MAQ®20
Industrial Data Acquisition & Control System

- Test and Measurement
- Factory and Process Automation
- Machine Automation
- Military and Aerospace
- Power and Energy
- Environmental Monitoring
- Oil and Gas
Encompassing more than 30 years of design excellence in the test and measurement and control industry, the MAQ20 family consists of high performance, DIN rail mounted, programmable, multi-channel, industrially rugged signal conditioning I/O and communications modules.

The modules mount on industry standard 35x7.5mm gull-wing DIN rails. A backbone within the rail provides power and communication interconnections between the communications modules and each I/O module.

The MAQ20 interfaces directly to industrial sensors and transducers. It provides input protection, noise filtering, amplification, CJC and linearization, shunt calibration, and data logging.

**Instrument Class® Performance**
- Industry’s Lowest Cost per Channel
- ±0.035% Accuracy
- Industry Leading ±0.3°C CJC Accuracy Over Full Operating Temperature Range
- 1500Vrms Channel-to-Bus Isolation
- Up to 240Vrms Continuous Field I/O Protection
- 4000V Input Transient Protection
- Wide Range 7-34VDC Power
- −40°C to +85°C Industrial Operating Temperature
- CE Compliant, UL/CUL Listing and ATEX Compliance Pending

**Industry Leading Functionality**
- Up to 24 I/O Modules – 384 Channels – per System, per 19” Rack Width
- Per-Channel Configurable for Range and Alarms
- Load Share Power Supply Modules for Expansion, Standby and Redundant Power
- System Can Operate Remotely Without Host PC Intervention
- System Can Operate as Standalone Data Logger

**Distributed Processing**
- Output Modules Programmable for User-Defined Waveforms
- Discrete I/O Modules Offer 7 High Level Functions:
  - Pulse Counter
  - Frequency Counter
  - Waveform Measurement
  - Time Between Events
  - Frequency Generator
  - PWM Generator
  - One-Shot Pulse Generator

**Intuitive Graphical Control Software, Integral PID Control**
- ReDAQ Shape Graphical HMI Design & Runtime Solution
- Up to 32 PID Loops With Auto-Tune
- IPEmotion Advanced Features & Multi-Language Solution
  - Formulas, Data Logger, TEDS, PID, Scripting
Communications Modules
• Manage System I/O and Run PID Control
• Communicate to Host Using Ethernet, USB, RS-485, RS-232
• Follow Modbus TCP or RTU Protocols
• Interface to Up to 24 I/O Modules to Create a 384-Channel System
• Automatically Register I/O Modules

Analog Input Modules
Voltage, Current & Thermocouple Input Modules
• Voltage & Current Input Interface to Volt, Millivolt, Milliamp Sensors and Equipment
• Thermocouple Input Interfaces to Types J, K, T, R and S Sensors
• 8-Channel Differential or 16-Channel Single-Ended Input
• All Channels Individually Configurable for Range, Alarms, Averaging

RTD and Potentiometer Input Modules
• Interface to 3-Wire and 4-Wire Sensors
  - 6 Input Channels for 3-Wire Sensors
  - 5 Input Channels for 4-Wire Sensors
• Interface to 100ΩPt, 120Ω Ni RTDs, and 5kΩ Potentiometer
• All Channels Individually Configurable for Sensor, Range, Alarms, Averaging

Strain Gage Input Module
• Interface to Full, Half, and Quarter Bridge Sensors
• 4 Input Channels for 4-Wire or 6-Wire Sensors
• All Channels Individually Configurable for Range, Alarms, Averaging
• Burst Mode for Fast Event Capture
• Programmable Bandwidth, Excitation, Shunt Calibration

Frequency Input Module
• 8 Input Channels
• 50mV Sensitivity
• Input Range 0.5Hz to 1MHz
• All Channels Individually Configurable for Range and Alarms

Analog Output Voltage & Current Modules
• 8 Isolated Voltage or Current Output Channels
• All Channels Individually Configurable for Range and Programmable Output
• User-Defined Default Output and Output Waveform
• 300Vrms Channel-to-Channel Isolation

Discrete Input/Output Modules
• 4 or 5 Isolated Input and Output Channels
• User-Defined Default Input and Output Waveform
• 7 High Performance Special Functions
• 300Vrms Channel-to-Channel Isolation

All MAQ20 I/O Modules
• 1500Vrms Field-to-Bus Isolation
• Each Channel Protected Up to 240Vrms Continuous Overload
• Continuous Overload and Reverse Protection

The Modules: Compact, Flexible, Powerful

Leading-Edge PID Loop Control
• Integral in Both ReDAQ Shape for MAQ20 and IPEmotion Software
• Up to 32 PID Control Loops with ReDAQ Shape for MAQ20
  - Faceplates Enable Engineer or Operator to Configure Loop Control Features and Monitor Processes
  - Auto-Tuner Simplifies Control Loop Optimization
• Typical PID Applications
  - Steam, Water, and Chemical Flow Control
  - Tank Level Control
  - Heat-Exchanger / Reactor Temperature Control
  - Pressure Control
ReDAQ® Shape Software for MAQ®20
- One-Time Low-Cost License Fee
- Ideal for Data Acquisition, Monitoring and Control Applications
- No Setup Required in Acquire and Analyze Panels
- Create, Save, Open GUI Projects for Test, Process, Data Collection, Data Analysis
- 3 Easy Steps to Create Customized Presentation Panels
- Main Screen Shows Communications Module + Installed I/O Modules
  - Graphic Updates as I/O Modules are Added or Removed
- Automatic Registration of I/O Modules
- Faceplates for PID Loop Control – Up to 32 Loops Possible
- 18 Toolbox Tools Simplify Project Creation
- Supports Any Graphical File Format
- Most Efficient Way to Set Up & Configure MAQ20 Functions

IPEmotion Software for MAQ®20
- Advanced, Intuitive Data Acquisition / Test & Measurement Software
- Synchronized Data Acquisition
- Automatic Recognition of Connected Devices
- Automatic Configuration of All Channels
- Automatic Start of Measuring
- Instant Visualization of All Measurement Values
- Live Data Display, Recording, Online and Offline Math and Logic Functions
- One-Click Acquisition
  - Direct Hardware Detection, Data Display and Recording
- Live Adjustment
  - Analyze and Verify Measurements During Active Data Acquisition
  - GUI Adaptation During Active Measurement and Storage
- PID Loop Control – Unlimited Loops Possible
  - Limited Only by Processing Power of PC
- Post Processing and Report Generation
- Easy Drag and Drop HMI Creation
- High Speed Recording to 1000 Samples/s
- Communication with MAQ20 via Plug-In Driver
- Import and Export Recorded Data Using Standard File Formats
- Scripting Option with VB or Python Software
- Configurable Gauges for Wide Ranging Applications
- Available in 8 Languages
  - English, German, French, Italian, Chinese, Korean, Japanese, Russian