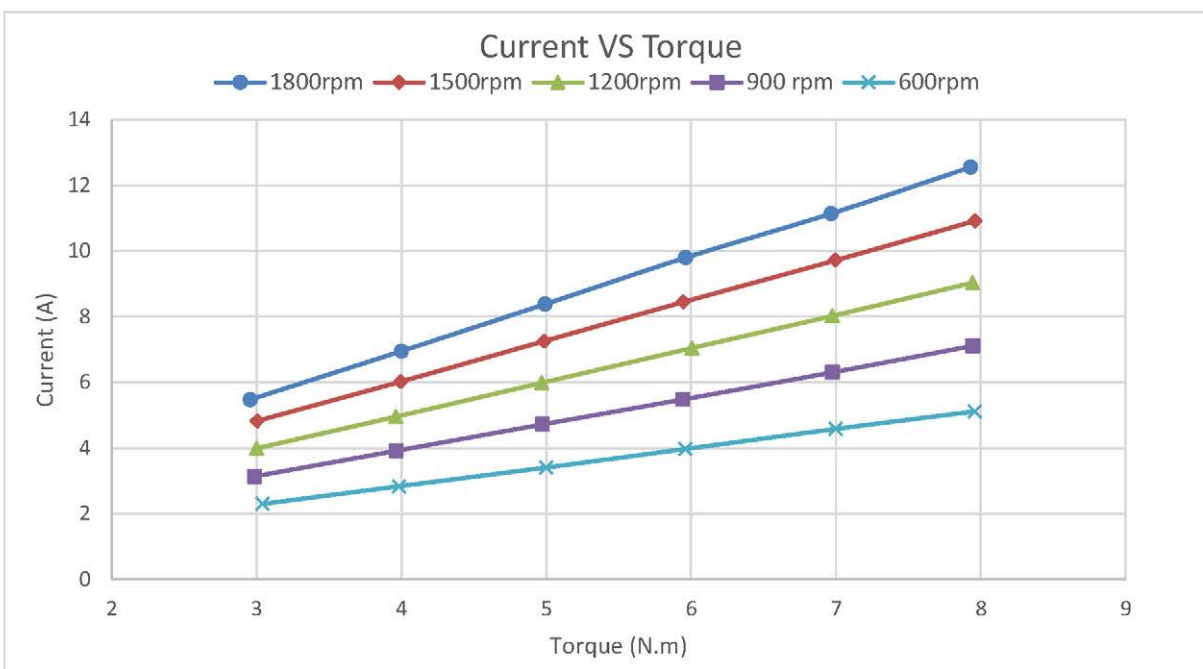
Motor model:	T90ECI07X18	(Integrated drive model)
Input Voltage:	200-240 V	50/60 Hz
Rated torque:	7 N.m	*No cooling condition
Max speed:	1800 rpm	
Max. torque:	8 N.m	
Max. current:	13 A	

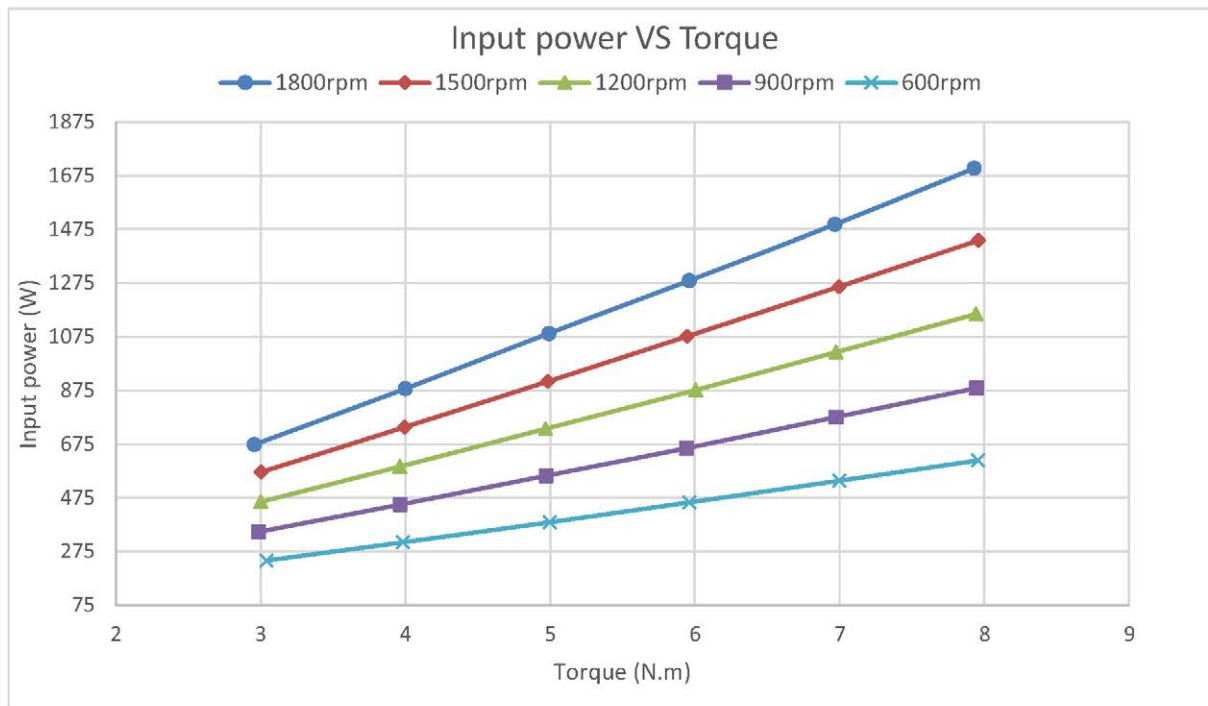
Performance data:

Maximum speed: 1800 rpm Tested data 20180907

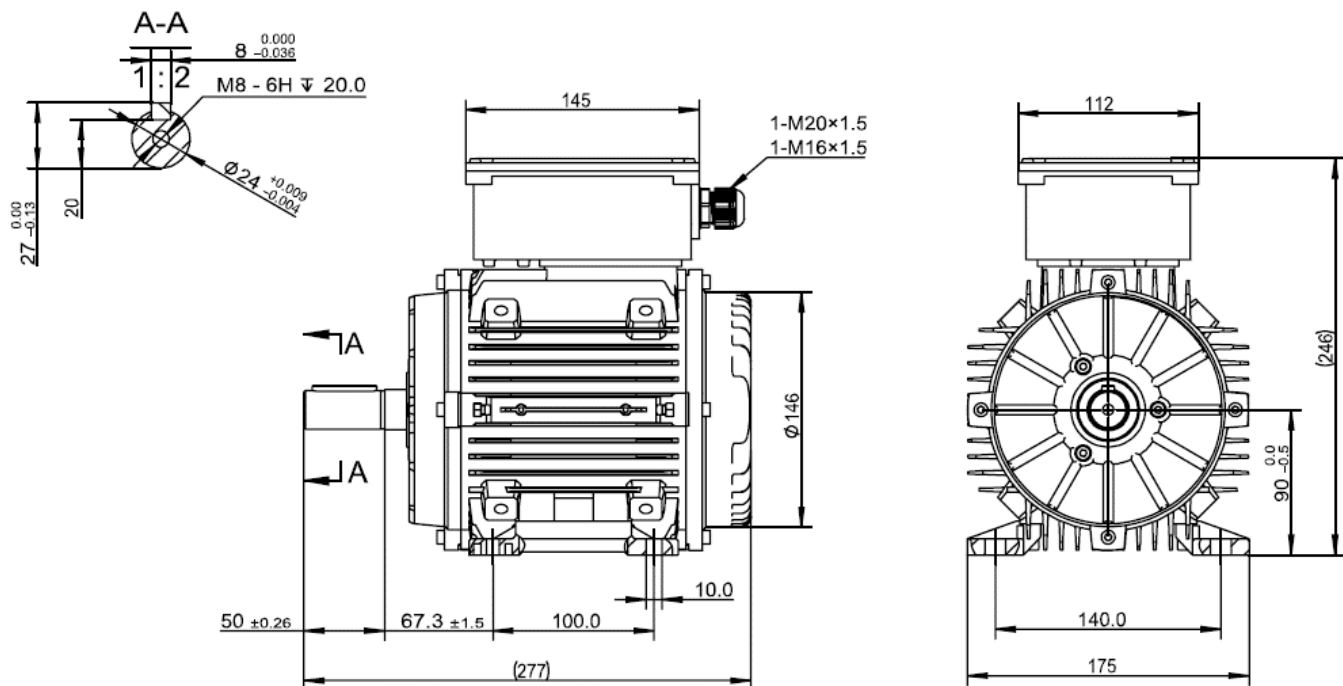


* Total Eff include the VSD loss.





Motor dimension and mounting method:



B3 mounting method - IC410

*The feet can be removed.

*The mounting method can be B5 and B14.

