Aries Controller
System Solutions Guide

Parker

ENGINEERING YOUR SUCCESS.

Aries Controller

System Solutions Guide

Introduction

Aries Controller System Solutions Guide is provided to aid the user in selecting and configuring Parker products used with the Aries Controller.

This document is intended as a supplement to existing Parker literature and user guides. The Aries Controller System Solutions Guide is essentially an extension of catalog information and a summary of installation and programming manuals. Information contained herein does not supersede official manuals unless specifically noted.

REV 02092009-1

Overview

Aries Controller Features

- 7 onboard inputs (4 standard, 3 high speed), 4 outputs
- Advanced Multitasking of up to 16 simultaneous programs
- Integrated 2 port Ethernet hub
- ACRView Software Development Kit
- Rotary or linear servo motor control
- 3, 4.5 and 6.3 A RMS continuous current
- 120/240 VAC power input
- Multiple feedback options

Smart encoder, quadrature encoder, Heidenhain EnDat absolute encoder

- Auto-tuning
- CE (EMC & LVD), UL508C Recognized

Aries Controller Part Numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
AR-08CE	750W, 4.5 amp RMS servo controller
AR-13CE	1300W, 6.3amp RMS servo controller

Features

Aries Controller Features

- Jog and Contoured Profiles
- Scaling for distance, velocity, acceleration
- S-Curve profiling
- Hardware and Software Limits
- Multi-Tasking
- Segmented Electronic Cams
- Electronic Gearing
- Global and local variables and arrays
- Floating point math functionality
- Logic operators
- Hardware & Software capture registers
- Registration moves
- Time-Based Moves
- Data Sampling
- String Handling
- Torque/Force Control
- Programmable Limits Switch Functions
- Non-Volatile Flash Memory
- Conditional Statements
- Ballscrew and Backlash Compensation

FAQ's

Frequently Asked Questions

• **Programming Language:** The Aries Controller is programmed in the AcroBASIC language used for the ACR family of controllers. Commands used for drive/motor set-up are based on the Aries command language.

• **Development Environment:** The free of charge, ACR-View Software Development Kit is used to set-up, program and troubleshoot the Aries Controller. The Aries Support Tool (AST), used to configure Aries drive only products, is not required or supported. AST functionality is embedded in ACR-View.

• **PC Applications:** Included with ACR-View is a Windows compatible library (API) called the ComACRserver that can be integrated into any COM enabled programming language such as VB6, VB.NET, C++, and C#. The rich set of functions included with the ComACRserver allows a user to develop custom user interfaces with ease.

• **LabView:** The ComACRserver allows LabView users to quickly create custom VIs for communicating to, commanding and querying the Aries Controller. Example projects are available for download.

• **Enable Input:** The Aries does not have a dedicated hardware enable circuit. The mains input power could be used for stopping purposes, however, motion may occur for several seconds while capacitors discharge. A user can program a task to monitor an input and immediately kill motion when the input is opened. For true safety stop functionality, a custom version of the Aries is available which dedicates Input 0 as a hardware enable circuit. Request a custom product quotation for this version (will be available as a standard ordering option).

• **Feedback Types:** Aries Controller supports Smart encoders, quadrature rotary and linear encoders and Heidenhain EnDat absolute encoders. No special order code is required, all are supported on the same hardware platform. Resolvers are not supported at this time and no development timeline has been established.

• **HMI Drivers:** Drivers are available and currently shipping with Parker InteractX (2.51) and Interact Xpress(1.8) platforms.

• **IP Addressing:** The IP address for the controller can be freely assigned using hardware switches of the front of the controller. See notes for more information

• **Auxiliary Encoder:** The Aries controller has a secondary encoder input for following/cam applications. See notes for more information

Frequently Asked Questions-Coming Attractions

• **Controller Peer-to-Peer:** Functionality is being developed that will allow Aries Controllers to pass commands and variables to other Aries controllers. Expected availability is spring 2009.

• **Expansion I/O:** Parker is currently developing EtherNet/IP scanner functionality for the Aries that will allow use of Ethernet expansion I/O modules. Expected availability is mid-2009.

• **EtherNet/IP:** Parker is currently developing EtherNet/IP scanner and adapter functionality for the Aries. Expected availability is mid-2009.

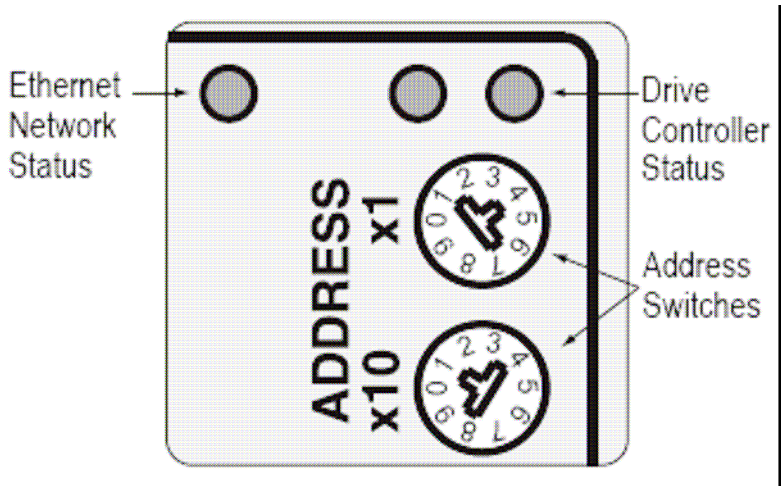
• **Higher Power Levels:** 2kW and 3kW (-20, -30) versions of the Aries Controller are in development. Expected availability is fall 2009.

The IP address Aries CE Controllers can be assigned via hardware, programmed by the user or assigned dynamically from a DHCP server.

Aries CE Controllers ship with IP address default of 192.168.100.1

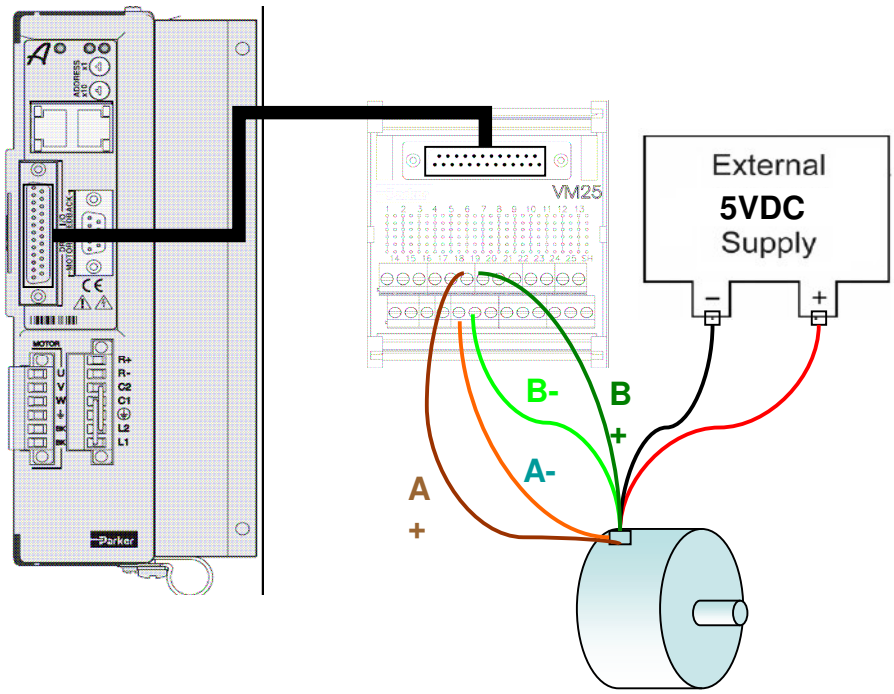
	Switch Setting	Unit IP Address
Hardware	0 (x1=0, x10=0)	10.10.10.10
Hardware	1 (x1=1, x10=0)	192.168.100.1
Hardware	2-98 (x1=2, x10=0) Example: 14 (x1=4, x10=1)	192.168.100.(x10)(X1)
Software	99 (x1=9, x10=9)	User defined via IP command

******Valid for OS version 1.10 and higher.



Auxiliary Encoder Input

- 2 High speed inputs can be wired as an encoder input
    - A+/A- are wired to high speed input 5
    - B+/B- are wired to high speed input 6
- Encoder power must be supplied externally
    - 5V source power for encoders will be added for future versions of the drive
- Differential encoder signals
- Controller always reads as both inputs and encoder
- No software selection/command required
- Encoder input is mapped to controller parameter ENC1 (P6160)
- Encoder position value can be utilized for gearing, cam etc
- Dual loop feedback not supported



I/O Connector

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16
High-Speed Input 4+	4
High-Speed Input 4–	17
High-Speed Input 5+ (or Aux Enc A+)	5
High-Speed Input 5– (or Aux Enc A-)	18
High-Speed Input 6+ (or Aux Enc B+)	6
High-Speed Input 6– (or Aux Enc B-)	19
Input 3+	7
Input 3–	20
Reserved (future 5V)	8
Reserved (future GND)	21
Output 32+	9
Output 32–	22
Output 33+	10
Output 33–	23
Output 34+	11
Output 34–	24
Output 35+	12
Output 35–	25
Not used	13

Aries Controller

Xpress Features

Interact Xpress software is pre-installed and bundled with Parker's new XPR PowerStation hardware, which is designed to optimize the performance, storage and connectivity features of Xpress HMI.

XPR Powerstation Features

- **256MB of DRAM**
- **128MB Compact Flash (also available with 256 or 512)**
- **NEMA4/4X-rating**
- **embedded fanless CPU technology,**
- **256MB DRAM**
- **2 USB ports, 2 RS-232 and RS-232/422/485 ports**
- **100BaseT Ethernet port**
- **CE/UL/CUL Approvals**

Interact Xpress Features

- Sophisticated graphics look and feel with ease of development
- Integrated Web Publishing capability for distributed applications
- Applications can be served, created and edited online from any PC with Internet Explorer.
- Available offline, development software allows work on applications when a live Internet connection is not available.
- Advanced security for single or multi-user applications
- Tools for historical alarm data
- Capacity for complex graphics and animations
- Standard Ethernet port for both networking and controller communications
- Unlimited tags
- Color depth to 262,144 colors

Aries Controller

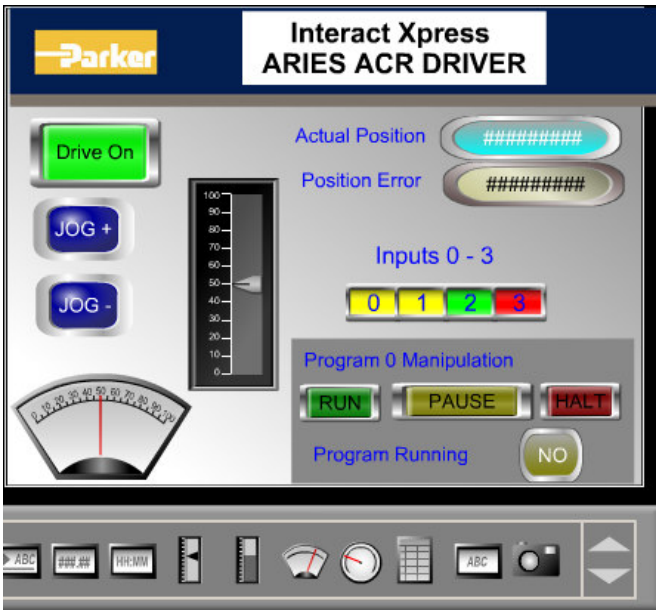
Xpress

INTERACT Xpress™

Together, the Aries Controller, Xpress software and XPR PowerStations create a powerful, easy to use motion and HMI solution. The Aries Controller and XPR PowerStation communicate via 100Mb Ethernet using a the Xpress COMMserver for fast, efficient data and command transfer. The ACR Ethernet Driver included with Xpress enables almost unlimited access to information on the controller. Since most controller functions can be executed by simply asserting a binary variable, push button control can be created for most motion needs.

