

# PRO165LM Series

## Mechanical Bearing, Linear Motor Stage

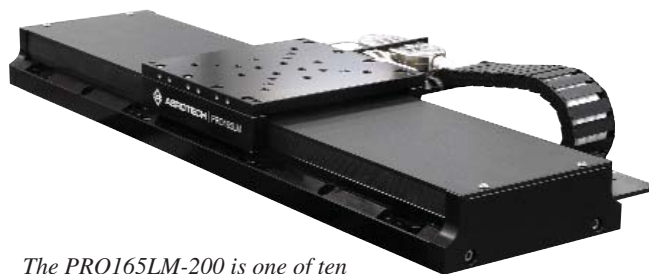
Direct-drive linear motor for ultra-precise motion

Long-life linear motion guide bearing system

Ten models with travels from 100 mm to 1 m

Low-cost, high-performance stage

Fast delivery



The PRO165LM-200 is one of ten models in the PRO165LM series.

The PRO165LM is a high-performance linear motor stage that is as accurate as it is versatile, providing a cost-effective alternative for precision applications. A linear motion guide bearing system and high-performance brushless linear servomotor make the PRO165LM the stage of choice in industrial applications such as laser machining, medical component manufacturing, and other applications requiring high accuracy in a production environment.

### Construction Features

Sealed linear motion guide bearings with integral wipers are incorporated to provide excellent payload capability and long life. Both the metal waycover and tabletop are treated with a hardcoat that is scratch-resistant and provides outstanding protection in the harshest applications. The tabletop utilizes stainless steel Helicoil™ inserts to protect mounting holes against thread wear. Several tabletop options are available for metric or English mounting, as well as for direct interface with our popular ADRS and AGR rotary stages. In addition, configurable cable management options are available for single or multi-axis systems.

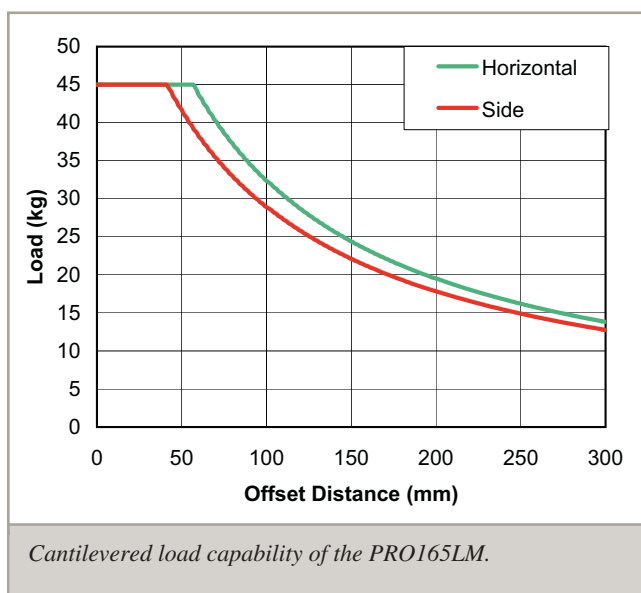
### Linear Motor Drive

Aerotech's high-power, cog-free, BLMC series linear motor drives the PRO165LM. The non-magnetic forcer coil provides high force with zero cogging for super-smooth velocity and position control. This zero cogging design is ideal for applications requiring outstanding contour accuracy and smooth velocity profiling. As with all Aerotech linear motor stages, the linear motor has zero backlash, no windup, zero friction, and outstanding system responsiveness. The magnetic field of the linear motor is totally self-contained within the U-channel design. Many high-performance applications cannot tolerate the stray magnetic fields generated by flat motor magnet tracks.

### High Performance

Noncontact linear encoders with micron-level repeatabilities are standard on all PRO165LM series stages. Either a line-driver output or amplified sine-wave output encoder is available.

The optional HALAR factory calibration further increases the standard accuracy and repeatability. Aerotech manufactures a wide range of matching drives and controls to provide a fully integrated and optimized motion solution.



