

Controller Flags & Parameters

| Flag | Number | Parameter | Number |
|--------------------------|--------|--|---------|
| Control Flags | | | |
| Start Network | 16640 | EPL Network Control | |
| Reset Network | 16641 | Number of CNs (default 1; range 0–15) [†] | P37376 |
| Status Flags | | Node ID EPLD0 (default 1; range 1–99) [†] | P37632* |
| | | Drive Mode EPLD0 | P37634* |
| EPL Controller Installed | 16648 | TCP/IP Port Number EPLD0 | P37635* |
| Network Operational | 16649 | EPL Network Status | |
| Network Start Failed | 16650 | Network State | P37384 |
| EPL Node Failure | 16651 | Non-Operating Nodes Bit Reports | P37385 |
| EPLD Stream OPEN | 16652 | EPL Operation Error Code (0 = no error) | P37386 |
| EPLD Stream Disconnected | 16653 | EPLD object OPENed (-1 = none) | P37387 |
| EPL Drive(s) Enabled | 16654 | OPENed EPLD Device Number | P37388 |
| Insufficient Period | 16655 | Operational Duration in Seconds | P37389 |
| Starting Network | 16656 | [†] Set by user | |
| Resetting Network | 16657 | *For higher numbered EPLDs, work from EPLD0 and | |
| Opening EPLD Stream | 16660 | add n x 16 to each parameter number | |

Compliance

UL, cUL Recognized Component, 508c



Product Type Aries AR-04PE, -08PE, and -13PE Drives
ACR9030 and ACR9040 Controllers

The above product complies with the requirements of directives EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC, and CE Marking Directive 93/68/EEC, provided the installation requirements described in the *Aries EPL Hardware Installation Guide* are met, and there are no special requirements of the installation and operating environment so that the application may be considered typical.

The above equipment conforms with the protection requirements of Council Directive 89/336/EEC as amended by Directive 92/31/EEC on the approximation of the laws of the Member States relating to Electromagnetic Compatibility when installed, operated, and maintained as intended. Also, the above equipment conforms with the requirements of Council Directive 73/23/EEC (Low Voltage Directive) as amended by Directive 93/68/EEC (CE Marking Directive), when installed, operated, and maintained as intended.

In accordance with IEC 61800-3:1997 (adjustable-speed electrical power drive systems) this product is of the restricted sales distribution class which meets the needs of an industrial environment when installed as directed. However, further measures may need to be taken for use of the product in a domestic environment.

The installation requirements are detailed in the Information supplied with the equipment. The equipment is sold only to competent system builders.



Safety Warning!



High-performance motion control equipment is capable of producing rapid movement and very high forces. Unexpected motion may occur especially during the development of controller programs. KEEP WELL CLEAR of any machinery driven by servo motors. Never touch any part of the equipment while it is in operation.

This product is sold as a motion control component to be installed in a complete system using good engineering practice. Care must be taken to ensure that the product is installed and used in a safe manner according to local safety laws and regulations. In particular, the product must be positioned so that no part is accessible while power may be applied.

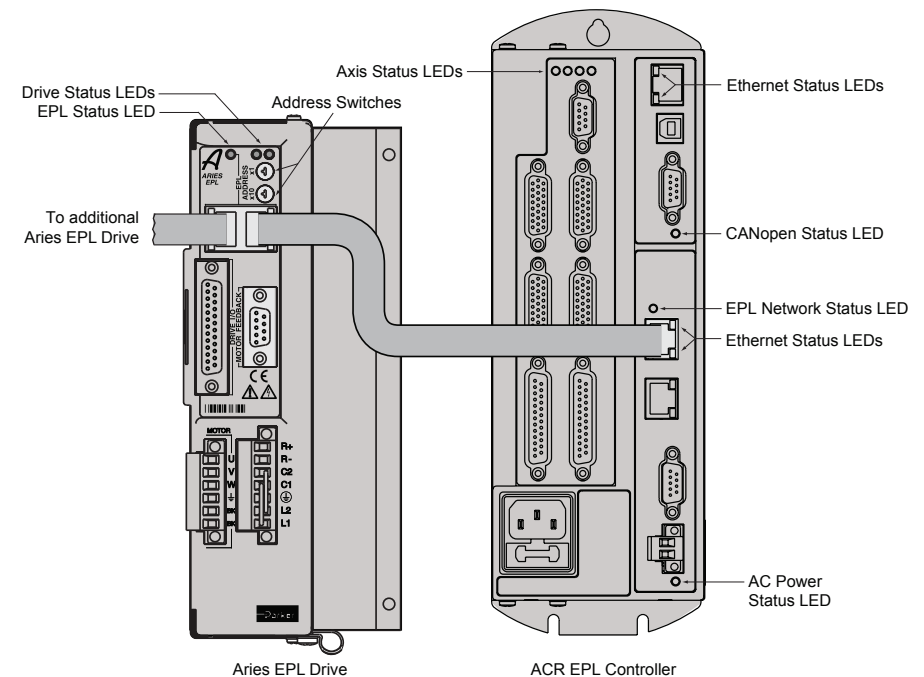
This and other information from Parker Hannifin Corporation, its subsidiaries, and authorized distributors provides product or system options for further investigation by users having technical expertise. Before you select or use any product or system, it is important that you analyze all aspects of your application and review the information concerning the product in the current product catalog. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, safety, and warning requirements of the application are met.