- Read and write global variables
- Read and write controller system parameters and flags
- Read and write strings
- Standard Ethernet Cable for direct connection or thru a switch

Getting Started with Xpress and Aries Controller



Name	Address
bCAMActive	AR.CE.BIT790
bCancel	AR.CE.BIT128
bEnable	AR.CE.BIT8465
bExecute	AR.CE.BIT129
bGearActivate	AR.CE.BIT788
bGearActive	AR.CE.BIT789
bGearAtSpeed	AR.CE.BIT782
bGearStopping	AR.CE.BIT783
bHomeToZ	AR.CE.BIT130
bInMotion	AR.CE.BIT516
bJogActive	AR.CE.BIT792
bJogForward	AR.CE.BIT796
bJogReverse	AR.CE.BIT797
bKAMR	AR.CE.BIT8467
bKillMoves	AR.CE.BIT522
bProgRunning_0	AR.CE.bit1024
bProgRun_0	AR.CE.BIT1032
bStopMoves	AR.CE.BIT523

Aries Controller

Xpress Part Numbers

XPR Part numbers	Description
XPR06VT-2P3	6” TFT touchscreen Display
XPR08VT-4P3	8” TFT touchscreen Display
XPR10VT-4P3	10.4"/VGA/TFT Touchscreen Display
XPR10ST-4P3	10. 4“ SVGA/TFT Touchscreen Display
P1X-PWRAC	AC Power Supply
IXM-0150	Interact Xpress Manager 1.x Development Software

Sample System Bill of Materials

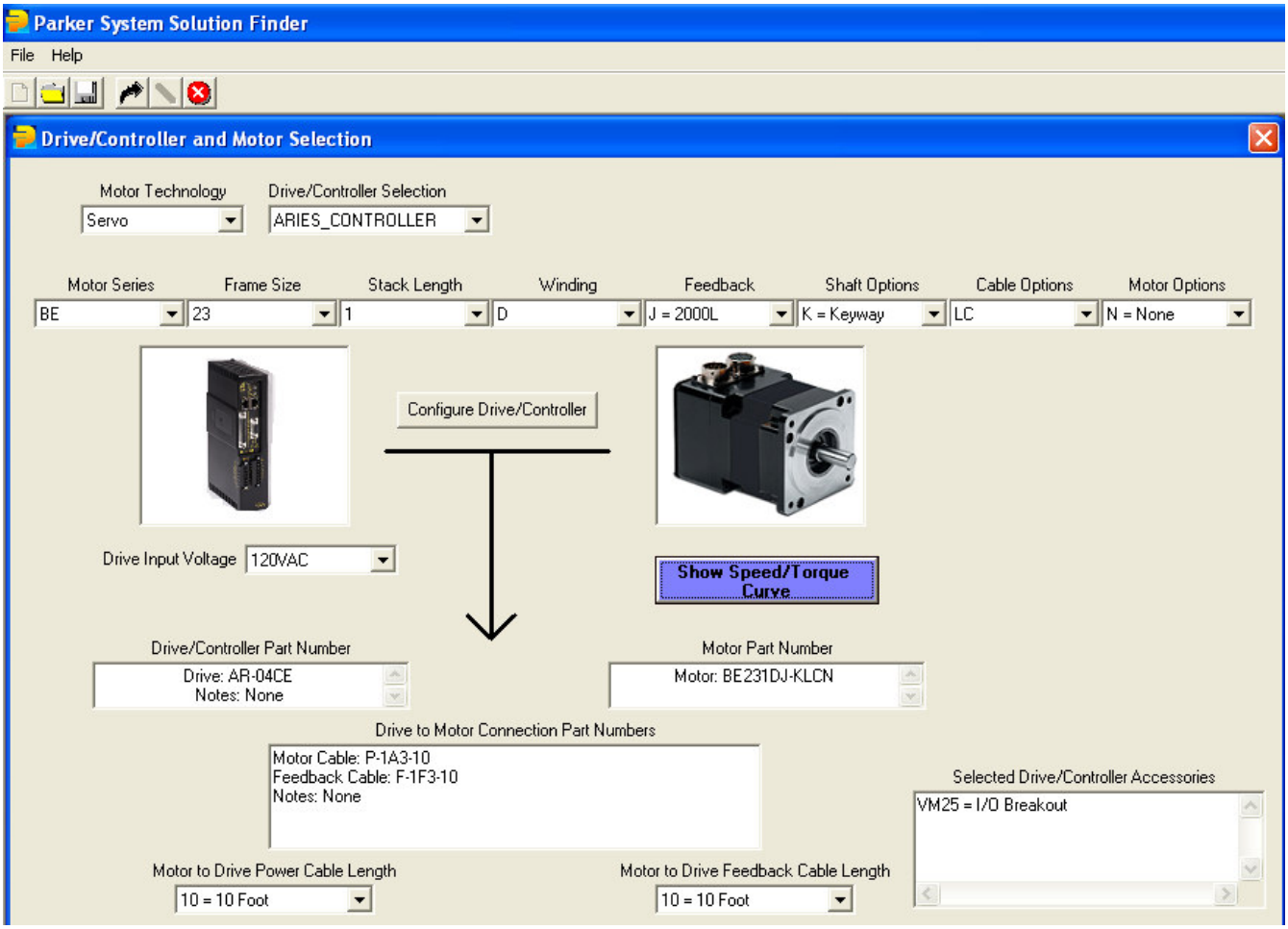
Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
XPR06VT-2P3	6” TFT touchscreen Display
P1X-PWRAC	AC Power Supply
IXM-0150	Interact Xpress Manager 1.x Development Software (one-time charge)
N	Ethernet Cross-over Cable

Aries Controller and Parker Motors

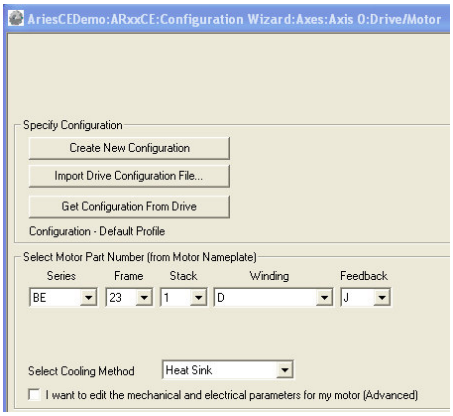
Parker System Solution Finder is a great resource for building compatible motor, cable and drive part number combinations. SSF generates a full bill of materials and will create a speed/torque curve for the selected system.

Download the most recent version of System Solution Finder from

www.parkermotion.com/scripts/support_download.asp#SIZINGCD



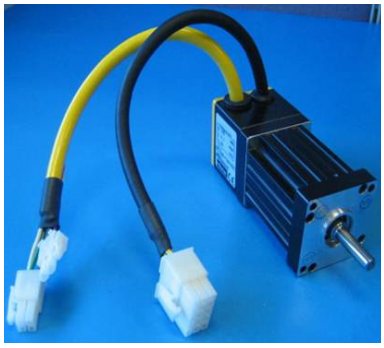
Aries Controller and Parker Motors



The Aries Controller is compatible with a wide range of Parker motors and feedback types. ACR-View contains a complete database of Parker motors allowing the user to easily create a download the correct motor set-up file to the controller.

Motors are offered with two types of connector options for use with the Aries Controller.

- **LC Connecter Option**– Space and cost saving
  - Motor is equipped with 8 inch leads for motor power and feedback, terminating into Molex/Tyco style connectors.
  - Mating cables are offered in various lengths.
  - Feedback mating cables include a 15-pin D-Sub connector for direct connection to the controller feedback connector
  - Motor Power mating cables include brake leads
  - P-Clip is included with the motor power cable to connect cable braided shield to earth ground for proper noise immunity



- **PS Connecter Option** – Rugged, Industrial
  - Motor is provided with hardened, military style connectors for power and feedback connections,
  - Mating cables are offered in various lengths.
  - Feedback mating cables include a 15-pin D-Sub connector for direct connection to the controller feedback connector
  - Motor Power mating cables include brake leads

Aries Controller and Parker Motors

Mating Cables for Aries Controller to LC and PS option Motors

Motor Connector Type	Motor Cable	Feedback Cable (all encoder types)
LC	**P-1A3-XX (0-6A)** **Stock Lengths: 10 and 25ft** **Also Available:** 5, 15, 20, 30, 35, 40, 45, 50	**F-1F3-XX** **Stock Lengths: 10 and 25ft** **Also Available:** 5, 15, 20, 30, 35, 40, 45, 50
PS	**P-1A1-XX (0-6A)** **P-3B1-XX (>6 amps)** **Stock Lengths: 10, 25 and 50 ft** **Also Available:** 5, 15, 20, 30, 35, 40, 45	**F-1A1-XX** **Stock Lengths: 10, 25 and 50 ft** **Also Available:** 5, 15, 20, 30, 35, 40, 45

Motor Connector and Encoder Options

Motor Series	Encoder Code	Connector Options	Description	Controller Resolution
BE	Q	LC, PS	2000 Line Smart Encoder	8000 ppr
	J	LC, PS	2000 Line Encoder	8000 ppr
	L	PS	5000 Line Encoder	20000 ppr
SM	Q	LC, PS	2000 Line *Smart* Encoder	8000 ppr
	E	LC, PS	1000 Line Encoder	4000 ppr
	L	PS	5000 Line Encoder	20000 ppr
MPP/MPJ	1E	PS	2000 Line *Smart* Encoder	8000 ppr
	3E	PS	2000 Line *Smart* Encoder	8000 ppr
	6D	PS	*Smart* Multi-turn Absolute, 131072	131072 ppr
	9D	PS	*Smart* Single-turn Absolute, 131072	131072 ppr

Aries Controller and Parker Motors

Sample System Bill of Materials

Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
BE231DJ-NLCN	BE Series Motor, LC connector, 2000 line encoder
P-1A3-10	10ft Motor Power Cable, LC style
F-1F3-10	10ft Motor Feedback Cable, LC style

Part numbers	Description
AR-13CE	1300W, 6.3 amp RMS servo controller
BE342HQ-KPSB	BE Series Motor, PS connector, 2000 line smart encoder, brake, keyway
P-1A1-25	25ft Motor Power Cable, PS style
F-1A1-25	25ft Motor Feedback Cable, PS style

Part numbers	Description
AR-13CE	1300W, 6.3 amp RMS servo controller
MPP0922C6D-KPSN	MPP Series Motor, PS connector, Multi-turn Absolute smart encoder, keyway
P-1A1-10	10ft Motor Power Cable, PS style
F-1A1-10	10ft Motor Feedback Cable, PS style

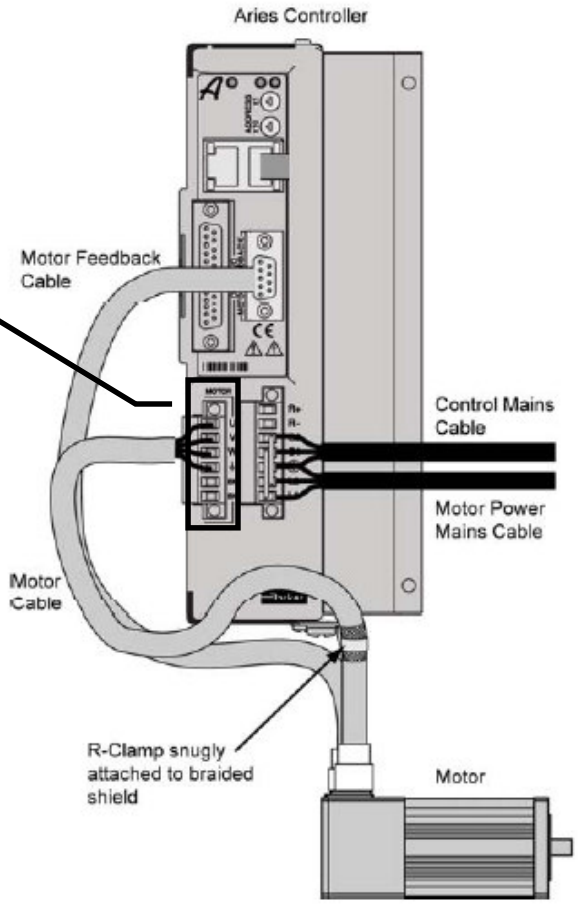
Part numbers	Description
AR-08CE	750W, 4.5 amp RMS servo controller
MPJ1002R1E-KPSN	MPJ Series Motor, PS connector, 2000 line encoder, keyway
P-1A1-10	10ft Motor Power Cable, PS style
F-1A1-10	10ft Motor Feedback Cable, PS style

Parker Rotary Motor Wiring

Parker motor cables are marked with white numbers (1,2, or 3) to indicate the phase. Connect Motor Phase 1 to U, 2 to V, and 3 to W, and Motor Safety Earth to the Protective Earth ground con

