MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ABB BAILEY INFI 90

IMDSI14

16-CHANNEL DIGITAL INPUT MODULE

Used with the applicable ABB Symphony rack I/O configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: ABB official manufacturer documentation

Introduction

Section 1

Overview

The IMDSI13, IMDSI14, and IMDSI22 Digital Input Modules provide 16 separate digital signals into the Symphony Enterprise Management and Control System for processing and monitoring. They interface process field inputs to the system. A contact closure or switch is an example of a device that supplies a digital signal. The controller provides the control functions, I/O modules provide the inputs and outputs. Three variations of the DSI modules are described in this instruction:

- IMDSI13 - 24 VDC inputs.
- IMDSI14 - 48 VDC inputs.
- IMDSI22 - 120 VAC, 24 VDC, 48 VDC, or 125 VDC inputs.

Figure 1-1 shows a Harmony area controller and the Harmony rack controllers using the rack I/O modules for I/O interface.

Intended User

Personnel installing, operating, or maintaining the DSI modules should read this instruction before performing any installation, operation, or maintenance procedures. Installation requires an engineer or technician with experience handling electronic circuitry. Those working with the digital output module should have experience working with and know the precautions to take around AC/DC power. A knowledge of the Symphony system and electronic principles is also required.

Instruction Content

This instruction consists of the following sections:

Introduction — Contains a brief description, general usage information and technical specifications.

Description and Operation — Uses block diagrams and schematics to explain module operation and input circuitry.



Table 1-1. Glossary of Terms and Abbreviations *(continued)*

Term	Definition
Module mounting unit (MMU)	A card cage that provides electrical and communication support for Harmony rack modules.
Termination unit (TU)	Provides input/output connection between plant equipment and the Harmony rack modules.

Reference Documents

Table 1-2 lists instructions for equipment that is referenced in this instruction.

Table 1-2. Reference Documents

Number	Document
WBPEEUI200502??	Module Mounting Unit (IEMMU11, IEMMU12, IEMMU21, IEMMU22)
WBPEEUI210504??	Symphony Function Code Application Manual
WBPEEUI260042??	Digital Input Termination Unit (NTDI01)
WBPEEUI270003??	Composer, Automation Architect

Related Nomenclature

Table 1-3 lists nomenclature related to the IMDSI13, IMDSI14, and IMDSI22 modules.

Table 1-3. Related Nomenclature

Nomenclature	Description
IEMMU11, EMMU12, IEMMU21, IEMMU22	Module mounting unit
NFTP01	Field termination panel

Specifications

Table 1-4 contains the specifications for the IMDSI13, IMDSI14, and IMDSI22 digital input modules.

Table 1-4. Specifications

<table>
<tr><th>Property</th><th>Characteristic/Value</th></tr>
<tr><td>Power requirements
Operating voltage</td><td>95 mA at 5 VDC (typical), 115 mA maximum</td></tr>
<tr><td>Over voltage category (ANSI/ISA S82.01-1994 and IEC 61010-1)</td><td>I for power
I for circuits >150 V, II for circuits <150 V</td></tr>
<tr><td>Digital inputs</td><td>16 channels
<table>
<tr><th></th><th>IMDSI13/22</th><th>IMDSI14/22</th><th colspan="2">IMDSI22</th></tr>
<tr><td>Voltage (±10%)</td><td>24 VDC</td><td>48 VDC</td><td>125 VDC</td><td>120 VAC</td></tr>
<tr><td>Current</td><td>5.5 mA</td><td>4.7 mA</td><td>4.5 mA</td><td>6 mA</td></tr>
<tr><td>Turn-on voltage (min.)</td><td>19.5 VDC</td><td>26.7 VDC</td><td>90.5 VDC</td><td>81 VAC</td></tr>
<tr><td>Turn-off voltage (max)</td><td>13 VDC</td><td>13 VDC</td><td>55 VDC</td><td>45 VAC</td></tr>
<tr><td>Maximum input current at minimum turn-on</td><td>4 mA at 19.5 VDC</td><td>2 mA at 26.7 VDC</td><td>2.4 mA at 90.5 VDC</td><td>3.8 mA at 81 VAC</td></tr>
<tr><td>Off-leakage current (max)</td><td>50 nA (at V_{in} ≤10.5 VDC</td><td>50 nA (at V_{in} ≤10.5 VDC)</td><td>1 μA (at V_{in} ≤50.8 VDC)</td><td>1.6 mA (at V_{in} ≤45 VAC)</td></tr>
<tr><td>DC response time (debounce filter)</td><td colspan="4">17 ms (fixed)</td></tr>
</table></td></tr>
<tr><td>Mounting</td><td>Occupies one slot in a standard module mounting unit</td></tr>
<tr><td>Environmental</td><td></td></tr>
<tr><td>Ambient temperature (per IEC 68-2-1, 2,14)</td><td>Temperature rating within the cabinet or enclosure applies. Internal cabinet rating: 0° to 70° C (32° to 158° F)</td></tr>
<tr><td>Relative humidity (per IEC 68-2-3)</td><td>5% to 95% up to 55° C (131° F), noncondensing
5% to 45% at 70° C (158° F), noncondensing
Pollution degree: 1</td></tr>
<tr><td>Atmospheric pressure</td><td>Sea level to 3 km (1.86 miles)</td></tr>
<tr><td>Air quality (per ISA S71.04, Class LA, LB, LC - level 1)</td><td>Noncorrosive</td></tr>
<tr><td>Insolation (IEC 61010-1, IEC 60255-5, IEC 60060)</td><td>
<table>
<tr><th>Test</th><th>Common Mode</th><th>Normal Mode</th></tr>
<tr><td>Insulation resistance (100/500 VDC)</td><td>100 M</td><td>N/A</td></tr>
<tr><td>Dielectric VAC (45 -65 Hz) or VDC</td><td>1.4 kV_{RMS}/1min. or 1.95 kVDC/1min.</td><td>N/A</td></tr>
<tr><td>Impulse voltage</td><td>±2.55 kVp</td><td>±1 kVp</td></tr>
</table></td></tr>
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