MOTOR CONTROL AND CONNECTION

+ Control cable

Item	Function	Wire color	Note
1	Speed output	White	3 puls per revolution (*)
2	On/Off	Red	On/Off connect to 12VDC to work
3	DC 12V output	Yellow	DC 10V supplier
4	DC 12V output	Yellow	DC 10V supplier
5	DC 0-10V input	Blue	Speed control by 0-10V
6	GND	Black	GND
7	RS485 B	Green T/R+	When RS485 connect On/Off will not work
8	RS485 A	Gray T/R-	

(*) Duty cycle 50%, ampiezza 5V

+ Power cable

Item	Function	Wire color	Note
9	L	Brown	Single phase power
10	N	Blue	
11	PE	Yellow/Green	

+ Dip switch

There are two dip switches in the terminal box PCB.
Please see right circle in the picture.

Switch #1 is the rotated direction switch.

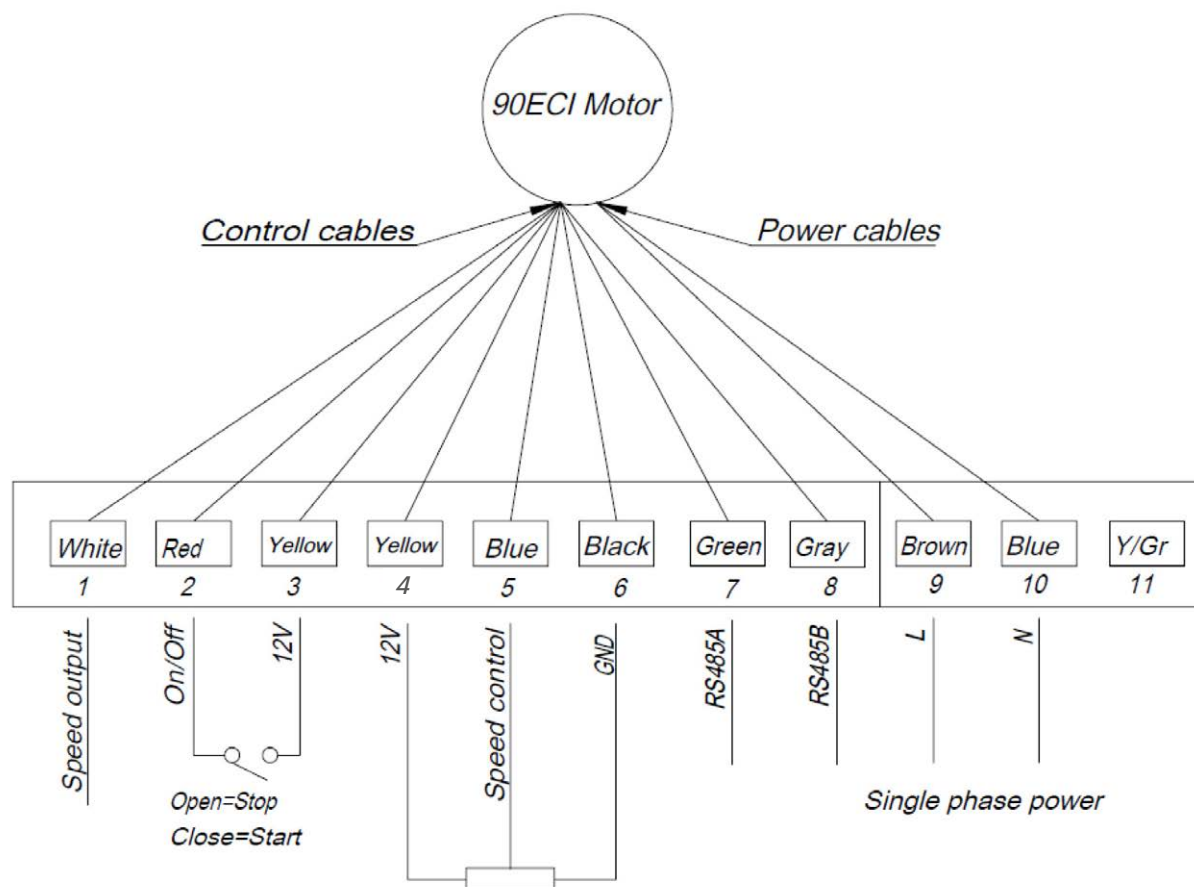
- On mean clock wise rotation.
- Off mean counter clock wise rotation.

Switch #2 mean local speed control.

- On mean speed control by outside control.
- Off mean speed control by local potentiometer in the PCB.