LC Cable: P-1A3-XX

PS Cable: P-1A1-XX



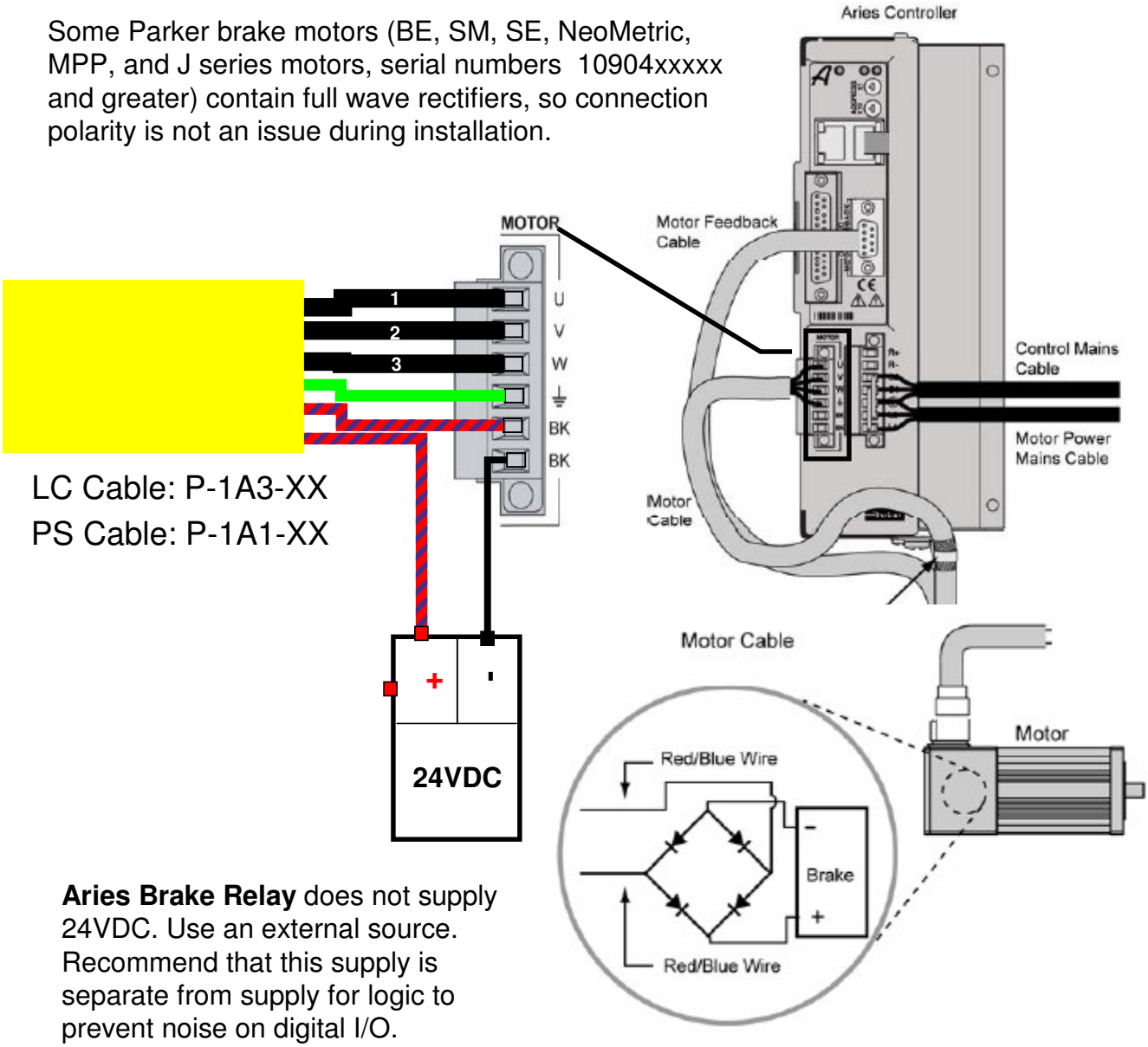
Warning — You must connect the Motor Safety Earth conductor terminal, marked with the earth symbol , to the motor cable's motor-safety-earth wire (green/yellow).

Important — An R-clamp must be connected to the drive and snugly attached to the exposed braided shield of the motor cable in order to control electrical noise.

Parker Rotary Motor Wiring

Brake Relay to Motors

Some Parker brake motors (BE, SM, SE, NeoMetric, MPP, and J series motors, serial numbers 10904xxxxx and greater) contain full wave rectifiers, so connection polarity is not an issue during installation.



LC Cable: P-1A3-XX

PS Cable: P-1A1-XX

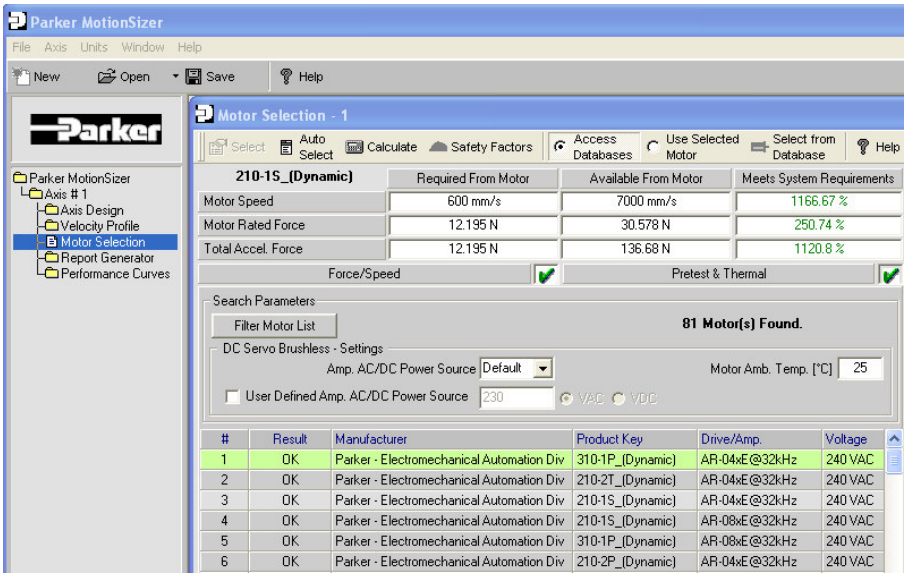
Aries Brake Relay does not supply 24VDC. Use an external source. Recommend that this supply is separate from supply for logic to prevent noise on digital I/O.

Aries Controller and Parker Linear Motors

The Aries Controller is perfect choice with Parker 400LXR Linear Motor Stages and Parker Trilogy Linear Motors. Either LME magnetic or RGH optical encoders can be used with any resolution.

- Sizing and Selection: **Parker Motion Sizer** includes 400LXRs, Trilogy Motors and Aries Controller
    - Aries Controller is listed as AR-04xE, AR-08xE, and AR-13xE
- 400LXR stages and Trilogy positioners are offered with plug and play connectors compatible with the Aries.
    - T2DA024NSA**LA**3
    - 404T03LXRMP-D13H3L2**CM13**Z2E2R1A1P1

- VM15-PM breakout module provides a convenient method for wiring encoder, halls and motor thermal sensors to the controller when using Trilogy coils



Aries Controller with Linear Motors

Sample System Bill of Materials

Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
404T05LXRMP-D13H3L2CM13Z2E2R1A1P1	LXR Series Linear Motor Table, 300mm travel, 1.0um linear encoder, NPN Limits/Home, 3.0m Cable Module for Aries
VM25	25-pin breakout for user I/O, limits with 2 ft cable
PS-60W	24 VDC, 60 Watt power supply for I/O

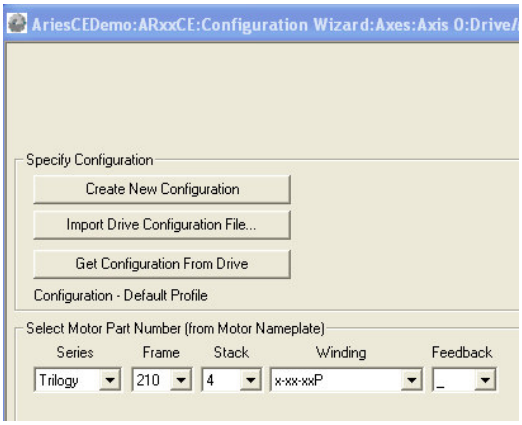
Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
T2SA0192NSBLA3	Trilogy Single Rail Positioner, 210-2 series coil 12 inch travel, 5.0um linear encoder, Limits/Home, 3.0m Cable Module for Aries
VM25	25-pin breakout for user I/O , limits with 2 ft cable
PS-60W	24 VDC, 60 Watt power supply for I/O,limits

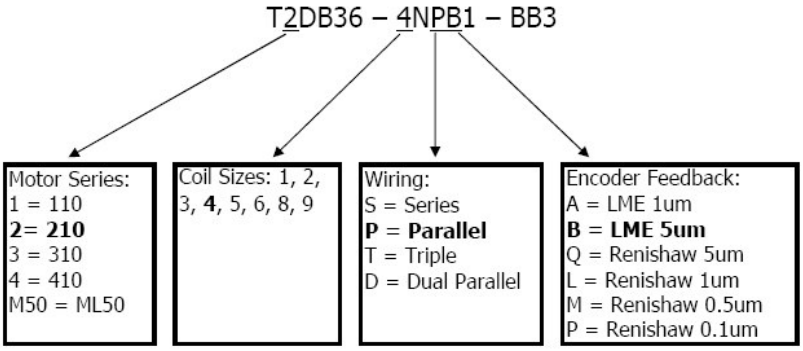
Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
310-3A-NC-WD7-8	Trilogy 310-3 series coil, 8ft flying lead cables, delta wound with thermostat & digital halls
31019M1-N	19.2 inch Nickel Plated modular magnet track
LME-5F	5um magnetic linear encoder
VM15-PM	15-pin breakout module for feedback with 2 ft cable
VM25	25-pin breakout for user I/O, limits with 2 ft cable
PS-60W	24 VDC, 60 Watt power supply for I/O,limits

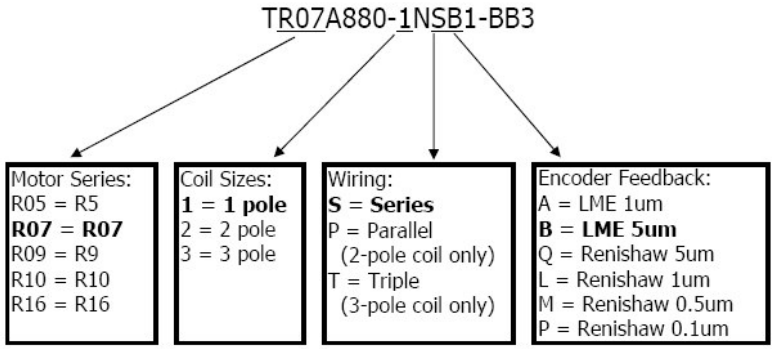
Aries Controller with Trilogy Linear Motors

ACR-View Setup

The motor selection screen in ACR-View includes all Trilogy coils combinations. Trilogy positioners can configured by selecting the coil used by the positioner.



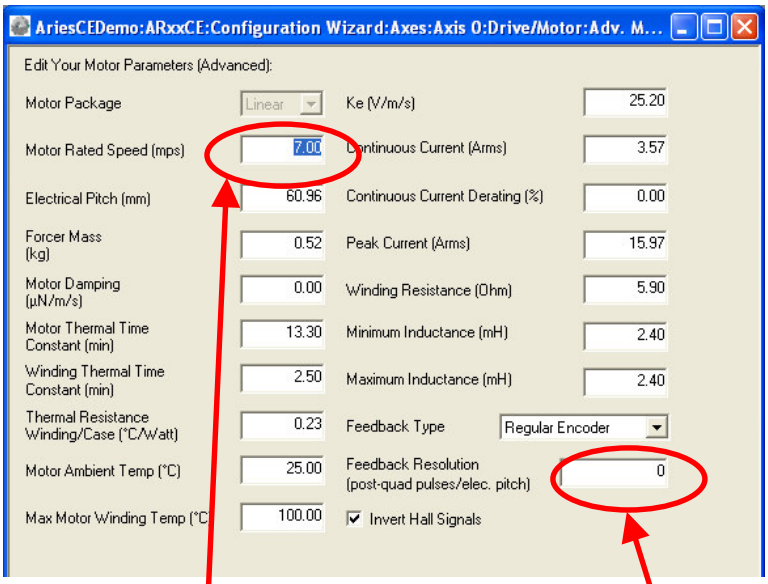




Aries Controller with Trilogy Linear Motors

ACR-View Setup

After selecting the coil part number for coil or positioners, the feedback resolution and rated speed needs to be entered in the Advanced Motor parameter screen. The feedback resolution is based on the encoder resolution and the motor electrical pitch. The charts below contain the necessary information.



Positioner Order Code	Encoder	Max Speed (m/s)
B	5um LME	7
A	1um LME	2.5
Q	5um Renishaw	5
L	1um Renishaw	5
M	0.5um Renishaw	3
P	0.1um Renishaw	0.4

Motor Series	5um	1um	0.5um	0.1um
110/210/310	12192	60960	121920	60960
410	17068	85340	170680	853400
ML50	12000	60000	120000	600000
R5/R7/R9	8000	40000	80000	400000
R10/R16	12000	60000	120000	600000

Aries Controller

Trilogy Motor Wiring

Trilogy Motor Coils and Positioners have two different styles of wiring listed below. In 2008 Parker began changing wire color codes, both old and new codes are shown for reference.

