

Variateur courant continu série DPR

DigiFlex Performance Servo Drive

Advanced Motion Control

www.rosier.fr

This document is intended as a guide and general overview in selecting, installing, and operating an *ADVANCED* Motion Controls DigiFlex Performance servo drive. This manual specifically focuses on drives, referred to herein as DPR drives, that use a RS-485/232 interface for networking. Other drives in the DigiFlex Performance product family that utilize other methods of network communication such as CANopen are discussed in separate manuals that are available at www.a-m-c.com. Contained within each DigiFlex Performance product family manual are instructions on system integration, wiring, drive-setup, and standard operating methods.

2.1 DPR Drive Family Overview

The DPR drive family can power single phase (brushed), three phase (brushless), and closed loop vector motors. The command source can be generated externally or can be supplied internally. A digital controller can be used to command and interact with DPR drives, and a number of dedicated and programmable digital and analog input/output pins are available for parameter observation and drive configuration. DPR drives are capable of operating in Current (Torque), Velocity, or Position Mode, and utilize Space Vector Modulation, which results in higher bus voltage utilization and reduced heat dissipation compared to traditional PWM. DPR drives also offer a variety of feedback options.

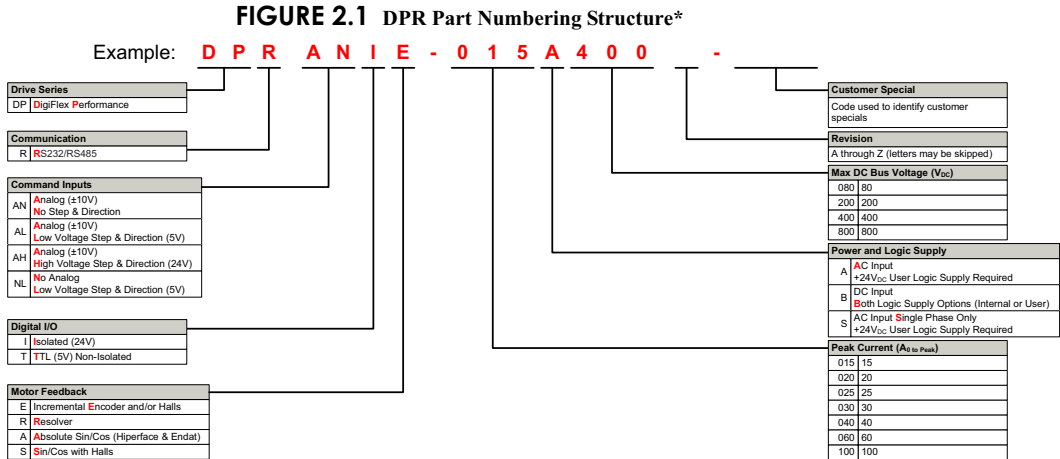
DPR drives offer RS-485/RS-232 communication for multiple drive networking, and feature an RS-232 serial communication interface for drive configuration and setup. Drive commissioning is accomplished using DriveWare, the setup software from *ADVANCED* Motion Controls, available for download at www.a-m-c.com.

2.1.1 Drive Datasheet

Each DPR digital drive has a separate datasheet that contains important information on the options and product-specific features available with that particular drive. The datasheet is to be used in conjunction with this manual for system design and installation.

2.2 Products Covered

The products covered in this manual adhere to the following part numbering structure. However, additional features and/or options are readily available for OEM's with sufficient ordering volume. Feel free to contact *ADVANCED* Motion Controls for further information.



* Note that not all possible part number combinations are offered as standard drives. For a list of standard drives, see "Drive Models" on page 7.

When selecting a DPR drive, follow the part numbering structure above to determine the Digital I/O, Motor Feedback, and Power Module choices that are applicable for the end application. The tables below outline the features and specifications that are available for standard DPR drive models.

