

# ABB Low Voltage Drives

## ACS350

0.5 to 15 Hp @ 240Vac  
0.5 to 30 Hp @ 480Vac

### Product Pricing List





# **AC DRIVES**

## **ACS350**

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Specifications and pricing subject to change without notice

### **Contact ABB Inc., Low Voltage Drives**

#### **U.S. Headquarters, Low Voltage Drives**

##### **ABB Inc.**

Low Voltage Drives  
16250 W. Glendale Drive  
New Berlin, WI 53151  
Tel: (800) 752-0696  
Fax: (262) 785-0397  
Internet: [www.abb.us/drives](http://www.abb.us/drives)

#### **U.S. ABB Low Voltage Drives Technical Support**

Tel: (800) 435-7365, (800) HELP-365  
Fax: (262) 780-5135  
E-mail: [DrivesSupportLine@us.abb.com](mailto:DrivesSupportLine@us.abb.com)

#### **U.S. ABB Low Voltage Drives Customer Service**

Tel: (800) 752-0696  
Fax: (800) 648-2072  
E-mail: [abb.drives.customerservice@us.abb.com](mailto:abb.drives.customerservice@us.abb.com)

### Table of Contents

Overview.....	4
Guidelines for use of Price Pages .....	4
General Terms and Conditions of Sale .....	5
Definition of NEMA and IEC environmental ratings .....	8
Product Features .....	9
Product Specifications .....	10
240Vac & 480Vac Configured Product Selection .....	12
Configured Option Descriptions.....	14
Stock Option Descriptions .....	15
Brake Resistor Selection .....	17
Product Dimensions .....	19

### Symbols used

$I_N$ = Continuous Base Current	$P_N$ = Nominal Power - Normal Duty
$I_I$ = Input Current	$U_N$ = Nominal Motor Voltage
$I_{2N}$ = Nominal Current - Normal Duty	$U_I$ = Input Voltage
$I_{2MAX}$ = Maximum Output Current	$U_2$ = Output Voltage
$f_N$ = Nominal Motor Frequency	
$f_{SW}$ = Switching Frequency	

### Trademarks

DriveWindow® is a registered trademark of ABB  
Modbus® is a registered trademark of Schneider Electric  
PROFIBUS® is a registered trademark of Profibus International  
DeviceNet™ is a trademark of the Open DeviceNet® Vendor Association.  
Windows® is a registered trademark of Microsoft Corp.

### Documentation

#### **Standard Documentation Included with Standard ACS350 Drive**

Standard documentation (provided in English only) for the ACS350 is the User Manual. This document is shipped with the product and provides basic UL and safety notifications as well as installation and operating instructions. Standard product drawings may be downloaded from the ABB drives web page or the online drive Configurator. The Configurator is for Authorized Industrial Distributors.

#### **Project Submittals**

For project submittals, please utilize the online Configurator to create these submittal documents. The following documents may be selected to be included in the submittal:

- |                       |                                |                      |                                 |
|-----------------------|--------------------------------|----------------------|---------------------------------|
| - Product Overview    | - Dimensional Drawings         | - Submittal Schedule | - Power Drawings                |
| - Connection Drawings | - General Terms and Conditions | - Engineering Data   | - Clarifications and Exceptions |
| - Rating Tables       | - General Notes                |                      |                                 |

#### **Non-Standard documentation requests for Standard Drive products**

For non-standard documentation requirements, the online Configurator and ABB drives web page should be utilized as appropriate. Additional documentation requirements that cannot be met with the information provided here may be available at additional cost. For specific project documentation requirements, quotes may be provided by the factory sales team.



### Overview

The ACS350 family of drives was designed to meet virtually every customer's application requirements. These Price Pages were developed to allow quick and easy selection of standard ACS350 products.

With drives ranging from 0.5 to 30Hp, the ACS350 AC Drive features a control panel that can be mounted on the cover of the drive or remotely and has capabilities to upload and download drive configuration parameters as well as a real clock, start-up, maintenance and diagnostic assistants, and sequence programming.

The ACS350 comes with an extensive library of preprogrammed application macros that, at the touch of a button, allow rapid configuration of inputs, outputs, and parameters for specific applications to maximize convenience and minimize start-up time.

### Guidelines for use of Price Pages

These Price Pages were developed to allow quick and easy selection of standard ACS350 products. Please contact your local ABB Low Voltage Drives sales representative for information regarding additional configurations.

### Application considerations

Because of the variety of application uses for the ACS350 AC Drives, those responsible for the application and control of the drive must satisfy themselves that all necessary steps have been taken to ensure that they meet all safety and installation requirements regarding national and local laws, regulation, codes, and standards. Unless otherwise noted, ACS350 AC Drive products found in this document are designed to meet NEMA (National Electrical Manufacturers Association) standards.

### ACS350 products carry third party approval as follows;

Product	Approval
ACS350	240 & 480V UL / cUL / CE Directive / C-Tick / GOST-R

### Ordering CE product

All ACS350 AC Drives ship with CE EMC Directive compliance for immunity and emissions for the 2nd Environment.

### Selecting the correct drive rating

ACS350 AC Drives are current rated devices. The Hp ratings are provided for your reference only and are based on typical 4-pole squirrel cage motors at nominal voltages per NEC Table 430.250. When selecting the drive ensure the drive has a continuous current rating equal or greater than the full load amp rating of the motor (if full motor torque is required).

### Technical Support

ACS350 AC Drive Technical Support is available 24 hours per day 7 days a week. To reach Technical Support call 1-800-HELP 365 ((800)-435-7365).



## General Terms and Conditions of Sale

### 1. General.

The terms and conditions contained herein, together with any additional or different terms contained in ABB's Proposal, if any, submitted to Purchaser (which Proposal shall control over any conflicting terms), constitute the entire agreement (the "Agreement") between the parties with respect to the order and supersede all prior communications and agreements regarding the order. Acceptance by ABB of the order, or Purchaser's acceptance of ABB's Proposal, is expressly limited to and conditioned upon Purchaser's acceptance of these terms and conditions, payment for or acceptance of any performance by ABB being acceptance. These terms and conditions may not be changed or superseded by any different or additional terms and conditions proposed by Purchaser to which terms ABB hereby objects. Unless the context otherwise requires, the term "Equipment" as used herein means all of the equipment, parts, accessories sold, and all software and software documentation, if any, licensed to Purchaser by ABB ("Software") under the order. Unless the context otherwise requires, the term "Services" as used herein means all labor, supervisory, technical and engineering, installation, repair, consulting or other services provided by ABB under the order. As used herein, the term "Purchaser" shall include the initial end use of the Equipment and/or services; provided, however, that Paragraph 13(a) shall apply exclusively to the initial end user.

### 2. Prices.

- (a) Unless otherwise specified in writing, all Proposals expire thirty (30) days from the date thereof.
- (b) Unless otherwise stated herein, Services prices are based on normal business hours (8 a.m. to 5 p.m. Monday through Friday). Overtime and Saturday hours will be billed at one and one-half (1 1/2) times the hourly rate; and Sunday hours will be billed at two (2) times the hourly rate; holiday hours will be billed at three (3) times the hourly rate. If a Services rate sheet is attached hereto, the applicable Services rates shall be those set forth in the rate sheet. Rates are subject to change without notice.
- (c) The price does not include any federal, state or local property, license, privilege, sales, use, excise, gross receipts, or other like taxes which may now or hereafter be applicable. Purchaser agrees to pay or reimburse any such taxes which ABB or its suppliers are required to pay or collect. If Purchaser is exempt from the payment of any tax or holds a direct payment permit, Purchaser shall, upon order placement, provide ABB a copy, acceptable to the relevant governmental authorities of any such certificate or permit.
- (d) The price includes customs duties and other importation or exportation fees, if any, at the rates in effect on the date of ABB's Proposal. Any change after that date in such duties, fees, or rates, shall increase the price by ABB's additional cost.