T1, T2, T3 Positioners **110 210 310 coils with options WD0/WD1/WD2/WD7/WDA/WDC**		**Aries Motor Pin**
Old Color Codes	*New Color Codes*	
Red	Red/Yellow	**U**
Blue	Blue/Yellow	
White	White/Yellow	**V**
Green	Violet/Yellow	
Black	Black/Yellow	**W**
Brown	Brown/Yellow	
Drain (coils) Green/Yellow (Positioners)	Green/Yellow	**Ground**

T4, TR7, TR10, TR16 Positioners **R7, R10, R16 Coils** **410 and ML50 Coils** **110 210 310 coils with options WD3/WD4/WDB**		**Aries Motor Pin**
Old Color Codes	*New Color Codes*	
Red	Red/Yellow	**U**
Brown	Brown/Yellow	**V**
Orange	Orange/Yellow	**W**
Drain (coils) Green/Yellow (Positioners)	Green/Yellow	**Ground**

Aries Controller

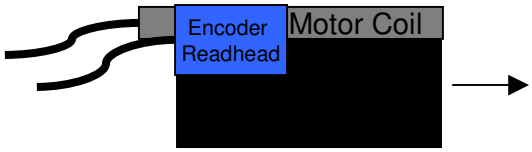
Trilogy Motor Wiring

Encoder Cable			Note	Aries Feedback Connector		
Function	**LME Magnetic**	**RGH Optical**		**Pin #**	**Signal**	**Description**
+5V	Brown	Brown		**4**	+5 VDC	+5 VDC Encoder power
Ground	White	White		**3**	DGND	Encoder power return
A/	Yellow	Yellow	*	**8**	ENC A+	Encoder A Channel in
A+	Green	Green	*	**7**	ENC A–	Encoder A Channel in
B+	Blue	Blue		**12**	ENC B+	Encoder B Channel in
B-	Red	Red		**11**	ENC B-	Encoder B Channel in
Z+	Black	Pink		**1**	ENC Z+	Encoder Z Channel in
Z-	Orange	Grey		**2**	ENC Z–	Encoder Z Channel in
Hall Effect Cable						
Function	**Hall Type 1**	**Hall Type 2**				
+5V	Black	Black		**5**	+5 VDC	+5 VDC Hall power
Ground	White	White		**6**	DGND	Hall power return
Hall C	Yellow	Brown	**	**9**	Hall 1	Hall 1 input
Hall B	Blue	Blue	**	**13**	Hall 2	Hall 2 input
Hall A	Green	Green	**	**14**	Hall 3	Hall 3 input
Motor Cable						
	Temp Style1	**Temp Style2**				
	Yellow	Grey		**10**	Thermal+	Motor thermal switch/thermistor
	Orange	Violet		**15**	Thermal-	Motor thermal switch/thermistor

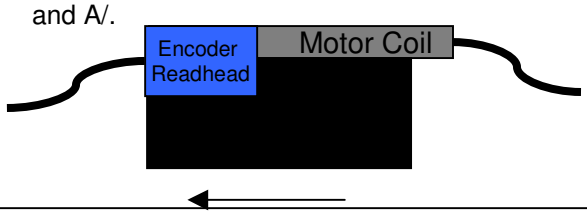
Hall Type 1: All Positioners with flying leads, all coils not listed in Hall Type 2
Hall Type 2: Coils 210, 310, 410, with WD7/C
Temp Style 1: All Positioners with flying leads, Coils with WD0, WD1, WD2, WD7
Temp Style 2: Coils with WD3, WD4 options
* The encoder's A+ and A- are reversed at the Aries drive, A/ and A respectively.
** Halls C/B/A are reversed at the Aries, Hall 1/2/3 respectively

The above connections presumes the motor, readhead and hall cables exit the same direction.

For positioners, this is the standard orientation.



In coil only applications, if the encoder's cable exit faces opposite the opposite way, switch A and A/.



Limit Wiring

Trilogy Limit and Home Wiring

Applies to all Trilogy Positioners that include the connector box option.

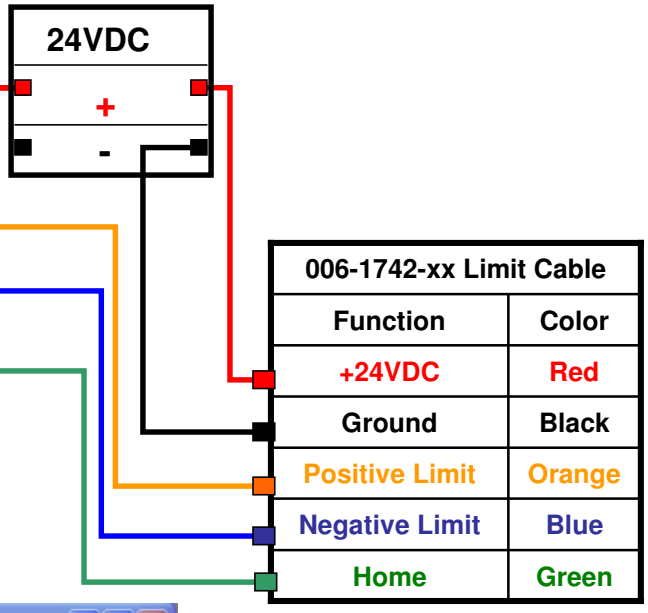
Txxxxxxxxx**LA3**

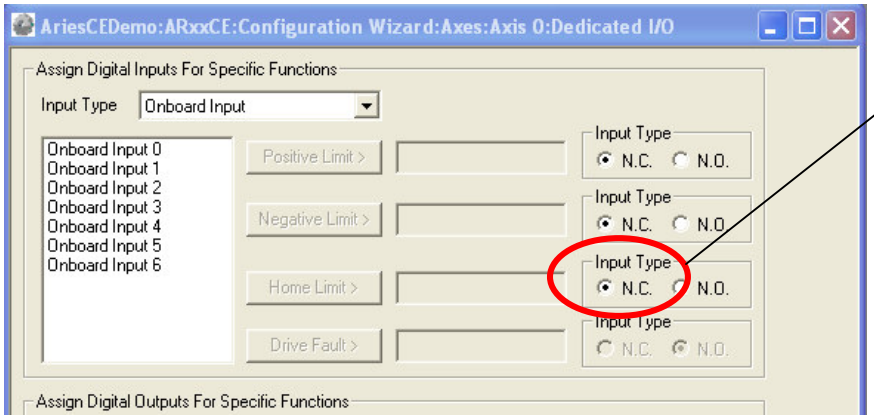
Txxxxxxxxx**MA3**

AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16





Note: Home sensors for Trilogy Positioners are Normally Closed. Be sure to adjust this setting in ACR-View when configuring the controller

Limit Wiring

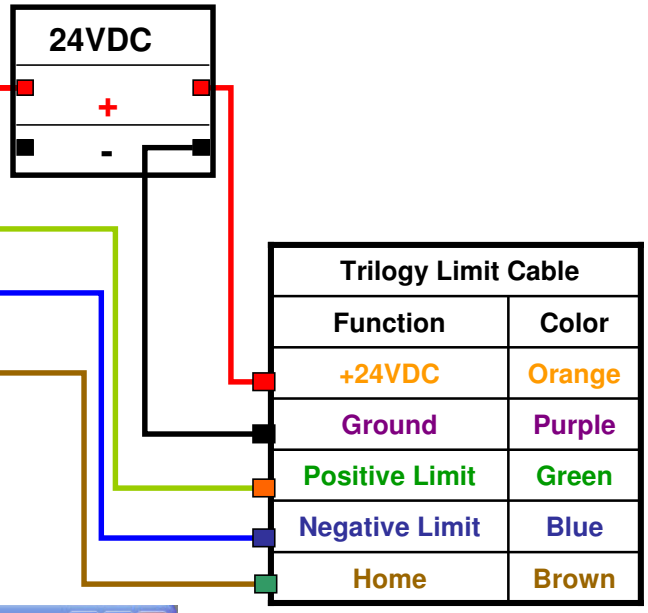
Trilogy Limit and Home Wiring

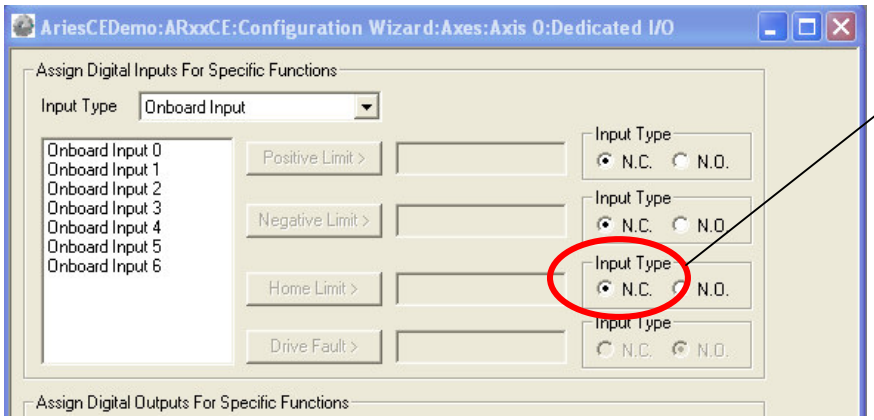
Applies to all Trilogy Positioners that do NOT include the connector box option.

AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16





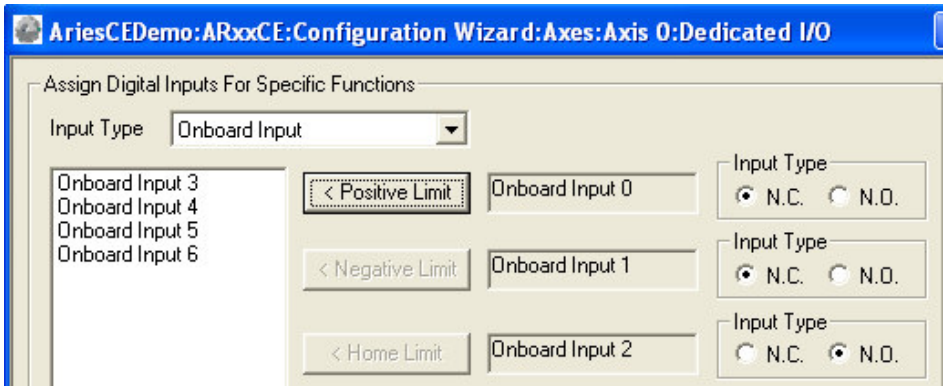
Note: Home sensors for Trilogy Positioners are Normally Closed. Be sure to adjust this setting in ACR-View when configuring the controller

Aries Controller with Parker Mechanics

Parker Mechanics are offered with a wide array of choices for limits and home sensors. Any of these combinations can be used with the Aries Controller. The Aries Controller can utilize either NPN (sinking) or PNP (sourcing) style sensors ranging from 5-24 VDC input levels.

- Aries controller includes 7 general purpose inputs, any of which can be configured for limits and home function.
- Limits and home must be selected on 3 consecutive inputs, ordered as positive, negative and home
- Normally Open (NO) or Normally Closed (NC) activation level can be configured for each individual input.
- Input voltage must be supplied externally
- Inputs are accessed via the controller 25-pin connector. The VM25 breakout module offers a convenient way to wire the inputs.

ACR-View Configuration: Limits and Home



Aries Controller with Parker Mechanics

Sample System Bill of Materials

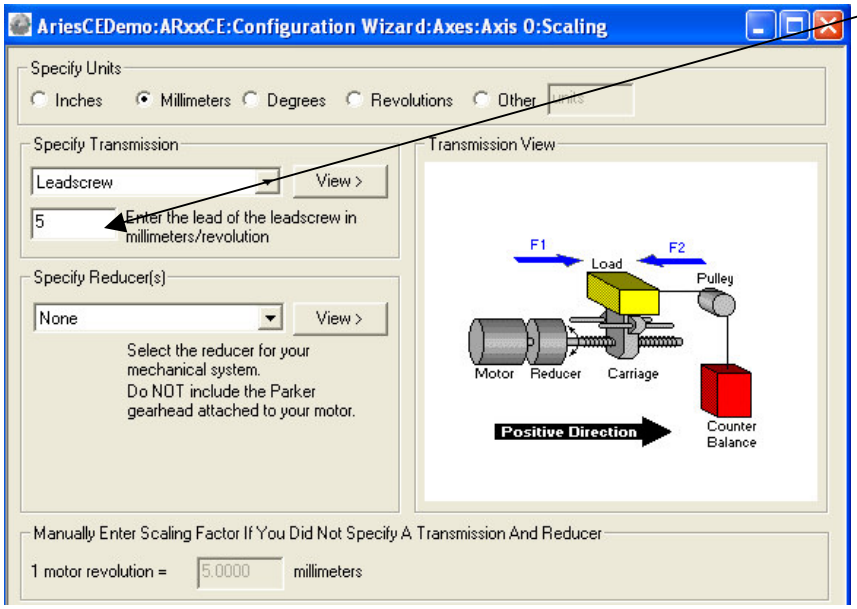
Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
HD085T03N-D03M110LH2B1R1	HD Series Industrial Grade Table, 300mm travel, 10mm lead ballscrew, NPN Limits/Home and SM232AQ-TPSN motor
P-1A1-10	10ft Motor Power Cable, PS style
F-1A1-10	10ft Motor Feedback Cable, PS style
VM25	25-pin breakout for user I/O with 2 ft cable
PS-60W	24 VDC, 60 Watt power supply for I/O

Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
404300XRMP-D2H12L11C5M42E1B1P1R1	XR Series Precision Grade Table, 300mm travel, 5mm lead ballscrew, NPN Limits/Home-Sensor Pack and SM232AQ-NPSN motor
P-1A1-10	10ft Motor Power Cable, PS style
F-1A1-10	10ft Motor Feedback Cable, PS style
VM25	25-pin breakout for user I/O with 2 ft cable
PS-60W	24 VDC, 60 Watt power supply for I/O

Part numbers	Description
AR-04CE	400W, 3 amp RMS servo controller
ET050B05 LA000E14FKAN0300A	ET Series Electric Cylinder, 300mm travel, 0.20 inch lead ballscrew, NPN Limits/Home-Sensor Pack and SM232AQ-TPSN motor
SMC50-1N (qty2)	N.C. NPN Hall Effect Sensor w/ mounting for ET50
SMH50-1N (qty1)	N.O. NPN Hall Effect Sensor w/ mounting for ET50
P-1A1-10	10ft Motor Power Cable, PS style
F-1A1-10	10ft Motor Feedback Cable, PS style
VM25	25-pin breakout for user I/O with 2 ft cable
PS-60W	24 VDC, 60 Watt power supply for I/O

Aries Controller with Parker Mechanics

The Aries Controller allows users to program moves in predefined units of measure. Simply enter the relevant parameters in ACR-View and the correct scaling factor will be calculated. Parker mechanics are offered a wide range of ballscrew leads. The order codes and the actual leads are listed to the right for reference when using ACR-View.