# PRO165LM Series SPECIFICATIONS

Mechanical Specifications		PRO165LM-0100	PRO165LM-0150	PRO165LM-0200	PRO165LM-0250
Travel		100 mm	150 mm	200 mm	250 mm
Accuracy <sup>(1)</sup>	Standard	±4.0 µm	±6.0 µm	±8.0 µm	±10.0 µm
	HALAR	±1.5 µm	±1.5 µm	±1.5 µm	±2.0 µm
Resolution <sup>(2)</sup>		250 nm	250 nm	250 nm	250 nm
Bi-Directional Repeatability <sup>(1)</sup>		±0.75 µm	±0.75 µm	±0.75 µm	±0.75 µm
Straightness <sup>(1)</sup>		±2.5 µm	±3.0 µm	±4.5 µm	±5.0 µm
Flatness <sup>(1)</sup>		±2.5 µm	±3.0 µm	±4.5 µm	±5.0 µm
Pitch		6 arc sec	7 arc sec	9 arc sec	10 arc sec
Roll		6 arc sec	7 arc sec	9 arc sec	10 arc sec
Yaw		8 arc sec	8 arc sec	12 arc sec	12 arc sec
Maximum Speed		2 m/s			
Maximum Acceleration		3 g			
Maximum Force (Continuous)		68.2 N			
Load Capacity <sup>(3)</sup>	Horizontal	45 kg			
	Side	45 kg			
Moving Mass		2.5 kg			
Stage Mass		11 kg	12 kg	13 kg	14 kg
Material		Aluminum			
MTBF (Mean Time Between Failure)		20,000 Hours			

Notes:

1. Certified with -PLOTS option.
2. Minimum Incremental Motion.
3. Axis orientation for on-axis loading is listed. See curves for offset loading behavior.
4. Specifications are for single-axis systems measured 25 mm above the table top. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.

Mechanical Specifications		PRO165LM-0300	PRO165LM-0400	PRO165LM-0500	PRO165LM-0600
Travel		300 mm	400 mm	500 mm	600 mm
Accuracy <sup>(1)</sup>	Standard	±11.5 µm	±14.0 µm	±16.0 µm	±17.5 µm
	HALAR	±2.0 µm	±2.0 µm	±2.5 µm	±2.5 µm
Resolution <sup>(2)</sup>		250 nm	250 nm	250 nm	250 nm
Bi-Directional Repeatability <sup>(1)</sup>		±0.75 µm	±0.75 µm	±0.75 µm	±0.75 µm
Straightness <sup>(1)</sup>		±6.0 µm	±8.0 µm	±9.0 µm	±10.0 µm
Flatness <sup>(1)</sup>		±6.0 µm	±8.0 µm	±9.0 µm	±10.0 µm
Pitch		12 arc sec	16 arc sec	19 arc sec	22 arc sec
Roll		12 arc sec	16 arc sec	19 arc sec	22 arc sec
Yaw		16 arc sec	20 arc sec	24 arc sec	28 arc sec
Maximum Speed		2 m/s			
Maximum Acceleration		3 g			
Maximum Force (Continuous)		68.2 N			
Load Capacity <sup>(3)</sup>	Horizontal	45 kg			
	Side	45 kg			
Moving Mass		2.5 kg			
Stage Mass		15 kg	17 kg	19 kg	21 kg
Material		Aluminum			
MTBF (Mean Time Between Failure)		20,000 Hours			

Notes:

1. Certified with -PLOTS option.
2. Minimum Incremental Motion.
3. Axis orientation for on-axis loading is listed. See curves for offset loading behavior.
4. Specifications are for single-axis systems measured 25 mm above the table top. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.

## PRO165LM Series SPECIFICATIONS

Mechanical Specifications		PRO165LM-0800	PRO165LM-1000
Travel		800 mm	1000 mm
Accuracy <sup>(1)</sup>	Standard	±19.0 µm	±20.0 µm
	HALAR	±2.5 µm	±2.5 µm
Resolution <sup>(2)</sup>		250 nm	250 nm
Bi-Directional Repeatability <sup>(1)</sup>		±0.75 µm	±0.75 µm
Straightness <sup>(1)</sup>		±12.0 µm	±14.0 µm
Flatness <sup>(1)</sup>		±12.0 µm	±14.0 µm
Pitch		27 arc sec	30 arc sec
Roll		27 arc sec	30 arc sec
Yaw		34 arc sec	38 arc sec
Maximum Speed		2 m/s	
Maximum Acceleration		3 g	
Maximum Force (Continuous)		68.2 N	
Load Capacity <sup>(3)</sup>	Horizontal	45 kg	
	Side	45 kg	
Moving Mass		2.5 kg	
Stage Mass		26 kg	30 kg
Material		Aluminum	
MTBF (Mean Time Between Failure)		20,000 Hours	

Notes:

1. Certified with -PLOTS option.

2. Minimum Incremental Motion.

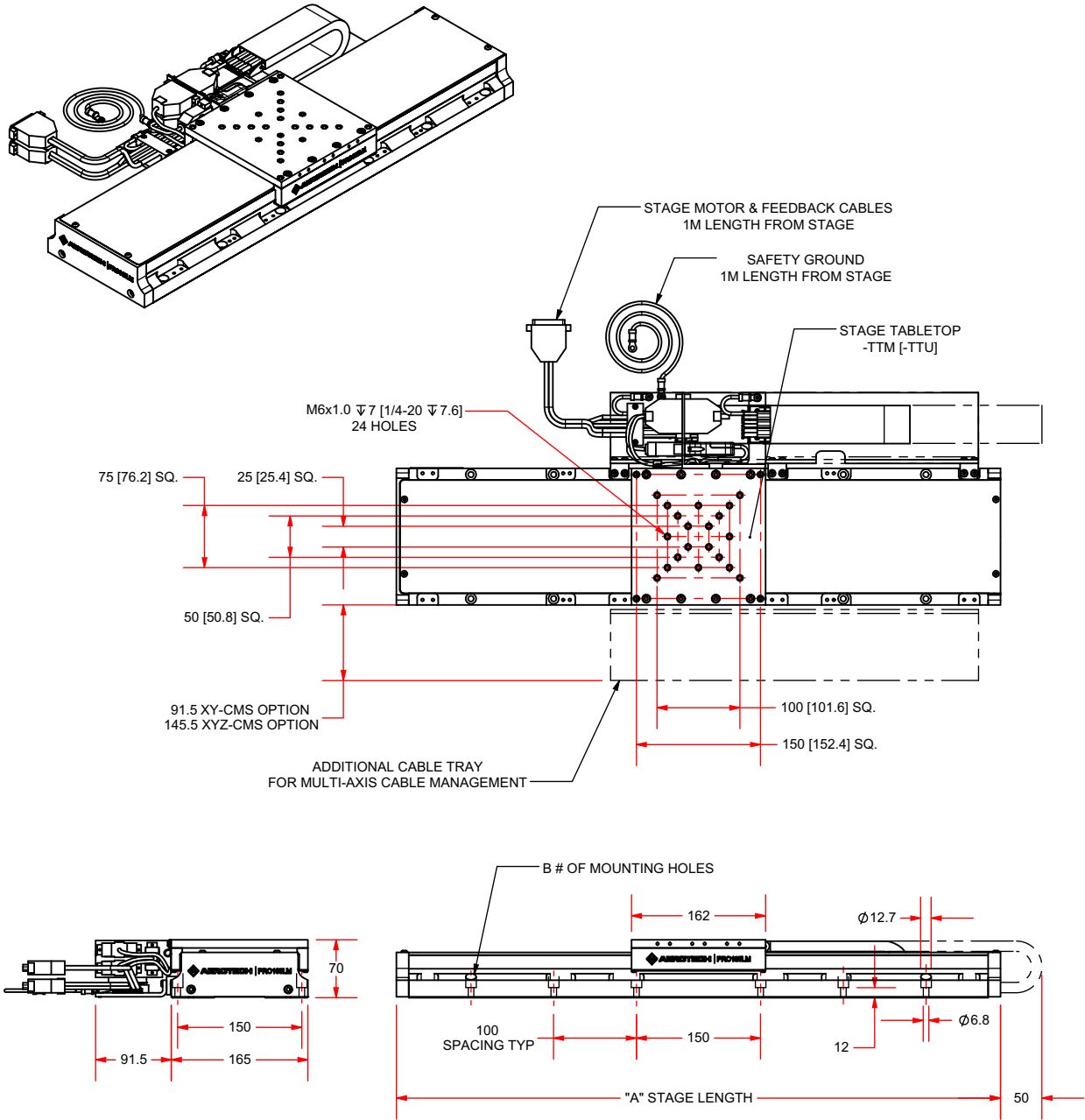
3. Axis orientation for on-axis loading is listed. See curves for offset loading behavior.

4. Specifications are for single-axis systems measured 25 mm above the table top. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.