### 3. Payment.

- (a) Unless specified to the contrary in writing by ABB, payment terms are net cash, payable without offset, in United States Dollars, 30 days from date of invoice by wire transfer to the account designated by ABB in the Proposal.
- (b) If in the judgment of ABB the financial condition of Purchaser at any time prior to delivery does not justify the terms of payment specified, ABB may require payment in advance, payment security satisfactory to ABB, or may terminate the order, whereupon ABB shall be entitled to receive reasonable cancellation charges. If delivery is delayed by Purchaser, payment shall be due on the date ABB is prepared to make delivery. Delays in delivery or nonconformities in any installments delivered shall not relieve Purchaser of its obligation to accept and pay for remaining installments.
- (c) Purchaser shall pay, in addition to the overdue payment, a late charge equal to the lesser of 1 1/2% per month or any part thereof or the highest applicable rate allowed by law on all such overdue amounts plus ABB's attorneys' fees and court costs incurred in connection with collection.

### 4. Changes.

- (a) Any changes requested by Purchaser affecting the ordered scope of work must be accepted by ABB and resulting adjustments to affected provisions, including price, schedule, and guarantees mutually agreed in writing prior to implementation of the change.
- (b) ABB may, at its expense, make such changes in the Equipment or Services as it deems necessary, in its sole discretion, to conform the Equipment or Services to the applicable specifications. If Purchaser objects to any such changes, ABB shall be relieved of its obligation to conform to the applicable specifications to the extent that conformance may be affected by such objection.

### 5. Delivery.

- (a) All Equipment manufactured, assembled or warehoused in the continental United States is delivered F.O.B. point of shipment. Equipment shipped from outside the continental United States is delivered F.O.B. United States port of entry. Purchaser shall be responsible for any and all demurrage or detention charges.
- (b) If the scheduled delivery of Equipment is delayed by Purchaser or by Force Majeure, ABB may move the Equipment to storage for the account of and at the risk of Purchaser whereupon it shall be deemed to be delivered.
- (c) Shipping and delivery dates are contingent upon Purchaser's timely approvals and delivery by Purchaser of any documentation required for ABB's performance hereunder.
- (d) Claims for shortages or other errors in delivery must be made in writing to ABB within ten days of delivery. Equipment may not be returned except with the prior written consent of and subject to terms specified by ABB. Claims for damage after delivery shall be made directly by Purchaser with the common carrier.

### 6. Title & Risk of Loss.

Except with respect to Software (for which title shall not pass, use being licensed) title to Equipment shall remain in ABB until fully paid for. Notwithstanding any agreement with respect to delivery terms or payment of transportation charges, risk of loss or damage shall pass to Purchaser upon delivery.

### 7. Inspection, Testing and Acceptance.

- (a) Any inspection by Purchaser of Equipment on ABB's premises shall be scheduled in advance to be performed during normal working hours.
- (b) If the order provides for factory acceptance testing, ABB shall notify Purchaser when ABB will conduct such testing prior to shipment. Unless Purchaser states specific objections in writing within ten (10) days after completion of factory acceptance testing, completion of the acceptance test constitutes Purchaser's factory acceptance of the Equipment and its authorization for shipment.
- (c) If the order provides for site acceptance testing, testing will be performed by ABB personnel to verify that the Equipment has arrived at site complete, without physical damage, and in good operating condition. Completion of site acceptance testing constitutes full and final acceptance of the Equipment. If, through no fault of ABB, acceptance testing is not completed within thirty (30) days after arrival of the Equipment at the site, the site acceptance test shall be deemed completed and the Equipment shall be deemed accepted.

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## General Terms and Conditions of Sale

### 8. Warranties and Remedies.

(a) Equipment and Services Warranty. ABB warrants that Equipment (excluding Software, which is warranted as specified in paragraph (d) below) shall be delivered free of defects in material and workmanship and that Services shall be free of defects in workmanship. The Warranty Remedy Period for Equipment (excluding Software, Spare Parts and Refurbished or Repaired Parts) shall end twelve (12) months after installation or eighteen (18) months after date of shipment, whichever first occurs. The Warranty Remedy Period for new spare parts shall end twelve (12) months after date of shipment. The Warranty Remedy Period for refurbished or repaired parts shall end ninety (90) days after date of shipment. The Warranty Remedy Period for Services shall end ninety (90) days after the date of completion of Services.

(b) Equipment and Services Remedy. If a nonconformity to the foregoing warranty is discovered in the Equipment or Services during the applicable Warranty Remedy Period, as specified above, under normal and proper use and provided the Equipment has been properly stored, installed, operated and maintained and written notice of such nonconformity is provided to ABB promptly after such discovery and within the applicable Warranty Remedy Period, ABB shall, at its option, either (i) repair or replace the nonconforming portion of the Equipment or re-perform the nonconforming Services or (ii) refund the portion of the price applicable to the nonconforming portion of Equipment or Services. If any portion of the Equipment or Services so repaired, replaced or re-performed fails to conform to the foregoing warranty, and written notice of such nonconformity is provided to ABB promptly after discovery and within the original Warranty Remedy Period applicable to such Equipment or Services or 30 days from completion of such repair, replacement or re-performance, whichever is later, ABB will repair or replace such nonconforming Equipment or re-perform the nonconforming Services. The original Warranty Remedy Period shall not otherwise be extended.

(c) Exceptions. ABB shall not be responsible for providing working access to the nonconforming Equipment, including disassembly and re-assembly of non-ABB supplied equipment, or for providing transportation to or from any repair facility, all of which shall be at Purchaser's risk and expense. ABB shall have no obligation hereunder with respect to any Equipment which (i) has been improperly repaired or altered; (ii) has been subjected to misuse, negligence or accident; (iii) has been used in a manner contrary to ABB's instructions; (iv) is comprised of materials provided by or a design specified by Purchaser; or (v) has failed as a result of ordinary wear and tear. Equipment supplied by ABB but manufactured by others is warranted only to the extent of the manufacturer's warranty, and only the remedies, if any, provided by the manufacturer will be allowed.

(d) Software Warranty and Remedies. ABB warrants that, except as specified below, the Software will, when properly installed, execute in accordance with ABB's published specification. If a nonconformity to the foregoing warranty is discovered during the period ending one (1) year after the date of shipment and written notice of such nonconformity is provided to ABB promptly after such discovery and within that period, including a description of the nonconformity and complete information about the manner of its discovery, ABB shall correct the nonconformity by, at its option, either (i) modifying or making available to the Purchaser instructions for modifying the Software; or (ii) making available at ABB's facility necessary corrected or replacement programs. ABB shall have no obligation with respect to any nonconformities resulting from (i) unauthorized modification of the Software or (ii) Purchaser-supplied software or interfacing. ABB does not warrant that the functions contained in the software will operate in combinations which may be selected for use by the Purchaser, or that the software products are free from errors in the nature of what is commonly categorized by the computer industry as "bugs".

(e) THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY AND PERFORMANCE, WHETHER WRITTEN, ORAL OR IMPLIED, AND ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USAGE OF TRADE ARE HEREBY DISCLAIMED. THE REMEDIES STATED HEREIN CONSTITUTE PURCHASER'S EXCLUSIVE REMEDIES AND ABB'S ENTIRE LIABILITY FOR ANY BREACH OF WARRANTY.

### 9. Patent Indemnity.

(a) ABB shall defend at its own expense any action brought against Purchaser alleging that the Equipment or the use of the Equipment to practice any process for which such Equipment is specified by ABB (a "Process") directly infringes any claim of a patent of the United States of America and to pay all damages and costs finally awarded in any such action, provided that Purchaser has given ABB prompt written notice of such action, all necessary assistance in the defense thereof and the right to control all aspects of the defense thereof including the right to settle or otherwise terminate such action in behalf of Purchaser.

(b) ABB shall have no obligation hereunder and this provision shall not apply to: (i) any other equipment or processes, including Equipment or Processes which have been modified or combined with other equipment or process not supplied by ABB; (ii) any Equipment or Process supplied according to a design, other than an ABB design, required by Purchaser; (iii) any products manufactured by the Equipment or Process; (iv) any patent issued after the date hereof; or (v) any action settled or otherwise terminated without the prior written consent of ABB.

