

BALDOR



Motion Product Accessories

HMI Panels, Cables, Power Supplies
and Filters



HMI Panels

Baldor's operator panels or HMIs provide a complete machine interface that operate with Baldor's broad range of Mint[®] programmable motion controllers and servo drives. The HMI connects via the controllers RS232 or CANopen port.

Baldor offers a comprehensive range to suit the majority of applications, providing excellent performance at an affordable price. Text panels are available with simple programmable graphic display and keypad for data entry. A range of touch screens from 3.8" to 12.1" are available with full graphics capabilities in color and monochrome, to suit your budget.

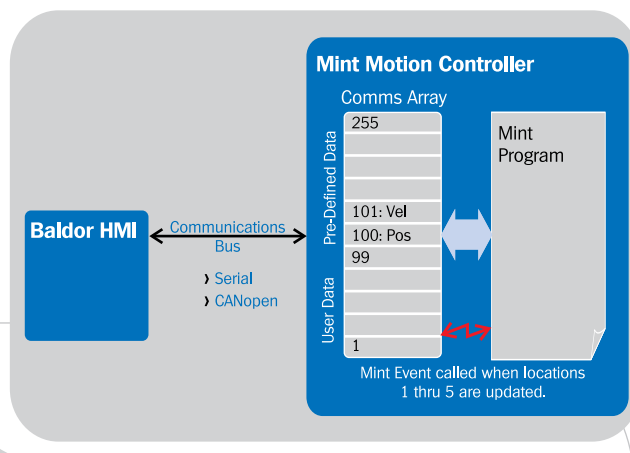
Simple Programming

Baldor operator panels are fully programmable removing the burden from the motion controller. This is achieved using Baldor's Designer Windows-based software. With only one software tool used across the entire range of products, this easy to use front end minimizes your training, development and support costs,

Adding text, variables, graphics, touch buttons etc is made simple with the WYSIWYG (What You See is What You Get) editor. A library of over 500 symbols will get you started quickly, or you can create or import your own.

Quick and Easy Connection

The operator panels will connect to the Mint motion controllers using either the standard RS232 interface or the optional CANopen interface (order code KPD-OPTC). The panels make full use of the Mint Comms Array for data transfer. The Mint Comms Array is an area of memory held within the Mint controller memory that can be read from or written to from both the Mint program and the operator panel. Up to 99 data elements are available for data transfer. Predefined elements present data such as digital I/O information, axis position and errors.



Page 2-7 HMI Panels

Text and touch screen operator panels



Page 8 Cables

Feedback and motor power cables



Page 8 Communication Cables

Serial, Ethernet and CAN cables



Text Displays

The Baldor text displays offer a simple graphics capability in addition to displaying text of different sizes. Each panel supports a keypad for data entry, plus a series of programmable macro keys. A keyboard macro editor allows a single keypress to perform a number of instructions without the need for programming. Functions can include turning pages, setting parameters and turning on and off LEDs.

In addition to displaying text, the LCD display can show bitmaps, bar graphs, charts, trends and more. All are programmed in the easy to use Designer software.

Slide in legends allow you to customize the programmable function keys to suit the machine configuration.



Graphical Touch Screens

Baldor's range of touch screens provide a powerful yet cost effective operator interface. The range starts with the entry level 3.8" 1/4 VGA monochrome display through to the full color 12.1" TFT (800x600) display for showing complex graphics.

The Designer software makes programming the graphic screens simple. A library of over 500 symbols can be called upon to make feature rich and easy to follow operator screens. The comprehensive drawing and file import tools allow you to create your own library of symbols making the screen layouts infinitely customizable.

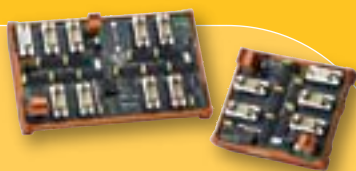
Areas of the screen can be made into touch cells, responding to human touch. Each touch cell can be programmed for different actions including data entry, page change etc.

Recipe data storage is supported on all the touch screen panels allows for different machine configurations to be stored and recalled.

