

TiM Integrated Servo Motor



Integrated Motor

Feature	Unit	IM1-60S	IM1-60M	IM1-60S	IM1-60M	IM1-80S	IM1-80M
Input Voltage	VDC	24		48			
Flange Size	mm	60	60	60	60	80	80
Power Rating	W	200	400	200	400	480	800
Rated Current	Arms	11	22	6.50	12	14.60	22
Peak Current	Arms	32.40	66	19.50	36	46	66
Rated Torque	Nm	0.64	1.27	0.64	1.27	1.53	2.55
Peak Torque	Nm	1.92	3.81	1.92	3.81	4.60	8.00
Rated Speed	rpm	3000					
No Load Speed	rpm	4200	4200	5400	5000	5100	4800
Brake Voltage	VDC	24 ±10%					
Brake power	W	7.4				13,5	
Holding torque	Nm	1.3				4	
Feedback		Absolute single turn, Absolute multi turn					
Communication		EtherCAT, CANopen, RS232					
IP Rating		IP54					
Digital Inputs (x3)		Home, limit CW, limit CCW, spare (multifunction)					
Digital Outputs (x1)		Multifunction					

Environmental		Ambient: -25 to 40°C (0 – 70°C storage) Operation at reduced power: 45 – 70°C Humidity: 10-90% Altitude: <2,000 m (per IEC 61800-5-1)
Connectors		Power – M12 IO/Comm/STO – M8

Motor inertia

	TIM motor inertia kg.mm ²	
TIM	w/o Brake	with Brake
200 W	11.9	14.5
400 W	21.8	24.3
480 W	61.5	64.7
800 W	95.6	98.8

Shaft loading forces

	Axial force F_a [Nm]	Radial force F_r [Nm]
200 W	98	245
400 W	98	245
480 W	147	392
800 W	147	392

Control

Feature	Specification	
Operation Modes	Selectable	Profile position Profile velocity Homing Cyclic synchronous velocity
Display		LEDs
Software Tools	User Interface	GUI, Windows-based
	Functions	Connection settings, Drive info, Power info, I/O configuration, Motion settings and tuning, Fault history/display

Communication

Feature	Specification
CANopen	CANopen – CiA 301 application layer and CiA 402 device profile for drives and motion control. Baud rate 10 kbps – 1 Mbps CAN ID 1 – 127 (Default 127) Heartbeat producer, SDO, PDO (dynamic mapping)
EtherCAT	CANopen – CiA 301 application layer and CiA 402 device profile for drives and motion control. Communication cycle time: up to 250 µs

Protection

Feature	Specification
Protective Functions	I ² T limit, Over-voltage, Over-current, Under-voltage, Drive over-temperature, Over-speed, Velocity error, Position error, Power stage fault, PLL lock lost, Position command error

Functional Safety

Feature	Specification
STO	STO - Safe Torque Off according to EN 61800-5-2, SIL 3/PL e, CAT 3

