Communications Modules

Provide Connection, Power, Interface

Description

The MAQ20 communications module is offered in two models and provides the connection between a host computer and a MAQ20 Data Acquisition System. MAQ20-COM4 communicates using Ethernet, USB, or RS-485; MAQ20-COM2 uses Ethernet, USB, or RS-232. Ethernet communications use the Modbus® TCP protocol and USB communications are based on the Modbus RTU protocol, which RS-485 and RS-232 communications also use. Serial communications over RS-485 can be either 2-wire or 4-wire.

When using the Ethernet interface, up to four simultaneous socket connections are supported. Serial communications over RS-232 or RS-485 can be run at baud rates as fast as 921.6kbps.

A very useful feature of the MAQ20 system is the capability to store acquired data locally for later analysis. This is provided by the easily accessible and removable 4GB micro-SD memory card that is in the MAQ20-COMx module and can be used to log data acquired from all input modules.

Each MAQ20-COMx module can interface to up to 24 I/O modules in any combination, allowing high channel counts and great flexibility in system configuration.

To power the system, a 7-34VDC power source is connected to the communications module. Regulated and protected supplies within the module then provide power both to the internal circuits and to all I/O modules in the system. When many high power I/O modules are used in a system, MAQ20-PWR3 load share power supply modules can be installed in standard I/O module slots to provide the necessary additional power.

Features

- Connect Host Computer and MAQ20 System
- Communicate using Ethernet, USB, RS-485 or RS-232
- Up to 4 Simultaneous Socket Connections with Ethernet
- Baud Rates to 921.6kbps with RS-232/RS-485
- Follow Modbus® TCP or RTU Protocols
- Store Acquired Data Locally
- Interface to up to 24 I/O Modules
- 50VDC Communications Interface-to-Bus Isolation

To ensure robustness, the communications interface-to-bus isolation is 50VDC and power input terminals are protected against overvoltage, transient, and reverse connections.

As a minimum, a MAQ20 Data Acquisition System must have a communications module, a backbone, and one I/O module.

All MAQ20 modules are designed for installation in Class I, Division 2 hazardous locations and have a high level of immunity to environmental noise commonly present in heavy industrial environments.
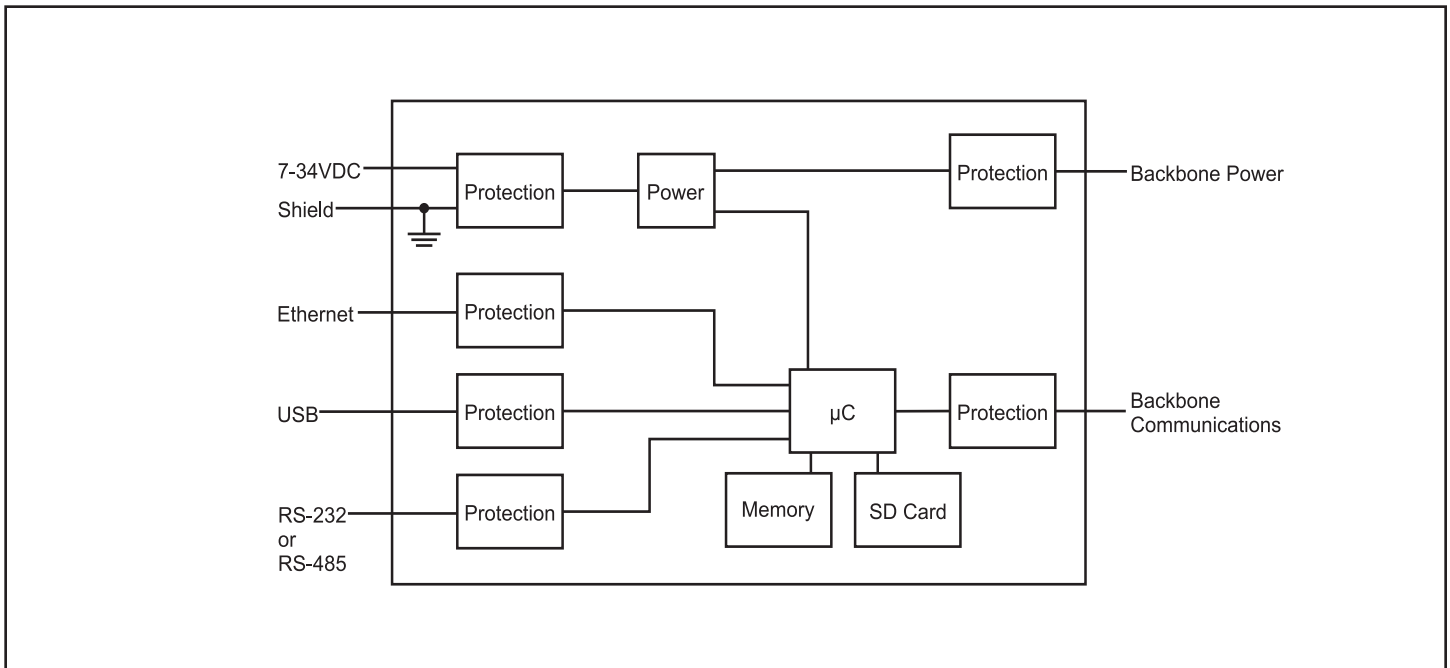

