

ioPAC 8500 Series (85M) Modules

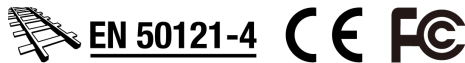
Rugged modules for the ioPAC 8500 Series



Features and Benefits

- Compliant with EN 50121-3-2, EN 50121-4, and a portion of EN 50155 specifications
- Rugged and compact design for harsh environments
- Expand the I/O and communication capabilities of your ioPAC 8600 or 8500 Series device
- Wide operating temperature range: -40 to 75°C (-40 to 167°F)
- Millisecond timestamp granularity for digital input and analog input
- Supports sampling rates up to 40 kHz for analog input
- Pre-recording for analog input data logging
- Up to 4 3-in-1 RS-232/422/485 serial ports

Certifications



Introduction

Moxa's ioPAC 8500 Series 85M Modules can be installed in both ioPAC 8500 and ioPAC 8600 Series devices. Modules are available with DI/Os, Als, Fast Als, and serial interfaces, giving users a wide variety of options to choose from and allowing them to select the I/O combination that best fits their target application. All 85M modules are designed for railway industry applications, and as such, are compliant with EN 50121-3-2, EN 50121-4, and a portion of the EN 50155 specifications. In addition, these modules all support a wide operating temperature range of -40 to 75°C for reliable operation even in harsh environments.

Specifications

Input/Output Interface

Analog Input Channels	85M-3800-T/3801-T/3810-T/3811-T: 8
Digital Input Channels	85M-1602-T: 16
Digital Output Channels	85M-2600-T: 16
RTD Channels	85M-6600-T: 6
Thermocouple Channels	85M-6810-T: 8
Serial Ports	85M-5401-T: 4
Isolation	3k VDC or 2k Vrms

Digital Inputs

Connector	Spring-type Euroblock terminal
Voltage	24 VDC
I/O Mode	DI, event counter, or frequency
Points per COM	8 channels
Sensor Type	Dry contact Wet contact (NPN or PNP)

Dry Contact	On: short to GND Off: open
Wet Contact (DI to COM)	On: 10 to 30 VDC Off: 0 to 3 VDC
Counter Frequency	5 kHz

Digital Outputs

Connector	Spring-type Euroblock terminal
Voltage	24 VDC
I/O Type	Sink
Current Rating	200 mA per channel
I/O Mode	DO or PWM
Pulse Output Frequency	5 kHz
Over-Current Protection	0.65 A per channel @ 25°C
Over-Temperature Shutdown	175°C (typical), 150°C (min.)
Over-Voltage Protection	45 VDC (typical)

Analog Inputs

Connector	Spring-type Euroblock terminal
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C
Input Range	85M-3800-T/3801-T: 4 to 20 mA (with burn-out detection) 85M-3810-T/3811-T: 0 to 10 VDC
I/O Type	Differential
Built-in Resistor for Current Input	85M-3800-T/3801-T: 125 ohms
Input Impedance	85M-3800-T/3801-T: 125 ohms (min.) 85M-3810-T: 200 kilo-ohms (min.) 85M-3811-T: 20 mega-ohms (min.)
Resolution	16 bits
Sampling Rate	85M-3800-T/3810-T: All channels: 100 samples/sec Per channel: 12.5 samples/sec 85M-3801-T/3811-T: All channels: 40k samples/sec Per channel: 5k samples/sec
Historical Data Buffering	85M-3801-T/3811-T: 60 KB per channel, 6-second data buffer at 5 kHz

RTDs

Connector	Spring-type Euroblock terminal
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C
Input Connection	2- or 3-wire
Input Impedance	625 kilo-ohms (min.)

Sensor Type	JPT100, JPT200, JPT500 (-200 to 640°C) JPT1000 (-200 to 350°C) NI100, NI50, NI500 (-60 to 250°C) NI1000 (-60 to 150°C) NI120 (-80 to 260°C) PT1000 (-200 to 350°C) PT50, PT100, PT200, PT500 (-200 to 850°C) Resistance of 310, 620, 1250, and 2200 ohms
Resolution	0.1°C or 0.1 ohms
Sampling Rate	All channels: 12 samples/sec Per channel: 2 samples/sec

Thermocouples

Connector	Spring-type Euroblock terminal
Millivolt Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C
Input Impedance	1 mega-ohms (min.)
Millivolt Type	±19.532 mV ±39.062 mV ±78.126 mV ±78.126 mV Fault and over-voltage protection: -35 to +35 VDC (power off); -25 to +30 VDC (power on)
Resolution	16 bits
Sampling Rate	All channels: 12 samples/sec All channels: 12 samples/sec Per channel: 1.5 samples/sec Per channel: 1.5 samples/sec
Sensor Type	J, K, T, E, R, S, B, N

Serial Interface

Baudrate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 921600 bps
Data Bits	7, 8
Flow Control	RTS/CTS, XON/XOFF
Parity	Even, Odd, None
Serial Standards	RS-232/422/485
Stop Bits	1, 2

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND

Power Parameters

Power Consumption	85M-1602-T: 50.0 mA @ 24 VDC 85M-2600-T: 35.4 mA @ 24 VDC 85M-3800-T: 43.8 mA @ 24 VDC 85M-3801-T: 52.1 mA @ 24 VDC 85M-3810-T: 43.3 mA @ 24 VDC 85M-3811-T: 52.1 mA @ 24 VDC 85M-5401-T: 51.7 mA @ 24 VDC 85M-6600-T: 27.7 mA @ 24 VDC 85M-6810-T: 24.1 mA @ 24 VDC
-------------------	--

Physical Characteristics

Dimensions	25 x 128.2 x 85.5 mm (0.98 x 5.05 x 3.37 in)
Weight	Under 80 g
Wiring	I/O cable, 14 to 28 AWG

Environmental Limits

Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	2000 m Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

Standards and Certifications

EMC	EN 55032/24, EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 5100 MHz to 6000 MHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4, EN 50155 (complies with a portion of EN 50155 specifications)
Safety	UL 508
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	85M-1602-T: 1,132,561 hrs 85M-2600-T: 792,571 hrs 85M-3800-T: 1,512,906 hrs 85M-3801-T: 1,426,112 hrs 85M-3810-T: 1,530,690 hrs 85M-3811-T: 1,426,112 hrs 85M-5401-T: 596,611 hrs 85M-6600-T: 571,446 hrs 85M-6810-T: 2,324,891 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x ioPAC 8500 Series (85M) module
Documentation	1 x warranty card

Ordering Information

Model Name	Input/Output Interface	Analog Input Type	Analog Input Sampling Rate	Serial Standards
85M-1602-T	16 x DI	–	–	–
85M-2600-T	16 x DO	–	–	–
85M-3800-T	8 x AI	4-20 mA	Per channel: 12.5 samples/sec	–
85M-3801-T	8 x AI	4-20 mA	Per channel: 5k samples/sec	–
85M-3810-T	8 x AI	0-10 V	Per channel: 12.5 samples/sec	–
85M-3811-T	8 x AI	0-10 V	Per channel: 5k samples/sec	–
85M-5401-T	4 x Serial port	–	–	RS-232/422/485
85M-6600-T	6 x RTD	–	–	–
85M-6810-T	8 x TC	–	–	–

Accessories (sold separately)

Cables

CBL-M44M9x4-50	DB44 male to DB9 male serial cable, 50 cm Applicable Models: 85M-5401-T
----------------	---

© Moxa Inc. All rights reserved. Updated Dec 30, 2020.

This document and any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of Moxa Inc. Product specifications subject to change without notice. Visit our website for the most up-to-date product information.