Series	Order Code	Screw Lead
HD	D02	5mm
	D03	10mm
	D04	20mm
	D07	40mm
XR, XE	D2	5mm
	D3	10mm
	D4	20mm
	D5	25mm
	D6	32mm
	D9	2mm
	D31	1mm
	D32	2mm
	D33	5mm
	D34	0.10 inch
	D35	0.10 inch
ET	A04	0.250 in
	A05	0.200 in
	A08	0.125 in
	B01	1.000 in
	B02	0.500 in
	B04	0.250 in
	B05	0.200 in
	B08	0.125 in
	B53	1.875 in
	M05	5mm
	M10	10mm
	M20	20mm
	M50	50mm

Limit and Home Wiring

Applies to the following Parker Stages:

402/403/404XE ...**L12H11**

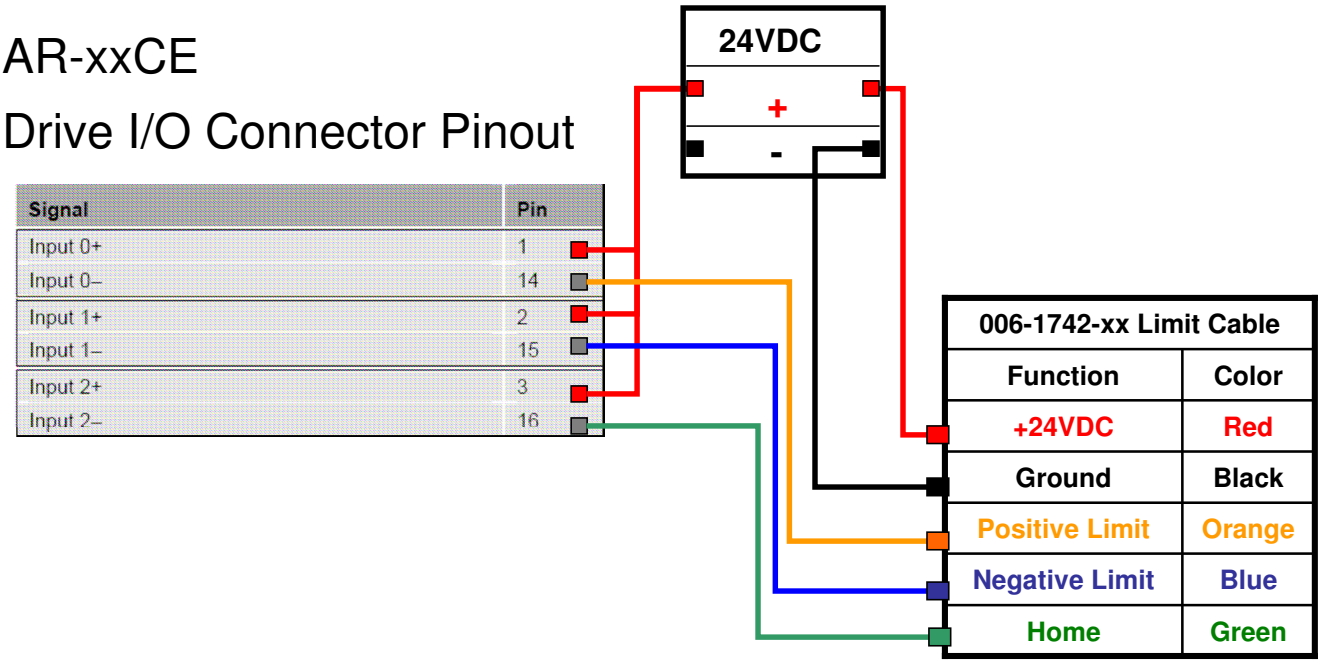
404/406XR…**L12H11**

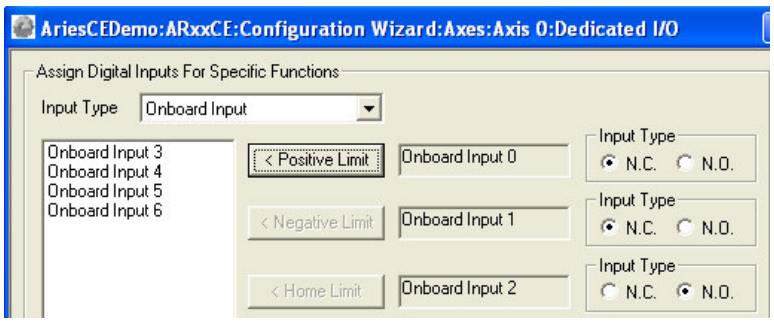
404/406/412LXR….**H3 L2**

AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16





Limit and Home Wiring

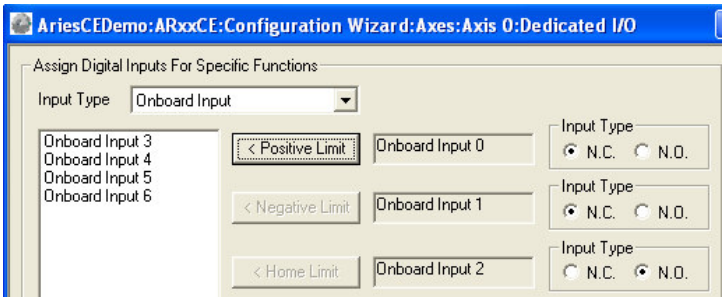
Applies to the following Parker Stages:

404XE…**H3L2**

404XE…**H7L6**

401/402/404/406/412XR…**H3L2**

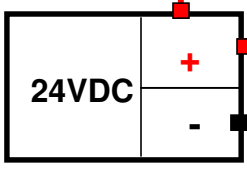
401/402/404/406/412XR…**H7L6**



AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16



Positive Limit L2 or L6 NPN N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Negative Limit L2 or L6 NPN N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Home H3 or H7 NPN N.O.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NO Signal	White

Limit and Home Wiring

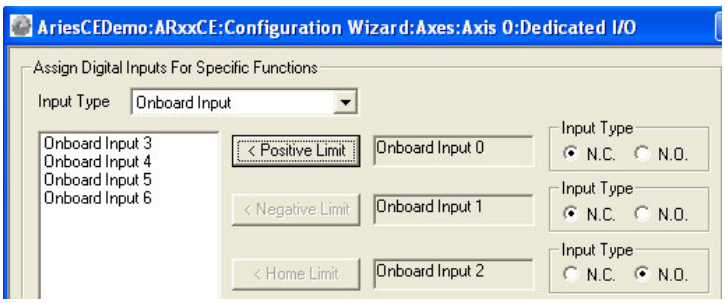
Applies to the following Parker Stages:

404XE…**H5L4**

404XE…**H9L8**

401/402/404/406/412XR…**H5L4**

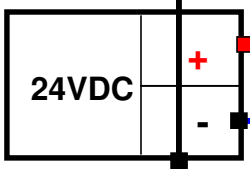
401/402/404/406/412XR…**H9L8**



AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16



Positive Limit L4 or L8 PNP N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Negative Limit L4 or L8 PNP N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

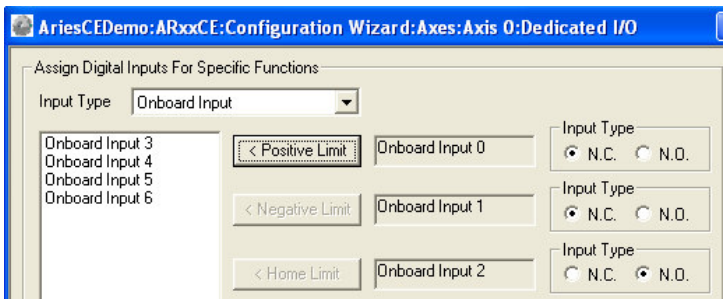
Home H5 or H9 PNP N.O.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NO Signal	White

Limit and Home Wiring

Applies to the following Parker Stages:

402/403XE…**H3L2**

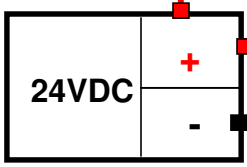
HD085/125/185…**LH2**



AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16



Positive Limit NPN N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Negative Limit NPN N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Home NPN N.O.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NO Signal	Black

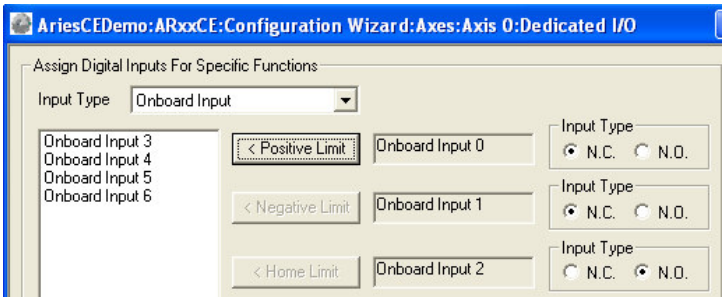
Limit and Home Wiring

Applies to the following Parker Stages:

ET32/50/80/100/125 NPN Sensors ordered separately

Hall Effect Sensors

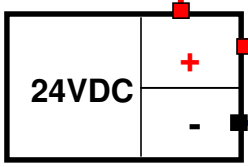
Part No.	Type	LED Color	Logic	Cable/ Connector
SMH-1P	N.O.	Green	PNP	1.5m black with leads
SMH-1N	N.O.	Red	NPN	
SMC-1P	N.C.	Yellow	PNP	
SMC-1N	N.C.	White/Red	NPN	
SMH-1PC	N.O.	Green	PNP	150mm black with connector*
SMH-1NC	N.O.	Red	NPN	
SMC-1PC	N.C.	Yellow	PNP	
SMC-1NC	N.C.	White/Red	NPN	



AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16



Positive Limit SMC-1N NPN N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Negative Limit SMC-1N NPN N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Home SMH-1N NPN N.O.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NO Signal	Black

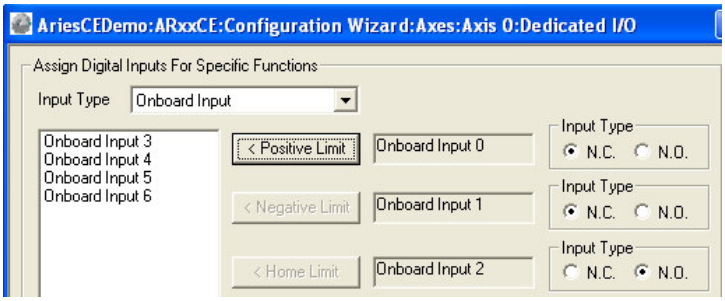
Limit and Home Wiring

Applies to the following Parker Stages:

ET32/50/80/100/125 PNP Sensors ordered separately

Hall Effect Sensors

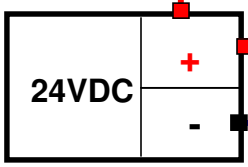
Part No.	Type	LED Color	Logic	Cable/ Connector
SMH-1P	N.O.	Green	PNP	1.5m black with leads
SMH-1N	N.O.	Red	NPN	
SMC-1P	N.C.	Yellow	PNP	
SMC-1N	N.C.	White/Red	NPN	
SMH-1PC	N.O.	Green	PNP	150mm black with connector*
SMH-1NC	N.O.	Red	NPN	
SMC-1PC	N.C.	Yellow	PNP	
SMC-1NC	N.C.	White/Red	NPN	



AR-xxCE

Drive I/O Connector Pinout

Signal	Pin
Input 0+	1
Input 0–	14
Input 1+	2
Input 1–	15
Input 2+	3
Input 2–	16



Positive Limit SMC-1P PNP N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

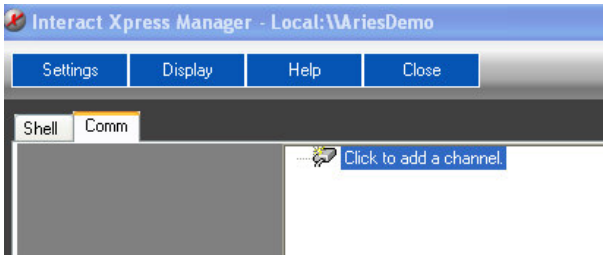
Positive Limit SMC-1P PNP N.C.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NC Signal	Black