Electrical Specifications	
Drive System	Brushless Linear Servomotor
Feedback	Noncontact Linear Encoder
Maximum Bus Voltage	±320 VDC
Limit Switches	5 V, Normally Closed
Home Switch	Near Center

Recommended Controller		
Multi-Axis	A3200	CP/HPe/Npaq
	Ensemble	CP/HPe
Single Axis	Soloist	CP/HPe

# PRO165LM Series DIMENSIONS

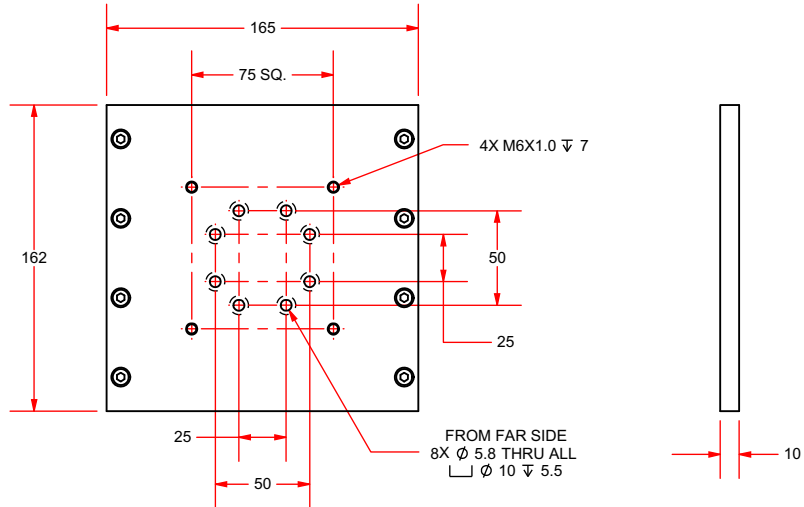


BASIC MODEL	TRAVEL	A	B
PRO165LM-0100	100	430	8
PRO165LM-0150	150	480	8
PRO165LM-0200	200	530	8
PRO165LM-0250	250	580	8
PRO165LM-0300	300	630	12
PRO165LM-0400	400	730	12
PRO165LM-0500	500	830	16
PRO165LM-0600	600	930	16
PRO165LM-0800	800	1130	20
PRO165LM-1000	1000	1330	24