Figure 1: MAQ20 Communications Module Block Diagram

Specifications Typical* at T_A =+25°C and +24VDC system power

Module	Description
MAQ20-COM4	Ethernet, USB, RS-485
MAQ20-COM2	Ethernet, USB, RS-232
Communications	
Ethernet	10/100 Base-T (1000 Base-T compatible)
	RJ-45, Modbus® TCP
USB	USB 2.0, Type B,
	Proprietary Modbus over USB
RS-485	2-wire or 4-wire, up to 921.6kbps,
	up to 4000 ft, RJ-45, Modbus RTU
RS-232	Up to 921.6kbps, RJ-45, Modbus RTU
CMV	
Power-to-Bus	50VDC
Communication Port-to-Bus	50VDC
Transient	ANSI/IEEE C37.90.1
Power Supply	
Input Power	7-34VDC at 2A max
Power to Bus	5VDC at 3A max
Power Conversion Efficiency	76%
Quiescent Current	100mA
Dimensions	4.51" x 1.11" x 3.26"
(h)(w)(d)	(114.6mm x 28.2mm x 82.8mm)
Environmental	
Operating Temperature	–40°C to +85°C
Storage Temperature	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Emissions, EN61000-6-4	ISM Group 1
Radiated, Conducted	Class A
Immunity EN61000-6-2	ISM Group 1
RF	Performance A
ESD, EFT	Performance B
Certifications	Heavy Industrial CE Compliant
	UL/CUL Listing Pending
	(Class I, Division 2, Groups A, B, C, D)
	ATEX Compliance Pending

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.

Power Input Terminal Block Position (top to bottom)	Input Connections	
1	7 – 34 VDC	+
2	7 – 34 VDC	-
3		SHIELD

For full details on module operation, refer to MA1040 – MAQ20 Communications Module Hardware User Manual, available for download at: www.dataforth.com/maq20_download.aspx

Ordering Information

Model	Description
MAQ20-COM4	Ethernet, USB, RS-485
MAQ20-COM2	Ethernet, USB, RS-232

Figure 2: Communications Module
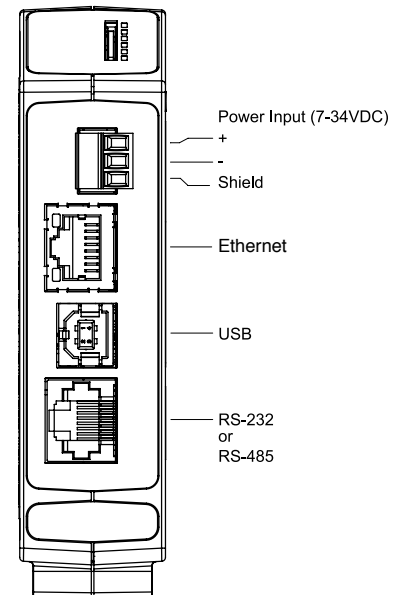

Power Input (7-34VDC)
+
-
Shield
Ethernet
USB
RS-232 or RS-485

Figure 3: Communications Module Input Connections