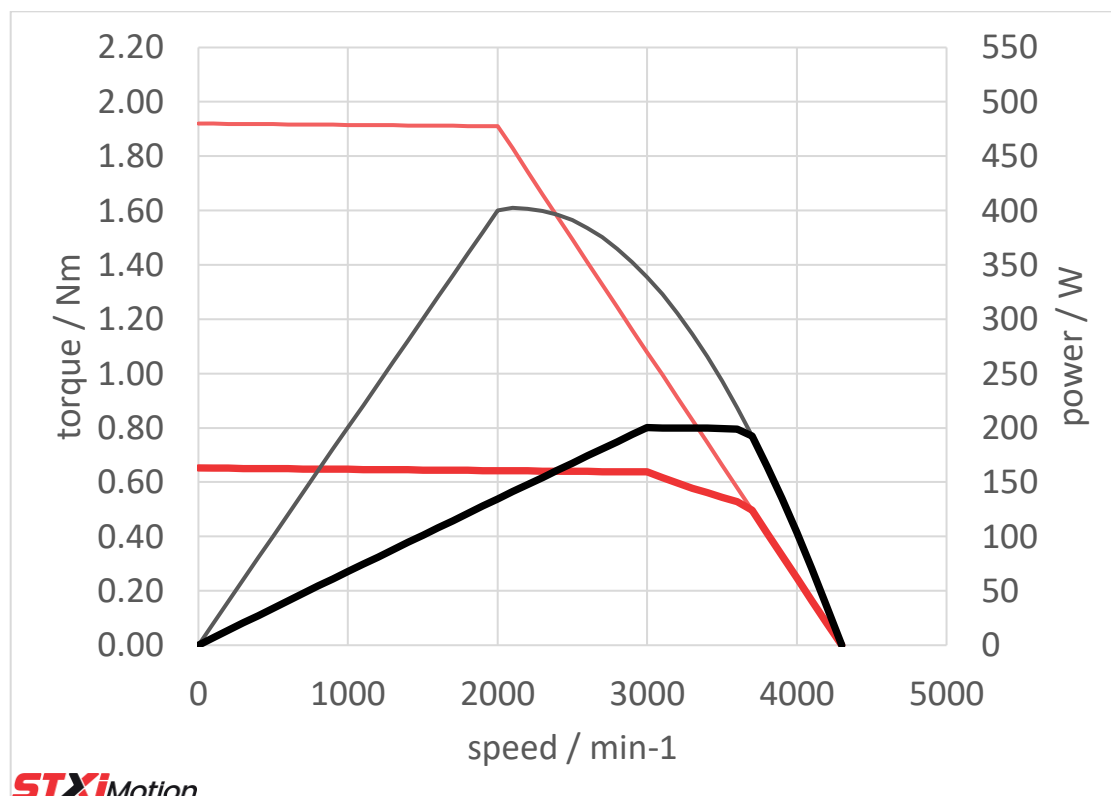
Inputs/Outputs

Feature	Specification	
3x Digital Input	Signal	Configurable opto-isolated, sink/source, Type 1
	Functions	Multi-functional - Home switch - Positive limit switch - Negative limit switch - User (User (user can read the input, no functionality is triggered)
	Voltage High Level Input	30 V
	Min. High Level Input	11 V
	Max. Low Level Input	5 V
	Input Resistance	3.6 k Ω
	Max. Input Frequency	5 kHz
	Propagation Delay Time	200 μ s
1x Digital Output	Signal	Configurable open collector, opto-isolated sink/source
	Functions	Multi-functional - None - User (user can control the output, no functionality is connected) - Drive is disabled - Drive is enabled
	Voltage	30 V
	Max. Current	100 mA
	Min. Load Resistance	300 Ω
	Output Voltage	2 V
	Min. Propagation Delay Time	1 ms (may be longer if load current is lower)

