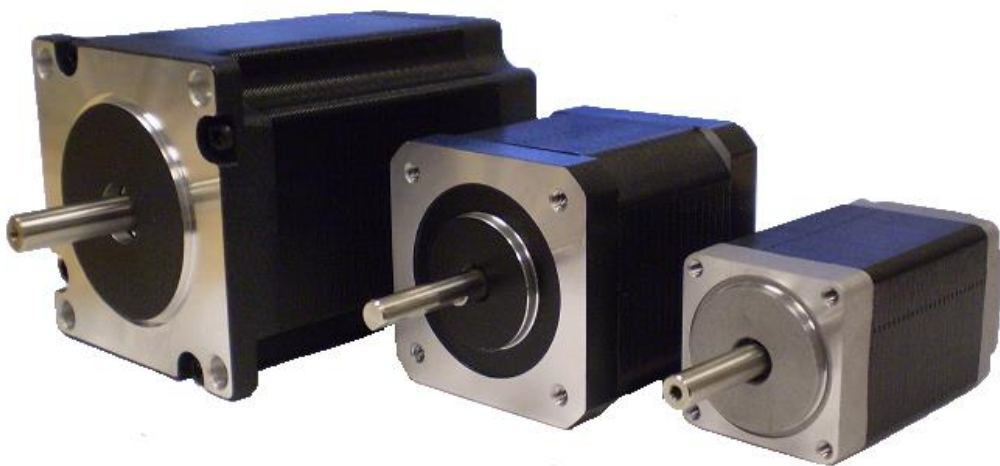


Arcus Stepper Motor

Manual

STM Series



COPYRIGHT © 2008 ARCUS, ALL RIGHTS RESERVED

First edition, May 2008

ARCUS TECHNOLOGY copyrights this document. You may not reproduce or translate into any language in any form and means any part of this publication without the written permission from ARCUS.

ARCUS makes no representations or warranties regarding the content of this document. We reserve the right to revise this document any time without notice and obligation.

Revision History:

- 1.0– First Revision
- 1.01 – Updated introduction, updated motor specification chart format
- 1.02 – Updated motor spec
- 1.03 – Updated NEMA 11 spec
- 1.04 – Updated force specification
- 1.05 – Added encoder information
- 1.06 – Added NEMA 11 encoder specification
- 1.07 – Update
- 1.08 – Formatting update.

Table of Contents

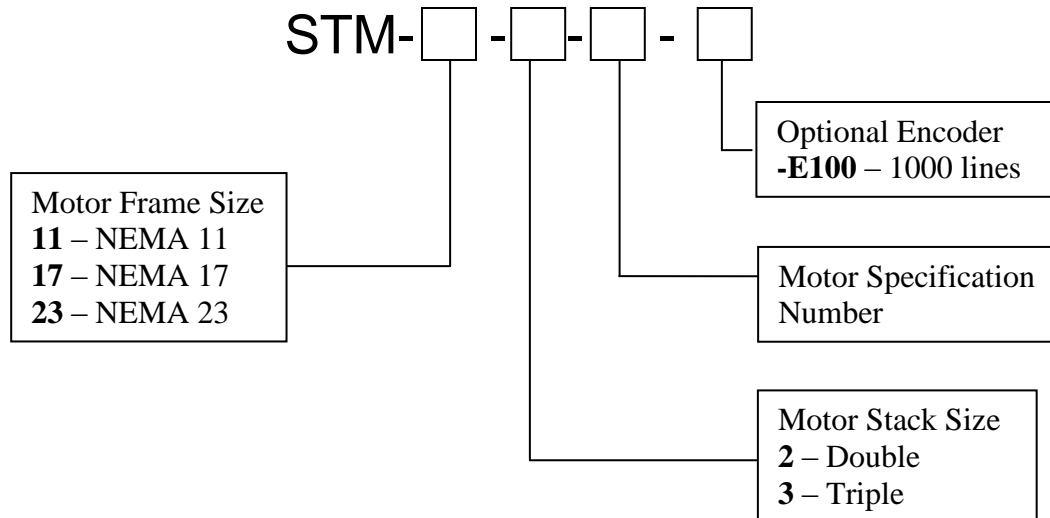
1. Introduction	4
2. Part Numbering	5
3. Dimensions	6
STM-11-X-2	6
STM-11-X-2-E100.....	6
STM-17-X-1	7
STM-17-X-1-E100.....	7
STM-23-X-1	8
STM-23-X-1-E100.....	8
STM-23-X-2	9
4. Motor Specifications	10
5. Torque Curves	11
STM-11-X-2	11
STM-17-X-1	12
STM-23-X-1	13
6. Connectors	14
Connector Information	14
Wire Color Code – Motor Wires	14
Wire Color Code – Encoder Wires.....	15
7. Connector Extensions	16
NEMA 11/17/23	16

1. Introduction

Arcus stepper motors are brushless, synchronous electric motors with the following features:

- NEMA 11, NEMA 17, and NEMA 23 motor frame sizes
- Bi-polar operation with 4 leads (A, /A, B, /B)
- Double and triple standard stack sizes
- Supports up to 2.8A RMS current (depending on motor frame size and stack)
- 200 steps per revolution when operating under full step mode (1.8 degree/step)
- Optional 1000 count encoder on NEMA 17 and 23 models
- All motors are of Insulation Class B.
- The insulation resistance is 100 M Ω Min. 500VDC.