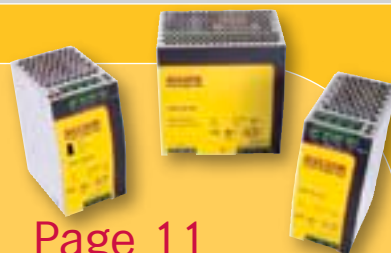


Page 10 EMC Filters

Filters suitable for all Baldor servo drives



Page 10 Encoder Splitters



Page 11 Power Supply Units

24V DC DIN rail power supply units

Intuitive Programming Interface

- › **One Windows front end for all panels**
- › **WYSIWYG (What You See Is What You Get) programming**
- › **Comprehensive library of objects with ability to create and store new objects**
- › **Easy translation of text**

Baldor's Designer application tool provides an intuitive and easy to use front end for programming the entire range of panels. Each panel display is represented in a WYSIWYG format, so what you see on the computer screen is what you see on the panel display. This makes placing text and graphical elements simple.

Translation Made Easy

Translation into different languages has been made simple with Designer. Project text, alarms and messages can be exported from Designer and edited with Windows-based applications such as Microsoft Excel. The new file can then be imported back into the project file with the entire graphic layout still intact.



Touch Screens

Touch cells can be defined by either drawing them in Designer as a graphic or importing them as graphic files. Once defined, the touch cells can be edited and programmed using the Keyboard Macro Editor. Functions that can be performed include changing pages, scrolling the display and data entry mode. Touch cells can be created as layers on top of animated drawings to provide a powerful tool for machine trouble-shooting.

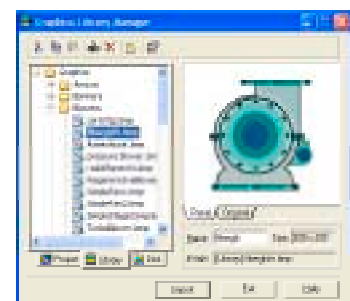


Designer includes all the tools necessary for creating graphical objects. Alternatively, with its support for an extensive array of graphics formats, images can be imported into Designer for use within your projects.

Object Orientated Workflow

Screen images are created as objects and can be moved, copied, edited, aligned and even combined into new objects. Custom graphics can be created by combining and grouping objects and once created, can be saved in the project library for re-use in later projects.

Supporting both vector and bitmap images, Designer allows over 20 different graphic formats to be imported, including BMP, JPEG, TIFF, etc.



The HMI Designer software is available for evaluation from
www.baldormotion.com

› Serial or CANopen Connections

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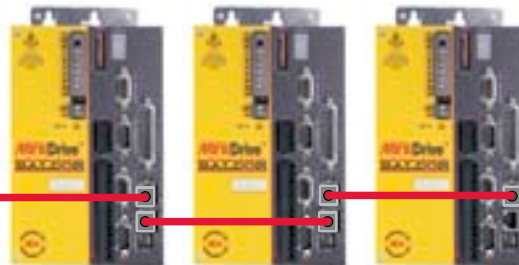
Serial connection - uses HMI's serial port for a low cost interface to the Baldor motion controller or drive.

RS232 Communications



CANopen connection - Requires KPD-OPTC to be fitted to HMI panel. CANopen is standard on all NextMove motion controllers and optional on Flex+Drive-II and MintDrive-II.

CANopen Network



CANopen connection - CANopen is used to connect to the onboard CANopen port of the NextMove motion controller.