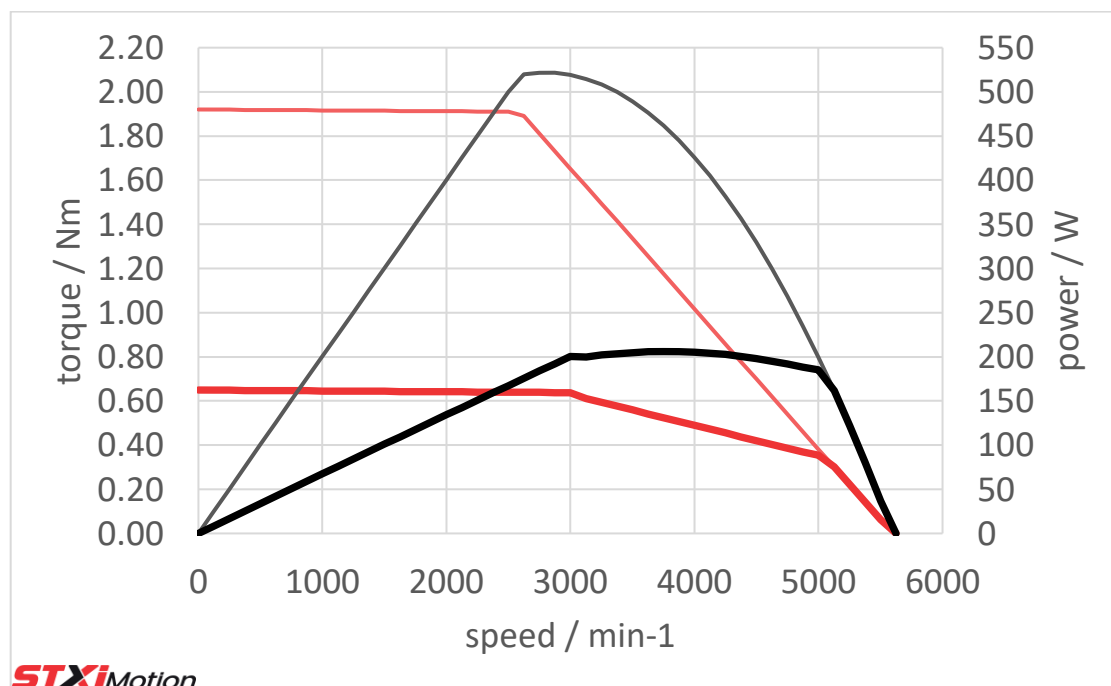
Speed/Torque Curves

IM1-60S

24 VDC, 200 W

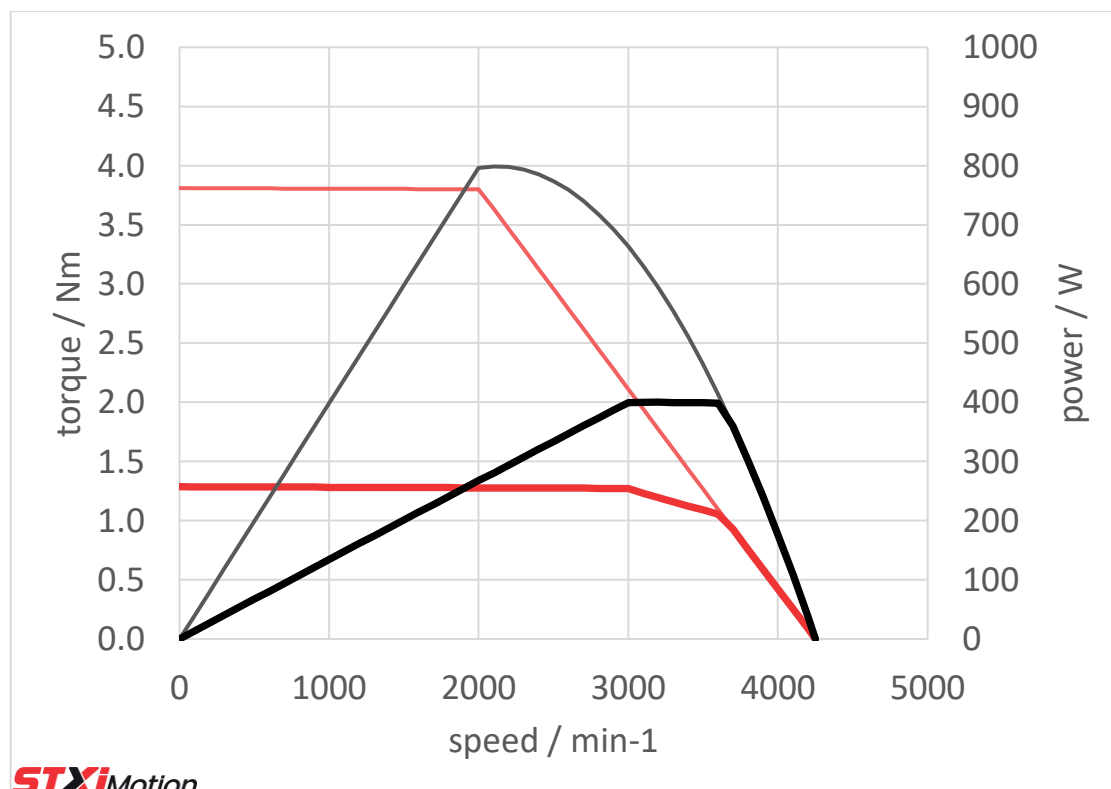


48 VDC, 200 W

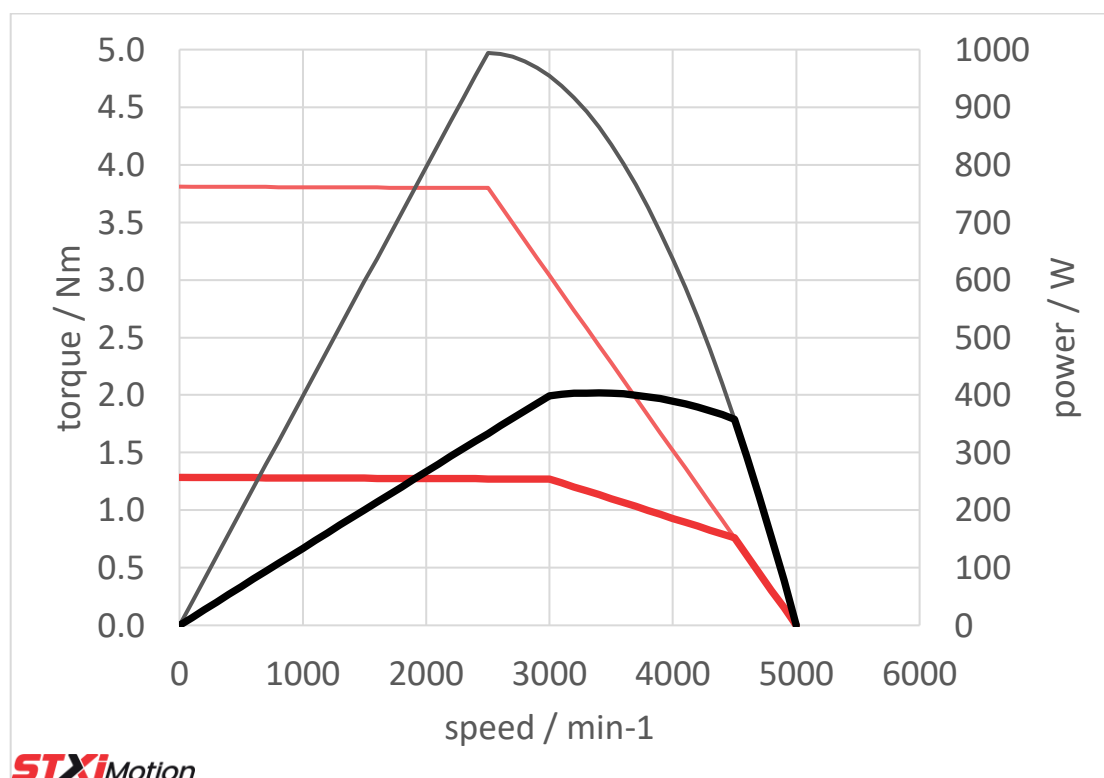


IM1-60M

24 VDC, 400 W

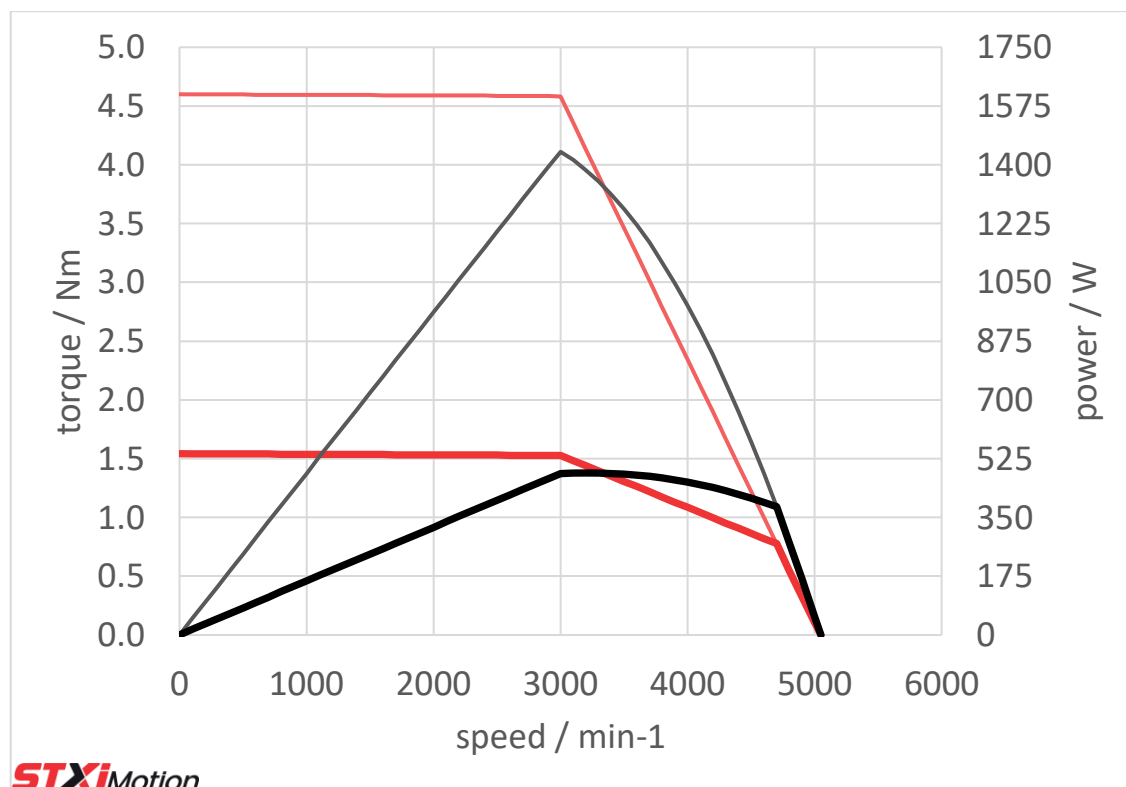


48 VDC, 400 W



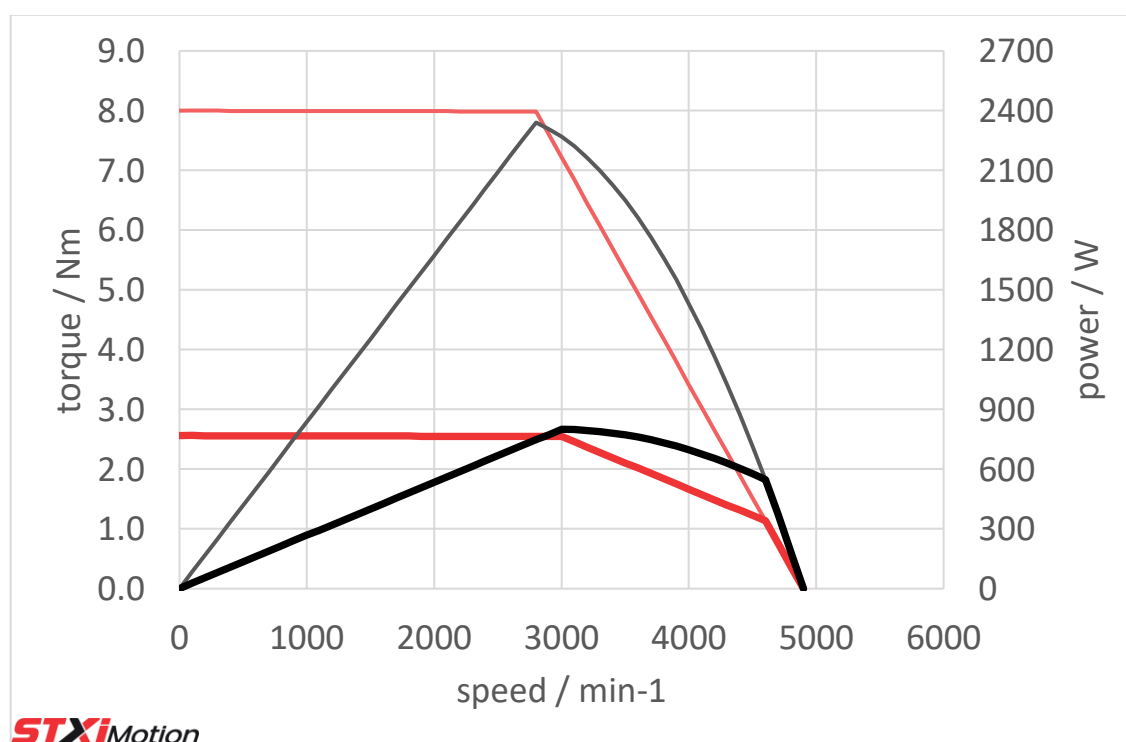
IM1-80S

48 VDC, 480 W



