Aries Drive

High-Power, Compact Digital Servo Drives

With its “plug and spin” design, the Aries family of compact digital servo drives requires no setup. Users simply attach any Parker “smart encoder” motor and the drive automatically configures. Available in seven versions (100, 200, 400, 750, 1300, 2000 and 3000 Watts), the Aries family gives users a robust and cost-effective digital servo product – users only pay for the level of performance they need. Unlike the competition, the Aries family is designed with open architecture in mind, so it can also be configured for use with any manufacturer’s motion controller and servo motor.

The Aries comes standard as a torque-only amplifier but is software selectable to run in velocity mode. An optional step-and-direction version is also available for users replacing stepper systems or not wanting to change their current step-and-direction command interface.

Aries Drive Features

- Plug in and spin – no set up required; drive auto-configures when used with Parker’s “smart encoder” motor
- Drive Talk – ACR9000 controller can access all drive parameters
- Auto-tuning available
- Optimized for Parker’s brushless rotary and linear servo motors
- Standard quadrature encoder compatible
- 7 versions available: 100, 200, 400, 750, 1300, 2000 and 3000 Watts
- Standard high-density D-sub connectors for easy connectivity to any system
- 120/240 VAC input with required 120/240 VAC keep alive circuitry
- CE (EMC & LVD), UL compliant
- Compact design
- Brake relay
- Optional velocity and step-and-direction signal inputs

Specifications	AR-01_E	AR-02_E	AR-04_E	AR-08_E
Motor Output Power				
Shaft Power @ Continuous Current	100 Watts*	200 Watts*	400 Watts*	750 Watts*
Shaft Power @ Peak Current	300 Watts*	600 Watts*	1200 Watts*	2250 Watts*
Drive Output Power				
Continuous Current (RMS)	1 Amp	1.75 Amps	3 Amps	4.5 Amps
Peak Current (RMS)	3 Amps	5.25 Amps	9 Amps	13.5 Amps
Bus Voltage	170/340 VDC			
PWM	16 or 32 kHz, motor dependent			
Drive Input Voltage	120/240 VAC, 1ø, 50/60 Hz			

Specifications	AR-13_E	AR-20_E	AR-30_E
Motor Output Power			
Shaft Power @ Continuous Current	1300 Watts*	2000 Watts*	3000 Watts*
Shaft Power @ Peak Current	3900 Watts*	6000 Watts*	9000 Watts*
Drive Output Power			
Continuous Current (RMS)	6.3 Amp	10 Amps	16 Amps
Peak Current (RMS)	14.2 Amps	30 Amps	48 Amps
Bus Voltage	170/340 VDC	340 VDC	340 VDC
PWM	16 or 32 kHz, motor dep.	16 kHz	16 kHz
Drive Input Voltage	20/240 VAC, 1 or 3 ph	240 VAC, 1 or 3 ph	240 VAC, 3 phase,
	50/60 Hz		

Performance	
Servo Update	62.5 µ secondsm
Accuracy	± 1 encoder count; encoder dependentm
Commutation	Sinusoidal
Inputs	
Command	14-bit resolution ADC, ± 10 V (torque/velocity control) Step and direction, 2 MHz max (position control)
Enable/Reset	5-24 VDC
Encoder	5 MHz (pre-quadrature); RS-422 compatible differential input
Outputs	
Fault	5-24 VDC
Brake	Solid state, normally open; 1 Amp @ 24 VDC max
Encoder Out	RS-422 compatible differential driver; 5 MHz max. output frequency (pre-quadrature)
Communications	
Type	RS-232 (3-wire)/RS-485 (2-wire) ASCII
Baud Rate	Fixed at 9600
Multi-drop	Up to 99 units (RS485 only)
Drive talk	RS-485 (2 wire)
Standards	UL, cUL, CE(LVD), CE(EMC)
Environmental	
Temperature	0-45½ C (32-113½ F) except AR-13_E 0-40½ C (32-104½ F)
Humidity	0-95% non-condensing
Shock/Vibration	15g, 11 msec half sine / 10-2000 Hz @ 2g

Weight - lbs (kg)	
AR-01_E	1.68 (0.76)
AR-02_E	1.90 (0.86)
AR-04_E	2.54 (1.15)
AR-08_E	2.82 (1.28)
AR-13_E	3.60 (1.63)
AR-20_E	7.35 (3.33)
AR-30_E	7.40 (3.36)