CANopen Network

Real-Time
Ethernet Network



Product Overview



	Catalog Number	KPD-KG420-10	KPD-KG420-20	KPD-KG420-30	KPD-KG840-10
Display	Type	Transflective LCD	Transflective LCD	Transflective LCD	Transflective LCD
	Colors	-	-	-	-
	Size (Touch Screen)	-	-	-	-
	Character Rows/Columns	4/20	4/20	4/20	8/40
	Resolution	120x32	120x32	120x32	240x64
	User Defined Fonts	256	256	256	256
Keyboard	Function Keys	4	9	12	20
	Numerical Keypad	No	Yes	Yes	Yes
	LED Status	4	10	12	20
Memory	User Memory	512KB	512KB	512KB	512KB
	User Memory Expansion	-	-	-	1024KB
	Recipe Memory	-	-	-	16KB
Communications	Printer Port	No	No	Yes	Yes
	Aux Port for CANopen	1	1	1	1
	Serial Port Baud Rate	38,400/9600	38,400/9600	38,400/9600	38,400
Functionality	Graphics	Yes	Yes	Yes	Yes
	Battery	No	No	No	Yes
	Real Time Clock	No	No	No	Yes
	Password	Yes	Yes	Yes	Yes
	Alarms	1024	1024	1024	1024
	Event List	-	-	-	256
	Protection Level ①	IP65	IP65	IP65	IP65
	Max Power Reqs (@24VDC)	~250mA	~250mA	~300mA	~400mA
Dimensions	Front (HxL) mm/in.	149x109 / 5.86x4.29	149x109 / 5.86x4.29	141x176 / 7.75x6.93	220x176 / 8.86x6.93
	Cut-out (LxH) mm/in.	136x96 / 5.35x3.78	136x96 / 5.35x3.78	128x163 / 5.04x6.41	207x163 / 8.15x6.41

① With supplied gasket fitted

Accessories

Power Supply Units

Catalog Number	Description
DR-75-24	24V Universal Power Supply. 75W/3.2A output
DR-120-24	24V Universal Power Supply. 120W/5.0A output
DRP-240-24	24V Universal Power Supply. 240W/10A output



Option Cards

Catalog Number	Description
KPD-OPTC	CANopen option card





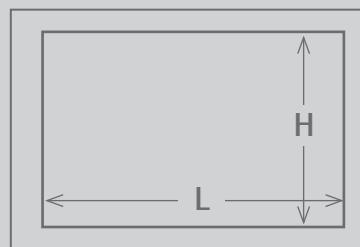
KPD-TS03M-10	KPD-TS05M-10	KPD-TS05C-10	KPD-TS10C-10	KPD-TS12C-10
LCD monochrome	LCD monochrome	STN color	TFT color	TFT color
-	-	16	64K	64K
3.8"	5.6"	5.6"	10.4"	12.1"
16/40	16/40	16/40	30/80	30/80
320x240	320x240	320x240	640x480	800x600
256	256	256	256	256
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
512KB	8MB	8MB	32MB	32MB
-	32MB	32MB	32MB	32MB
No	Yes	Yes	Yes	Yes
1	1	1	1	1
38,400	38,400	38,400	38,400	38,400
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
1024	1024	1024	1024	1024
256	256	256	256	256
IP65	IP65	IP65	IP65	IP65
~400mA	~600mA	~600mA	~700mA	~800mA
149x109 / 5.86x4.29	187x147 / 7.32x5.79	187x147 / 7.32x5.79	287x232 / 11.3x9.13	337x267 / 13.27x10.5
136x96 / 5.35x3.78	176x136 / 6.93x5.35	176x136 / 6.93x5.35	276x221 / 10.87x8.7	326x256 / 12.8x10.1

Detailed technical specifications for each panel are available for download from www.baldormotion.com.

Cables

Catalog Number	Description
CBL034-501	HMI Programming Cable (RS232)
OPT033-501	Gender changer for programming cable. Required for KPD-KG420-20 and KPD-TS03M-10

Dimensions



› Motor Feedback Cables

Pre-made (with connectors) and raw (no connectors) cables.

Encoder Cables ①

CBLxxxRF-E	Encoder raw cable - no connectors 8.9mm (0.35") dia. 16 core
CBLxxxSF-E	Cable with motor connector only
CBLxxxSF-E1	Series-II drives - connectors both ends
CBLxxxSF-E2	MicroFlex drive - connectors both ends

EnDat Cables ①

CBLxxxRF-D	EnDat raw cable - no connectors 8.65mm (0.34") dia. 11 core
CBLxxxSF-D	Cable with motor connector only
CBLxxxSF-D1	Series-II drives - connectors both ends
CBLxxxSF-D2	MicroFlex e100 - connectors both ends