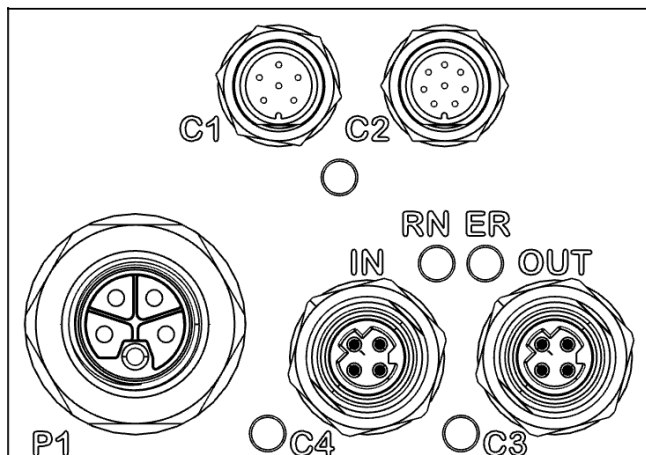
IM1-80M

48VDC, 800 W

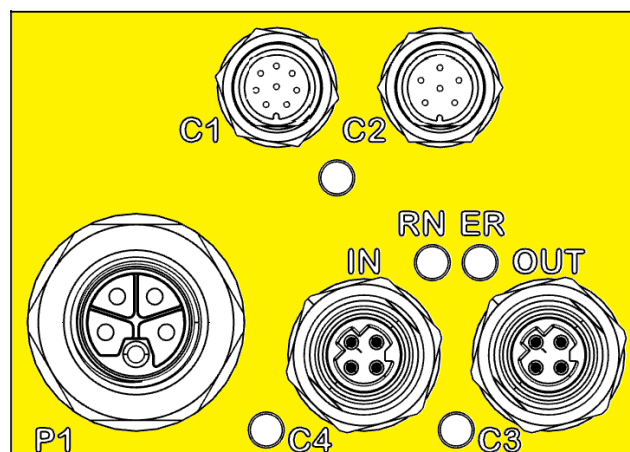


Electrical Interfaces

TIM standard (STO only)



TIM Safety version



Note:

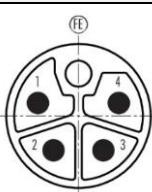
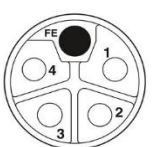
The pin assignment of connectors C1 and C2 for the respective TIM version is different.