(c) If, in any such action, the Equipment is held to constitute an infringement, or the practice of any Process using the Equipment is finally enjoined, ABB shall, at its option and its own expense, procure for Purchaser the right to continue using said Equipment; or modify or replace it with non-infringing equipment or, with Purchaser's assistance, modify the Process so that it becomes non-infringing; or remove it and refund the portion of the price allocable to the infringing Equipment. THE FOREGOING PARAGRAPHS STATE THE ENTIRE LIABILITY OF ABB AND EQUIPMENT MANUFACTURER FOR ANY PATENT INFRINGEMENT.

(d) To the extent that said Equipment or any part thereof is modified by Purchaser, or combined by Purchaser with equipment or processes not furnished hereunder (except to the extent that ABB is a contributory infringer) or said Equipment or any part thereof is used by Purchaser to perform a process not furnished hereunder by ABB or to produce an article, and by reason of said modification, combination, performance or production, an action is brought against ABB, Purchaser shall defend and indemnify ABB in the same manner and to the same extent that ABB would be obligated to indemnify Purchaser under this "Patent Indemnity" provision.

### 10. Limitation of Liability.

(a) In no event shall ABB, its suppliers or subcontractors be liable for special, indirect, incidental or consequential damages, whether in contract, warranty, tort, negligence, strict liability or otherwise, including, but not limited to, loss of profits or revenue, loss of use of the Equipment or any associated equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs, delays, and claims of customers of the Purchaser or other third parties for any damages. ABB's liability for any claim whether in contract, warranty, tort, negligence, strict liability, or otherwise for any loss or damage arising out of, connected with, or resulting from this Agreement or the performance or breach thereof, or from the design, manufacture, sale, delivery, resale, repair, replacement, installation, technical direction of installation, inspection, operation or use of any equipment covered by or furnished under this Agreement, or from any services rendered in connection therewith, shall in no case (except as provided in the section entitled "Patent Indemnity") exceed one-half (1/2) of the purchase price allocable to the equipment or part thereof or Services which gives rise to the claim.

(b) All causes of action against ABB arising out of or relating to this Agreement or the performance or breach hereof shall expire unless brought within one year of the time of accrual thereof.

(c) In no event, regardless of cause, shall ABB be liable for penalties or penalty clauses of any description or for indemnification of Purchaser or others for costs, damages, or expenses arising out of or related to the Equipment and/Services.





## General Terms and Conditions of Sale

**11. Laws and Regulations.** ABB does not assume any responsibility for compliance with federal, state or local laws and regulations, except as expressly set forth herein, and compliance with any laws and regulations relating to the operation or use of the Equipment or Software is the sole responsibility of the Purchaser. All laws and regulations referenced herein shall be those in effect as of the Proposal date. In the event of any subsequent revisions or changes thereto, ABB assumes no responsibility for compliance therewith. If Purchaser desires a modification as a result of any such change or revision, it shall be treated as a change per Article 4. Nothing contained herein shall be construed as imposing responsibility or liability upon ABB for obtaining any permits, licenses or approvals from any agency required in connection with the supply, erection or operation of the Equipment. This Agreement shall be governed by the laws of the State of New York, but excluding the provisions of the United Nations Convention on Contracts for the International Sale of Goods and excluding New York law with respect to conflicts of law. Purchaser agrees that all causes of action against ABB under this Agreement shall be brought in the State Courts of the State of New York, or the U.S. District Court for the Southern District of New York. If any provision hereof, partly or completely, shall be held invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision or portion hereof and these terms shall be construed as if such invalid or unenforceable provision or portion thereof had never existed.

**12. OSHA.** ABB warrants that the Equipment will comply with the relevant standards of the Occupational Safety and Health Act of 1970 ("OSHA") and the regulations promulgated thereunder as of the date of the Proposal. Upon prompt written notice from the Purchaser of a breach of this warranty, ABB will replace the affected part or modify it so that it conforms to such standard or regulation. ABB's obligation shall be limited to such replacement or modification. In no event shall ABB be responsible for liability arising out of the violation of any OSHA standards relating to or caused by Purchaser's design, location, operation, or maintenance of the Equipment, its use in association with other equipment of Purchaser, or the alteration of the Equipment by any party other than ABB.

**13. Software License.**(a) ABB owns all rights in or has the right to sublicense all of the Software, if any, to be delivered to Purchaser under this Agreement. As part of the sale made hereunder Purchaser hereby obtains a limited license to use the Software, subject to the following: (i) The Software may be used only in conjunction with equipment specified by ABB; (ii) The Software shall be kept strictly confidential; (iii) The Software shall not be copied, reverse engineered, or modified; (iv) The Purchaser's right to use the Software shall terminate immediately when the specified equipment is no longer used by the Purchaser or when otherwise terminated, e.g. for breach, hereunder; and (v) the rights to use the Software are non-exclusive and non-transferable, except with ABB's prior written consent.

(b) Nothing in this Agreement shall be deemed to convey to Purchaser any title to or ownership in the Software or the intellectual property contained therein in whole or in part, nor to designate the Software a "work made for hire" under the Copyright Act, nor to confer upon any person who is not a named party to this Agreement any right or remedy under or by reason of this Agreement. In the event of termination of this License, Purchaser shall immediately cease using the Software and, without retaining any copies, notes or excerpts thereof, return to ABB the Software and all copies thereof and shall remove all machine readable Software from all of Purchaser's storage media.

**14. Inventions and Information.** Unless otherwise agreed in writing by ABB and Purchaser, all right, title and interest in any inventions, developments, improvements or modifications of or for Equipment and Services shall remain with ABB. Any design, manufacturing drawings or other information submitted to the Purchaser remains the exclusive property of ABB. Purchaser shall not, without ABB's prior written consent, copy or disclose such information to a third party. Such information shall be used solely for the operation or maintenance of the Equipment and not for any other purpose, including the duplication thereof in whole or in part.

**15. Force Majeure.** ABB shall neither be liable for loss, damage, detention or delay nor be deemed to be in default for failure to perform when prevented from doing so by causes beyond its reasonable control including but not limited to acts of war (declared or undeclared), Acts of God, fire, strike, labor difficulties, acts or omissions of any governmental authority or of Purchaser, compliance with government regulations, insurrection or riot, embargo, delays or shortages in transportation or inability to obtain necessary labor, materials, or manufacturing facilities from usual sources or from defects or delays in the performance of its suppliers or subcontractors due to any of the foregoing enumerated causes. In the event of delay due to any such cause, the date of delivery will be extended by period equal to the delay plus a reasonable time to resume production, and the price will be adjusted to compensate ABB for such delay.

**16. Cancellation.** Any order may be cancelled by Purchaser only upon prior written notice and payment of termination charges, including but not limited to, all costs identified to the order incurred prior to the effective date of notice of termination and all expenses incurred by ABB attributable to the termination, plus a fixed sum of ten (10) percent of the final total price to compensate for disruption in scheduling, planned production and other indirect costs.

**17. Termination.** No termination by Purchaser for default shall be effective unless, within fifteen (15) days after receipt by ABB of Purchaser's written notice specifying such default, ABB shall have failed to initiate and pursue with due diligence correction of such specified default.

**18. Export Control.**

(a) Purchaser represents and warrants that the Equipment and Services provided hereunder and the "direct product" thereof are intended for civil use only and will not be used, directly or indirectly, for the production of chemical or biological weapons or of precursor chemicals for such weapons, or for any direct or indirect nuclear end use. Purchaser agrees not to disclose, use, export or re-export, directly or indirectly, any information provided by ABB or the "direct product" thereof as defined in the Export Control Regulations of the United States Department of Commerce, except in compliance with such Regulations.

(b) If applicable, ABB shall file for a U.S. export license, but only after appropriate documentation for the license application has been provided by Purchaser. Purchaser shall furnish such documentation within a reasonable time after order acceptance. Any delay in obtaining such license shall suspend performance of this Agreement by ABB. If an export license is not granted or, if once granted, is thereafter revoked or modified by the appropriate authorities, this Agreement may be canceled by ABB without liability for damages of any kind resulting from such cancellation. At ABB's request, Purchaser shall provide to ABB a Letter of Assurance and End-User Statement in a form reasonably satisfactory to ABB.