Resolver Cables ①

CBLxxxRF-R	Resolver/SSI raw cable - no connectors 8.2mm (0.32") dia. 7 core.
CBLxxxSF-R	Cable with motor connector only
CBLxxxSF-R1	Connectors both ends

SSI Cables ①

CBLxxxSF-S	Cable with motor connector only
CBLxxxSF-S2	MicroFlex drives - connectors both ends

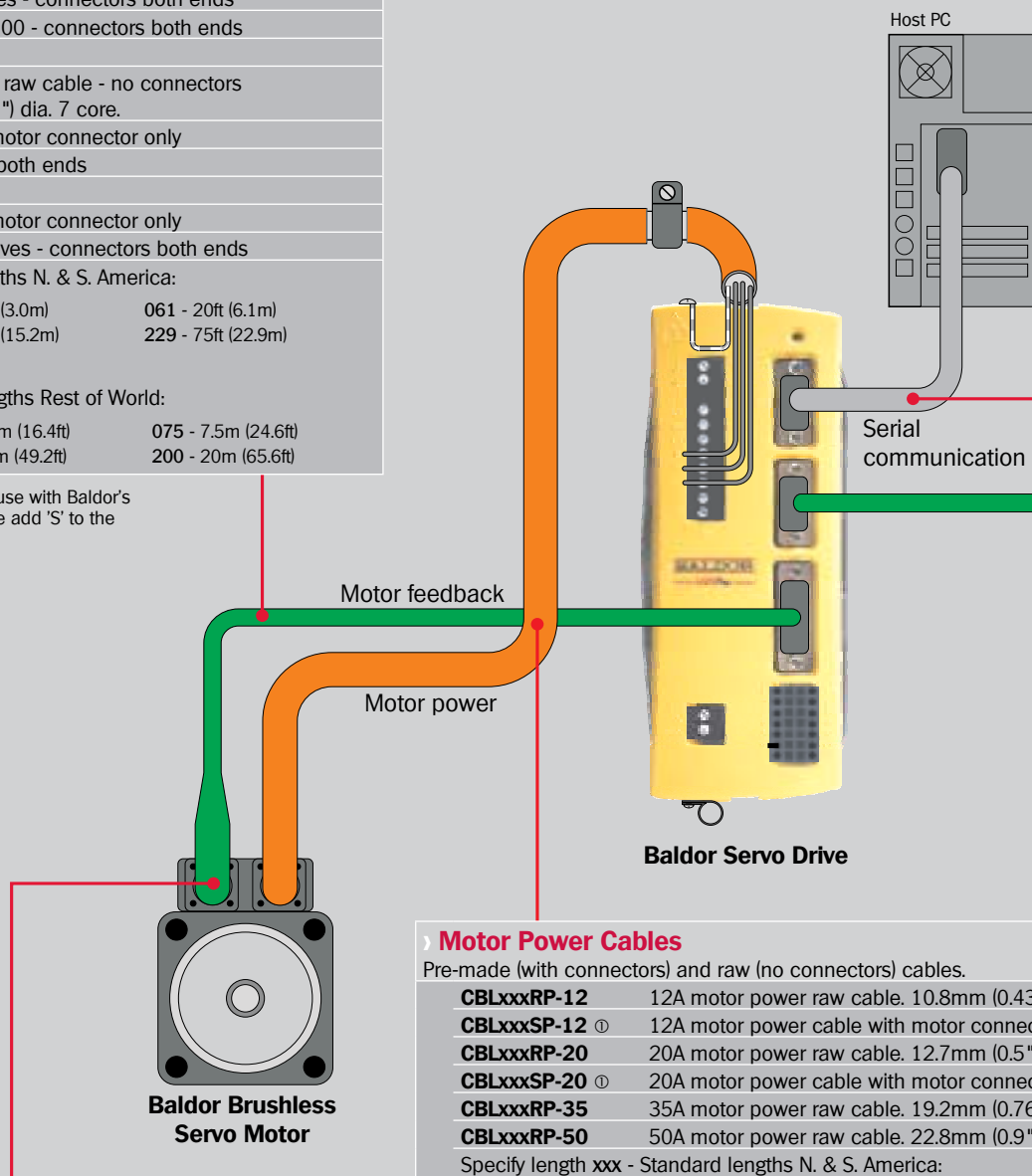
Specify length xxx - Standard lengths N. & S. America:

015 - 5ft (1.5m)	030 - 10ft (3.0m)	061 - 20ft (6.1m)
091 - 30ft (9.1m)	152 - 50ft (15.2m)	229 - 75ft (22.9m)
305 - 100ft (30.5m)		

Specify length xxx - Standard lengths Rest of World:

025 - 2.5m (8.2ft)	050 - 5.0m (16.4ft)	075 - 7.5m (24.6ft)
100 - 10m (32.8ft)	150 - 15m (49.2ft)	200 - 20m (65.6ft)

① For stainless steel motor connectors, for use with Baldor's Stainless Steel Servo Motors (SSBSM), please add 'S' to the part number. For example: CBL025SF-E1S



› Motor Connectors

For use with raw cable.

MCSP0W-08	Power connector (BSM 50/63/80)
MCSP0W-08S	Power connector for use with SSBSM motors
MCSRES-12	12-pin connector - resolver/EnDat/SSI feedback
MCSRES-12S	12-pin stainless steel connector - resolver/EnDat/SSI feedback for use with SSBSM motors
MCSENC-16	16-pin connector - encoder feedback
MCSENC-16S	16-pin stainless steel connector - encoder feedback for use with SSBSM motors

› Motor Power Cables

Pre-made (with connectors) and raw (no connectors) cables.

CBLxxxRP-12	12A motor power raw cable. 10.8mm (0.43") dia
CBLxxxSP-12 ①	12A motor power cable with motor connector
CBLxxxRP-20	20A motor power raw cable. 12.7mm (0.5") dia.
CBLxxxSP-20 ①	20A motor power cable with motor connector
CBLxxxRP-35	35A motor power raw cable. 19.2mm (0.76") dia.
CBLxxxRP-50	50A motor power raw cable. 22.8mm (0.9") dia.

Specify length xxx - Standard lengths N. & S. America:

015 - 5ft (1.5m)	030 - 10ft (3.0m)	061 - 20ft (6.1m)
091 - 30ft (9.1m)	152 - 50ft (15.2m)	229 - 75ft (22.9m)
305 - 100ft (30.5m)		

Specify length xxx - Standard lengths Rest of World:

025 - 2.5m (8.2ft)	050 - 5.0m (16.4ft)	075 - 7.5m (24.6ft)
100 - 10m (32.8ft)	150 - 15m (49.2ft)	200 - 20m (65.6ft)

① For stainless steel motor connectors, for use with Baldor's Stainless Steel Servo Motors (SSBSM), please add 'S' to the part number. For example: CBL015SF-E1S

Cables and Connectors

Baldor designs and manufactures completed cable assemblies in order to make installation easier. Motor feedback and motor power cables are available in different pre-defined lengths. Custom lengths are available on request.



› Programming Cables

CBL001-501	RS232 programming cable. 9-pin D-type. 3m (9.9 ft)
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› Motion Feedback Cables

Pre-made (with connectors) and raw (no connectors) cables.

CBLxxxRF-E	See Table "Motor Feedback Cable" for details and lengths.
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CBLxxxMF-E3A	Drive to NextMove e100/ESB/ES/BX-II
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CBLxxxMF-E3B	Drive to NextMove PCI/PCI-2
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Specify length xxx in meters:

005 - 0.5m (1.6ft)	010 - 1.0m (3.3ft)	015 - 1.5m (4.9ft)	020 - 2.0m (6.6ft)
030 - 3.0m (9.8ft)	040 - 4.0m (13.1ft)	050 - 5.0m (16.4ft)	

Motion Feedback



Baldor NextMove Motion Controller

Environmental/Mechanical Characteristics

Baldor motor feedback and power cables can be used in high flex applications. They meet the following characteristics ①

Temperature Range:	Flexing -30°C to 80°C Fixed -50°C to 90°C
Static Bend Radius:	Approx. 7.5x cable diameter
Dynamic Bend Radius:	Approx. 10x cable diameter
Min flex life at rated radius, speed and acceleration:	Min. 2 million cycles
Speed:	3 m/sec (9.8 ft/sec)
Acceleration:	7 m/sec ² (0.7G)