C1 – 6 Pin	C1 – 8 Pin
C2 – 8 Pin	C2 – 6 Pin

LED's

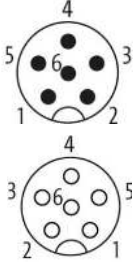
One bi-color LED to display the drive status and four LEDs to display the field bus status

P1 – Power

Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M12 Male, 5-pin, L-coded	TE Connectivity	T4140L12051-000
	<u>Mating Cable</u> – Power cable. 5-position, PUR, Length: 1.5 m Optional: AWG 14 or AWG 16	TE Connectivity	TE: T4151399L25-002 STXi: CBL-M1205PW-01

Pin #	Signal Description
1	Vpower Power In+
2	Vpower Power In+
3	Vpower Power Ret -
4	Vpower Power Ret -
5	PE

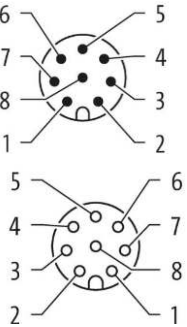
C1 – Digital I/Os

Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M8 Male, 6-pin A-coded	Finecables	MB08MBAFF06ST
	Mating Cable – M8 Female, 1 m Molded Cable, Straight, Shielded A-coded	Finecables	FC: MA08FSAF06ST10CB14 STXi: CBL-M0806ACO-01

C1 – TIM standard

Pin #	Signal Description
1	DIN 1
2	DIN 2
3	DIN 3
4	Out Com
5	DOUT 1
6	In Com

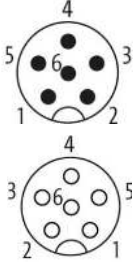
C2 - STO, Brake, RS232

Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M8 male, 8-pin A-coded	Finecables	MB08MBAFF08ST
	Mating Cable – M8 female, 1 m Molded Cable, Straight, Shielded A-coded	Finecables	FC: MA08FSAF08ST10CB14 STXi: CBL-M0808AIO-01

C2 – TIM standard

Pin #	Signal Description
1	STO_1
2	RS232 Rx
3	RS232 Tx
4	V_Brake
5	GND_Brake
6	STO GND
7	STO_2
8	RS232 GND

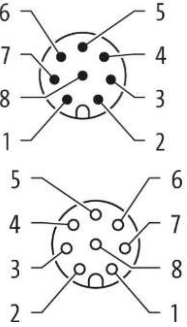
C2 – Safe Digital I/Os

Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M8 Male, 6-pin A-coded	Finecables	MB08MBAFF06ST
	Mating Cable – M8 Female, 1 m Molded Cable, Straight, Shielded A-coded	Finecables	FC: MA08FSAF06ST10CB14 STXi: CBL-M0806ACO-01

C2-TIM Safety version

Pin #	Signal Description
1	Safe IN 1
2	Safe IN 2
3	SD 24V
4	SD_CLK1
5	SD_CLK2
6	SD_GND

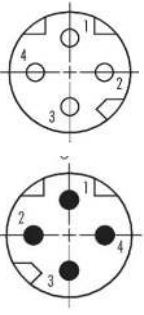
C1 - Digital IN, Brake, RS232

Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M8 male, 8-pin A-coded	Finecables	MB08MBAFF08ST
	Mating Cable – M8 female, 1 m Molded Cable, Straight, Shielded A-coded	Finecables	FC: MA08FSAF08ST10CB14 STXi: CBL-M0808AIO-01

C1- TIM Safety version

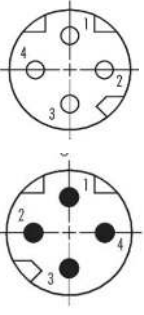
Pin #	Signal Description
1	DIN 1
2	RS232 Rx
3	RS232 Tx
4	V_Brake
5	GND_Brake
6	DIN_COM
7	DIN 2
8	RS232_GND

C3 – Field bus OUT – EtherCAT, CANopen

Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M8 Female, 4-pin D-coded	Finecables	A838-CP-T0316
	Mating Cable – M8 Male, 1 m Molded Cable, Straight, Shielded d-coded	Finecables	FC: MA08MSDF04STx2-10CB25 (M8 to M8) STXi: CBL-M8M8ECD-001 (M8 to M8) FC: MA08MSDF04ST10CB25-RJ45 (M8 to RJ45) STXi: CBL-M8RJ45D-001 (M8 to RJ45)