2. Part Numbering



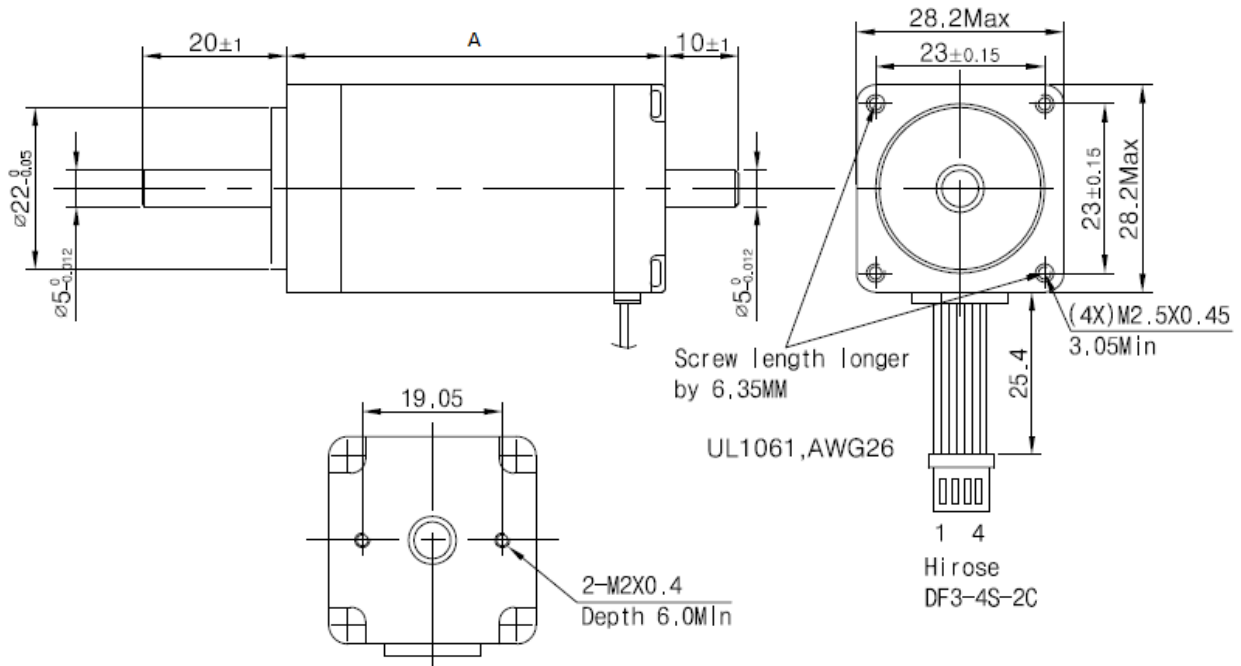
Motor Frame Size – Standard bi-polar step motors are available in NEMA 11, NEMA 17, and NEMA 23 sizes.

Motor Stack Size – Standard stack size motor available: (2) Double, (3) Triple. Typically, a larger size motor can handle higher torque but is slower and require higher current.

Option Encoder – NEMA 17 and NEMA 23 motors are available with an optional 1000 count optical encoder. The encoder is provided with an enclosure and flying lead wire interface.

