FIBER OPTIC ABSOLUTE ENCODER

MR330 Controller Module

The MR330-1 Controller Module is the active optical and electrical interfacec for the MR330 series ZapFREE[®] Fiber Optic Absolute Position Sensor System. The module incorporates multiple built-in interfaces for compatibility with PLCs, motor drives and other motion control systems.

Features

- Absolute 0-360° position sensor with 0.025° resolution
- Multi-turn tracking to 4096 turns (12-bits)
- EX rated Inherently Safe Optical Radiation
- Sensor can be installed in any manner of hazardous location or explosive atmosphere gas, dust or mines
- Controller is installed outside the hazardous area
- Interference-free transmission up to 300 meters

Interfaces

- SSI Interface
- USB interface
- RS485/Modbus RTU serial interface
- RS232 with optional MR232-1 adapter
- Programmable 4-20mA output
- Progarammable ±10V output
- Programmable Digital Set Points
- LabVIEW[™] sample software drivers are available

System Planning

MR330 Controller



MR332

With LC

Duplex Piqtail

ZAP

Fiber Optic Cabling

- 1. Verify cabling and junction boxes compatible with the operating environment.
- 2. Verify that the optical link loss is within Controller's Maximum Loss Budget.
- 3. Consult Application Note AN118 for more information, examples and guidance on loss budget.

MR330 SERIES

Questions?

Call +1-805-389-6600



MR338

MRI With LC

Duplex Pigtail

MR332

With ODVA

IP-LC Interface

1 of 4



ZapView® Configuration Software

As delivered, the Micronor ZapFREE® Fiber Optic Absolute Encoder System (consisting of a MR330 series Encoder/ Sensor and MR330-1 Controller Module) are pre-programed, ready to be connected and operated using the SSI, USB or RS485/Modbus interface. However, many user applications intend to use the auxiliary functions such as the SSI Display Simulator, Analog Outputs, Digital Set Points, or run Diagnostics. For these latter functions, the user needs to use the supplied ZapView® Configuration/Diagnostics program to perform a one-time setup for configuring these functions. The software is designed to run on a PC running under Windows XP or later. The PC can be connected to the MR330-1 Controller module, via USB or RS485 or RS232 (with optional MR232-1 Adapter). Typical ZapView® screens are shown below:

apView TM for MR330 Absolute Fiber Optic Position Sensor System - MICRONOR © 2011	and the second	-
Communication View Help About	Voltage Output Oursent Output SSI Interface	Mod-Bus
rial connected	System info Diagnostics Real Time	Set Points
MR 330-1 Controller SSI	System Information	
	Modet MR330 s	erial Number:
	Version: 0.2.21	0
	Status: 0 Reset	
	Turn Counter: 5 n°2 Depth of Turn	Counter in bits
Signal OK.	Valid Restore: 512 Hestore rums	
** 0	Label	
	Turn Direction:	
•••	Device Address: 235 ModBus Address [1 t	to 255]
	Destroy Entrop	
525252323233 72300447337 35××88	The MIR330 is a true Absolute Singleturn Position Sensor with a res	to notution
	13bits (0192). The MR33C controller samples the sensor via the fil every 05Ous and updates the new position at that rate. To assure r	ber optic line reliable
000000000000000000000000000000000000000	operation the controller constantly monitors the optical signals as workings of the sensor. The status should be read as often as reas	well as internal onais and the
	user toftware will determine the "health" of the system. For more in "Status and Health Monitoring".	nformation see
	Singletum - Setup	
ZERO DEANIS SEAL	For single turn operation. Set the Turn Counter to 0 and unclick "Re The value for "Valid Restore" is not applicable in this mode.	estore Turns".
	Multium - Selup	
	has the capability to keep track of multiple turns and if artup accor	dingly will

SSI Display Simulator

A	Voltage Output	Current Output	SSI Interface	Mod-Bus
ial connected	System Info	Diagnostics	Real Time	Set Points
MR 330-1 Controller SSI	System Inform	ation		
	Model:	MR330	Se	rial Number:
	Version:	1.1.02		1001
	Status:	0	keset	
	Turn Counter:	6	n^2 Depth of Turn C	ounter in bits
Signal OK.	Resolution:	14	13bit = 8192 14t	oit = 13950
*	Valid Restore:	4000	Restore Turns	
	Turn Direction:	CCW direction w	hen checked	
lecter 🗘 🔍 entre travelo 🛔	Device Address:	235	ModBus Address [1 to	255]
RSWSWSB85981 Status: OK		Show SSI Displ	ay only insor with a reso to 13950 incre	slution of ments for one
			ples the sensor at that rate. To	via the fiber assure
0000000000		mm	the optical sign e read as often i	als as well as as reasonable
			the system. For	more
•				
ZERO	The value for "Valid	Restore" is not applicat	le in this mode since the	sytem is
	BODOTOVE WILDTIN DIVE			