Pin #	EtherCAT	CANopen
1	ECAT_OUT_Tx+	CAN_H
2	ECAT_OUT_Rx+	CAN_GND
3	ECAT_OUT_Tx-	CAN_L
4	ECAT_OUT_Rx-	CAN_GND

C4 - Field bus IN – EtherCAT, CANopen

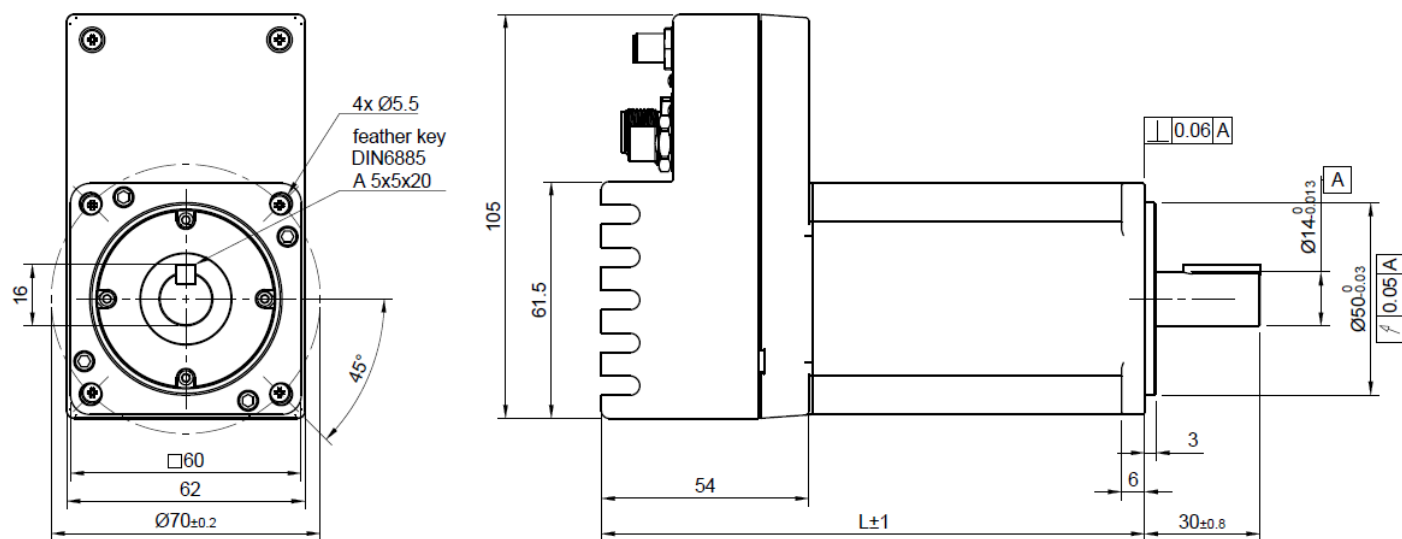
Interface	Item	Manufacturer	Manufacturer Part Number
	Connector – M8 Female, 4-pin D-coded	Finecables	A838-CP-T0316
	Mating Cable – M8 Male, 1 m Molded Cable, Straight, Shielded d-coded	Finecables	FC: MA08MSDF04STx2-10CB25 (M8 to M8) STXi: CBL-M8M8ECD-001 (M8 to M8) FC: MA08MSDF04ST10CB25-RJ45 (M8 to RJ45) STXi: CBL-M8RJ45D-001 (M8 to RJ45)

Pin #	EtherCAT	CANopen
1	ECAT_OUT_Tx+	CAN_H
2	ECAT_OUT_Rx+	CAN_GND
3	ECAT_OUT_Tx-	CAN_L
4	ECAT_OUT_Rx-	CAN_GND

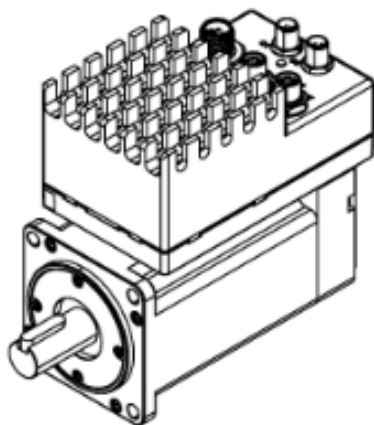
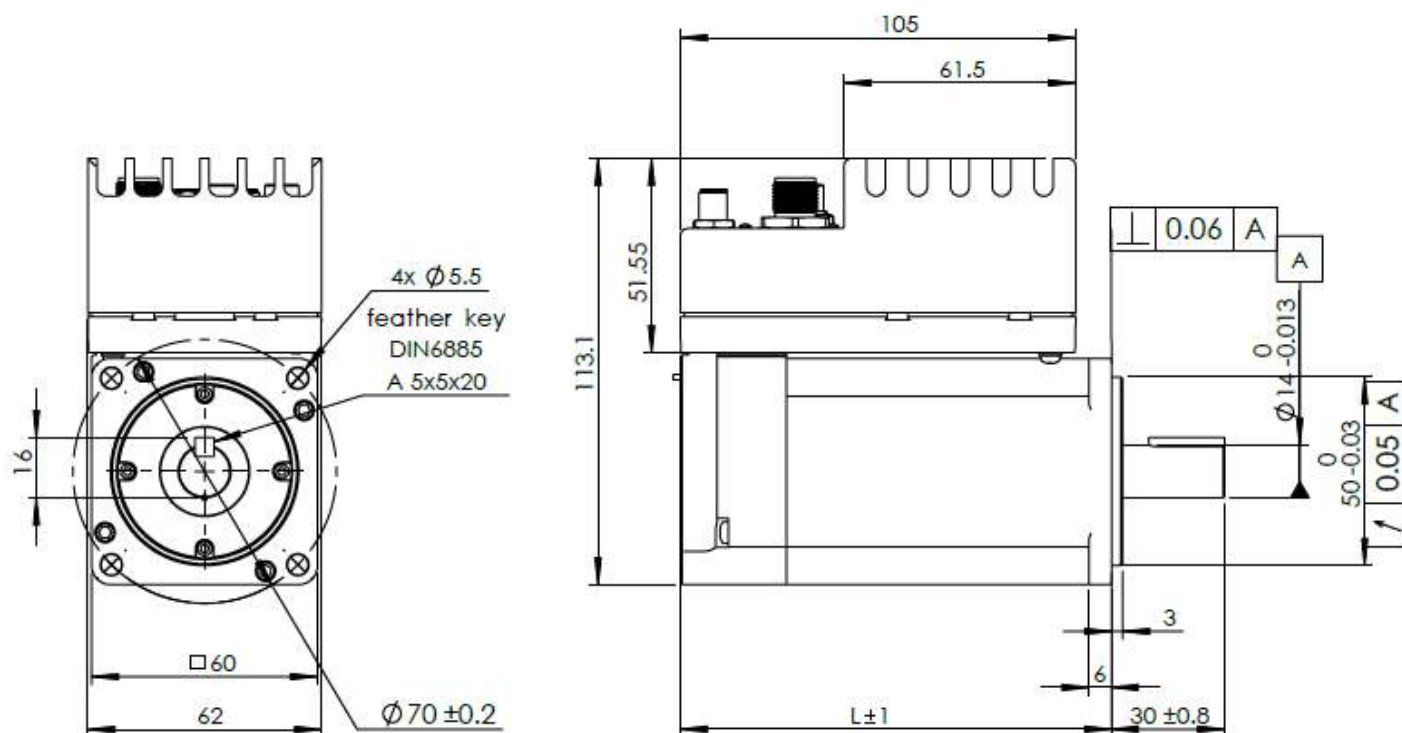
Dimensions