Home SMH-1P PNP N.O.	
Function	Color
+ (supply)	Brown
- (supply)	Blue
NO Signal	White

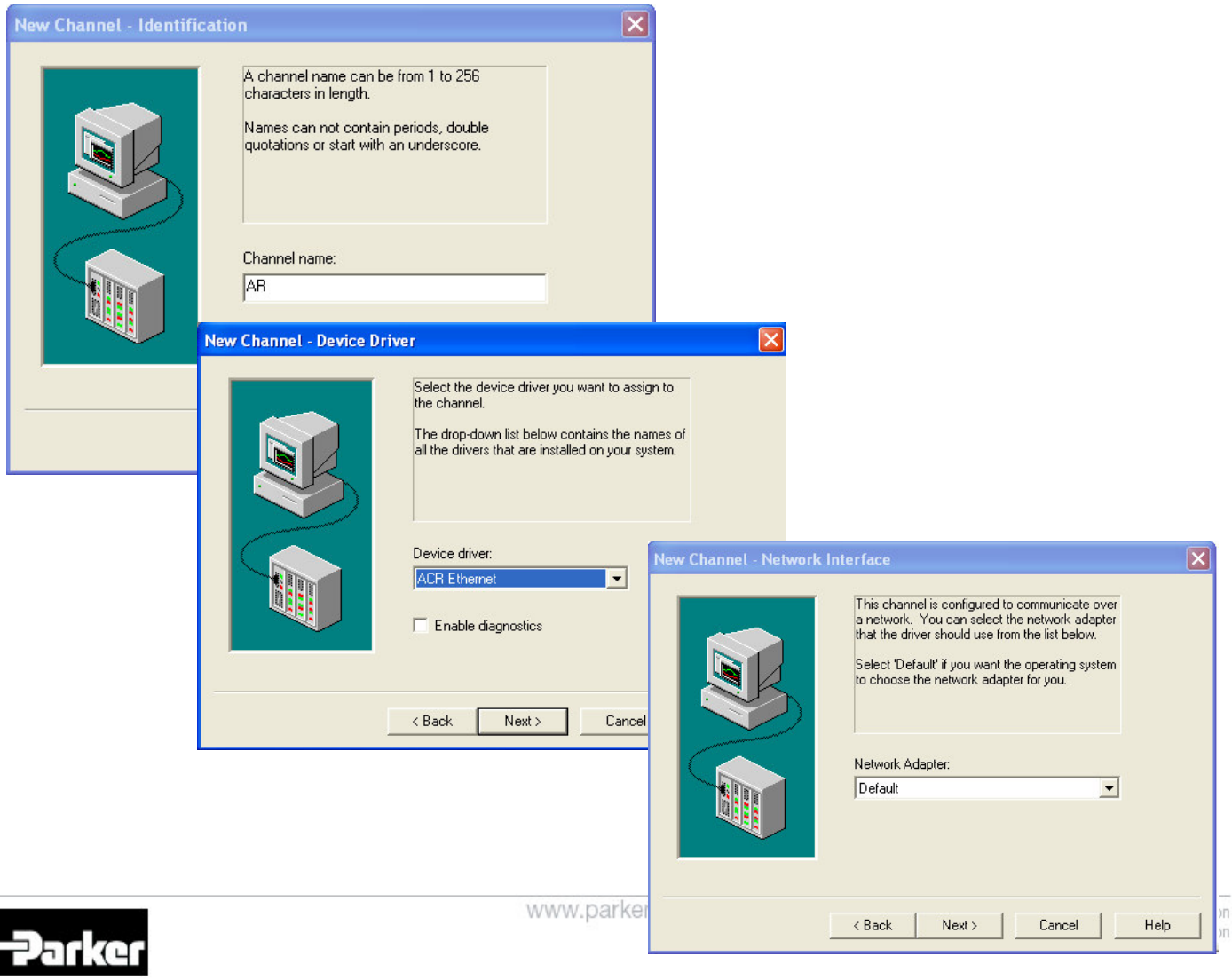
Aries Controller

Getting Started With Xpress

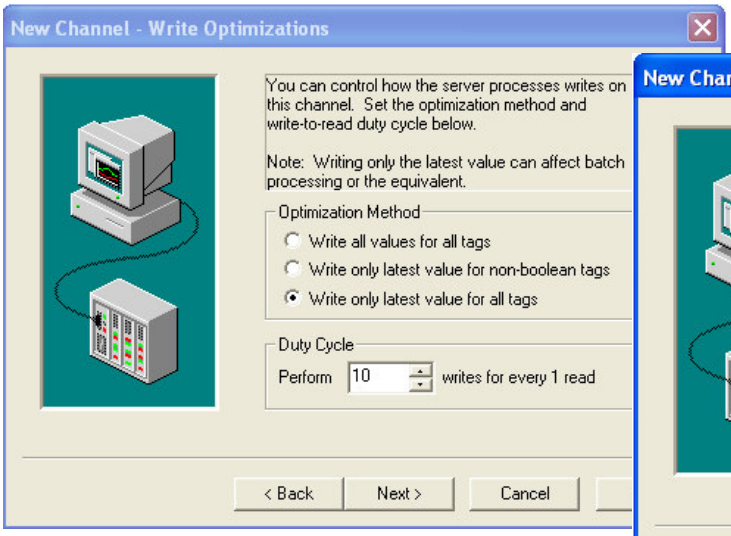
Launch Interact Xpress Manager

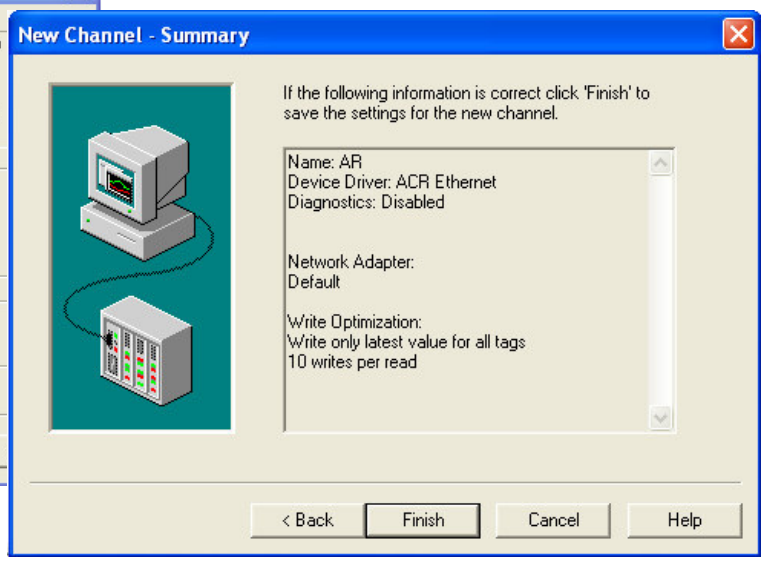


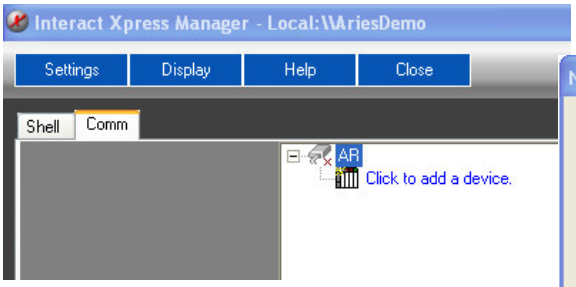
1. Create a new project
2. Open the Comm Tab
3. “Click to add a channel”
4. New Channel-Name: “AR”
5. New Channel - Device Driver : “ACR Ethernet”
6. New Channel - Network Adapter: “Default”

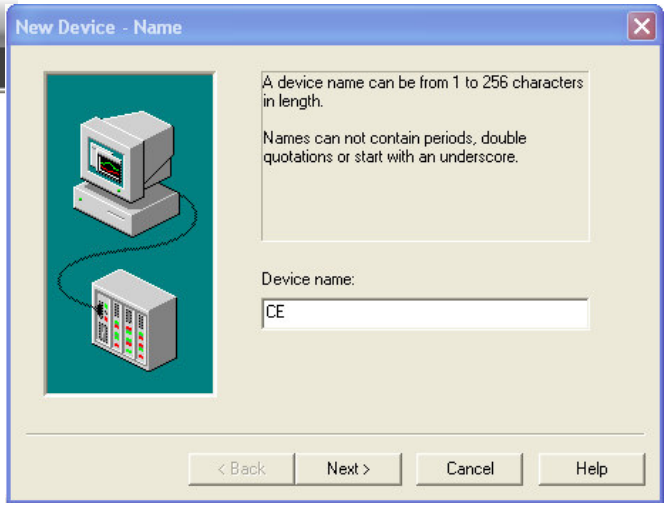


7. New Channel - Write Optimizations: Use default settings
8. New Channel - Summary
9. “Click to add Device”
10. New Device - Name “CE”