**19. Assignment.** Any assignment of this Agreement or of any rights or obligations under the Agreement without prior written consent of ABB shall be void.

**20. Nuclear Insurance – Indemnity.** For applications in nuclear projects, the Purchaser and/or its end user customer shall have complete insurance protection against liability and property damage resulting from a nuclear incident to and shall indemnify ABB, its subcontractors, suppliers and vendors against all claims resulting from a nuclear incident.

**21. Resale.** If Purchaser resells any of the Equipment, the sale terms shall limit ABB's liability to the buyer to the same extent that ABB's liability to Purchaser is limited hereunder.

**22. Entire Agreement.** This Agreement constitutes the entire agreement between ABB and Purchaser. There are no agreements, understandings, restrictions, warranties, or representations between ABB and Purchaser other than those set forth herein or herein provided.

## Definition of NEMA and IEC environmental ratings

Below is a summary of the rating definitions and recommendations for application of each type supported by the ACS350 Drive product family.

Intended for use indoors, primarily to prevent accidental contact of personnel with the enclosed equipment in areas where unusual service conditions do not exist.

- IP 2 0
- (2) Protection of personnel from finger contact with active or internal moving parts. Protection from access of solid foreign object larger than 12mm in diameter
  - (0) No special protection

### Recommendation

Installation in a clean environment such as a clean room or in another enclosure with a higher degree of protection

### NEMA 1, UL Type 1

Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.

- IP 2 1
- (2) Protected against solid foreign objects of 12.5mm diameter and greater
  - (1) Protected against vertically falling water drops

### Recommendation

Installation in a clean environment such as a clean room or in another enclosure with a higher degree of protection





### Product Features

UL, cUL, CE, C-Tick, and GOST-R  
Optional Full Graphic and Multilingual Display  
with real time clock  
Optional Basic Control Panel  
Optional Blank Cover  
Start-Up, Maintenance and Diagnostic Assistant  
Motor ID Run  
Motor Control  
Scalar Control, Sensorless Vector and Flux Vector  
Two (2) Programmable Analog Inputs  
Five (5) Programmable Digital Inputs  
One (1) Programmable Analog Output  
One (1) Programmable Form C Relay Output  
One (1) Programmable Digital Output (pulse train output)  
Input Speed Signals  
Two (2) Current 0 (4) - 20 mA, 0 (2)- 10VDC  
Bipolar voltage reference with external power supply  
Pulse Train Input  
Start/Stop  
2 wire control (dry contact closure)  
3 wire control (momentary dry contacts)  
Adjustable Current Limit  
Nine (9) Supervision Functions  
Electronic Reverse  
Power Loss Ride-Through  
DC Injection Braking  
DC Magnetizing Start (provides maximum starting torque)  
Seven (7) Preset Speeds  
Three (3) Critical Speed Lockout Bands  
Two (2) Independently Adjustable Accel and Decel Ramps  
Linear or Adjustable "S" Curve Accel/Decel Ramps  
Internal Braking Chopper  
Sequence Programming  
Ramp to Stop or Coast to a Stop  
Maximum Frequency Programmable up to 500 Hz  
Two independent Integral Programmable PID Setpoint  
Controllers  
Coated Boards  
RoHS (Verify RoHS label)

### Programmable Fault Functions

AI < Min (A 1,2 loss)  
Panel Loss  
Supply Phase  
Ground Fault  
Wiring Fault  
External Fault 1,2  
Motor Thermal Protection  
Motor Stall Protection  
Underload  
Encoder Error  
Communications Fault  
Overcurrent  
Over/Undervoltage

### Preprogrammed Protections:

Overcurrent  
Short Circuit  
Overvoltage (Intermediate Circuit)  $1.3 \times$  input voltage  
Undervoltage (Intermediate Circuit)  $0.65 \times$  input voltage  
Input Phase Loss and output miswiring  
Device Overtemperature  
Motor Overtemperature  
Overspeed  
Underload  
Motor Phase Loss  
DC Over/Undervoltage

### Available options

Flashdrop (MFDT-01)  
NEMA 1 Enclosure Kit (MUL1-R1/-R3/-R4)  
DriveWindow Light®-based Start-up & Programming Tool  
Fieldbus Adapter Modules  
Modbus (FMBA-01, FRSA-00)  
Profibus (FPBA-01)  
DeviceNet (FDNA-01)  
CANopen (FCAN-01)  
Display, Programming and Demo Cases  
NEMA 4X Panel Cover Kit (ACS/H-CP-EXT-IP66)  
Cabinet Panel Mounting (OPMP-01)  
Speed POT, Start/Stop and FWD/REV switches (MPOT-01)  
Pulse Encoder Interface (MTAC-01)

### Specifications

#### Input Connection

Input Voltage (U1, V1, W1)	208/220/230/240Vac 1-phase or 3-phase $\pm 10\%$ 380/400/415/440/460/480Vac 3-phase $\pm 10\%$
Input Frequency	48 to 63 Hz, maximum rate of change 17%/second
Line Imbalance	Max $\pm 3\%$ of nominal phase to phase input voltage
Fundamental Power Factor	0.98 (at nominal load)
Connection	Terminals U1, V1, W1 (1-phase L, N)

#### Output Connection

Output Voltage	0 to U1, 3-phase symmetrical
Output Frequency	0 to 500 Hz
Frequency Resolution	0.01 Hz
Continuous Current	Rated $I_{2N}$ for $f_s = 4\text{kHz}$
Short Term Overload Capacity	$1.5 * I_{2N}$ (at least 1 min / 10 min)
Field Weakening Point	30 to 500 Hz
Switching Frequency	4, 8 or 12 kHz (derate $I_{2N}$ to 80% for 8 kHz, derate ambient temp to 30°C and $I_{2N}$ to 65% for 12 kHz) (16 kHz, v. 2.41+)
Acceleration & Deceleration Time	0.1 to 1800 s
Efficiency	98% at nominal power level
Short circuit withstand rating	100,000 AIC
Connection	Terminals U2, V2, W2

#### Ambient Conditions, Operation

Air Temperature	-10°C (14°F) to 40°C (104°F), no frost allowed, above 40°C the maximum output current is de-rated 1% for every additional 1°C (up to 50°C (122°F) maximum limit)
Relative Humidity	5 to 95%, no condensation allowed, maximum relative humidity is 60% in the presence of corrosive gasses
Contamination Levels	
IEC	60721-3-3
Chemical Gasses	3C2
Solid Particles	3S2
Installation Site Altitude	0 to 1000 m (3300 ft) above sea level. At sites from 1000 m to 2000 m (3300 ft to 6600 ft) above sea level, the maximum power is de-rated 1% for every additional 100 m (330 ft).

#### Ambient Conditions, Storage & Transportation (in Protective Shipping Package)

Air Temperature	-40° to 70°C (-40° to 158°F)
Relative Humidity	Less than 95%, no condensation allowed
Atmospheric Pressure	70 to 106 kPa (10.2 to 15.4 PSI)

#### Cooling Information

Cooling Method	Internal Fan except for Frame R0
Power Loss	Approximately 3% of rated power

### Specifications (cont'd)

#### Analog Inputs

Two (2) Programmable Analog Inputs

Current Reference	Unipolar	0 (4) to 20 mA, $R_{in} = 100 \text{ ohm}$
	Bipolar	-20 mA to 20 mA, $R_{in} = 100 \text{ ohm}$
Voltage Reference	Unipolar	0 (2) to 10 V, $R_{in} > 312 \text{ kohm}$
	Bipolar	-10 V to 10 V, $R_{in} > 312 \text{ kohm}$
Resolution		0.1%
Accuracy		±1%

#### Reference Power Supply

Voltage	+10 VDC, ±1% at 25°C (77°F)
Maximum Load	10 mA
Applicable Potentiometer	1 kOhm to 10 kOhm