IM1-60S / -60M

Part Number	Power (W)	L = Length (mm) with Absolute Single turn Encoder	L = Length (mm) Absolute Multiturn Encoder
IM1-60SX3X5XXYY000	200	104.3	124.3
IM1-60SX3X5XXYYB00	200 with brake	121.3	141.3
IM1-60MX3X5XXYY000	400	124.3	144.3
IM1-60MX3X5XXYYB00	400 with brake	141.3	161.3

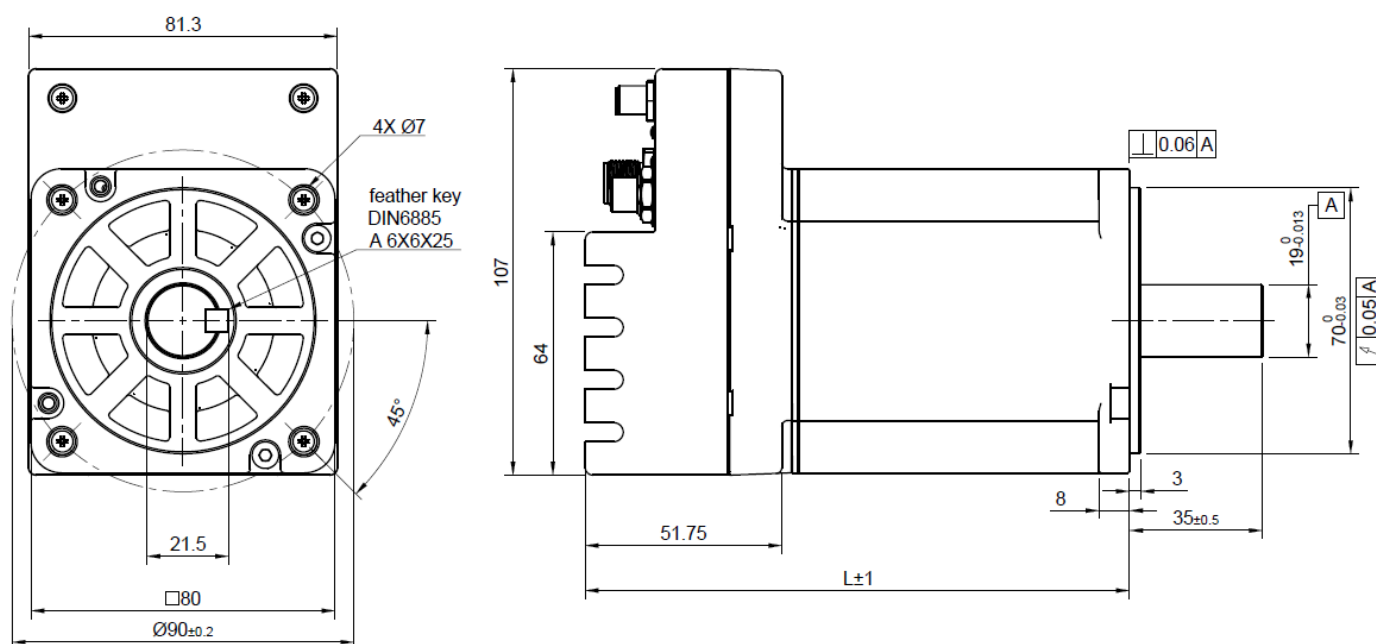


Part Number	Power (W)	L = Length (mm) all Feedbacks
IM1-60MX3X6XXYYB00	400 with brake	114.5
IM1-60MX3X6XXYYB0R	400 with reinforced brake	123.5