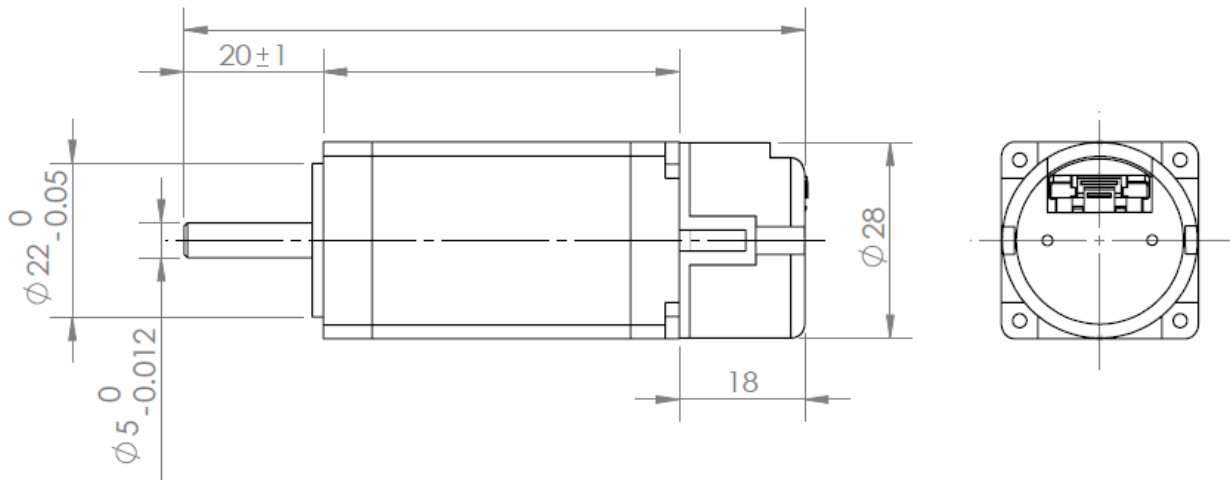
3. Dimensions

STM-11-X-2



Dimensions in mm

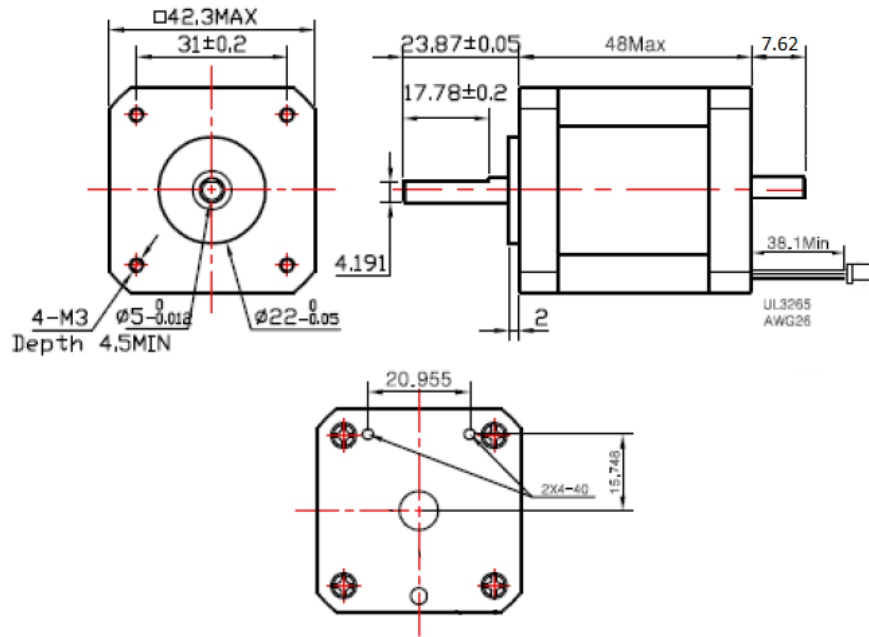
STM-11-X-2-E100



Dimensions in mm

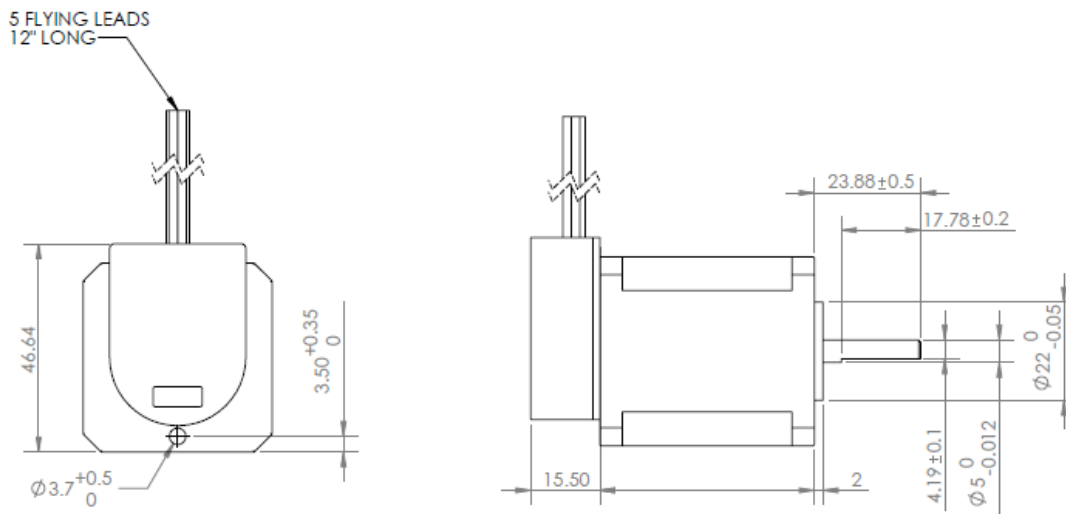
Stack Size	Length A
Double	45 mm
Triple	51.1 mm