Complete cable specifications are available on request or can be downloaded from www.baldormotion.com

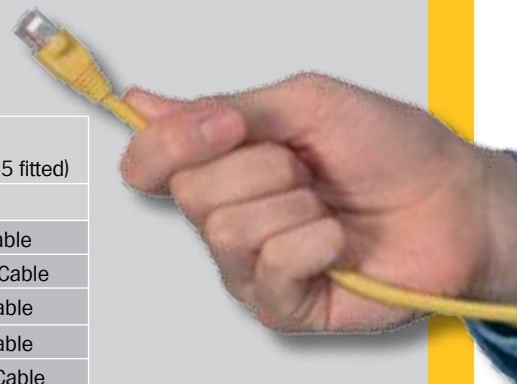
① Contact Baldor for technical specifications for 35A and 50A power cables.

Communication Cables

› Ethernet/CAN Cables

For use with Baldor's e100 product family and CAN I/O nodes (where RJ45 fitted)

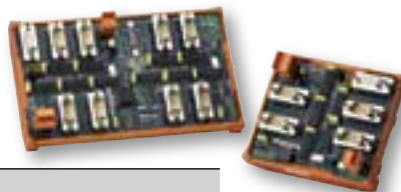
Catalog Number	Description
CBL002CM-EXS	0.2m (8") CAT5e Shielded RJ45 Ethernet/CAN Cable
CBL005CM-EXS	0.5m (1.6ft) CAT5e Shielded RJ45 Ethernet/CAN Cable
CBL010CM-EXS	1m (3.2ft) CAT5e Shielded RJ45 Ethernet/CAN Cable
CBL020CM-EXS	2m (6.5ft) CAT5e Shielded RJ45 Ethernet/CAN Cable
CBL050CM-EXS	5m (16.3ft) CAT5e Shielded RJ45 Ethernet/CAN Cable
CBL100CM-EXS	10m (32.6ft) CAT5e Shielded RJ45 Ethernet/CAN Cable



Accessories

Encoder Splitter Boards

Baldor encoder splitter boards take a single encoder input signal (typically from a master encoder) and splits the signal to multiple drives or motion controllers.



Catalog Number	Description
OPT029-501	4 channel encoder splitter board (DIN rail mount)
OPT029-502	8 channel encoder splitter board (DIN rail mount)

EMC Filters

EMC filters are available for Baldor's range of servo drives and motion controllers. Footmount filters are available for the single phase drives which reduce panel space.



Filter Selection Guide

Recommended filters for Series-II drives

	230VAC 1Φ	115VAC 1Φ	230VAC 3Φ	230-460VAC 3Φ
2.5A	FI0029A00* FI0015A00	FI0015A00		FI0018A00
5A	FI0029A00* FI0015A02	FI0015A02		FI0018A00
7.5A	FI0029A00*	FI0029A00		FI0018A00
15A			FI0018A01	FI0018A01
20A				FI0018A01
27.5A				FI0018A01

Recommended filters for MicroFlex and MicroFlex

	230VAC 1Φ	115VAC 1Φ
3A	FI0029A00* FI0015A00	FI0018A00
6A	FI0029A00* FI0015A02	FI0018A02
9A	FI0029A00*	FI0018A03

* Footmount filter

Catalog Number	Nominal Current Amps	Dimensions HxLxD mm (in)	Weight Kg (lbs)
24V Single Phase Filter			
FI0014A00	3.0	40x85x54 (1.57x3.35x2.13)	0.3 (0.66)
230VAC Single Phase Filters			
FI0029A00*	22	40x255x100 (1.57x10.04x3.94)	3 (6.6)
FI0015A00	6.0	46x114x58 (1.81x4.49x2.28)	0.5 (1.1)
FI0015A02	12.0	58x156x46 (2.28x6.14x1.81)	0.7 (1.5)
480VAC Three Phase Filters			
FI0018A00	7.7	71x190x40 (2.8x7.48x1.57)	0.5 (1.1)
FI0018A03	17.5	70x250x45 (2.76x9.84x1.77)	0.8 (1.76)
FI0018A01	32.9	85x270x50 (3.35x10.63x1.97)	1.2 (2.65)

* Footmount filter



◀ Footmount filter saves on panel space.