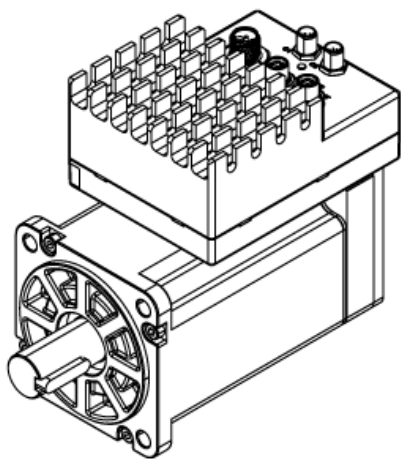
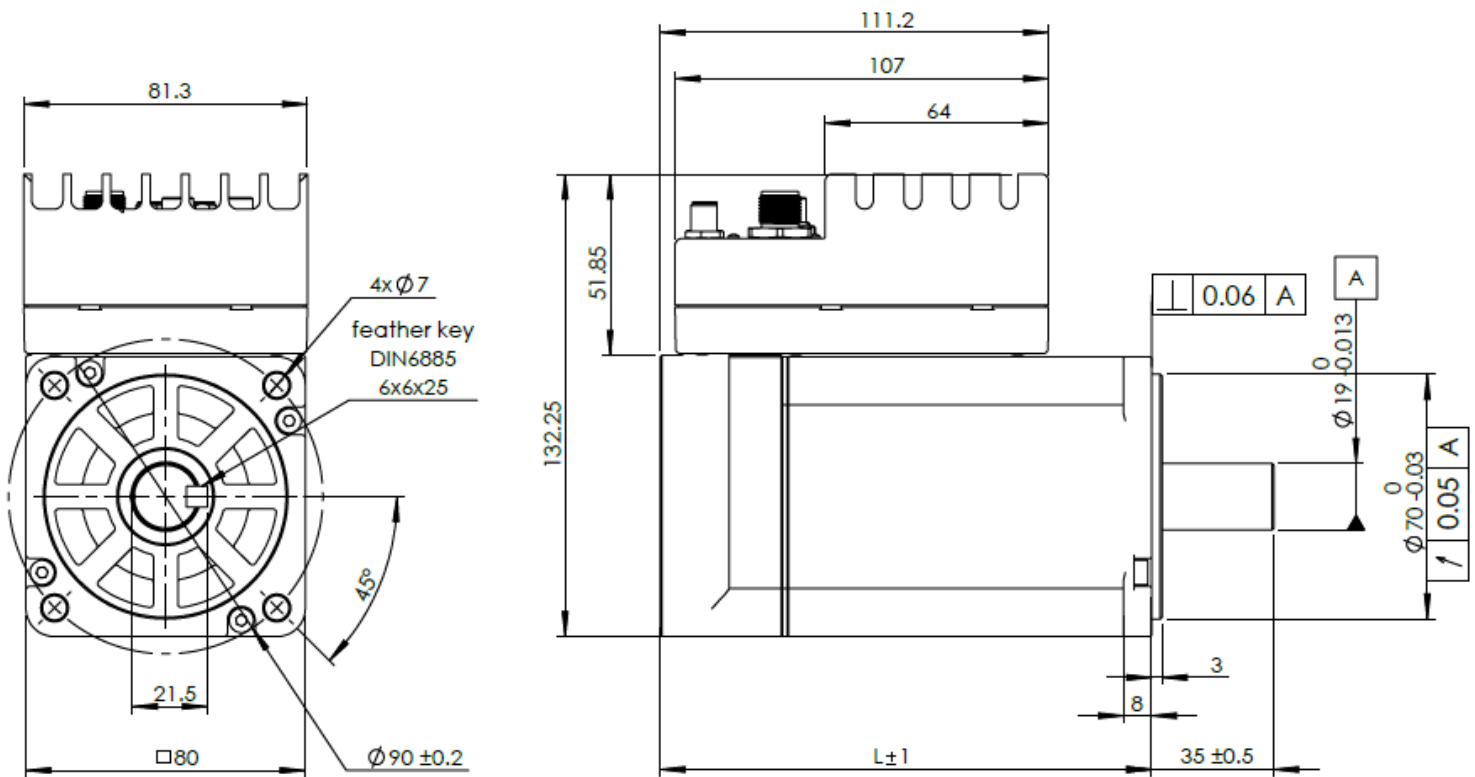


IM1-80S / -80M

Part Number	Power (W)	L = Length (mm) with Absolute Single turn Encoder	L = Length (mm) Absolute Multiturn Encoder
IM1-80SX3X5XXYY000	480	113.25	133.25
IM1-80SX3X5XXYYB00	480 with brake	143.25	163.25
IM1-80MX3X5XXYY000	800	130.25	150.25
IM1-80MX3X5XXYYB00	800 with brake	160.25	180.25



Part Number	Power (W)	L = Length (mm) all Feedbacks
IM1-80SX3X6XXYY000	480	93.7
IM1-80MX3X6XXYYB00	800 with brake	140.7



Weight

TiM with Single Turn Feedback

Feature	Unit	IM1 60S	IM1 60M	IM1 80S	IM1 80M
Weight, without brake	kg	0.98	1.32	1.68	2.20
Weight, with brake	kg	1.24	1.58	2.40	2.86

TiM with Absolute Multiturn Feedback

Feature	Unit	IM1 60S	IM1 60M	IM1 80S	IM1 80M
Weight, without brake	kg	1.10	1.45	1.80	2.35
Weight, with brake	kg	1.35	1.70	2.52	3.00

Ordering Information

		IM1	-	60S	4	3	2	5	EC	20	0	00
	Integrated (Servo) Motor											
	Frame Size and Length											
60S	Flange 60 mm Short (200 W)											
60M	Flange 60 mm Medium (400 W)											
80S	Flange 80 mm Short (480 W)											
80M	Flange 80 mm Medium (800 W)											
	DC Bus Voltage											
2	24 VDC											
4	48 VDC											
	Rated Speed											
3	3000											
	Shaft											
0	Smooth											
2	Keyway											
	Connector and Protection Class											
1	Connector front mounting IP54 (<i>upon request only</i>)											
5	Connector back mounting IP 54											
6	Drive top mounting IP54											
	Communication											
CO	CANopen											
EC	EtherCAT											
ES	FSOE (safety version)											
	Feedback											
20	Absolute Single turn 21 bit											
30	Absolute Multi turn 24 bit											
	Brake											
0	No brake											
B	With brake											
	Option											
00												