IronHorse® Permanent-Magnet DC Motors (SCR Rated) Model Overview

MTPM-P10-1JK43

MTPM-P25-1JK44

MTPM-P33-1L18

MTPM-P75-1L18

MTPM-1P5-1M18

IronHorse motors are manufactured by leading motor suppliers with decades of experience delivering high-quality motors to the demanding U.S. market. Our suppliers test the motors during production and after final assembly. This is how we can stand behind our IronHorse motors with a two-year warranty (motors 1/3hp and above only; motors 1/4hp and less have a one-year warranty).

IronHorse DC motors are designed for use on unfiltered SCR (Thyristor) type and PWM (pulse width modulated) type DC adjustable speed drives, and on across-the-line DC controls.

The IronHorse line of DC motors features:

- Replacement brush sets
- Simple two-lead connection
- Class F insulation

Features for Small-Frame Motors 1/4hp and Under

- Available models accommodate 12 VDC, 24 VDC, 90 VDC (110 VAC DC drive), and 180 VDC (230 VAC DC drive)
- Rated for SCR drives
- TENV enclosure
- IP40 environmental rating
- Class F insulation
- High energy ceramic magnets
- Double shielded ball bearings
- Dynamically-balanced armature
- Electrically-reversible
- 18in leads, or junction boxes with 8-inch leads
- Externally replaceable brushes
- Can be mounted in any orientation
- Not intended for DC power generation
- UL recognized (E365956), CSA certified (259724), RoHS

Features for Motors 1/3hp and Above

- Input power of 115 or 230 volts rectified AC can be used with an appropriate SCR drive
- Linear speed/torque characteristics over entire speed range
- High starting torque for heavy load applications
- Capable of dynamic braking for faster stops
- Available in TENV or TEFC housings, depending on model
- NEMA 56C flange mount
- Rolled steel shell frame / cast aluminum end bell
- Removable base (0.33–2hp)
- STABLE motor slide bases for adjustable mounting of NEMA motors from 56–449T
- Space-saving design
- Large, replaceable brushes for longer brush life
- Easy access to DC motor brushes (DC motors ship with one set of brushes installed and one set of spare brushes in the box)
- Large easy-to-wire junction box with rubber gasket and six-inch leads
- Heavy duty oversized ball bearings
- High tensile strength steel shaft
- Large, easy to read nameplate
- Electrically reversible
- Not intended for DC power generation
- Service Factor: 1.0
- Two year warranty
- $_{C}CSA_{US}$ certified (247070), CE, RoHS

Applications

- Conveyors
- Turntables
- Where adjustable speed and constant torque are required
- When dynamic braking and reversing capabilities are needed

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IronHorse® DC Motors

MTPM Small-Frame Permanent Magnet DC Motors – 1/31 to 1/4hp

MTPM-P10-1JK43
with flying leads

MTPM-P25-1JK44
with junction box

Motor Specifications – MTPM Series Small-Frame Permanent Magnet DC Motors

Part Number	Price	Voltage (VDC)	HP	Speed (rpm)	F/L Torque (oz-in)	F/L Current (A)	Shaft Dia (in)	Pilot Shaft (in)	Overhung Load (lb)	Axial/ Thrust Load (lb)	Wiring Type	Replacement Brush	Weight (lb)	Drawing Links
MTPM-P10-1JK43	$155.00	12/24	1/20 1/10	1746 4252	28	4.8	5/16	1.00	85	70	Flying Leads	MTPM-BRUSH-5	2.8	PDF
MTPM-P13-1JK42	$168.00		1/17 1/8	1825 4224	32	5.4							3.3	PDF
MTPM-P17-1JK43	$223.00		1/13 1/6	1841 4290	42	7.5	1/2	2.02	130	150	Junction Box	MTPM-BRUSH-4	5.3	PDF
MTPM-P25-1JK40	$233.00		1/6 1/4	1732 3996	96 80	14.3 12.2							7.8	PDF
MTPM-P25-1JK44	$233.00		1/5 1/4	1854 4375	113 70	18.1 11.9							9	PDF
MTPM-P03-1L18	$162.00	90	1/31	1797	18	0.4	5/16	1.00	85	70	Flying Leads	MTPM-BRUSH-7	2.8	PDF
MTPM-P04-1L17	$171.00		1/26	1749	22	0.5							3.3	PDF
MTPM-P05-1L19	$223.00		1/19	1917	28	0.7	1/2	2.02	130	150	Junction Box	MTPM-BRUSH-6	5.3	PDF
MTPM-P13-1L19	$221.00		1/8	1917	73	1.4							7.8	PDF
MTPM-P14-1L19	$240.00		1/7	1740	86	1.6							9	PDF
MTPM-P07-1M24	$200.00	180	1/15	2440	28	0.4							5.3	PDF
MTPM-P13-1M19	$240.00		1/8	1865	73	0.7							7.8	PDF
MTPM-P14-1M18	$240.00		1/7	1828	84	0.8							9	PDF