TABLE 2.1 Control Specifications

Description	Control Specifications			
	DPRAlx	DPRANix	DPRNLix	DPRALTx
Network Communication	RS-485/RS232	RS-485/RS232	RS-485/RS232	RS-485/RS232
Command Sources	±10V Analog, 24V Step and Direction, Encoder Following, Over the Network, PWM and Direction	±10V Analog, Encoder Following, Over the Network, PWM and Direction	5V Step and Direction, Encoder Following, Over the Network, PWM and Direction	±10V Analog, 5V Step and Direction, Encoder Following, Over the Network
Commutation Methods	Sinusoidal, Trapezoidal	Sinusoidal, Trapezoidal	Sinusoidal, Trapezoidal	Sinusoidal, Trapezoidal
Control Modes ¹	Current (Torque), Velocity, Hall Velocity, Position	Current (Torque), Velocity, Hall Velocity, Position	Current (Torque), Velocity, Hall Velocity, Position	Current (Torque), Velocity, Hall Velocity, Position
Motors Supported	Three Phase (Brushless), Single Phase (Brushed, Voice Coil, Inductive Load), Closed Loop Vector (AC Induction)	Three Phase (Brushless), Single Phase (Brushed, Voice Coil, Inductive Load), Closed Loop Vector (AC Induction)	Three Phase (Brushless), Single Phase (Brushed, Voice Coil, Inductive Load), Closed Loop Vector (AC Induction)	Three Phase (Brushless), Single Phase (Brushed, Voice Coil, Inductive Load), Closed Loop Vector (AC Induction)
Hardware Protection	40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage	40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage	40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage	40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage
Programmable Digital I/O	10/4	10/4	10/4	6/4
Programmable Analog I/O	4/0	4/1	3/0	3/2
Primary I/O Logic Level	24 VDC	24 VDC	24 VDC	5V TTL

1. Hall Velocity mode may not be supported on certain drives. Check the drive datasheet to see if Hall Sensors are supported.

TABLE 2.2 Feedback Options

Description	Feedback Supported			
	DPRxxxA	DPRxxxE	DPRxxxR	DPRxxxS
Hall Sensors		✓		✓
Incremental Encoder		✓		
Auxiliary Incremental Encoder	✓	✓	✓	✓
Resolver			✓	
Absolute Sin/Cos Encoder (Steggmann Hiperface®, Heidenhain EnDat®)	✓			
1Vp-p Sine/Cosine Encoder				✓
Tachometer (±10 VDC)	✓	✓	✓	✓

TABLE 2.3 Power Specifications - AC Input DPR Drives

Description	Units	Power Specifications						
		015S400	015A400	030A400	060A400	100A400	030A800	060A800
Rated Voltage	VAC(VDC)	240 (339)	240 (339)	240 (339)	240 (339)	240 (339)	480 (678)	480 (678)
AC Supply Voltage Range	VAC	100-240	100-240	100-240	100-240	200-240	200-480	200-480
AC Supply Minimum	VAC	90	90	90	90	180	180	180
AC Supply Maximum	VAC	264	264	264	264	264	528	528
AC Input Phases ²	-	1	3	3	3	3	3	3
AC Supply Frequency	Hz	50-60	50-60	50-60	50-60	50-60	50-60	50-60
DC Supply Voltage Range	VDC	123-373	127-373	127-373	127-373	255-373	255-747	255-747
DC Bus Over Voltage Limit	VDC	394	393	429	429	429	850	850
DC Bus Under Voltage Limit	VDC	55	55	55	55	205	230	230
Maximum Peak Output Current	A (Arms)	15 (10.6)	15 (10.6)	30 (21.2)	60 (42.4)	100 (70.7)	30 (21.2)	60 (42.4)
Maximum Continuous Output Current	A (Arms)	7.5 (5.3)	7.5 (5.3)	15 (10.6)	30 (21.2)	50 (35.4)	15 (10.6)	30 (21.2)
Max. Continuous Output Power @ Rated Voltage ²	W	1710	1710	3420	6840	11400	6840	13680
Max. Continuous Power Dissipation @ Rated Voltage	W	90	90	180	360	600	360	720
Internal Bus Capacitance	µF	540	660	1410	1650	1500	330	330
PWM Switching Frequency	kHz	20	20	20	20	16	10	10
External Shunt Resistor Minimum Resistance	Ω	25	-	20	10	10	note 3	40
Minimum Load Inductance (Line-To-Line)	µH	600	600	600	600	600	3000	3000

1. 3-phase drive modes can operate on single-phase VAC if peak/cont. current ratings are reduced by at least 30%.
2. $P = (DC \text{ Rated Voltage}) * (\text{Cont. RMS Current}) * 0.95$
3. Contact factory before using an external shunt resistor with this power module