24V Power Supply Units

- › 24V output for Baldor's motion controllers, servo drives and HMI panels
- › High efficiency, low working temperature
- › Range to suit system requirements
- › Built-in EMI filter, low ripple noise
- › DIN rail mounting
- › Compact size, light weight
- › Universal input (110 - 230 VAC)
- › Short circuit/over load/over voltage/temperature protection

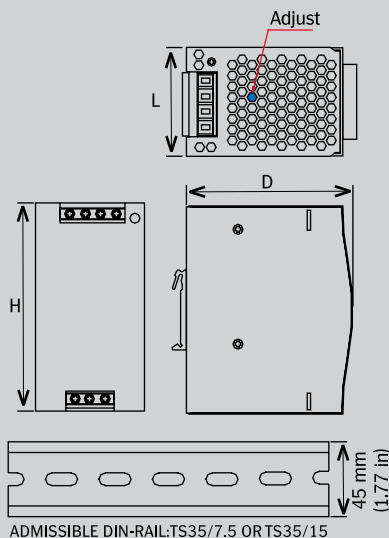


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› Technical Data

INPUT	DR-75-24	DR-120-24	DRP-240-24
Voltage range	85~264 VAC; 120~370 VDC	88~132 VAC; 176~264 VDC	85~264 VAC; 120~370 VDC
Frequency	47-63Hz		
Inrush current	Cold start, 30A/115V, 60A/230V		
OUTPUT			
Power	75W	120W	240W
Output	24V @ 3.2A	24V @ 5.0A	24V @ 10.0A
Tolerance	±1%	±1%	±1%
Ripple and Noise	150mV	80mV	80mV
Efficiency	80%	84%	84%
Overload protection	115% to 150% output constant current limiting	105% to 150% output constant current limiting	
Over voltage protection	120% to 140% of rated output voltage		120% to 150% of rated output voltage
Setup, rise, hold up time	1000ms, 60ms, 50ms @ 230VAC	500ms, 70ms, 30ms @ 230VAC	1000ms, 60ms, 50ms@230VAC.
Withstand voltage	I/P-O/P: 3kV, I/P-FG: 1.5kV, 1 min		
ENVIRONMENTAL			
Operating temperature	0°C to +50°C @100%, -10°C @ 80%, 60°C @ 60%		0°C to +50°C @100%, -10°C @ 80%, 70°C @ 70%
GENERAL			
Connections	Screw terminal connectors for input and output		
Dimensions (H x L x D)	100 x 55.5 x 125.2 mm (3.94 x 2.18 x 4.93 in)	100 x 65.5 x 125.2 mm (3.94 x 2.58 x 4.93 in)	125.5 x 100 x 125.2 mm (4.94 x 3.94 x 4.93 in)
Weight	0.55kg (1.2 lb)	0.7kg (1.5 lb)	1.1kg (2.4 lb)
STANDARDS			
Safety standards	UL508, TUV EN60950		
EMC standards	EN55022 Class B, EN61000-3-2, 3, EN61000-4-2, 3, 4, 5, 6, 8, 11, ENV50204		

› Dimensions



› System Selection Guide

The system selection guide helps in selecting the correct power supply for a typical system consisting of an HMI, motion controller and a number of servo axes.

	HMI	NextMove	Servo Drive
DR-75	1	1	3
DR-120	1	1	5
DRP-240	1	1	9

Baldor's Motion Solutions Catalogs

- BR1202-A** Motion Control Solutions
- BR1202-B** Mint® Software and Applications
- BR1202-C** NextMove Multi-Axis Motion Controllers
- BR1202-D** AC Servo Drives
- BR1202-E** AC Servo Motors
- BR1202-F** DC Servo Motors and Drives
- BR1202-G** Linear Motors and Stages
- BR1202-H** Motion Product Accessories
- BR1202-I** Real-Time Ethernet Motion Solutions

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