#### Analog Outputs

One (1) Programmable Current Outputs

Signal Level	0 (4) to 20 mA
Accuracy	±3% Full Scale Range at 25°C (77°F)
Maximum Load Impedance	500 ohms

#### Digital Inputs

Five (5) Programmable Digital Inputs

Voltage	12 to 24 VDC with internal or external supply
Type	PNP and NPN
Input Current	15 mA at 24 VDC
Input Updating Time	8 ms, ±1 ms
Frequency Input	Pulse Train 0 to 16 kHz (X1A:16 only)
Input Impedance	2.4 kohm

Internal 24 VDC Supply for Digital Inputs

Voltage	24 VDC, ±10%
Maximum Current	200 mA

#### Relay Outputs

One (1) Programmable Relay Output

Type	NO + NC
Switching Voltage	12-250 VAC / 30 VDC
Maximum Switching Current	0.5 A / 30 VDC; 5 A / 230 VAC
Maximum Continuous Current	2 Amps RMS

#### Digital Outputs

One (1) Programmable Digital Output

Type	Transistor Output
Maximum Switching Voltage	30 VDC
Maximum Switching Current	100 mA / 30 VDC, short circuit protected
Frequency	10 to 16 Hz
Resolution	1 Hz
Accuracy	0.2%



### Notes for product selection

#### General Notes

- $I_{2N}$ : continuous base current at 40°C (104°F) and 50°C (120°F). Overload cycle 150% for 1 minute / 10 minutes allowed.
- Continuous output current at 50°C (120°F) shown for 230Vac NEC motor ratings. Use with input voltages less than 230Vac may require larger drive when operating at 50°C (120°F)
- Current ratings do not change with different supply voltages.
- The rated current of the ACS350 must be greater than or equal to the rated motor current to achieve the rated motor power given in the table.
- Horsepower ratings are based on NEC motor ratings for typical 4-pole motors (1800 rpm). Check motor nameplate current for compatibility.
- Kilowatt ratings are based on IEC motor ratings for typical 4-pole motors (1500 rpm). Check motor nameplate current for compatibility.

### CONFIGURED

To order a Configured ACS350 drive, select the appropriate type code from this page. To add options, simply add a [+] to the end of the type code followed by the plus code of the desired option. Configured Options are shown on the Configured Option Pages.

**Example:** ACS350-03U-06A7-2+J400+K451 means add the Advanced Operator Panel and DeviceNet Adapter

Contact Customer Service for lead times of Configured Drives

**Note:** A blank panel is provided as standard. Specify +J404 (Basic Panel) or +J400 (Advanced Panel) when an operator panel is required.

### 240Vac Ratings

3-phase supply voltage 208, 230 or 240 V. The power ratings are valid at nominal voltage, 208Vac at 40°C (104°F) or 230Vac at 50°C (120°F)

Type Codes below include Blank Panel only	Nominal ratings					Frame Size	IP 20 with Blank Panel	IP 20 with Basic Panel	IP 20 with Advanced Panel
	40°C (104°F) Continuous Rating		50°C (120°F) Continuous Rating		List Price		List Price (+J404)	List Price (+J400)	
	I <sub>2N</sub> A	P <sub>N</sub> HP	I <sub>2N</sub> A	P <sub>N</sub> HP					
1-Phase U <sub>n</sub> = 200...240V (200, 208, 230, 240V)									
ACS350-01U-02A4-2	2.4	0.5	2.2	0.5	R0	\$319	\$394	\$469	
ACS350-01U-04A7-2	4.7	1.0	4.2	1.0	R1	\$362	\$437	\$512	
ACS350-01U-06A7-2	6.7	1.5	6.0	1.5	R1	\$405	\$480	\$555	
ACS350-01U-07A5-2	7.5	2.0	6.8	2.0	R2	\$448	\$523	\$598	
ACS350-01U-09A8-2	9.8	3.0	8.8	2.0	R2	\$540	\$615	\$690	
3-Phase U <sub>n</sub> = 200...240V (200, 208, 230, 240V)									
ACS350-03U-02A4-2	2.4	0.50	2.2	0.5	R0	\$319	\$394	\$469	
ACS350-03U-03A5-2	3.5	0.75	3.2	0.75	R0	\$341	\$416	\$491	
ACS350-03U-04A7-2	4.7	1.0	4.2	1.0	R1	\$362	\$437	\$512	
ACS350-03U-06A7-2	6.7	1.5	6.0	1.5	R1	\$405	\$480	\$555	
ACS350-03U-07A5-2	7.5	2.0	6.8	2.0	R1	\$448	\$523	\$598	
ACS350-03U-09A8-2	9.8	3.0	8.8	2.0	R2	\$540	\$615	\$690	
ACS350-03U-17A6-2	17.6	5.0	15.8	5.0	R2	\$669	\$744	\$819	
ACS350-03U-24A4-2	24.4	7.5	22.0	7.5	R3	\$873	\$948	\$1,023	
ACS350-03U-31A0-2	31.0	10.0	27.9	10.0	R4	\$1,152	\$1,227	\$1,302	
ACS350-03U-46A2-2	46.2	15.0	41.6	15.0	R4	\$1,523	\$1,598	\$1,673	

### 480Vac Ratings

3-phase supply voltage 380, 400, 415, 440 or 480 V. The power ratings are valid at nominal voltage, 480Vac at 50°C (120°F)

Type Codes below include Blank Panel only	Nominal ratings					IP 20 with Blank Panel	IP 20 with Basic Panel	IP 20 with Advanced Panel
	40°C (104°F)		50°C (120°F)		Frame Size			
	Continuous Rating		Continuous Rating				List Price	List Price (+J404)
	I <sub>2N</sub> A	P <sub>N</sub> HP	I <sub>2N</sub> A	P <sub>N</sub> HP				
3-Phase U <sub>n</sub> = 380...480V (380, 400, 415, 440, 460, 480V)								
ACS350-03U-01A2-4	1.2	0.5	1.1	0.5	R0	\$380	\$455	\$530
ACS350-03U-01A9-4	1.9	0.75	1.7	0.75	R0	\$419	\$494	\$569
ACS350-03U-02A4-4	2.4	1	2.2	1	R1	\$458	\$533	\$608
ACS350-03U-03A3-4	3.3	1.5	3.0	1.5	R1	\$494	\$569	\$644
ACS350-03U-04A1-4	4.1	2	3.7	2	R1	\$529	\$604	\$679
ACS350-03U-05A6-4	5.6	3	5.0	3	R1	\$641	\$716	\$791
ACS350-03U-08A8-4	8.8	5	7.9	5	R1	\$761	\$836	\$911
ACS350-03U-12A5-4	12.5	7.5	11.3	7.5	R3	\$935	\$1,010	\$1,085
ACS350-03U-15A6-4	15.6	10	14.0	10	R3	\$1,154	\$1,229	\$1,304
ACS350-03U-23A1-4	23.1	15	20.8	15	R3	\$1,475	\$1,550	\$1,625
ACS350-03U-31A0-4	31.0	20	27.9	20	R4	\$1,800	\$1,875	\$1,950
ACS350-03U-38A0-4	38.0	25	34.2	25	R4	\$2,142	\$2,217	\$2,292
ACS350-03U-44A0-4	44.0	30	39.6	30	R4	\$2,602	\$2,677	\$2,752

Notes:

- ACS350-03U-31A0-4 available Q2, 2008
- ACS350-03U-38A0-4 available Q2, 2008
- ACS350-03U-44A0-4 available Q3, 2008
- ACS350-03U-24A4-2 available Q3, 2008
- ACS350-03U-31A0-2 available Q3, 2008
- ACS350-03U-46A2-2 available Q3, 2008

