Digital Input/Output Blocks

The DIO block interfaces digital input and output signals used to read on or off device states and to switch DC voltages. A DIO block can cable connect to an auxiliary relay block (i.e., RLY-100 and RLY-200) to provide relay outputs. The DIO block supports redundant I/O electronics. A DIO block can be ordered with either a screw terminal (S type), cable/clamp terminal (C type), or relay connector (R type) base. The relay connector base and cable (HRM-RLY) are required to connect the digital outputs to an RLY block.

DIO-400

Universal In, 24 or 48 VDC Out

The DIO-400 block supports 16 isolated input channels and eight isolated output channels. Input channels are individually hardware configurable for input voltage: 24 VDC, 48 VDC, 125 VDC, 120 VAC, and 240 VAC. Open-collector (NPN) output channels can switch voltages of 24 or 48 VDC with a maximum load current of 250 milliamperes.

Digital Output Blocks

The DOT block interfaces digital output signals and is used in AC/DC switching applications. The block supports redundant I/O electronics. A DOT block can be ordered with either a screw terminal (S type) or cable/clamp terminal (C type) base.

DOT-100

Onboard Electromechanical Relay Out

The DOT-100 block supports 16 isolated output channels (i.e., relay contacts). Each channel can be wired as either a normally open or normally closed output. Output channels can switch voltages up to 240 VAC with a maximum load current of three amperes. Relays are individually replaceable with the I/O module removed.

DOT-120

Onboard Monitored Electromechanical Relay Out (with Fusing)

The DOT-120 block is the same as the DOT-100 block, but provides readback circuitry for digital output verification and provides output channel fusing. The readback checks the contact side of the relay to ensure proper relay operation. Front panel fuses are provided for each output.

Auxiliary Relay Assemblies

RLY-100

Electromechanical Relay Assembly

The RLY-100 block connects eight electromechanical relay sockets for use with any DIO block. The RLY block comes populated with eight DPDT electromechanical relays.

Related Documents

Number	Document Title
WBPEEUD240001??	Harmony Analog Input/Output, Data Sheet
WBPEEUD240003??	Harmony Control Input/Output, Data Sheet
WBPEEUD240004??	Harmony Input/Output System, Data Sheet
WBPEEUS240008??	Harmony Input/Output System, Overview

I/O Specifications

Property	Characteristic/Value[1]
I/O blocks DIO-400 DOT-100 DOT-120	 Universal in, 24/48 VDC out Onboard SPDT electromechanical relay out Onboard monitored SPDT electromechanical relay out (with readback and fusing)
Microprocessor	16-bit processor running at 16 MHz
Memory	64 kb SRAM 512 kb Flash RAM
Redundancy link data rate	1 Mbaud
Block logic power (BLP) - refer to ***I/O Power Requirements***	21.6 VDC minimum 24.0 VDC nominal 28.0 VDC maximum
Field power (IFP/LFP) - refer to ***I/O Power Requirements***	24.0 VDC nominal 48.0 VDC nominal 125.0 VDC nominal 120.0 VAC nominal 240.0 VAC nominal
Common mode isolation Tested	300 VDC/V_{RMS} at 60 Hz 1,400 V_{RMS} at 60 Hz for 2 sec
Input protection[2]	Continuous short to ground
Dimensions	<table><tr><th rowspan="2">Type</th><th colspan="2">Height</th><th colspan="2">Width</th><th colspan="2">Depth</th></tr><tr><th>mm</th><th>in.</th><th>mm</th><th>in.</th><th>mm</th><th>in.</th></tr><tr><td>I/O module</td><td>266</td><td>10.5</td><td>76</td><td>3.0</td><td>162</td><td>6.4</td></tr><tr><td>Nonredundant base</td><td>267</td><td>10.5</td><td>138</td><td>5.4</td><td>169</td><td>6.7</td></tr><tr><td>Redundant base</td><td>267</td><td>10.5</td><td>217</td><td>8.5</td><td>169</td><td>6.7</td></tr></table>
Overvoltage (installation) category	ANSI/ISA-S82.01-1994 and IEC 1010-1 I for circuits above 150 V II for circuits below 150 V
Environmental	Refer to the Harmony I/O System data sheet for environmental specifications and design standards including certification and CE mark directives.
Design standards	

NOTES:
1. All specification values are maximums unless stated otherwise.
2. The DOT-120 block provides channel fuses for output protection. Other digital outputs may require some type of external output protection.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Auxiliary I/O Specifications

Property	Characteristic/Value[1]
Auxiliary blocks RLY-100 RLY-200	 DPDT electromechanical relay assembly Solid state relay assembly
Channels	8
Relays	Refer to Tables 3 and 4.
Field power (IFP/LFP)[2] - refer to ***I/O Power Requirements***	24.0 VDC nominal
Dimensions	Height mm: 266; Height in: 10.5; Width mm: 144; Width in: 5.7; Depth mm: 169; Depth in: 6.7
Environmental	Refer to the Harmony I/O System data sheet for environmental specifications and design standards including certification and CE mark directives.
Design standards	

NOTES:
1. All specification values are maximums unless stated otherwise.
2. 24 VDC from DIO block to power relay coils.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

I/O Power Requirements

Property[1]			DIO-400
24 VDC BLP current	Typ		200 mA
	Max		220 mA
24 VDC IFP current	DI	Typ[2]	70 mA
	DO[3,4]	Typ[2]	600 mA
	DI	Max[5]	145 mA
	DO[3,6]	Max[5]	2.0 A
	DI[7]	Fault	500 mA
24 VDC LFP current	DI	Typ[2]	70 mA
	DO[3,4]	Typ[2]	600 mA
	DI	Max[5]	145 mA
	DO[3,6]	Max[5]	2.0 A
	DI[7]	Fault	500 mA
48 VDC LFP current	DI	Typ[2]	50 mA
	DO[3,4]	Typ[2]	600 mA
	DI	Max[5]	100 mA
	DO[3,6]	Max[5]	2.0 A
	DI[7]	Fault	130 mA
125 VDC LFP current	DI	Typ[2]	70 mA
	DI	Max[5]	135 mA
	DI[7]	Fault	220 mA
120 VAC LFP current	DI	Typ[2]	75 mA
	DI	Max[5]	140 mA
	DI[7]	Fault	225 mA