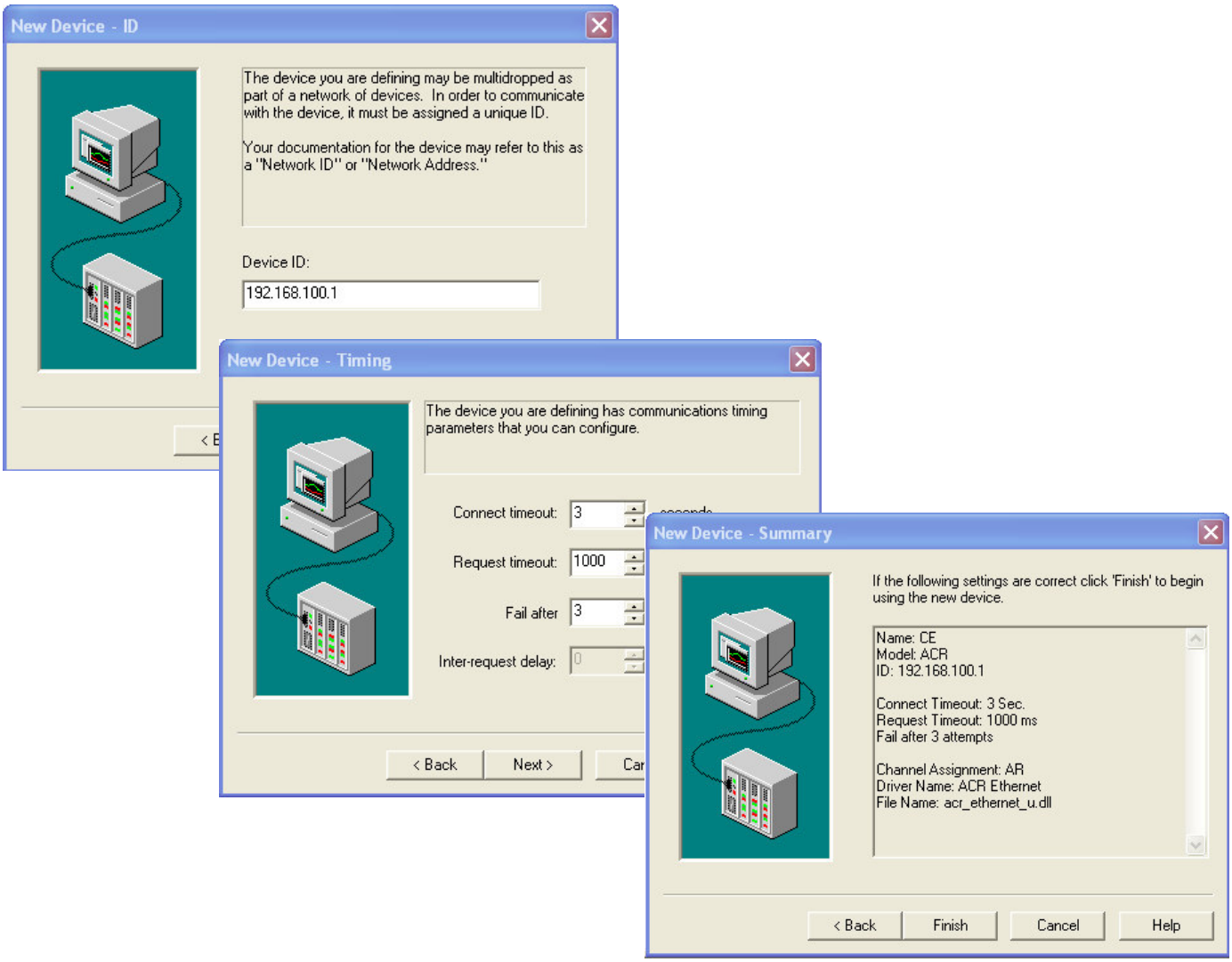








11. New Device ID: Enter IP address of Aries, default is 192.168.100.1
12. New Device - Timing: Use Defaults
13. Finish



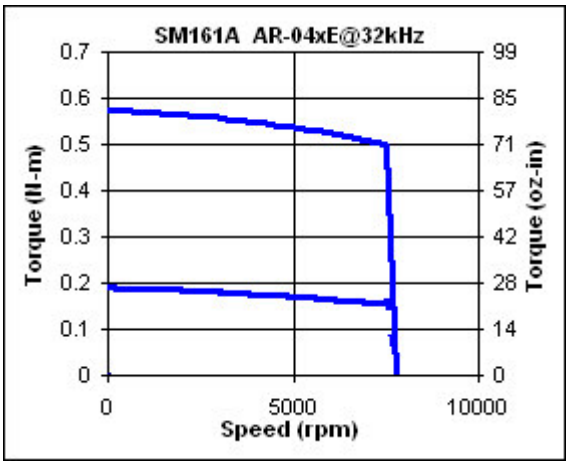
Getting Started With Xpress

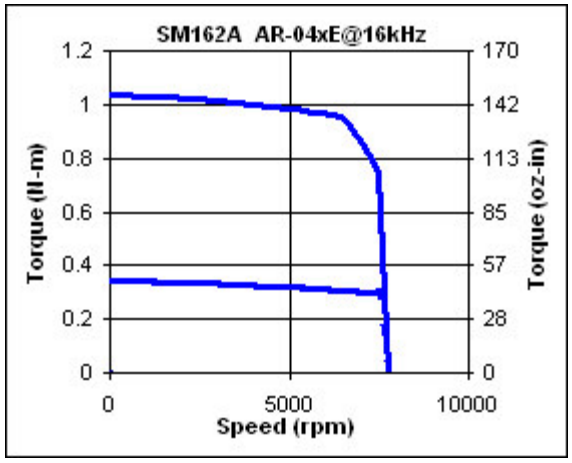
Creating Tags

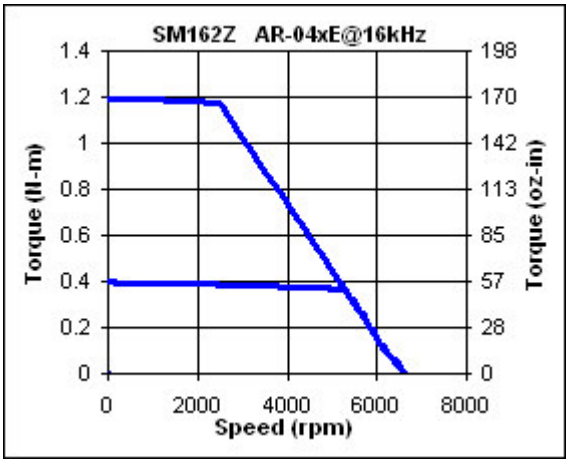
- Tag names follow the generic format: Channel.Device.BITxxxx or Channel.Device.Pxxxx
- In the above example Channel = AR, Device= CE
- Any controller BIT (also called flags) can be referenced and represent BOOLEAN type
- Any controller P parameter can be referenced, either LONGS or FLOAT(REAL)

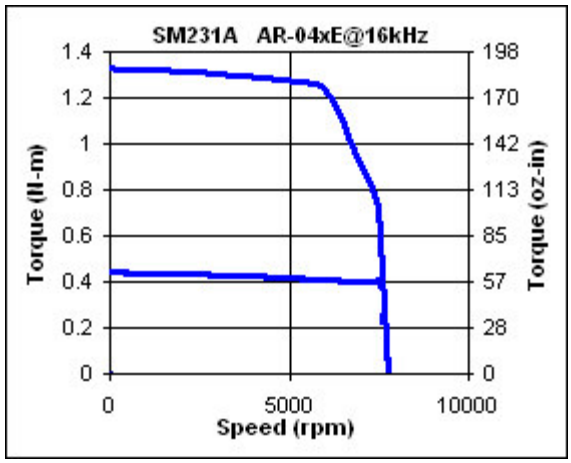
Name	Address
bProgRun_0	AR.CE.BIT1032
bStopMoves	AR.CE.BIT523
dACC	AR.CE.P10
dDEC	AR.CE.P13
dFVEL	AR.CE.P14
dSTP	AR.CE.P12
dValue	AR.CE.P3
dVEL	AR.CE.P11
iIndex	AR.CE.LV0
iOptionWord	AR.CE.P2
OUTA	AR.CE.BIT32
OUTB	AR.CE.BIT33
OUTC	AR.CE.BIT34
OUTD	AR.CE.BIT35
pControlWord	AR.CE.P0
pJogAcc	AR.CE.P12349
pJogDec	AR.CE.P12350
pJogJrk	AR.CE.P12351
pJogVel	AR.CE.P12348