3: Customer side connection



pin 4 e 5 riferimento esterno 0-10Vdc

pin 11 = PE

08. RISPARMIO ENERGETICO

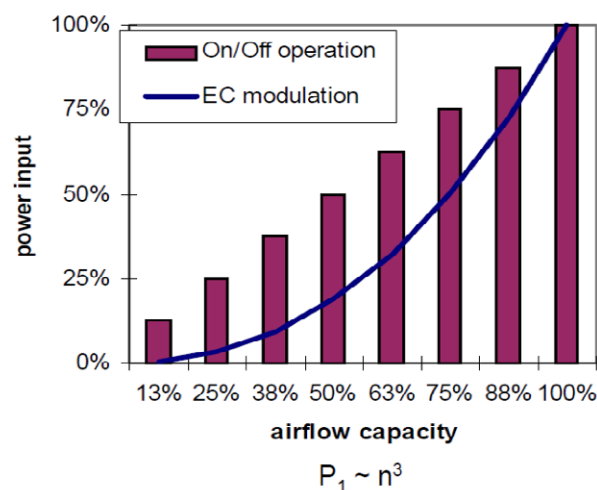
I motori sincroni a magneti permanenti EC o ECI, grazie all'alto rendimento e alla fine modulazione della velocità, rispetto ai motori asincroni tradizionali, garantiscono, a parità di prestazioni, importanti riduzioni di potenza assorbita e quindi importanti riduzioni di energia consumata.

Come già precisato, i principali campi di applicazione dei motori EC ed ECI sono:

- Ventilatori
- Condizionamento
- Pompe
- Compressori d'aria

I motori EC ed ECI sono disegnati per applicazioni in cui è necessario variare la velocità, ad esempio per impianti di aria condizionata o ventilatori dove alle diverse temperature occorre cambiare la velocità per raggiungere il volume d'aria necessario. Nei compressori o nelle pompe dove è necessario regolare la portata alle diverse velocità. I motori EC ed ECI garantiscono alti livelli di efficienza alle diverse velocità, in generale il livello di energia risparmiata rispetto ad un motore asincrono tradizionale a parità di prestazioni è di circa il 30%.

Ad esempio in un'applicazione di un ventilatore, se il motore sincrono a magneti permanenti EC o ECI ha un'efficienza migliore del 8% rispetto al motore asincrono trifase tradizionale, considerando che il motore AC tradizionale ha un controllo della portata del ventilatore tipo On/Off (a gradini) mentre un motore sincrono a magneti permanenti tipo EC o ECI ha un controllo puntuale della velocità e quindi della portata d'aria del ventilatore il risparmio di energia del sistema è di circa il 30%.



Esempio:

-un ventilatore che lavora tre step di velocità:

- 30% tempo lavoro al 100% della velocità con il 100% della portata d'aria
- 40% tempo lavoro al 75% della velocità con il 75% della portata d'aria
- 30% tempo lavoro al 50% della velocità con il 50% della portata d'aria

Air flow	Induction Motor		EC Motor	
	Speed	Power	Speed	Power
100% - 30% time	100%	100%*30%	100%	100%^3*30%
75% - 40% time	75% run 40%time	75%*40%	75%	75%^3*40%
50% - 30% time	50% run 30% time	50%*30%	50%	50%^3*30%
Total		75%		50%
Power saving		75%-50% = 25%		



POWER



09. NETWORK

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Barcellona
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web: www.elektrim-techtop.com

MYANMAR

Amos Myanmar Services Co. Ltd
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Yangon, Myanmar
web: www.elektrim-techtop.com

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Selangor Darul Ehsan, Malaysia
web: www.elektrim-techtop.com

Millivest Sdn Bhd (East Malaysia)
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Taman Grandview Ppm 111
Sabah 90000 Sandakan, Malaysia
web: www.elektrim-techtop.com

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PT Interjaya Surya Megah
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PT Jayatech Palmino
Kawasan Industri Medan 2 (Kim 2)
Jalan Pulau Solor No. 18
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PT Biotani Indonesia
Jalan Jenderal Sudirman Bukit Indah Sukajadi
Ruko Dermaga Blok RE-09
Batam, Indonesia
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Pudong, Shanghai
web: www.techtop.com

HONG KONG

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web: www.techtop.com

MIDDLE EAST

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Dubai, U.A.E
web: www.halotop.cn

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Technical, mechanical dimensions and any other data reported in this catalog are not binding, Simotop Group Spa reserves the right to modify all the data reported in this catalog at any time and without notice.



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