TABLE 2.4 Power Specifications - DC Input DPR Drives

Description	Units	Power Specifications				
		020B080	040B080	060B080	025B200	015B200
DC Supply Voltage Range	VDC	20-80	20-80	20-80	20-190	40-190
DC Bus Over Voltage Limit	VDC	86	86	86	198	198
DC Bus Under Voltage Limit	VDC	17	17	17	17	35
Maximum Peak Output Current	A (Arms)	20 (14.1)	40 (28.3)	60 (42.4)	25 (17.7)	15 (10.6)
Maximum Continuous Output Current	A (Arms)	10 (7.1)	20 (14.1)	30 (21.2)	12.5 (8.8)	7.5 (5.3)
Max. Continuous Output Power	W	760	1520	2280	2256	1354
Max. Continuous Power Dissipation	W	40	80	120	118	71
PWM Switching Frequency	kHz	20	20	20	20	20
Internal Bus Capacitance	µF	33	500	500	50	20
Minimum Load Inductance (Line-To-Line)	µH	250	250	250	300	250

2.3 Drive Models

The standard drive models in the below tables are formed by combining a power module and a control module that will best suit the end application and system requirements.

TABLE 2.5 AC Drive Models

Drive Number	VAC (Nominal)	Peak Current (A)	Continuous Current (A)
DPRAHIA-015S400	100-240	15	7.5
DPRAHIA-015A400	100-240	15	7.5
DPRAHIA-030A400	100-240	30	15
DPRAHIA-060A400	100-240	60	30
DPRAHIA-100A400	200-240	100	50
DPRAHIA-030A800	200-480	30	15
DPRAHIA-060A800	200-480	60	30
DPRAHIE-015S400	100-240	15	7.5
DPRAHIE-015A400	100-240	15	7.5
DPRAHIE-030A400	100-240	30	15
DPRAHIE-060A400	100-240	60	30
DPRAHIE-100A400	200-240	100	50
DPRAHIE-030A800	200-480	30	15
DPRAHIE-060A800	200-480	60	30
DPRAHIR-015S400	100-240	15	7.5
DPRAHIR-015A400	100-240	15	7.5
DPRAHIR-030A400	100-240	30	15
DPRAHIR-060A400	100-240	60	30
DPRAHIR-100A400	200-240	100	50
DPRAHIR-030A800	200-480	30	15
DPRAHIR-060A800	200-480	60	30
DPRAHIS-015S400	100-240	15	7.5
DPRAHIS-015A400	100-240	15	7.5
DPRAHIS-030A400	100-240	30	15
DPRAHIS-060A400	100-240	60	30
DPRAHIS-100A400	200-240	100	50
DPRAHIS-030A800	200-480	30	15
DPRAHIS-060A800	200-480	60	30
DPRANIE-015S400	100-240	15	7.5
DPRANIE-015A400	100-240	15	7.5
DPRANIE-030A400	100-240	30	15
DPRANIE-060A400	100-240	60	30
DPRANIE-100A400	200-240	100	50
DPRANIE-030A800	200-480	30	15
DPRANIE-060A800	200-480	60	30
DPRANIR-015S400	100-240	15	7.5
DPRANIR-015A400	100-240	15	7.5
DPRANIR-030A400	100-240	30	15
DPRANIR-060A400	100-240	60	30
DPRANIR-100A400	200-240	100	50
DPRANIR-030A800	200-480	30	15
DPRANIR-060A800	200-480	60	30
DPRNLIE-015S400	100-240	15	7.5
DPRNLIE-015A400	100-240	15	7.5
DPRNLIE-030A400	100-240	30	15
DPRNLIE-060A400	100-240	60	30
DPRNLIE-100A400	200-240	100	50
DPRNLIE-030A800	200-480	30	15
DPRNLIE-060A800	200-480	60	30

TABLE 2.6 DC Drive Models

Drive Number	VDC (Nominal)	Peak Current (A)	Continuous Current (A)
DPRALTE-020B080	20-80	20	10
DPRALTE-040B080	20-80	40	20
DPRALTE-060B080	20-80	60	30
DPRALTE-015B200	40-190	15	7.5
DPRALTE-025B200	20-190	25	12.5
DPRALTR-020B080	20-80	20	10
DPRALTR-040B080	20-80	40	20
DPRALTR-060B080	20-80	60	30
DPRALTR-015B200	40-190	15	7.5
DPRALTR-025B200	20-190	25	12.5

□

SPÉCIALISTE DU MOUVEMENT



□
□
□
□
□
□
□
□
□
□
□

□□rue □Sigmund □Breud □

□□□□□Vaulx □en □Velin □

Tél □□□□□□□□□□□□□□□□

contact@rosier.fr □□

www.rosier.fr

Agence □Paris □

Tél □□□□□□□□□□□□□□□□

Fax □□□□□□□□□□□□□□□□