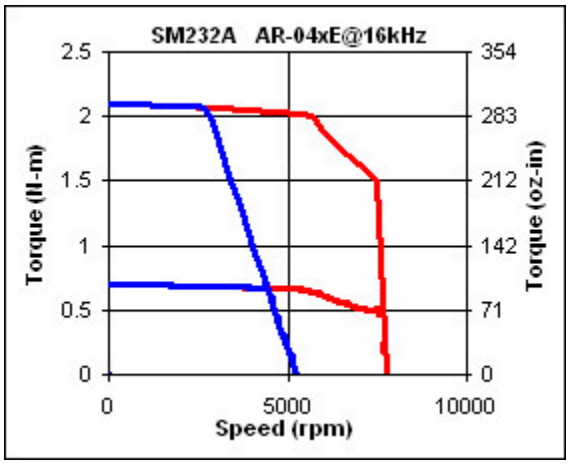
Speed Torque Curves

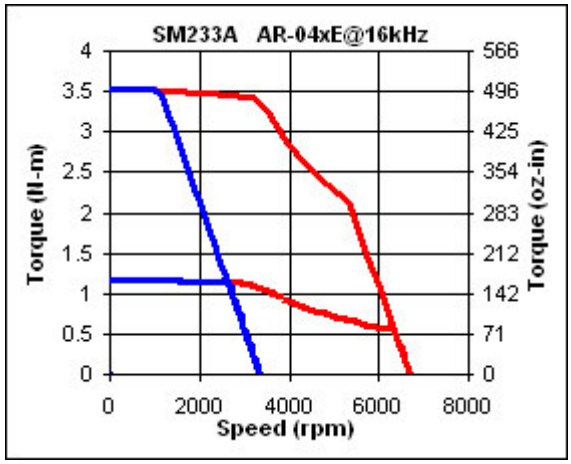


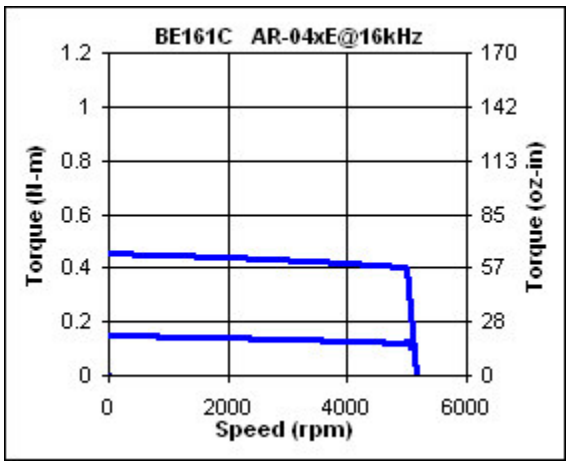


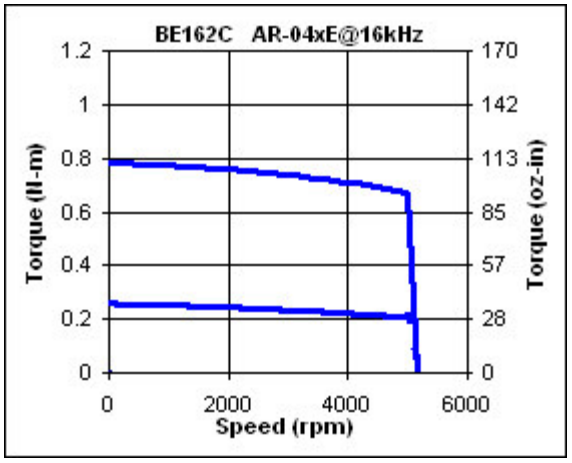


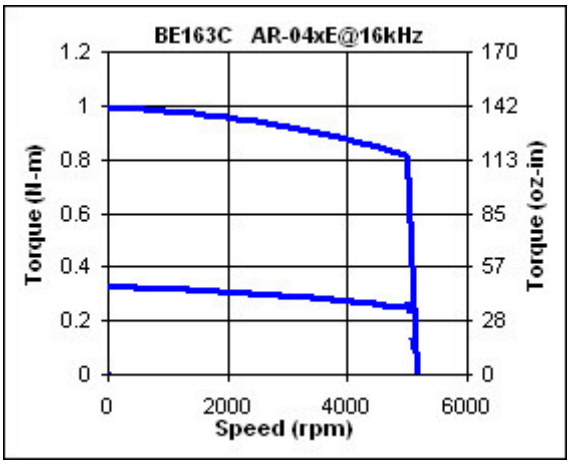


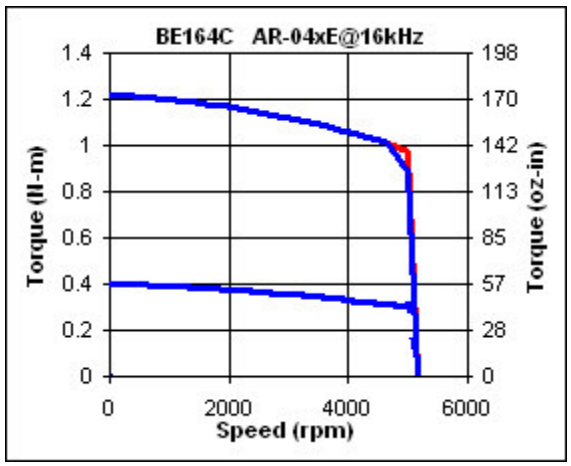


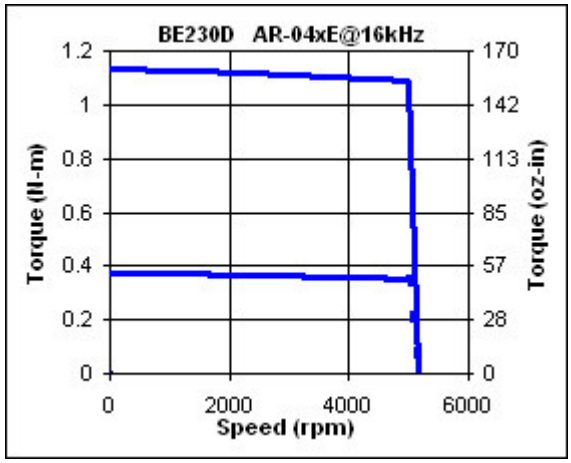


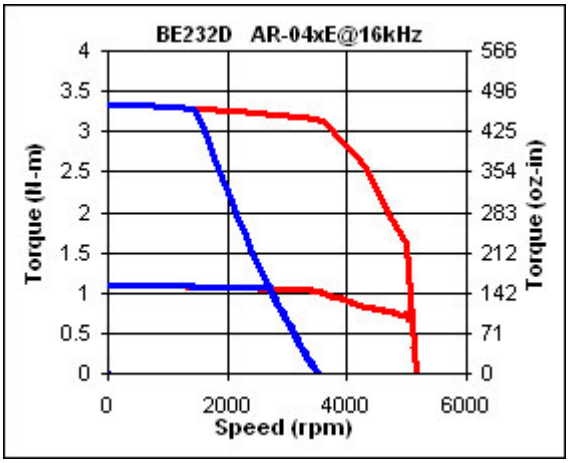


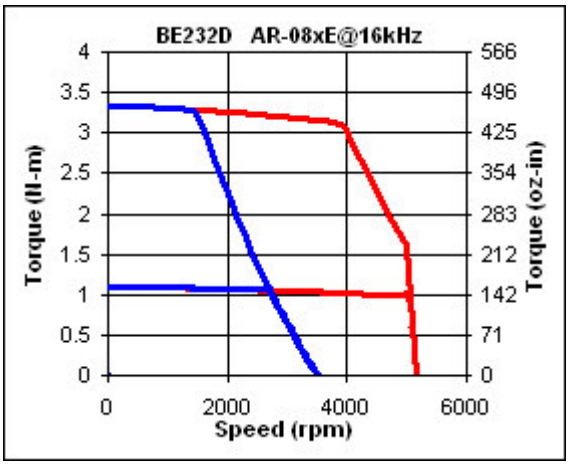


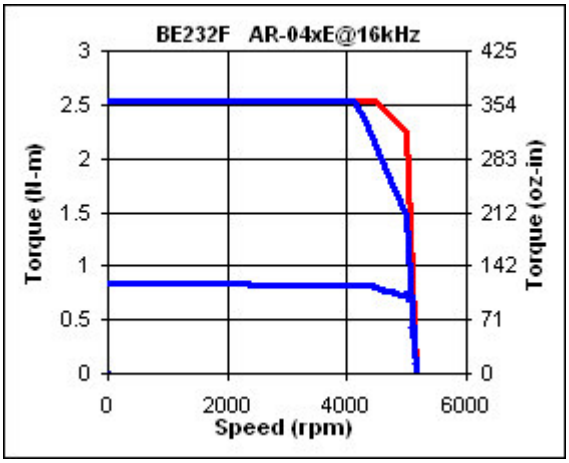


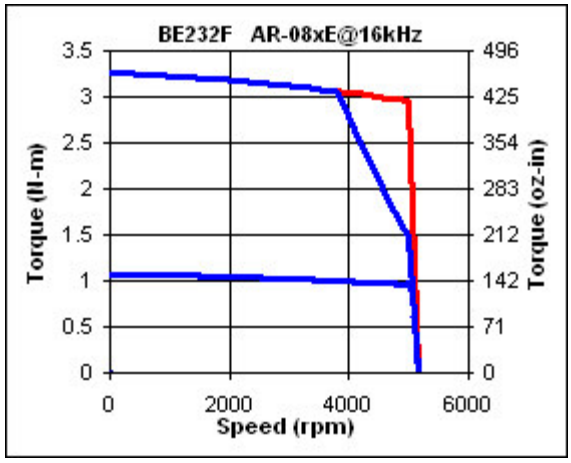


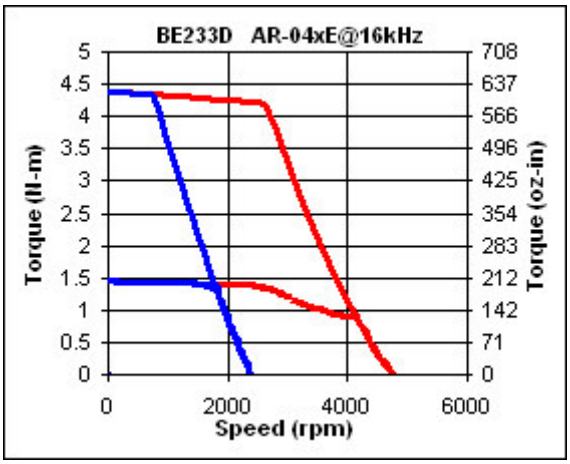


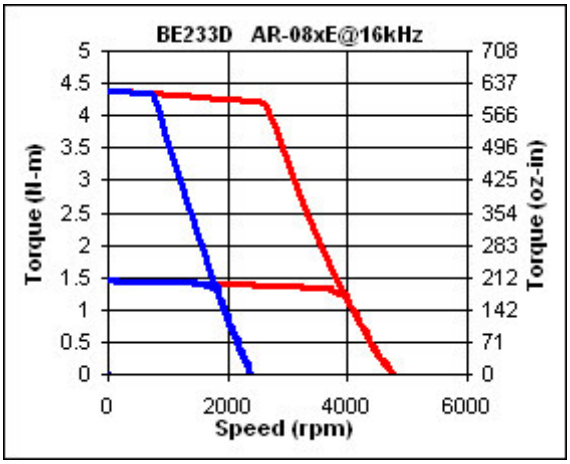












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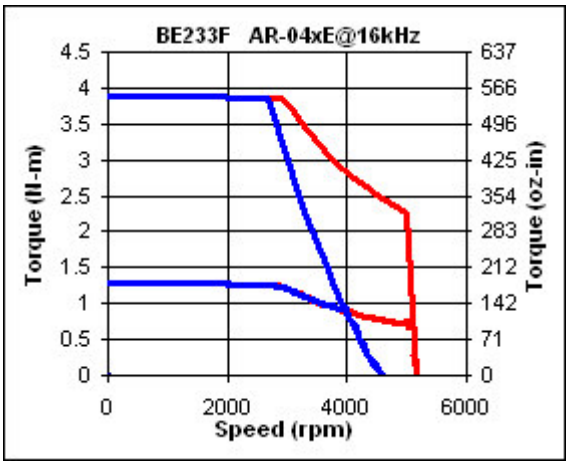

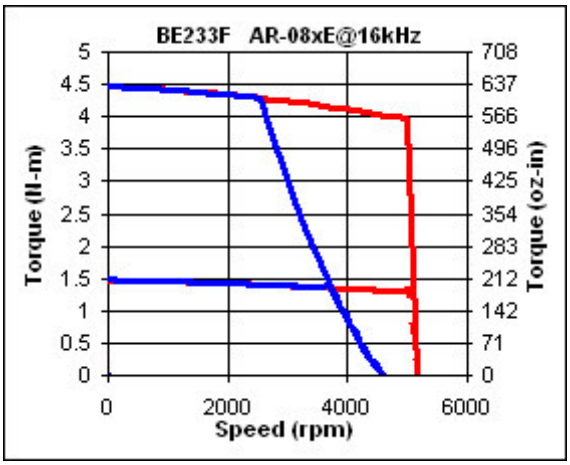

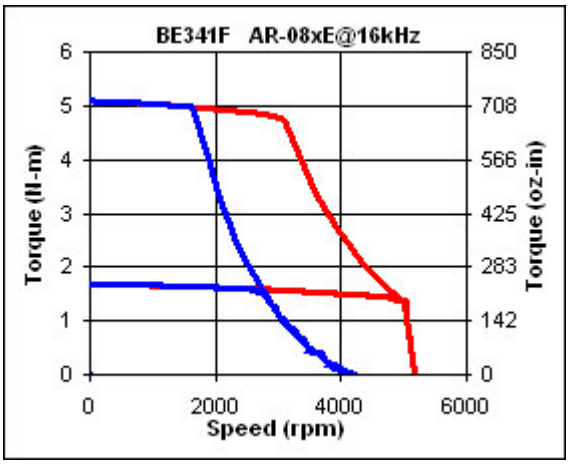

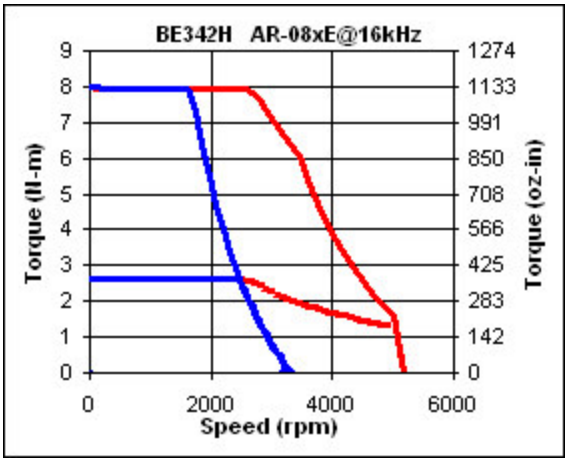

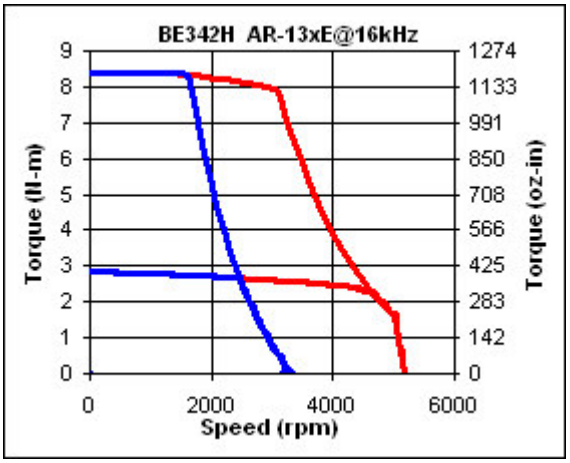

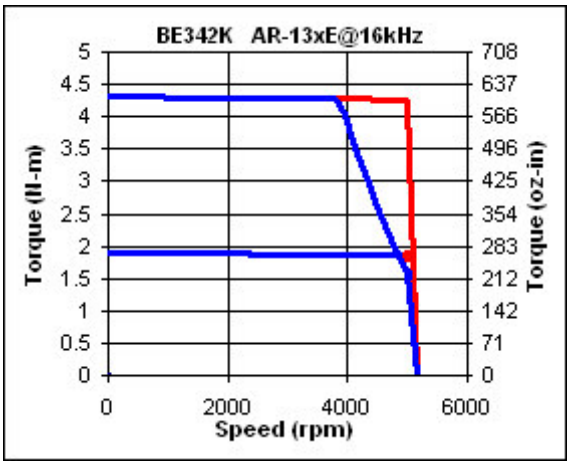

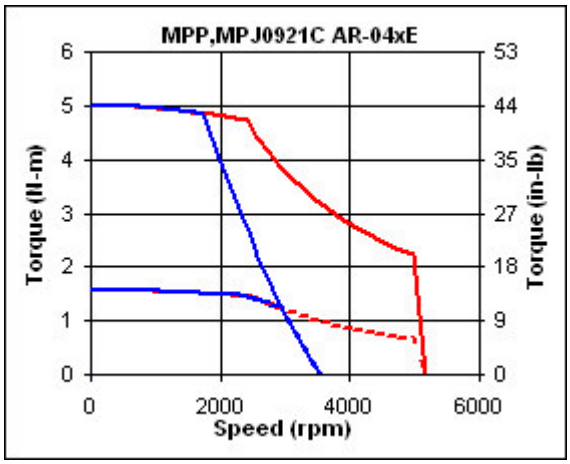

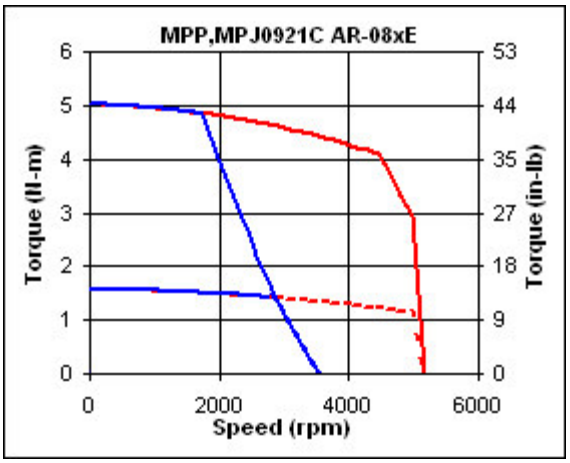

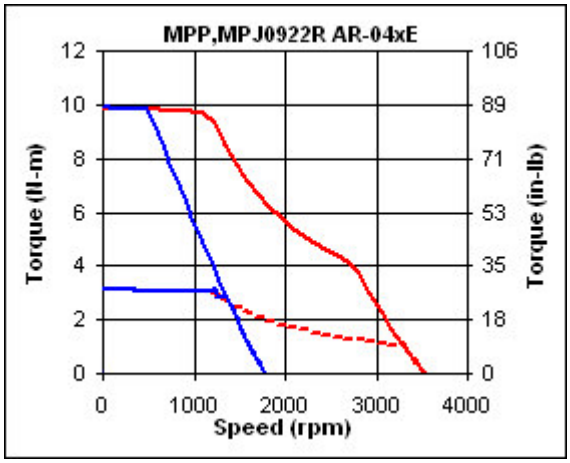

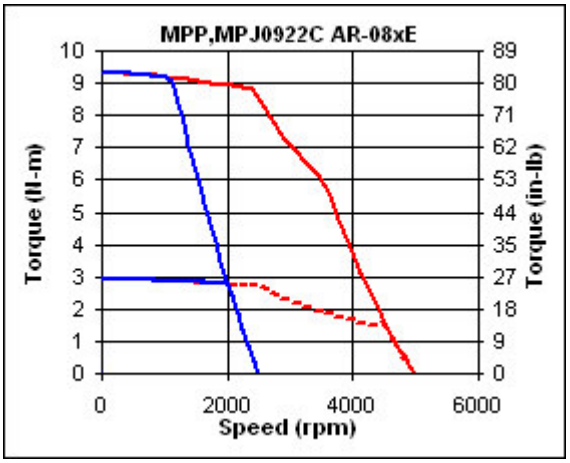

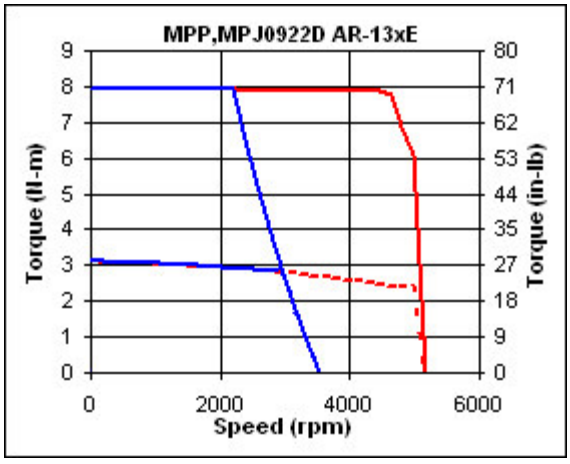

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