STM-17-X-1



Dimensions in mm

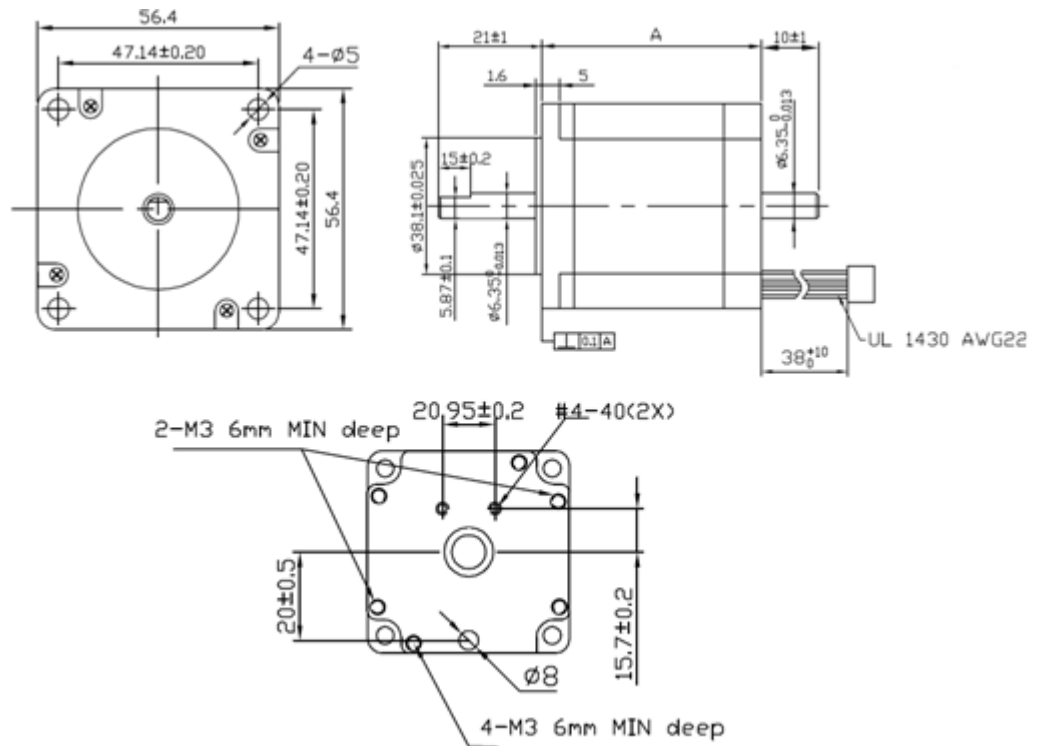
STM-17-X-1-E100



Dimensions in mm

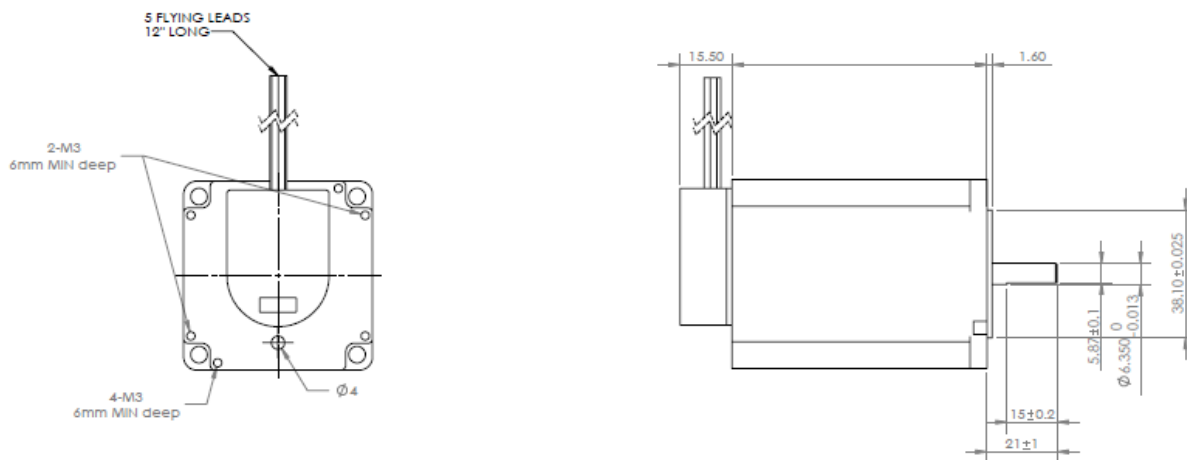
Stack Size	Length A
Double	40mm
Triple	48mm

STM-23-X-1



Dimensions in mm

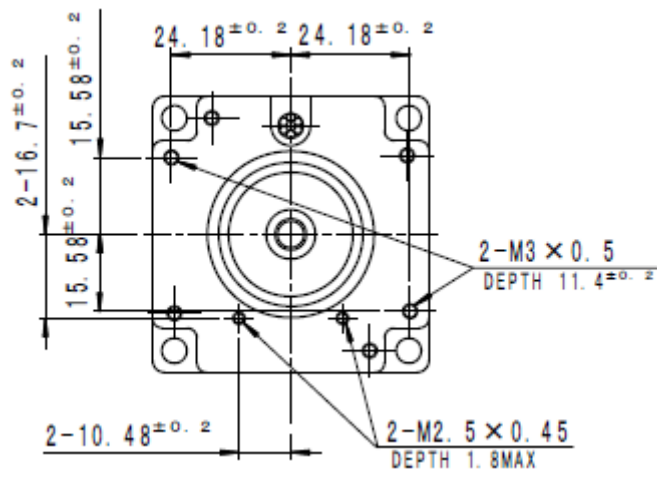
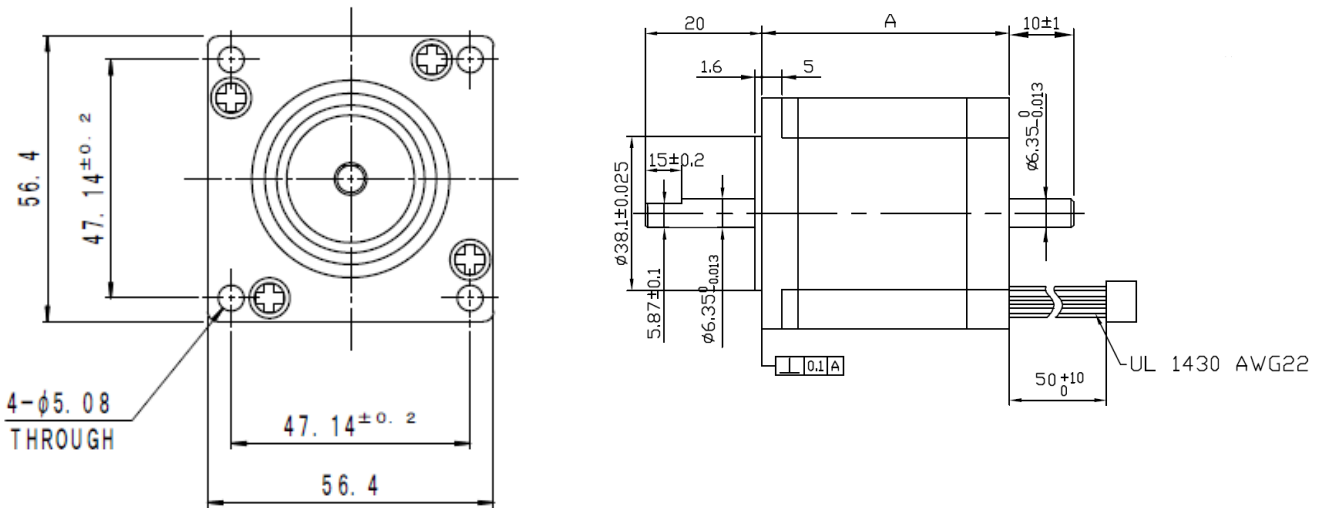
STM-23-X-1-E100



