

# Intelligent Parker Amplifier

## Ethernet Servo Drive/Controller



## IPA: Versatile Motion Capabilities

The new Intelligent Parker Amplifier or IPA, is a 1.5 axis servo drive/controller based on the ACR control platform. Available in two power levels, 400W and 1500W, the IPA can drive a wide range of rotary and linear motors and supports a number of industry standard feedback protocols.

The IPA provides a dual port Ethernet interface which gives the machine builder the flexibility needed to create cost effective motion control solutions. The IPA operates as a fully programmable stand-alone motion controller with on-board I/O and virtual axis capability or can be integrated into a PLC or PC-based machine control solution. Software tools are included to optimize motion performance and efficiently monitor and manage the application.

## Contact Information:

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## Specifications

| Part Number             | IPA04-HC  | IPA15-HC                 |
|-------------------------|---|--------------------------|
| Rated Motor Power       | 400 W   | 1500 W                   |
| Peak Motor Power        | 1200 W  | 4500 W                   |
| Continuous Current      | 3   | 6.3                      |
| Peak Current            | 9   | 18.9                     |
| Size                    | 3.0" W x 7.0" H x 5.3" D  | 3.4" W x 7.0" H x 5.3" D |
| Motor Input Voltage     | 100-240 VAC Single Phase or 20-90VDC  |                          |
| Control Input Voltage   | 100-240 VAC Single Phase  |                          |
| Logic Keep Alive        | 24 VDC (optional)   |                          |
| Servo Update            | 62.5 $\mu$ s  |                          |
| Digital Inputs          | 7 programmable inputs, 5-24 VDC (3 high-speed 1us capture, 4 standard)                              |                          |
| Digital Outputs         | 4 programmable outputs, 5-24 VDC  |                          |
| Analog Inputs           | 2 @ 12-bit resolution   |                          |
| Power Stage Enable      | 2 redundant inputs for torque disable   |                          |
| Primary Encoder         | Incremental encoder, EnDat 2.2 absolute encoder, BiSS-C, 1Vpp SineCosine, Analog Halls (Parker ETT) |                          |
| Secondary Encoder Input | Incremental encoder, 1.6 MHz, differential, A, B signals  |                          |
| Communications          | 100 Base-T, Dual RJ-45 connectors, Supports TCP/UDP and EtherNet/IP                                 |                          |
| Development Software    | ACR-View 6.4 and higher   |                          |
| API                     | Libraries for C++,C#, VB.Net, etc   |                          |
| Programming Language    | AcroBASIC with 1Mb of user memory   |                          |
| Standards               | UL Recognized 508c, CE (LVD), CE (EMC), RoHS<br>EtherNet/IP Conformance Tested                      |                          |

## Ordering Information

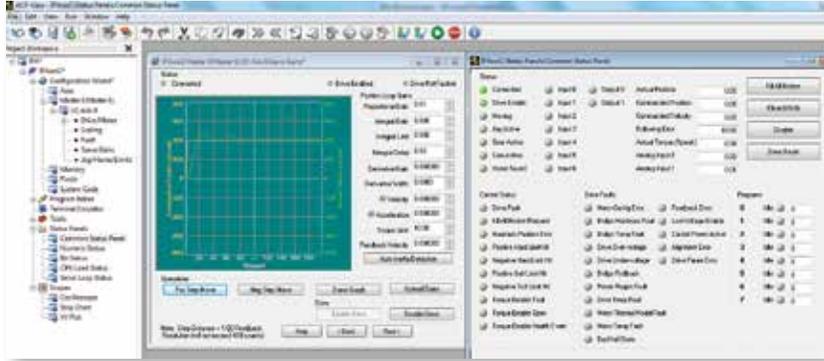
| Part Number           | Description  |
|-----------------------|--|
| IPA04-HC              | 400W Servo Drive Controller  |
| IPA15-HC              | 1500W Servo Drive Controller   |
| Optional Accessories: |  |
| VM25-MC-02            | 25-pin breakout board for Drive I/O connector, includes 2 ft cable                         |
| VM15-MC-02            | 15-pin breakout board for feedback connector, includes 2 ft cable for flying lead encoders |
| PS-60W                | 24VDC, 60W power supply  |

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# IPA Servo Drive/Controller

## Motion

The IPA is built on the proven and powerful AcroBASIC programming language used in the Parker ACR family of motion controllers. Project development is managed with the ACR-View development software that provides the user with the tools to program, commission, tune and debug applications. Motion and machine control features include:



- **Multitasking of up to 16 different tasks**
- **Incremental, absolute and continuous moves**
- **Trapezoidal and S-Curves profiles**
- **High speed (1 ms) position captures**
- **Registration moves**
- **Electronic gearing and camming**

## Visualization

Combined with Parker's Interact Xpress HMI platform the IPA becomes an affordable machine solution. Xpress supports connections to multiple IPA and other PLCs at the same time, with an easy to use development environment and award winning graphics.