Electrical and Optical Connections



J1 Wago PN: 733-112 (12 Pin Terminal)		
1	ZERO OUT	
2	GND-	
3	Set Point 1	
4	GND	
5	Set Point 2-	
6	GND	
7	BAT+	
8	24V	
9	GND	
10	+Vs	
11	ZERO IN	
12	Shield	

J2 Wago PN: 733-110 (10 Pin Terminal)		
1	± 10V Out	
2	GND-	
3	SSI Clock+	
4	SSI Clock-	
5	SSI Data+	
6	SSI Data-	
7	+24V IN	
8	GND	
9	4-20mA Out+	
10	4-20mA Out-	

J3 Wago PN: 733-106 (6 Pin Terminal)		
1	GND	
2	+5V Out	
3	TX+ (Output)	
4	TX- (Output)	
5	RCV+ (Input)	
6	RCV- (Input)	

Specifications

Position Measurement	
Single Turn Resolution	13 bits (8192 counts, 0.044°), 14 bits (13,950 counts, 0.0258°)
Multi-Turn Tracking	12 bits (4096 turns)
Electrical Interfaces	
SSI	25 bits, Programmable baudrate 25 kHz -250 kHz
RS485/Modbus RTU	56,200 Baud Default, Consult instruction manual for software protocol details
USB	USB, Disables Modbus interface when used
Current Output	Isolated 4-20mA (270V isolation maximum), Output scalable by user
Voltage Output	-10V to +10V, Non-Isolated, Output scalable by user
Digital Outputs	0-24V maximum 10 mA Load (Zero + two programmable Set Points)
Power Supply	+16 VDC to +32 VDC, 100 mA max at 24 VDC
	During Power Up, external power supply should be capable of 200 mA momentary output
Interface Update Rate	
Angular Speed	250 radians/second or 2400 RPM for accurate position reporting
Update Rate	1.17 kHz (850 μs)
Reporting Delay	SSI: Maximum 800 μ s (time from actual position to SSI output)
Reporting Delay	Analog Outputs: Maximum 1.0 ms
Optical Interface	
Interface	LC Duplex, 62.5/125µm graded index fiber, 0.275NA, Type OM1
System Loss Budget	2dB at 850nm
Maximum Optical Link Length	Up to 300 m (1000 ft)
Laser Safety	Class 1 per IEC 60825-1
Explosive Atmospheres	Inherently Safe Optical Radiation
	Controller shall be installed in non-hazardous location only
Ex Classification	Power supply to Controller shall be current limited to 200mA
	IECEx Test Report (IECExTR) GB/CML/ExTR 16.0070/00
ATEX	EPL Mb/Gb/Gc/Db/Dc
IEC Ex	EPL Mb/Gb/Gc/Db/Dc
NEC	Exempt
Environmental Performance	
Temperature/Humidty	Operating: 0°C to +45°C, Storage: -15°C to +65°C, 25-95% RH (non-condensing)
Ingress Protection	IP30
Physical Attributes	
Housing Dimensions	102 mm W x 102 mm D x 68 mm H, includes 35mm DIN rail mount
Unit Weight	600g (22 oz)

Specifications subject to change without notice

Ordering Info



Sensors:

MR332 Standard Sensor, consult MR332 data sheet for informationMR338 MRI Safe Sensor, consult MR338 data sheet for information

North American Sales and Support: MICRONOR SENSORS, INC. 2085 Sperry Ave, Suite A-1, Ventura, CA, 93003, USA +1-805-389-6600 sales@micronor.com www.micronor.com HQ and Global Sales & Support: MICRONOR AG Pumpwerkstrasse 32, CH-8105, Regensdorf, Switzerland T +41-44-843-4020 sales@micronor.ch www.micronor.ch © Micronor AG, MR330 Data Sheet, Document 98-0330-13, Revision H, Released 30-Aug-2022