### Configured Options (These options will be included in the Drives Shipping Package but will not be installed)

Name	Description	Plus Code	List Price
Advanced Control Panel	The Advanced Control Panel includes a full graphic, backlite display capable of displaying three Actual Signal values or bar graphs. The Alpha-Numeric display supports thirteen languages. A Real Time Clock is also included.	+J400	<b>See Drive Selection Table</b>
Basic Control Panel	The Basic Control Panel includes a single line numeric backlite LCD display.	+J404	<b>See Drive Selection Table</b>
Speed Pot, Start/Stop & Fw/Rev Switches	Potentiometer with two switches: Start/Stop and forward/reverse. Polarity is selected with DIP switches. No external power source is needed for the potentiometer. This option can be used with the Blank Cover, Basic or Advanced Panel.	+J402	<b>\$35</b>
DeviceNet Adapter	The DeviceNet network uses a linear bus topology. Terminating resistors are required on each end of the trunk line. Drop lines as long as 6 meters (20 feet) each are permitted, allowing one or more nodes to be attached. DeviceNet allows branching structures only on drop lines.	+K451	<b>\$277</b>
PROFIBUS-DP Adapter	PROFIBUS is an open serial communication standard that enables data exchange between all kinds of automation components. The physical transmission medium of the bus is a twisted pair cable (according to the RS-485 standard). The maximum length of the bus cable is 100 to 1200 meters, depending on the selected transmission rate. Up to 31 stations can be connected to the same PROFIBUS system without the use of repeaters.	+K454	<b>\$307</b>
CANOpen Adapter	CANopen is a higher layer protocol based on the CAN (Control Area Network) serial bus system and the CAL (CAN Application Layer). CANopen assumes that the hardware of the connected device has a CAN transceiver and a CAN controller as specified in ISO 11898. The CANopen Communication Profile, CiA Ds301, includes both cyclic and event driven communication, which makes it possible to reduce the bus load to minimum while still maintaining extremely short reaction times. High communication performance can be achieved at relatively low baud rates, thus reducing EMC problems and cable costs. CANopen device profiles define both direct access to drive parameter and time critical process data communication. The FCAN-01 module fulfills CiA (CAN in Automation) standard DSP 402 (Drives and Motion Control).	+K457	<b>\$342</b>
Modbus RTU Adapter	ModBus is a serial, asynchronous protocol. The ModBus protocol does not specify the physical interface. Typical physical interfaces are RS-232 and RS-485. The FMBA-01 provides a galvanically isolated RS-485 interface. ModBus is designed for integration with Modicon PLCs or other automation devices, and the services closely correspond to the PLC architecture. The FMBA-01 supports the RTU protocol only.	+K458	<b>\$159</b>



# AC DRIVES

## ACS350

### Stock Options (These options will be shipped separately from the drive shipping package)

Name	Description	Field Kit Code	Field Kit List Price
Pulse Encoder Interface	The Pulse Encoder Interface module offers a differential or single ended interface for a digital pulse encoder connection. The module is capable of operating from either a 15 or 24 VDC signal with a maximum frequency of 200kHz.	MTAC-01	\$290
Advanced Control Panel	The Advanced Control Panel includes a full graphic, backlite display capable of displaying three Actual Signal values or bar graphs. The Alpha-Numeric display supports thirteen languages. A Real Time Clock is also included. This panel supports the internal Sequence Programming Function.	ACS-CP-A	\$150
Basic Control Panel	The Basic Control Panel includes a single line numeric backlit LCD display.	ACS-CP-C	\$75
Cabinet Panel Mounting	Control Panel Mounting Platform allows remote mounting of the keypad on a larger enclosure or remote panel. The kit maintains UL Type 12 integrity of the mounting location. Adapters, 3 m (10 ft) cable and mounting hardware are included in this kit. With this mounting arrangement, the keypad is removable from the panel in a fashion identical to a drive-mounted keypad	OPMP-01	\$138
NEMA 4X Cabinet Panel Mounting	Allows remote mounting of the ACS-CP-X Operator Panels on a larger NEMA 4X (IP66) enclosure or remote panel. The kit maintains NEMA 4X integrity of the mounting location. All necessary hardware and a mounting template are provided in addition to a 3m panel cable. When mounted, the operator is not removable from the front of the enclosure. The operator panel must be purchased separately.	ACS/H-CP-EXT-IP66	\$63
Control Panel Mounting	Control Panel Mounting Kit for ACS350 drives allows remote mounting of the ACS350 keypad on the door of an enclosure. The kit includes a 10ft (3m) CAT 5 patch cable, gasket for NEMA 12, mounting hardware and drilling template.	ACS/H-CP-EXT	\$55
Speed Pot, Start/Stop & Fw/Rev Switches	Potentiometer with two switches: Start/Stop and Forward/Reverse. Polarity is selected with DIP switches. No external power source is needed for the potentiometer. This option can be used with the Blank Cover, Basic or Advanced Panel.	MPOT-01	\$30
ACS350 Demo-Case	Powered by 115VAC, the DemoCase includes an ACS 350 drive mounted on a panel. Included is a motor and I/O board with switches, pots, meters and LEDs permitting remote operation of the drive and motor.	ACS350-DEMOCASE	\$2,800
ACS150/350 Programming Case	Powered by 115VAC, the Programming Case includes an ACS150 and ACS350 drive mounted on a panel. Included is an I/O board with switches, pots, meters and LEDs permitting remote operation.	ACS150/350-PROGCASE	\$2,100
ACS55/150/350 Display Case	The Display Case provides an ACS55, ACS150 and an ACS350 along with options ACS50-POT, MPOT-01, one Fieldbus Adapter, ACS-CP-A, ACS-CP-C and MTAC-01 mounted loosely inside a foam packed suitcase.	ACS55/150/S350-DISPCASE	\$2,500
RJ45/DB9 Adapter	This adapter converts the drive's panel port RJ45 (CAT 5 cable connector) plug to a 9 pin RS-232 computer serial port connector for connecting the ACS350 to a PC.	OPCA-01	\$50
DriveWindow Light 2.x	DriveWindow Light is software designed for online drive commissioning and maintenance purposes. It is possible to adjust parameters, read the actual values and control the drive with DriveWindow Light instead of the drive control panel. It is also possible to follow trends and draw graphs. An RJ45 to DB9 adapter cable is provided to permit connection between the panel port and a PC.	3AFE64532871	\$275
Panel Extension Cable	7 foot CAT 5 patch cable allows remote operation of the standard panel or connection of the drive to a PC using the RJ45/DB9 Adapter which must be purchased separately.	OCAT-01	\$40
Flashdrop	FlashDrop is a powerful palm sized tool for fast and easy parameter selecting and setting. It gives the possibility to hide selected parameters to protect the machine. Only the parameters needed in the application are shown. The tool can copy parameters between two drives or between a PC and a drive. Includes DrivePM (Drive Parameter Manager) which is a software tool to create, edit and copy parameter sets for FlashDrop. The parameter sets can consist of all parameters (incl. motor parameters and ID run results) or only a set of the user parameters.	MFDT-01	\$600





# AC DRIVES

## ACS350

### Stock Options (These options will be shipped separately from the drive shipping package)

Name	Description	Field Kit Code	Field Kit List Price
NEMA 1 Enclosure Kit	This option provides the necessary hardware to modify the ACS350 drive from the standard fingersafe protected chassis to NEMA 1 protection capable of landing conduit. MUL1-R1 kit is used with frame sizes R0 through R2, MUL1-R3 is used with frame size R3, and MUL1-R4 is used with frame size R4.	MUL1-R1 MUL1-R3 MUL1-R4	<b>\$75</b> <b>\$75</b> <b>\$100</b>
DeviceNet Adapter	The DeviceNet network uses a linear bus topology. Terminating resistors are required on each end of the trunk line. Drop lines as long as 6 meters (20 feet) each are permitted, allowing one or more nodes to be attached. DeviceNet allows branching structures only on drop lines.	FDNA-01-KIT	<b>\$260</b>
PROFIBUS-DP Adapter	PROFIBUS is an open serial communication standard that enables data exchange between all kinds of automation components. The physical transmission medium of the bus is a twisted pair cable (according to the RS-485 standard). The maximum length of the bus cable is 100 to 1200 meters, depending on the selected transmission rate. Up to 31 stations can be connected to the same PROFIBUS system without the use of repeaters.	FPBA-01-KIT	<b>\$290</b>
CANOpen Adapter	CANopen is a higher layer protocol based on the CAN (Control Area Network) serial bus system and the CAL (CAN Application Layer). CANopen assumes that the hardware of the connected device has a CAN transceiver and a CAN controller as specified in ISO 11898. The CANopen Communication Profile, CiA Ds301, includes both cyclic and event driven communication, which makes it possible to reduce the bus load to minimum while still maintaining extremely short reaction times. High communication performance can be achieved at relatively low baud rates, thus reducing EMC problems and cable costs. CANopen device profiles define both direct access to drive parameter and time critical process data communication. The FCAN-01 module fulfills CiA (CAN in Automation) standard DSP 402 (Drives and Motion Control).	FCAN-01-KIT	<b>\$325</b>
Modbus RTU Adapter	Modbus is a serial, asynchronous protocol. The Modbus protocol does not specify the physical interface. Typical physical interfaces are RS-232 and RS-485. The FMBA-01 provides a galvanically isolated RS-485 interface. Modbus is designed for integration with Modicon PLCs or other automation devices, and the services closely correspond to the PLC architecture. The FMBA-01 supports the RTU protocol only.	FMBA-01-KIT	<b>\$142</b>
Modbus RTU PCB	Similar to the FMBA-01-KIT except as a bare, coated printed circuit board (PCB) with the RS-485 GND as the same potential as the drive I/O GND.	FRSA-00	<b>\$65</b>