### User Interface

| Part Number    | Description  |
|----------------|--|
| XTA-007-3R2-33 | 7" WVGA Display with Interact Xpress pre-installed   |
| XTA-010-3R2-33 | 10" WXGA Display with Interact Xpress pre-installed  |
| XTA-015-3R2-33 | 15" FWXGA Display with Interact Xpress pre-installed |

## Communications

EtherNet/IP gives IPA users a popular connectivity option to PLCs for easy integration of servo motion in larger machine control application.

The IPA is an EtherNet/IP adapter device supporting both I/O and

Explicit Messaging. Add-On Instructions are available for seamless integration with Logix controllers.

Users can also take full advantage of the IPA programming language and to create complex, custom routines called by the PLC.

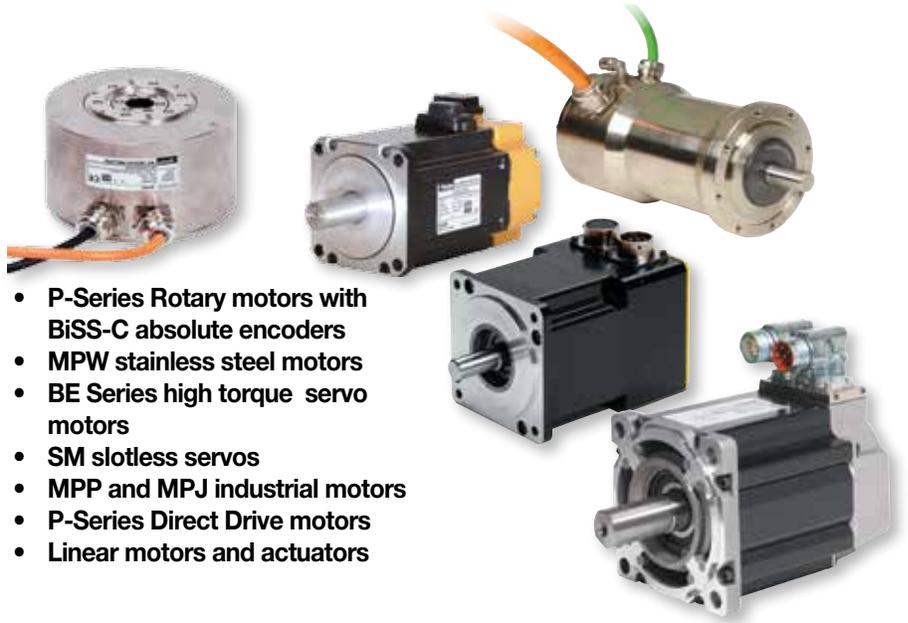
## EtherNet/IP™

Add-On Instructions include:

- **Homing**
- **Servo on/off**
- **Absolute/relative moves**
- **Jogging**
- **Run program**
- **Fault reset**
- **Gearing**

# Performance

At the core of the IPA is outstanding servo performance for the most demanding applications. The IPA can be paired with wide range of Parker rotary and linear servo motors, utilizing cost effective incremental encoders or absolute feedback devices based on high speed serial protocols. Recommend motors include:



- P-Series Rotary motors with BiSS-C absolute encoders
- MPW stainless steel motors
- BE Series high torque servo motors
- SM slotless servos
- MPP and MPJ industrial motors
- P-Series Direct Drive motors
- Linear motors and actuators