Dimensions in mm

Stack Size	Length A
Double Stack	54mm
Triple Stack	76mm

STM-23-X-2



Dimensions in mm

Stack Size	Length A
Triple Stack	76mm

4. Motor Specifications

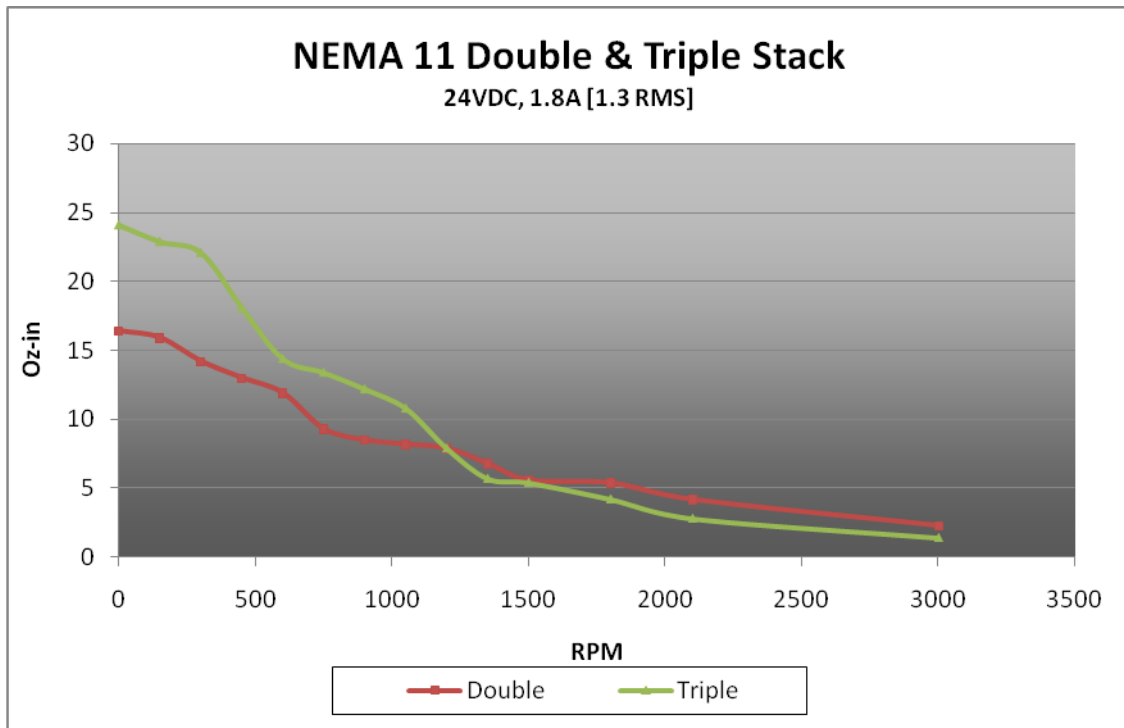
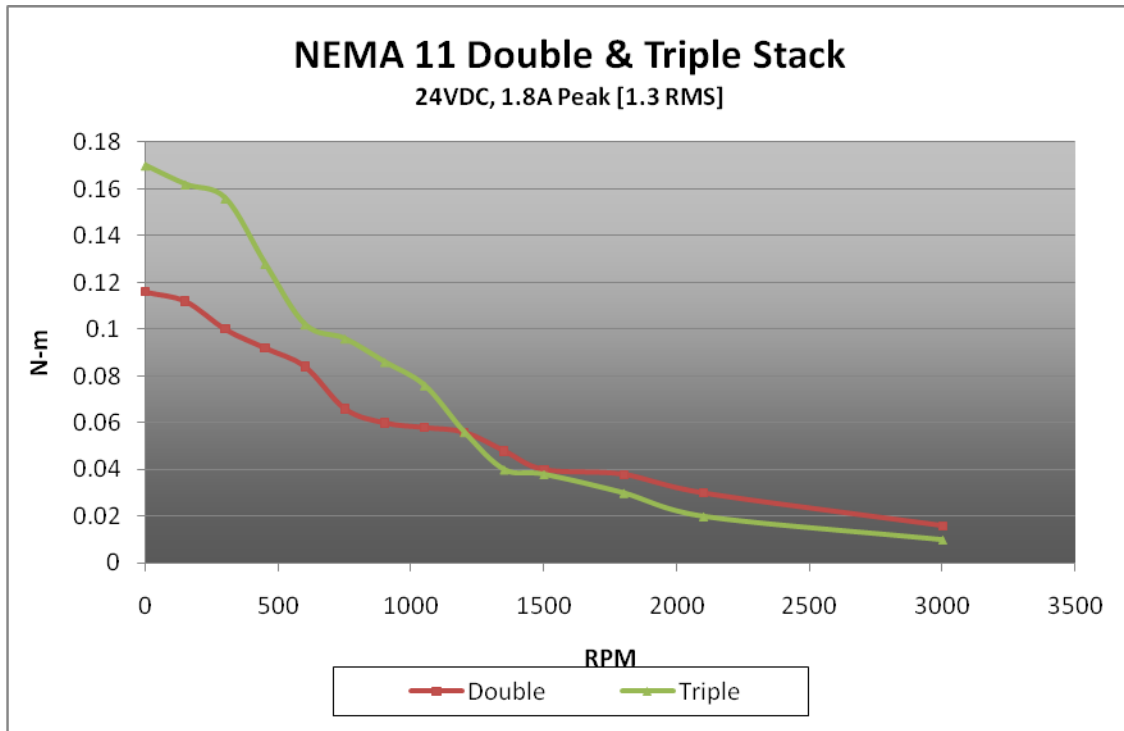
The following chart shows the specifications of standard step motors used for all Arcus products. All standard step motors are 1.8 degree bi-polar step motors.