If the equipment is used in any manner that does not conform to the instructions given in this user guide, then the protection provided by the equipment may be impaired.

ETHERNET Powerlink

Quick Reference Guide

Aries AR-04PE, -08PE, and -13PE Servo Drives
ACR9030 and ACR9040 Controllers



Electromechanical Division
Parker Hannifin Corporation
p/n 88-027023-01A
Effective: April 2007

<http://www.parkermotion.com>



Drive I/O Connector

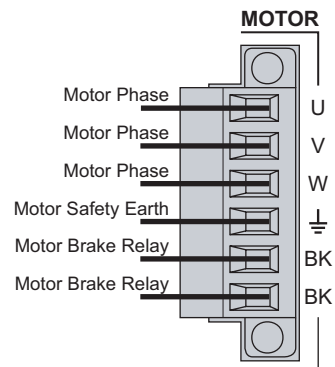
| Signal | Pin |
|---------------------|-----|
| Input 0+ | 1 |
| Input 0– | 14 |
| Input 1+ | 2 |
| Input 1– | 15 |
| Input 2+ | 3 |
| Input 2– | 16 |
| High-Speed Input 4+ | 4 |
| High-Speed Input 4– | 17 |
| High-Speed Input 5+ | 5 |
| High-Speed Input 5– | 18 |
| High-Speed Input 6+ | 6 |
| High-Speed Input 6– | 19 |
| Input 3+ | 7 |
| Input 3– | 20 |
| Not used | 8 |
| Not used | 21 |
| Output 0+ | 9 |
| Output 0– | 22 |
| Output 1+ | 10 |
| Output 1– | 23 |
| Output 2+ | 11 |
| Output 2– | 24 |
| Output 3+ | 12 |
| Output 3– | 25 |
| Not used | 13 |

EPL/Ethernet Connector

| Signal | Pin |
|----------|-----|
| RX+ | 1 |
| RX– | 2 |
| TX+ | 3 |
| Not used | 4 |
| Not used | 5 |
| TX– | 6 |
| Not used | 7 |
| Not used | 8 |

Ethernet Cable: Use braid over foil twisted-pair wiring (straight or crossover).

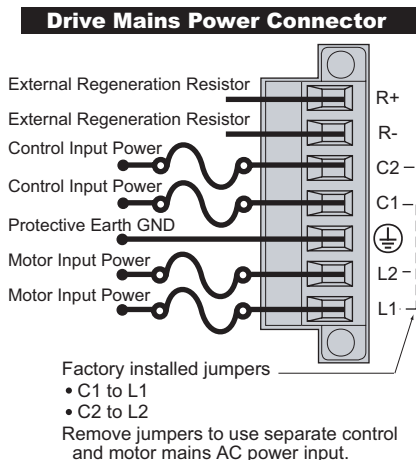
Drive Output Power Connector



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

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 |



Factory installed jumpers
 • C1 to L1
 • C2 to L2
 Remove jumpers to use separate control and motor mains AC power input.

Power Supply

120/240 VAC, 50-60Hz, single phase

Fuse Information

Drive has no internal fuses. For safety, you must provide a fuse in each AC input line. See installation guide for complete information. Controller has one accessible fuse by the AC power connector. 250 VAC, 2.5A, TD, 5x20 mm. See installation guide for complete information.