# AC DRIVES

## ACS350

### ACS350 AC Drive Brake Resistor Product Selection

Dynamic Braking Table - Single Phase 200-240V applications, stopping duty only

Drive Part No.	HP ND	DutyCycle=3sec 0n/27sec off					DutyCycle=10sec on/50sec off				
		Resistor Part No.	Ohms	Watts	Dimensions	List Price	Resistor Part No.	Ohms	Watts	Dimensions	List Price
ACS350-01U-											
02A4-2	0.5	P14494-19	75.0	300	12W x 5D x 5H	\$208	P14494-19	75.0	300	12W x 5D x 5H	\$208
04A7-2	1	P14494-24	45.0	300	12W x 5D x 5H	\$208	P14494-24	45.0	300	12W x 5D x 5H	\$208
06A7-2	1.5	P14494-24	45.0	300	12W x 5D x 5H	\$208	P14494-24	45.0	300	12W x 5D x 5H	\$208
07A5-2	2	P14494-31	35.0	300	12W x 5D x 5H	\$208	P14494-32	35.0	820	12W x 7D x 5H	\$315
09A8-2	3	P14494-31	35.0	300	12W x 5D x 5H	\$208	P14494-32	35.0	820	12W x 7D x 5H	\$315

Dynamic Braking Table - Three Phase 200-240V applications, stopping duty only

Drive Part No.	HP ND	DutyCycle=3sec 0n/27sec off					DutyCycle=10sec on/50sec off				
		Resistor Part No.	Ohms	Watts	Dimensions	List Price	Resistor Part No.	Ohms	Watts	Dimensions	List Price
ACS350-03U-											
02A4-2	0.5	P14494-19	75.0	300	12W x 5D x 5H	\$208	P14494-19	75.0	300	12W x 5D x 5H	\$208
03A5-2	0.75	P14494-19	75.0	300	12W x 5D x 5H	\$208	P14494-19	75.0	300	12W x 5D x 5H	\$208
04A7-2	1	P14494-24	45.0	300	12W x 5D x 5H	\$208	P14494-24	45.0	300	12W x 5D x 5H	\$208
06A7-2	1.5	P14494-24	45.0	300	12W x 5D x 5H	\$208	P14494-24	45.0	300	12W x 5D x 5H	\$208
07A5-2	2	P14494-31	35.0	300	12W x 5D x 5H	\$208	P14494-32	35.0	820	12W x 7D x 5H	\$315
09A8-2	3	P14494-31	35.0	300	12W x 5D x 5H	\$208	P14494-32	35.0	820	12W x 7D x 5H	\$315
17A6-2	5	P14494-32	35.0	820	12W x 7D x 5H	\$315	P14494-33	35.0	1200	12W x 10D x 5H	\$405
24A4-2	7.5	P14494-39	21.0	400	12W x 5D x 5H	\$208	P14494-40	21.0	750	12W x 7D x 5H	\$315
31A0-2	10	P14494-46	15.0	750	12W x 7D x 5H	\$315	P14494-47	15.0	1150	12W x 10D x 5H	\$405
46A2-2	15	P14494-56	10.0	720	12W x 7D x 5H	\$315	P14494-57	10.0	1250	12W x 10D x 5H	\$405

Dynamic Braking Table - 380-480V applications, stopping duty only

Drive Part No.	HP ND	DutyCycle=3sec 0n/27sec off					DutyCycle=10sec on/50sec off				
		Resistor Part No.	Ohms	Watts	Dimensions	List Price	Resistor Part No.	Ohms	Watts	Dimensions	List Price
ACS350-03U-											
01A2-4	0.5	P14494-10	350.0	200	12W x 5D x 5H	\$208	P14494-10	350.0	200	12W x 5D x 5H	\$208
01A9-4	0.75	P14494-11	250.0	300	12W x 5D x 5H	\$208	P14494-11	250.0	300	12W x 5D x 5H	\$208
02A4-4	1	P14494-11	250.0	300	12W x 5D x 5H	\$208	P14494-11	250.0	300	12W x 5D x 5H	\$208
03A3-4	1.5	P14494-13	200.0	300	12W x 5D x 5H	\$208	P14494-13	200.0	300	12W x 5D x 5H	\$208
04A1-4	2	P14494-15	150.0	300	12W x 5D x 5H	\$208	P14494-16	150.0	600	12W x 7D x 5H	\$315
05A6-4	3	P14494-15	150.0	300	12W x 5D x 5H	\$208	P14494-16	150.0	600	12W x 7D x 5H	\$315
08A8-4	5	P14494-20	75.0	600	12W x 7D x 5H	\$315	P14494-21	75.0	1000	12W x 10D x 5H	\$405
12A5-4	7.5	P14494-25	45.0	800	12W x 7D x 5H	\$315	P14494-26	45.0	1260	12W x 10D x 5H	\$405
15A6-4	10	P14494-26	45.0	1260	12W x 10D x 5H	\$405	P14494-27	45.0	1920	12W x 16D x 5H	\$585
23A1-4	15	P14494-32	35.0	820	12W x 7D x 5H	\$315	P14494-33	35.0	1200	12W x 10D x 5H	\$405
31A0-4	20	P14494-41	21.0	1050	12W x 10D x 5H	\$405	P14494-43	21.0	2000	12W x 16D x 5H	\$585
38A0-4	25	P14494-47	15.0	1150	12W x 10D x 5H	\$405	P14494-49	15.0	2160	19W x 10D x 5H	\$674
44A0-4	30	P14494-48	15.0	1550	12W x 13D x 5H	\$494	P14494-50	15.0	2450	19W x 13D x 5H	\$764



# AC DRIVES

## ACS350

### ACS350 AC Drive Brake Resistor Product Selection

Dynamic Braking Table - Single Phase 200-240V applications, stopping duty only

Drive Part No.	HP ND	DutyCycle=30sec on/180sec off					DutyCycle=60sec on/180sec off				
		Resistor Part No.	Ohms	Watts	Dimensions	List Price	Resistor Part No.	Ohms	Watts	Dimensions	List Price
02A4-2	0.5	P14494-19	75.0	300	12W x 5D x 5H	\$208	P14494-19	75.0	300	12W x 5D x 5H	\$208
04A7-2	1	P14494-24	45.0	300	12W x 5D x 5H	\$208	P14494-25	45.0	800	12W x 7D x 5H	\$315
06A7-2	1.5	P14494-25	45.0	800	12W x 7D x 5H	\$315	P14494-25	45.0	800	12W x 7D x 5H	\$315
07A5-2	2	P14494-32	35.0	820	12W x 7D x 5H	\$315	P14494-32	35.0	820	12W x 7D x 5H	\$315
09A8-2	3	P14494-32	35.0	820	12W x 7D x 5H	\$315	P14494-33	35.0	1200	12W x 10D x 5H	\$405