NEMA Size	Part #	Stack Size	Amp / Phase	Holding Torque	Resistance / Phase	Inductance / Phase	Inertia
11	STM-11-2-2	2	1.3A	0.1 N-m	1.3 Ohm	0.8 mH	0.07 oz-in ²
	STM-11-3-2	3	1.3A	0.12 N-m	1.9 Ohm	1.7 mH	0.1 oz-in ²
17	STM-17-2-1	2	1.7A	0.44 N-m	1.5 Ohm	3.0 mH	0.28 oz-in ²
	STM-17-3-1	3	2.0A	0.59 N-m	1.4 Ohm	2.7 mH	0.37 oz-in ²
23	STM-23-2-1	2	2.8A	0.95 N-m	0.9 Ohm	2.5 mH	1.64 oz-in ²
	STM-23-3-1	3	2.8A	1.41 N-m	1.13 Ohm	3.6 mH	2.62 oz-in ²
	STM-23-3-2	3	3.0A	1.5 N-m	1.15 Ohm	4.7 mH	1.97 oz-in ²

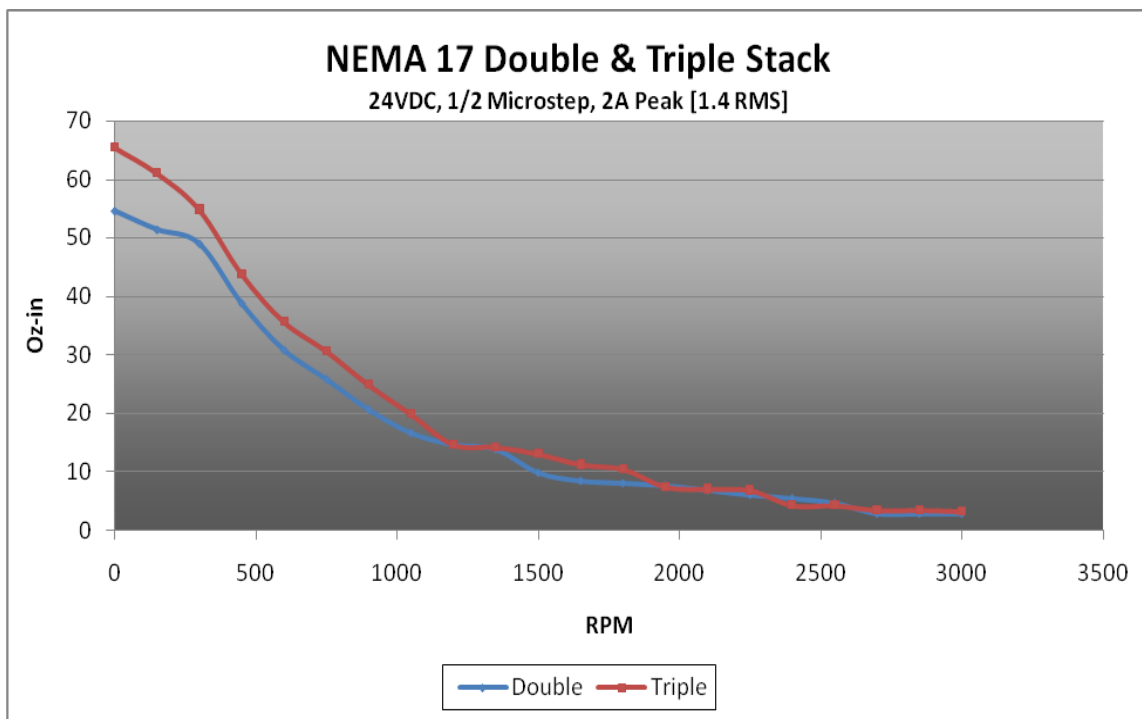
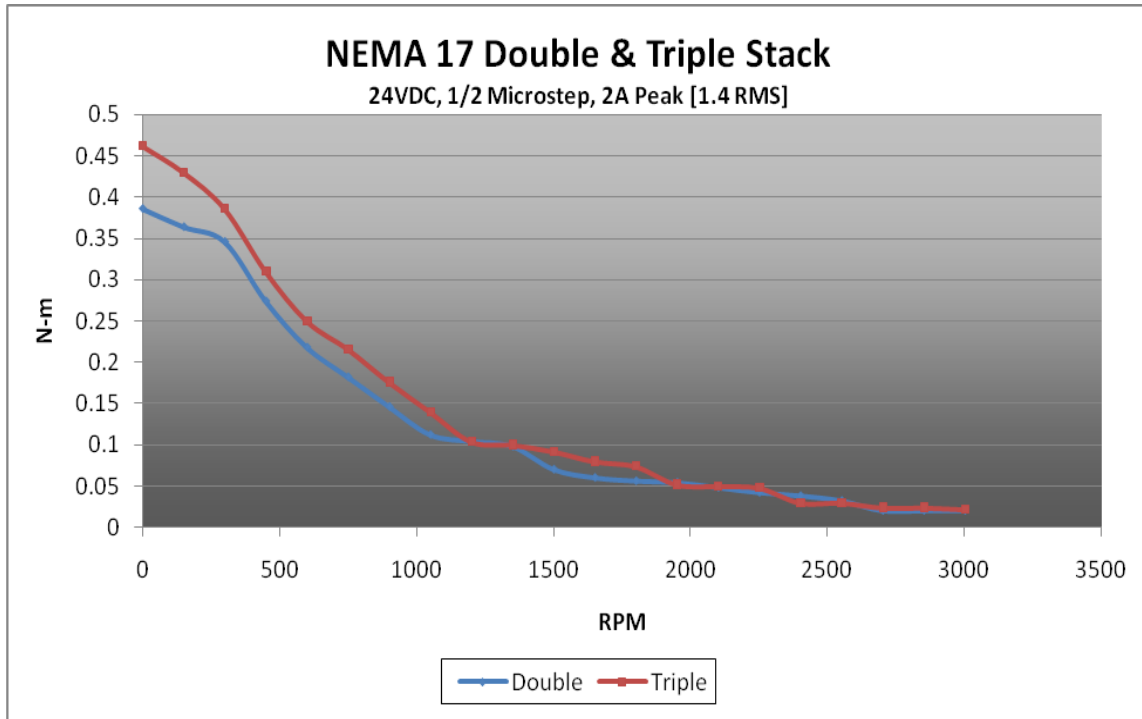
NEMA Size	Part #	Stack Size	Max Axial Force	Max Radial Force
11	STM-11-2-2	2	5N	8N
	STM-11-3-2	3	5N	8N
17	STM-17-2-1	2	15N	10N
	STM-17-3-1	3	15N	10N
23	STM-23-2-1	2	15N	75N
	STM-23-3-1	3	15N	75N
	STM-23-3-2	3	15N	75N