ETHERNET Powerlink

Controller EPL Network Status LEDs

| LED State | What it means |
|------------|--|
| Off | Reset or not active—MN is off, initializing, or in reset state |
| Green | Basic Ethernet—Node operating as a basic Ethernet device, not EPL |
| Flickering | Pre-Operational 1—MN asking node status & configuring CNS; full EPL cycles not started |
| 1 flash | Pre-Operational 2—Full EPL cycles started, node configuration not finished, data ignored |
| 2 flashes | Ready to operate—CN has responded to request from MN; exchanged data ignored |
| 3 flashes | Operational—Network exchanging valid data |
| Constant | Stopped—Network has stopped |
| Blinking | Indicates error state, obtained via P37386 |
| Red | |

Controller Axis Status LEDs

| LED State | What it means |
|-----------|-------------------------------------|
| Off | Axis disabled, no fault |
| Green | Axis enabled, no fault |
| Red | Axis fault; motion on axis disabled |

NOTE: LED illuminates red whenever the drive fault input is activated.

See front cover for controller LED locations.

Controller CANopen Status LEDs

| LED State | What it means |
|-------------------|--|
| Green, flickering | AutoBaud detection is in progress, or LSS services are in progress (alternately flickering with red LED) |
| Green, 1 flash | Stopped—Device is in the stopped state |
| Green, blinking | Pre-operational—Device is in the pre-operational state |
| Green, constant | Operational—Device is in the operational state |
| Red, 1 flash | Warning Limit Reached—At least one of the error counters of the CAN controller has reached or exceeded the warning level (too many error frames) |
| Red, flickering | AutoBaud detection is in progress, or LSS services are in progress |
| Red, 2 flashes | A guard event (NMT-slave or NMT-master) or a heartbeat event (heartbeat consumer) has occurred |
| Red, 3 flashes | SYNC message has not been received within the configured communication cycle period time out (see Object Dictionary Entry 0x1006) |
| Red, constant | BUS off—CAN controller is bus off |
| Off | Reset—controller is executing a reset |

Controller & Drive Ethernet Status LEDs

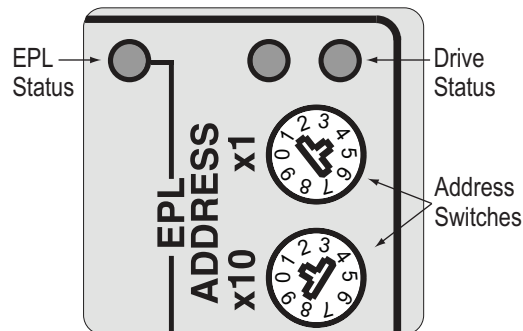
| LED | State | What it means |
|------------------------|------------------|--|
| Ethernet Link/Activity | Off | No Ethernet link detected |
| | Yellow | Ethernet link established; no activity |
| | Yellow, flashing | Ethernet link established and active |
| Ethernet Speed | Off | Ethernet 10Mbps |
| | Green | Ethernet 100Mbps |

Drive EPL Status LEDs

| LED State | What it means |
|---------------------------------|---|
| Off | Powering up, searching for Ethernet |
| Off/Green (alternating, 50 ms) | Standard Ethernet mode, no error |
| Red/Green (alternating, 50 ms) | Standard Ethernet mode, EPL error |
| Green, 1 flash | Waiting for configuration (followed by Start of Cycle frame) |
| Green, 2 flashes | Waiting for configuration to complete |
| Green, 3 flashes | Ready to operate in EPL mode |
| Green, constant | EPL mode |
| Red/Green (alternating, 200 ms) | Not participating in frame exchange, but observing EPL communications |

Drive Status LEDs

| LED State—Left | Right | What it means |
|----------------------------|-------|-------------------------------------|
| Drive Enabled | | |
| Off | Green | Enabled |
| Yellow (flashes in Regen) | Green | Regeneration active |
| Yellow/Green (alternating) | Green | Autorun mode |
| Drive Disabled | | |
| Off | Red | No faults, or Ethernet boot (8 sec) |
| Yellow | Off | Motor control boot (4 sec) |
| Yellow | Red | No bridge power |
| Yellow & 1 Green flash | Red | Bridge fault |
| Yellow & 2 Green flashes | Red | Feedback fault |
| Yellow & 3 Green flashes | Red | Thermal fault |
| Yellow & 4 Green flashes | Red | Other fault |



Drive IP Address Switches

Set IP address/node ID with drive's rotary decimal switches. Ex: set 14 by rotating x10 switch to 1 and x1 switch to 4 (valid range is 01 to 99; 00 not valid). IP addresses are 192.168.100.xx, with xx being drive's switch setting.

Warning!

- You must connect the drive's protective conductor terminal, marked with the earth symbol (⊕), to a reliable system Protective Earth.
- The drive's connector strip terminals are at hazardous voltages when power is applied to the drive, and up to several minutes after power is removed. Lower voltages may still be present for several minutes after power is removed.
- During normal operation, these high voltage terminals must not be accessible to the user.

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