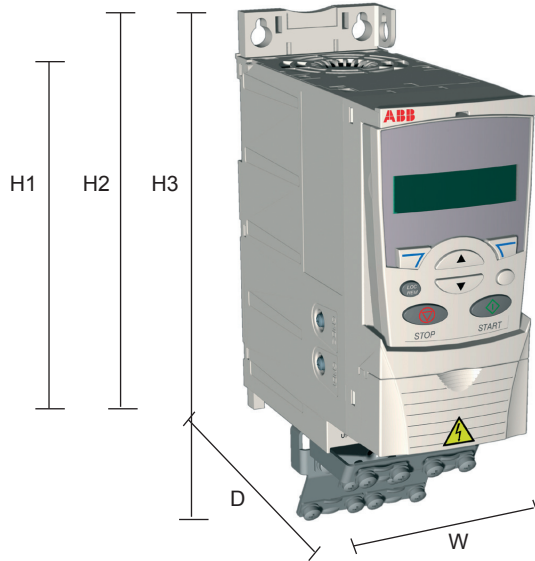
Dynamic Braking Table - Three Phase 200-240V applications, stopping duty only

Drive Part No.	HP ND	DutyCycle=30sec on/180sec off					DutyCycle=60sec on/180sec off				
		Resistor Part No.	Ohms	Watts	Dimensions	List Price	Resistor Part No.	Ohms	Watts	Dimensions	List Price
02A4-2	0.5	P14494-19	75.0	300	12W x 5D x 5H	\$208	P14494-19	75.0	300	12W x 5D x 5H	\$208
03A5-2	0.75	P14494-19	75.0	300	12W x 5D x 5H	\$208	P14494-19	75.0	300	12W x 5D x 5H	\$208
04A7-2	1	P14494-24	45.0	300	12W x 5D x 5H	\$208	P14494-25	45.0	800	12W x 7D x 5H	\$315
06A7-2	1.5	P14494-25	45.0	800	12W x 7D x 5H	\$315	P14494-25	45.0	800	12W x 7D x 5H	\$315
07A5-2	2	P14494-32	35.0	820	12W x 7D x 5H	\$315	P14494-32	35.0	820	12W x 7D x 5H	\$315
09A8-2	3	P14494-32	35.0	820	12W x 7D x 5H	\$315	P14494-33	35.0	1200	12W x 10D x 5H	\$405
17A6-2	5	P14494-34	35.0	1600	12W x 13D x 5H	\$405	P14494-35	35.0	2500	19W x 13D x 5H	\$405
24A4-2	7.5	P14494-41	21.0	1050	12W x 10D x 5H	\$405	P14494-42	21.0	1500	12W x 10D x 5H	\$460
31A0-2	10	P14494-48	15.0	1550	12W x 13D x 5H	\$494	P14494-49	15.0	2160	19W x 10D x 5H	\$674
46A2-2	15	P14494-58	10.0	1800	12W x 16D x 5H	\$585	P14494-59	10.0	3600	19W x 10D x 5H	\$738

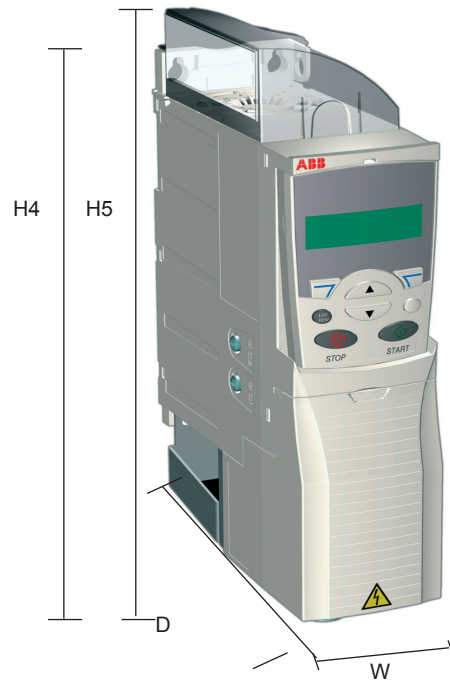
Dynamic Braking Table - 380-480V applications, stopping duty only

Drive Part No.	HP ND	DutyCycle=30sec on/180sec off					DutyCycle=60sec on/180sec off				
		Resistor Part No.	Ohms	Watts	Dimensions	List Price	Resistor Part No.	Ohms	Watts	Dimensions	List Price
01A2-4	0.5	P14494-10	350.0	200	12W x 5D x 5H	\$208	P14494-10	350.0	200	12W x 5D x 5H	\$208
01A9-4	0.75	P14494-11	250.0	300	12W x 5D x 5H	\$208	P14494-11	250.0	300	12W x 5D x 5H	\$208
02A4-4	1	P14494-11	250.0	300	12W x 5D x 5H	\$208	P14494-12	250.0	600	12W x 7D x 5H	\$315
03A3-4	1.5	P14494-14	200.0	600	12W x 7D x 5H	\$315	P14494-14	200.0	600	12W x 7D x 5H	\$315
04A1-4	2	P14494-16	150.0	600	12W x 7D x 5H	\$315	P14494-17	150.0	900	12W x 10D x 5H	\$405
05A6-4	3	P14494-17	150.0	900	12W x 10D x 5H	\$405	P14494-18	150.0	1200	12W x 13D x 5H	\$494
08A8-4	5	P14494-22	80.0	1600	12W x 13D x 5H	\$494	P14494-23	80.0	2400	19W x 10D x 5H	\$674
12A5-4	7.5	P14494-27	45.0	1920	12W x 16D x 5H	\$585	P14494-29	45.0	3200	19W x 13D x 5H	\$819
15A6-4	10	P14494-28	45.0	2450	19W x 13D x 5H	\$764	P14494-30	45.0	4400	26.5W x 13D x 5H	\$1,089
23A1-4	15	P14494-38	35.0	1865	12W x 16D x 5H	\$585	P14494-36	35.0	3600	26.5W x 10D x 5H	\$908
31A0-4	20	P14494-44	21.0	2600	19W x 13D x 5H	\$764	P14494-45	21.0	4400	26.5W x 10D x 5H	\$908
38A0-4	25	P14494-52	15.0	3150	26.5W x 10D x 5H	\$908	P14494-54	15.0	5000	26.5W x 10D x 5H	\$908
44A0-4	30	P14494-53	15.0	3600	19W x 10D x 5H	\$738	P14494-55	15.0	6000	26.5W x 13D x 5H	\$1,066

## Dimensions



*Cabinet Mounted Drives (IP20, UL Open)*



*Wall Mounted Drives (NEMA 1) -  
using MUL1-R1, MUL1-R3, or MUL1-R4 option*

Frame Size	IP20 (cabinet) / UL Open						Noise level
	H1 (in)	H2 (in)	H3 (in)	W (in)	D (in)	Weight (lb)	dBA
R0	6.65	7.95	9.41	2.76	6.34	2.6	<30
R1	6.65	7.95	9.41	2.76	6.34	2.6	50...62
R2	6.65	7.95	9.41	4.13	6.50	3.3	50...62
R3	6.65	7.95	9.29	6.65	6.65	5.5	50...62
R4	7.13	7.95	9.61	10.24	6.65	9.7	<62

Frame Size	NEMA 1					Noise level
	H4 (in)	H5 (in)	W (in)	D (in)	Weight (lb)	dBA
R0	10.12	11.02	2.76	6.65	3.5	<30
R1	10.12	11.02	2.76	6.65	3.5	50...62
R2	10.12	11.10	4.13	6.65	4.2	50...62
R3	10.24	11.77	6.65	6.97	6.8	50...62
R4	10.63	12.60	10.24	6.97	11.0	<62

### NOTES:

H1 = Height without fastenings and clamping plate.  
H2 = Height with fastenings but without clamping plate.  
H3 = Height with fastenings and clamping plate.  
H4 = Height with fastenings and NEMA 1 connection box.  
H5 = Height with fastenings, NEMA 1 connection box and hood.  
W = Width  
D = Depth



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