* @ 240 VAC

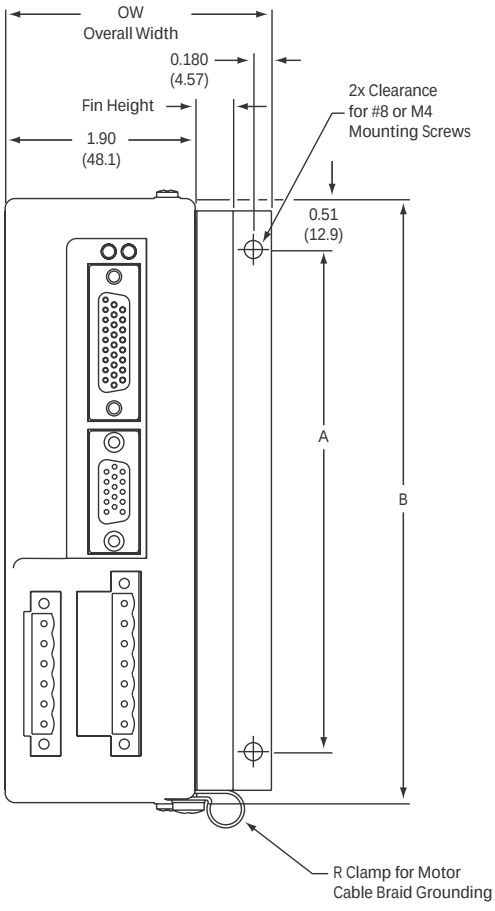
Drive	A- in (mm)	B- in (mm)	Fin Height in (mm)	Overall Width (OW) in (mm)
AR-01_E	5.00 (127)	6.02 (153)	0.010 (0.25)	2.29 (58.2)
AR-02_E	5.00 (127)	6.02 (153)	0.375 (9.5)	2.65 (67.3)
AR-04_E	6.00 (152)	7.02 (178)	0.625 (15.9)	2.90 (73.7)
AR-08_E	6.00 (152)	7.02 (178)	1.000 (25.4)	3.28 (83.3)
AR-13_E	6.00 (152)	7.02 (178)	2.00 (50.8)	4.28 (108.7)
AR-20_E & 30_E	-	-	1.48 (37.5)	4.67 (118.5)

Drive	Overall Depth in (mm)	Overall Depth with Cables in (mm)
AR-01_E	5.05 (128)	7.60 (193)
AR-02_E	5.05 (128)	7.60 (193)
AR-04_E	5.05 (128)	7.60 (193)
AR-08_E	5.05 (128)	7.60 (193)
AR-13_E	5.05 (128)	7.60 (193)
AR-20_E & 30_E	6.72 (171)	9.27 (235.5)

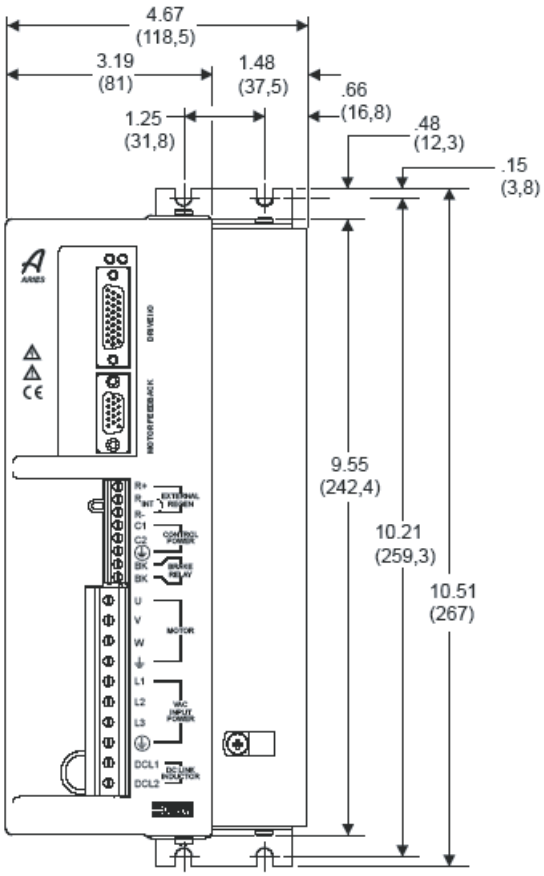
Please refer to www.parkermotion.com for motor/drive performance curves. The Aries drive is compatible with the following Parker motor series:

Rotary Motors	SMN Series, BE Series, MaxPlusPlus Series, SE/SM Series
Linear Motors	Trilogy linear motors and actuators, LXR linear stages, SL Linear Series

AR-01_E - AR-13_E



AR-20_E and AR-30_E



Aries Drive to Controller

Drive	Controller	Cable
AR-__-AE	ACR Controller (RBC Breakout on ACR9000)	71-021599-04
AR-__-AE	6K Controller	71-021600-04

Aries Drive to Motor

Drive	Motor	Power Cable	Feedback Cable
AR-01_E - AR-08_E	PS or Option 5 connection motors	P-1A1-xx	F-1A1-xx
AR-13_E - AR-30_E	PS or Option 5 connection motors	P-3B1-xx	F-1A1-xx

Aries Accessories

Part Number	Description
71-021609-01	Aries RS-232/485 serial communication dongle
VM26-PM	26-pin screw terminal breakout for drive I/O connector
VM15-PM	15-pin screw terminal breakout for motor feedback connector

Drive I/O Connector

NOTE: A box surrounding the pins indicates a requirement for twisted pair wiring.