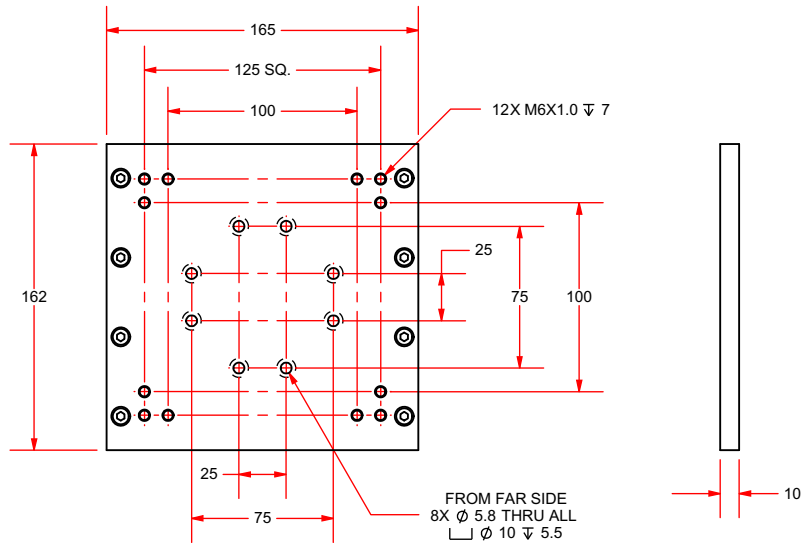
DIMENSIONS: MILLIMETERS

# PRO165LM Series Tabletop DIMENSIONS

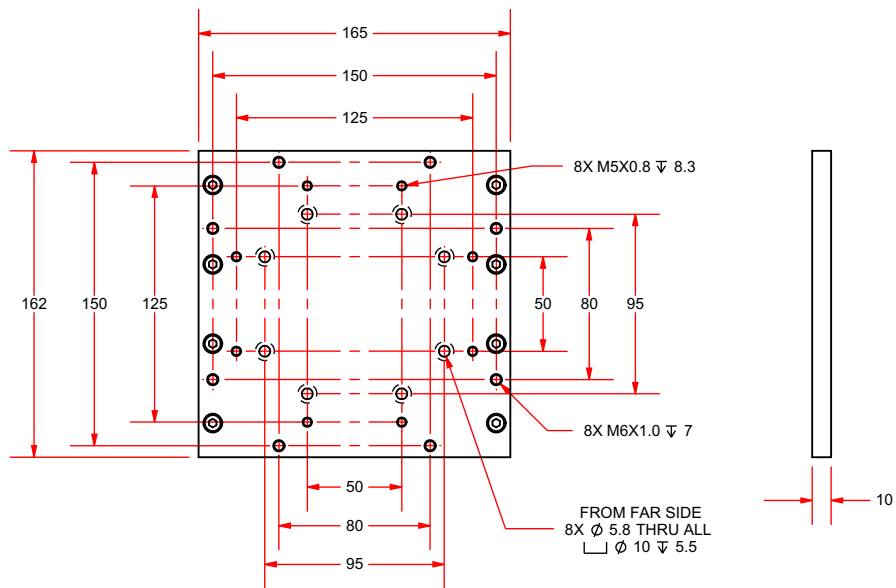
-TT100  
MOUNTS ADRS-100



-TT150  
MOUNTS ADRS-150 & ADRT-150



-TTAGR  
MOUNTS AGR-75 & AGR-100



DIMENSIONS: MILLIMETERS

## PRO165LM Series ORDERING-INFORMATION

### Ordering Information

PRO165LM	-0150	-TTM	-LTAS	-CMS	-NONE	-PLOTS
Series	Travel (mm)	Tabletop	Encoder	Cable Management	Lifting	Metrology
PRO165LM	-0100	-TTM	-LTAS	-xxxx-X-CMS	-LIFTING	-PLOTS
	-0150	-TTU	-LTX50		-NONE	-NO PLOTS
	-0200	-TTM-WIPER				
	-0250	-TTU-WIPER				
	-0300	-TT100				
	-0400	-TT150				
	-0500	-TT100-WIPER				
	-0600	-TT150-WIPER				
	-0800	-TTAGR				
	-1000	-TTAGR-WIPER				

### PRO165LM Linear Motor Stage

PRO165LM-0100	100 mm (4 in) travel stage with linear motor and limits
PRO165LM-0150	150 mm (6 in) travel stage with linear motor and limits
PRO165LM-0200	200 mm (8 in) travel stage with linear motor and limits
PRO165LM-0250	250 mm (10 in) travel stage with linear motor and limits
PRO165LM-0300	300 mm (12 in) travel stage with linear motor and limits
PRO165LM-0400	400 mm (16 in) travel stage with linear motor and limits
PRO165LM-0500	500 mm (20 in) travel stage with linear motor and limits
PRO165LM-0600	600 mm (24 in) travel stage with linear motor and limits
PRO165LM-0800	800 mm (32 in) travel stage with linear motor and limits
PRO165LM-1000	1000 mm (40 in) travel stage with linear motor and limits

### Tabletop

-TTM	Metric dimension mounting pattern and holes
-TTU	English dimension mounting pattern and holes
-TTM-WIPER	Metric dimension mounting pattern and holes with wipers
-TTU-WIPER	English dimension mounting pattern and holes with wipers
-TT100	Mounting pattern for ADRS100 rotary stage
-TT150	Mounting pattern for ADRS150 rotary stage
-TT100-WIPER	Mounting pattern for ADRS100 rotary stage with wipers
-TT150-WIPER	Mounting pattern for ADRS150 rotary stage with wipers
-TTAGR	Mounting pattern for AGR series rotary stage
-TTAGR-WIPER	Mounting pattern for AGR series rotary stage with wipers

### Standard Linear Encoders

-LTAS	Amplified sine output 1 Vpp (20 µm signal period) requires signal multiplier
-LTX50	Linear encoder; 0.1 micron line driver output

### CMS - Cable management

-xxx-X-CMS	External cable management system where xxx = travel (0100-1000 mm) and X = axes (X, XY, XZ, XT, Y, YZ, YT, XYZ, XYT, XZT)
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### LIFTING

-LIFTING	Threaded inserts and lifting lugs; recommended for longer travel stages and XY assemblies; only available for PRO165LM stages of 300 mm travel or greater
-NONE	None

### METROLOGY

-PLOTS	Accuracy and repeatability plots
-NO PLOTS	No performance plots

### Accessories (to be ordered as separate line item)

ALIGNMENT-NPA	Non-precision XY assembly
ALIGNMENT-NPAZ	Non-precision XZ or YZ assembly
ALIGNMENT-PA10	XY assembly; 10 arc second orthogonal
ALIGNMENT-PA10Z	XZ or YZ assembly; 10 arc second orthogonal
ALIGNMENT-PA5	XY assembly; 5 arc second orthogonal
ALIGNMENT-PA5Z	XZ or YZ assembly; 5 arc second orthogonal