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IronHorse® DC Motors

56C Frame TEFC/TENV Motors – DC – 1/3 to 2hp

Motor Specifications – DC 56C Frame Motors – 1800rpm

Part Number	Price	HP	Base RPM	Armature Voltage	Housing	NEMA Frame	Service Factor	F.L. Amps	Weight (lb)	Drawing Links
MTPM-P33-1L18	$330.00	1/3	1800	90 VDC	TENV	56C flange mount	1.0	3.5	17.70	PDF
MTPM-P50-1L18	$424.00	1/2						5.2	20.74	PDF
MTPM-P75-1L18	$480.00	3/4			TEFC			7.8	25.30	PDF
MTPM-001-1L18	$535.00	1						10.4	28.36	PDF
MTPM-1P5-1L18	$576.00	1-1/2						15.4	34.97	PDF
MTPM-P33-1M18	$325.00	1/3		180 VDC	TENV			1.75	17.60	PDF
MTPM-P50-1M18	$421.00	1/2						2.6	20.74	PDF
MTPM-P75-1M18	$480.00	3/4			TEFC			3.9	25.58	PDF
MTPM-001-1M18	$531.00	1						5.2	28.32	PDF
MTPM-1P5-1M18	$576.00	1-1/2						7.7	35.70	PDF
MTPM-002-1M18	$916.00	2						9.8	61.95	PDF

Note: Please review the AutomationDirect Terms & Conditions for warranty and service on this product.

Performance Data – DC 56C Frame Motors – 1800rpm

Part Number	HP	Armature Voltage	Torque (lb·ft) Full Load	Form Factor *	Ambient Temp.	Insulation Class	Ball Bearings DE Bearing	Ball Bearings ODE Bearing	Mounting	Wire / Housing	Shaft	Constant Torque Speed Range	Overall Speed Range	Base / Type	Paint Color	Rotor Inertia ($kg \cdot m^2$)	Efficiency (%)
MTPM-P33-1L18	1/3	90 VDC	0.97	1.35	40°C (104°F)	F	6203	6203	Top Mounted	Junction Box	Keyed	90-1800rpm	0-2000rpm	Rigid Removable	Gray	0.01956	79
MTPM-P50-1L18	1/2		1.46													0.02365	80
MTPM-P75-1L18	3/4		2.19													0.02795	
MTPM-001-1L18	1		2.92													0.03225	
MTPM-1P5-1L18	1-1/2		4.38													0.04945	81
MTPM-P33-1M18	1/3	180 VDC	0.97													0.01956	79
MTPM-P50-1M18	1/2		1.46													0.02365	80
MTPM-P75-1M18	3/4		2.19													0.02795	
MTPM-001-1M18	1		2.92													0.03225	
MTPM-1P5-1M18	1-1/2		4.38													0.04945	81
MTPM-002-1M18	2		5.84													0.09675	85

*** See additional information in Form Factor Table.**

Form Factor

The voltage used to power a permanent magnet (PM) DC motor is not pure DC; it is derived by rectifying a supplied AC voltage. The resulting DC voltage has a ripple that is related to the frequency of the AC input.

Form factor is the ratio of I_{rms} to I_{dc}, and it indicates how close the driving voltage is to pure DC. The form factor for a DC battery is 1.0. The higher the form factor is above 1.0, the more it deviates from pure DC. The Form Factor Table shows examples of commonly used voltages.

Form factor should not exceed 1.40 for continuous operation. Half wave rectification is not recommended, as it drastically increases form factor.

Operating Ironhorse PMDC motors with DC voltages with form factors higher than 1.40 can result in premature brush failure and excessive motor heating.

Form Factor Table

Form Factor	DC Voltage Source
1.0	Battery (pure DC)
1.05 *	Pulse width modulation (PWM)
1.40 **	Full wave rectification (1-phase)
1.9 ***	Half wave rectification (1-phase) **

*** All DC-input IronHorse GSD series DC drives are 1.05. IronHorse AC-input GSD5 DC drive is 1.05.**

**** 1-phase full wave rectification is the most common form of DC drive in 0.33–2hp range. All IronHorse GSD series DC drives are 1.40 or better.**

***** Not Recommended.**

56C Frame Motors – DC – 1/3 to 2hp – Accessories

DC motor brushes

Brushes commutate the incoming current in a DC motor. All IronHorse PMDC motors are shipped with a set of brushes in the motor. An extra set of brushes is included in the box. The brushes below can be ordered for spare.

IronHorse DC brushes should be changed at a maximum interval of 2500 hours motor runtime. When changing brushes, always change them as a set (never change only one brush).

DC Motor Accessories

Part Number	Price	Description	Applicable Motor Type	Rated Voltage	Motor HP	Brush Materials	Dimension L x W x H
MTPM-BRUSH-1	$19.00	Brushes with springs, package of 2	IronHorse MTPM	90 VDC 180 VDC	1/3–1-1/2hp	Resin class Graphite	0.75in x 0.27in x 0.70in 19 mmx 6.9mm x 18mm
MTPM-BRUSH-2	$25.00			180 VDC	2hp		0.71in x 0.49in x 0.70in 18mm x 12mm x 18mm
MTPM-BRUSH-3	$22.00			90 VDC	1-1/2hp		0.73in x 0.35in x 0.63in 19mm x 8.9mm x 16mm

All IronHorse 56C-frame DC motors ship with one set of brushes installed and one extra set in the box.