Signal	Pin
ENABLE+	1
ENABLE-	21
DGND	2
ENC A+	3
ENC A-	4
ENC B+	5
ENC B-	6
ENC Z+	7
ENC Z-	8
FAULT+	9
FAULT-	16
STEP+	10
STEP-	11
DIRECTION+	12
DIRECTION-	13
AIN+	14
AIN-	15
DGND	17
RESET+	18
RESET-	23
DGND	19
DGND	20
DGND	22
DGND	24
RS-232Rx/RS-485+	25
RS-232Tx/RS-485-	26

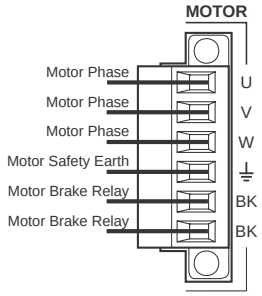
Motor Feedback Connector

Signal	Pin
ENC Z+/DATA+	1
ENC Z-/DATA-	2
DGND	3
+5 VDC (250mA max)	4
+5 VDC (250mA max)	5
DGND	6
ENC A-/SIN-	7
ENC A+/SIN+	8
Hall 1/SCLK+ *	9
Thermal+	10
Thermal-	15
ENC B/COS-	11
ENC B+/COS+	12
Hall 2/SCLK- *	13
Hall 3	14

*When using the SinCos protocol, pins 9 and 13 require twisted pair wiring.

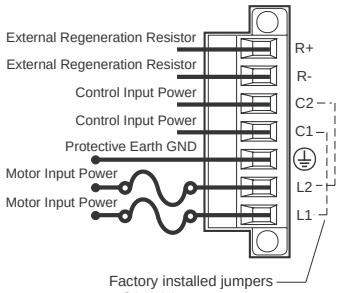
AR-01_E and AR-13_E

Output Power Connector



120/240 VAC, 50/60Hz, Single phase

Mains Power Connector

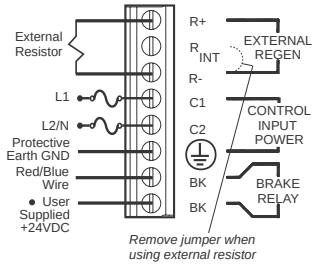


Factory installed jumpers
- C1 to L1
- C2 to L2

Remove jumpers to use separate control and motor mains AC power input.

AR-20_E and AR-30_E

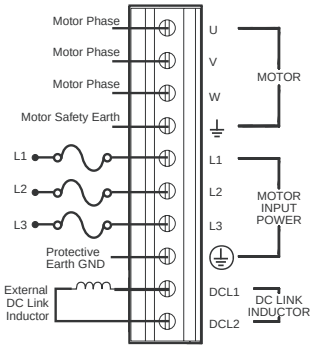
Control Connector



Factory installed jumpers
- R INT to R-
- C1 to L1
- C2 to L2
- DCL1 to DCL2

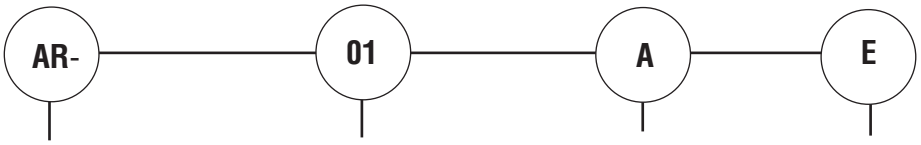
Remove jumpers to use separate control and motor mains AC power input.

Power/Motor Connector



240 VAC, 50/60Hz, Single and three phase

How to Order



Aries Digital Drive Series
Example AR-01AE

Maximum Shaft Power
01 - 100 Watts
02 - 200 Watts
04 - 400 Watts
08 - 750 Watts
13 - 1300 Watts
20 - 2000 Watts
30 - 3000 Watts

Command Interface
A - Analog +/- 10V
S - Step and direction

Motor Feedback
E - Encoder

Parker Hannifin Corp.
Electromechanical Division
parkermotion.com