5. Torque Curves

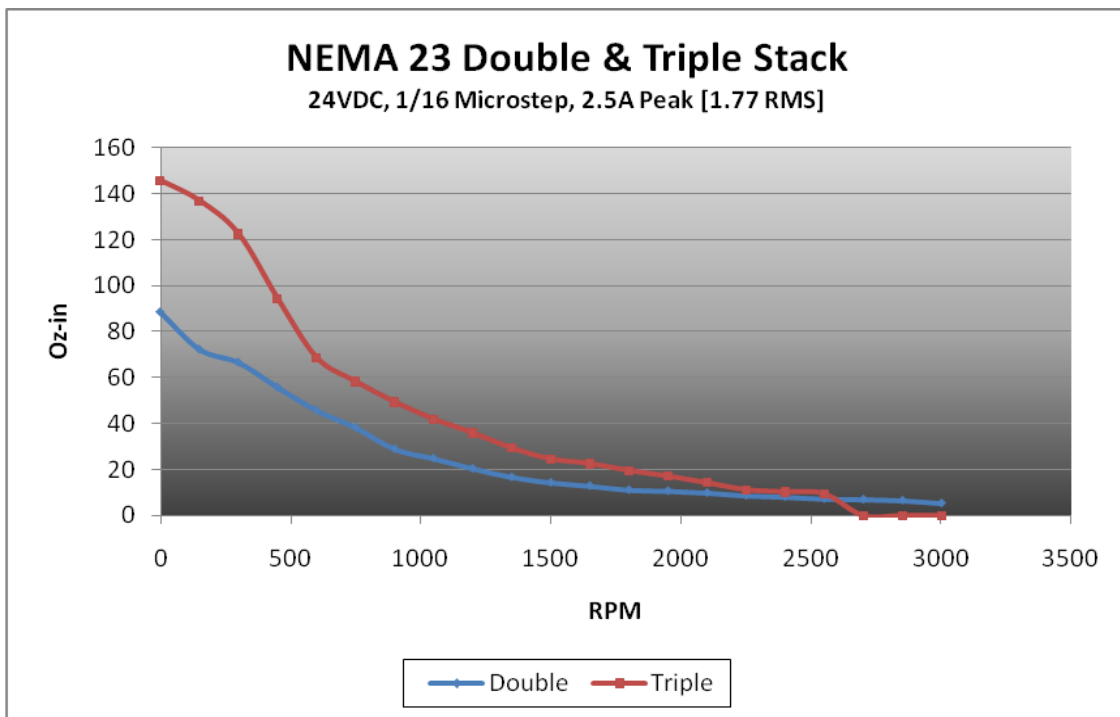
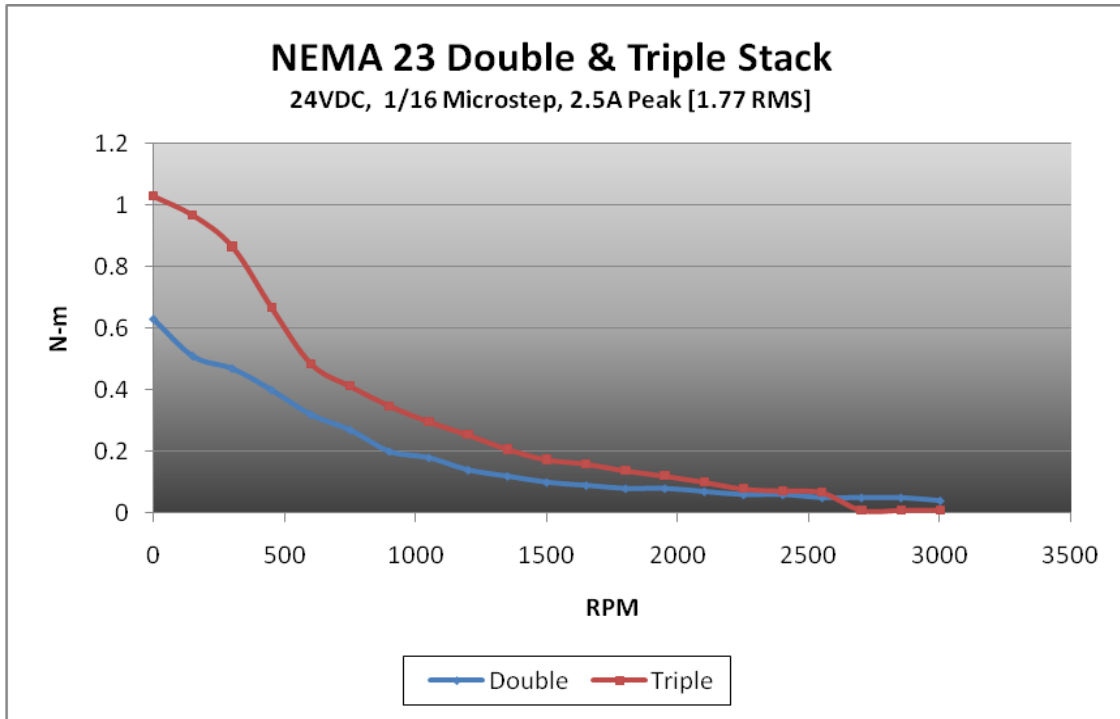
STM-11-X-2