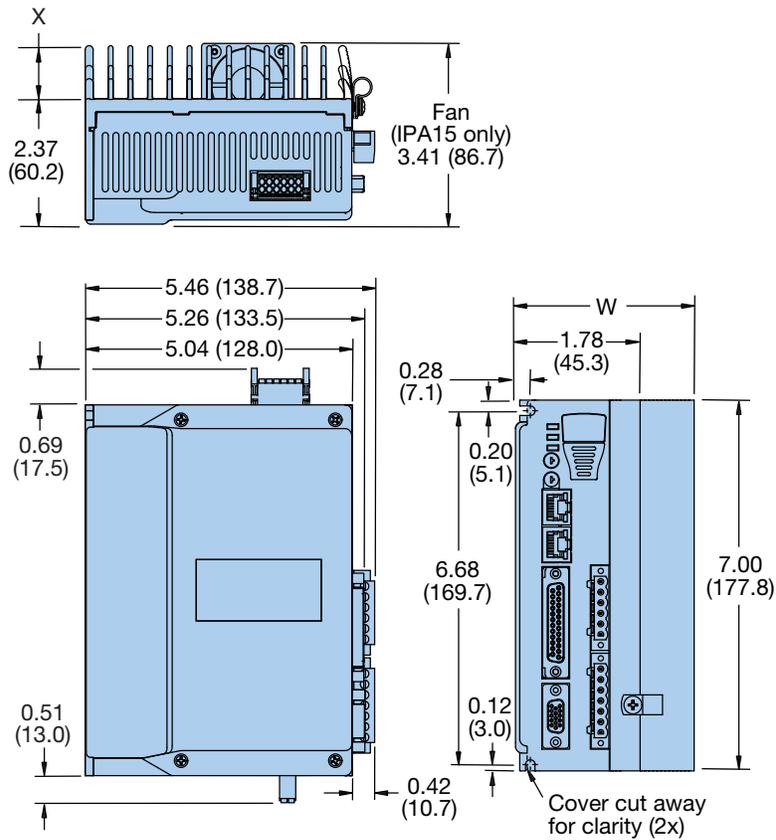
## Motor Specifications

| Motor Model Number | Drive    | Stall Torque Continuous |       | Peak Torque |       | Rated Speed<br>rpm | Rated Torque |       | Rated Shaft Output Power<br>W |
|--------------------|----------|-------------------------|-------|-------------|-------|--------------------|--------------|-------|-------------------------------|
|                    |          | Nm                      | in-lb | Nm          | in-lb |                    | Nm           | in-lb |                               |
| BE231DJ-NPSN       | IPA04-HC | 0.67                    | 5.9   | 2.03        | 18.0  | 4965               | 0.62         | 5.5   | 325                           |
| BE233DJ-NPSN       | IPA04-HC | 1.45                    | 12.8  | 4.38        | 38.8  | 2740               | 1.36         | 12.1  | 390                           |
| BE341FJ-NPSN       | IPA15-HC | 1.69                    | 14.9  | 5.09        | 45.0  | 4965               | 1.44         | 12.8  | 750                           |
| BE342HJ-NPSN       | IPA15-HC | 2.85                    | 25.2  | 8.57        | 75.9  | 4965               | 2.34         | 20.7  | 1215                          |
| BE344JJ-NPSN       | IPA15-HC | 4.78                    | 42.3  | 14.41       | 127.5 | 2980               | 4.33         | 38.3  | 1350                          |
| PM-FAL01AM8N       | IPA04-HC | 0.34                    | 3.0   | 0.96        | 8.5   | 3000               | 0.32         | 2.8   | 100                           |
| PM-FBL02AMK        | IPA04-HC | 0.68                    | 6.0   | 1.91        | 16.9  | 3000               | 0.64         | 5.7   | 200                           |
| PM-FBL04AMK        | IPA04-HC | 1.45                    | 12.8  | 3.82        | 33.8  | 3000               | 1.27         | 11.2  | 400                           |
| PM-FCL08AMK        | IPA15-HC | 2.51                    | 22.1  | 7.16        | 63.4  | 3000               | 2.39         | 21.2  | 800                           |
| PM-FCL10AMK        | IPA15-HC | 3.34                    | 29.5  | 9.55        | 84.5  | 3000               | 3.18         | 28.1  | 1000                          |
| MPP0921B1E-KPSN    | IPA04-HC | 1.55                    | 13.7  | 4.32        | 38.2  | 2614               | 1.41         | 12.5  | 390                           |
| MPP0923D1E-KPSN    | IPA15-HC | 3.50                    | 31.0  | 9.85        | 87.2  | 4288               | 3.22         | 28.5  | 1440                          |
| MPP1002D1E-KPSN    | IPA15-HC | 3.65                    | 32.3  | 10.15       | 89.8  | 3903               | 3.53         | 31.2  | 1440                          |
| MPP1003C1E-KPSN    | IPA15-HC | 5.26                    | 46.5  | 14.75       | 130.5 | 2700               | 5.15         | 45.5  | 1450                          |

## Motor Connection

| Motor Family           | Connector Type        | Motor Cable                             | Connectorized Feedback Cable |               |                             |                            |
|------------------------|-----------------------|---|------------------------------|---------------|-----------------------------|----------------------------|
|                        |                       |   | Incremental Encoder          | EnDat Encoder | Absolute BiSS-C Single Turn | BiSS-C Multi-Turn Absolute |
| MPE                    | C1                    | 71-030630-XX                            | 71-030631-XX                 | -             | -                           | -                          |
| BE<br>MPP<br>MPP<br>SM | PS                    | P-1A1-XX (0-6A)<br>P-3B1-XX (>6 amps)   | F-1A1-XX                     | F-1A2-XX      | -                           | -                          |
|                        | PS (Flex)             | PH-1A1-XX (0-6A)<br>PH-3B1-XX (>6 amps) | FH-1A1-XX                    | FH-1A2-XX     | -                           | -                          |
| PM-FxL                 | P Series              | APCS-PNxxLS                             | -                            | -             | 71-032647-XX                | 71-032751-XX               |
|                        | P Series (Flex)       | APCS-PFxxLS                             | -                            | -             | 71-032681-XX                | 71-032752-XX               |
| PM-DD                  | P Series Direct Drive | APCS-PNxxYS                             | -                            | -             | 71-032648-XX                | -                          |

# Dimensions



## Dimensions - in (mm)

|          | Overall Width<br>W | Fin Height<br>X | Overall Depth<br>w/Cables |
|----------|--------------------|-----------------|---------------------------|
| IPA04-HC | 3.00 (76.1)        | 0.63 (15.9)     | 7.8 (198)                 |
| IPA15-HC | 3.41 (86.7)        | 1.00 (25.4)     | 7.8 (198)                 |



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