



TQC-PC™ controller shown with the Akron Standard Model 70 Series Uniformity Machine

Additional Controller Upgrade Options

- New Electrical Panel for those existing machines not equipped with TQC-86 controllers.
- New Pushbutton Pedestal for those existing machines not equipped with TQC-86 controllers.

Ordering Information

- The existing TQC-86 machine controller will soon be obsolete and cannot be supported much longer with parts to repair computer boards, etc. Now is the time to replace your existing controller with a new TQC-PC™ controller retrofit kit. Contact your MicroPoise Sales Representative for details on pricing and availability.
- Most Analog In and Out PCB cards including Grinder Current/Watts, Servo Grind and Remote Function Processor cards are interchangeable among the TQC-86, the TQC-PC™, and/or the ASTEC controller, reducing spare parts inventory. Your new TQC-PC™ will be furnished with new cards based on your current TQC-86 configuration.
- To use a TQC-PC™ controller to control a TUG/TUO machine, the following items must exist or be added to the machine:
 - Transducers for all measured parameters.
 - Solenoids and servo valves for all controlled parameters.
 - Programmable Logic Controller for machine control, including 24-volt PLC input & output modules to replace old TTL modules.
 - DC Motor Controller.
 - Current transformers and resistor assemblies or watt transducers for each grinder (TUO only).
 - Regulating transformer with 115 VAC output.

Warranty Information

- MicroPoise warrants the TQC-PC™ to be free from defects in material and workmanship under normal use and service for a period of one year after shipment. Reference MicroPoise Terms and Conditions of Sale Form.

Shipping & Installation, and Acceptance

- The TQC-PC™ will ship in one box with the following box size and weight: 89" high, 51" wide and 28" deep, at 1230 pound gross weight (700 pounds net weight). Box size does not include optional electrical panel or pushbutton station.
- During pre-installation, customer to run a cycle time and repeatability study on the uniformity machine prior to removing the existing TQC-86 controller. MicroPoise will then demonstrate the same machine cycle time and repeatability, if not better, after the new TQC-PC™ controller is installed.

Micro-Poise Measurement Systems, LLC
 Customer Service Division
 Mail: P.O. Box 1869, Akron OH 44309-1869
 Ship: 1624 Englewood Ave., Akron OH 44305-4205
 Tel: 330.784.1251
 Fax: 330.798.0250
 Website: www.micropoise.com



Akron Standard™

Tire Uniformity Machine Controller Upgrade

SALES SPECIFICATION NUMBER 208-321-103



- Direct replacement for TQC-86 controllers, the new TQC-PC™ controller interfaces easily to the existing electrical panel and PLC machine controls.
- Optional Electrical Panel and Pushbutton Station is available for those machines not equipped with Akron Standard controllers.
- Pentium computer with standard keyboard and mouse device.
- Windows XP® operating platform for data presentation and communications to factory host systems.
- Universal Customer Interface provides an application programming interface (API) to the TQC-PC™ controller
- Uniformity Control Processor (UCP) and Rack Function Processor (RFP) for machine operation and data acquisition.
- Industrial enclosure with side mounted air conditioner (not shown).
- The TQC-PC™ controller maintains the same performance, reliability, hardware stability and return on investment you have come to count on from your existing TQC-86.

*...The best value in the industry
 from people you can depend on!*



Akron Standard™

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Architecture Overview

The Akron Standard TQC-PC™ controller includes the following components and features:

- Pentium computer running Windows XP® operating system, with keyboard and mouse device.
- Uniformity Control Processor, UCP - Real time executive for tire uniformity measurement and process control.
- 6 Rack Function Processors, RFP - Real time low level uniformity measurement and process control.
- Commercial Interface - Flexible interface to PLC or Remote I/O devices.
- Opto 22 Snap I/O for interface to hardware PLC - Digital Interface to PLC.
- Machine Control Hardware PLC.
- Industry proven data acquisition - Instrumentation signal and conditioning hardware.
- Industry proven control hardware - for grinder and probe position control.
- Industrial enclosure with side mounted air conditioner.
- Flat screen color monitor.
- Signal Conditioning card files.
- Circuit boards as follows:
 - Radial Force – Analog In.
 - Lateral Force – Analog In.
 - Radius – Analog In.
 - Carriage Drive – Analog In.
- 1024 Pulse Spindle Encoder Kit.
- Documentation for installation, setup, calibration and maintenance.

Open architecture to support interface to many Machine Control Hardware PLC's - Allen Bradley, GE, Modicon, Siemens, and others. The customer is required to furnish 2-each 24-volt PLC input and output modules for their current brand PLC.

Operation Features

The new Akron Standard TQC-PC™ controller controls several standard functions for the Tire Uniformity machine as follows:

- As directed by the PLC, the TQC-PC™ will control:
 - Flex Positioning of grinders, probes, and chuck width.
 - Automatic inflation to computer controlled setpoints.
 - Automatic loading to computer controlled setpoints.
 - Automatic advance and retract of probes.
 - Customer-programmed testing of the tire includes:
 - Measure forces and runouts.
 - Compute peak-to-peak and harmonic magnitudes.
 - Grade.
 - Harmonic Mark.
 - Grade Mark.
 - Sort.
 - Display, Output for printing, Output for Host.
- To support the user, the TQC-PC™ includes the ability to:
 - Setup (includes skim, configure).
 - Edit.
 - Calibrate.
 - Maintain and Diagnose.
- Same TQC-86 software V3.04 and V3.07 functionality:
 - Automatic Shoulder and Center grinding.
 - Hydraulic SAM and Runout function.
 - Automatic Adjustable Width Chuck (AAWC).
 - Computer controlled inflation.
 - Computer controlled tire load.
 - Additional functionality to be announced.

Architecture Functional Information

- **Pentium computer running Windows XP®**
The TQC-PC™ application runs as Windows XP® multithreaded event driven process that performs the following functions:
 - User interface for,
 - Machine Setup - Establish process set points for automatic operation.
 - Machine Edits - Editing of machine measurement and process parameters that are not tire specific.
 - Machine Calibration - User prompted procedures for calibration of instrumentation and measurement devices.
 - TIGRE (Tire GRading Executive) - BASIC programming that establishes what tire uniformity measurements will be acquired and how they will be communicated to the outside world.
 - Tire Type Editor - editing and storing of tire specific parameters important for tire uniformity measurement.
 - Viewing of machine diagnostic information.
 - Display of real time UCP/RFP process states.
 - Universal Customer Interface for application programming interface (API) to the TQC-PC™
 - Plant Network Communications, RS232, Ethernet.
 - Network Printing.
 - Database Support.
 - Recorder outputs.
- **Uniformity Control Processor, UCP, and Rack Function Processors, RFP's,**
 - Handle real time processes involved in uniformity measurement and process control.
 - Intel 386 25 MHz processors on UCP and RFP's.
 - Processes are executed as real time interrupt driven state machine procedures on UCP and all RFP's.
 - Responsible for all data acquisition processes.
 - Responsible for tire uniformity process control loops, i.e. inflation control, spindle speed control, load wheel positioning control, grinder control, probe control, etc.
- **Commercial Interface:**
The commercial interface connects the TQC-PC™ application to the Machine Control Hardware PLC through the Opto 22 Snap I/O. This interface provides capabilities to interface to a large array of PLC's and remote I/O devices and effectively decouples the PLC type from the TQC-PC™ applications. This will allow us to interface the TQC-PC™ to a broad range of PLC's and remote I/O without the need for a software change.
Currently this interface is ethernet to the Snap I/O which interfaces to the hardware PLC.