STM-17-X-1



STM-23-X-1



6. Connectors

Connector Information

Manufacturer: Hirose
 Connector Part Number: DF3-4S-2C
 Socket Pin Number: DF3-22SC
 Crimp Tool: DF3-TA22-HC



Note: All motor wires use the same connector.

Wire Color Code – Motor Wires

STM-11-X-2

Phase A	BLUE	Pin 1
Phase /A	RED	Pin 2
Phase B	GREEN	Pin 3
Phase /B	BLACK	Pin 4

For: STM-11-2-2, STM-11-3-2

STM-17-X-1, STM-23-X-1

Phase A	RED	Pin 1
Phase /A	RED/WHITE	Pin 2
Phase B	GREEN	Pin 3
Phase /B	GREEN/WHITE	Pin 4

For: STM-17-2-1, STM-17-3-1, STM-23-1-1, STM-23-3-1

STM-23-X-2

Phase A	RED	Pin 1
Phase /A	YELLOW	Pin 2
Phase B	BLUE	Pin 3
Phase /B	ORANGE	Pin 4

For: STM-23-3-2

Wire Color Code – Encoder Wires

For STM series with –E100 encoder option, 12” flying lead wires are provided for interfacing to the encoder. See below for the color code

GND	Black
Z	Yellow
A	White
5V	Red
B	Green

For: STM-17 and STM-23

5V	Red
GND	Black
A	White
/A	White/Black
B	Green
/B	Green/Black
Z	Yellow
/Z	Yellow/Black

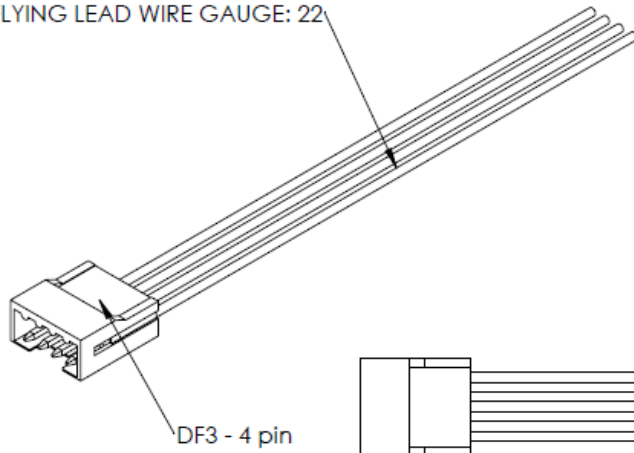
For: STM-11

7. Connector Extensions

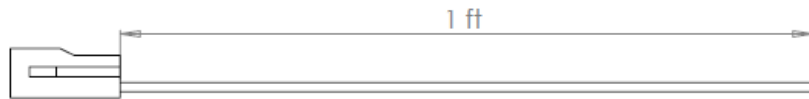
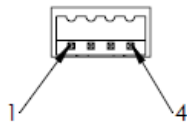
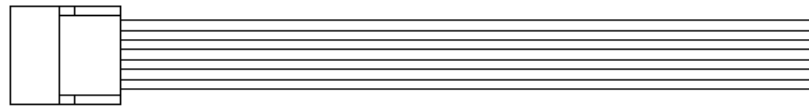
All STM purchases come with a 12" extension cable that extends the integrated connector into flying lead wires for easy interfacing.

NEMA 11/17/23

FLYING LEAD WIRE GAUGE: 22



Connector:
 Manufacturer: Hirose
 Part #: DF3-4EP-2C
 Description: DF3 - 4 pin
 Pin:
 Manufacturer: Hirose
 Part #: DF3-EP2428PCF
 Description: Crimpint contact for socket



Contact Information

Arcus Technology, Inc.

3159 Independence Drive
Livermore, CA 94551
925-373-8800

www.arcus-technology.com

The information in this document is believed to be accurate at the time of publication but is subject to change without notice.