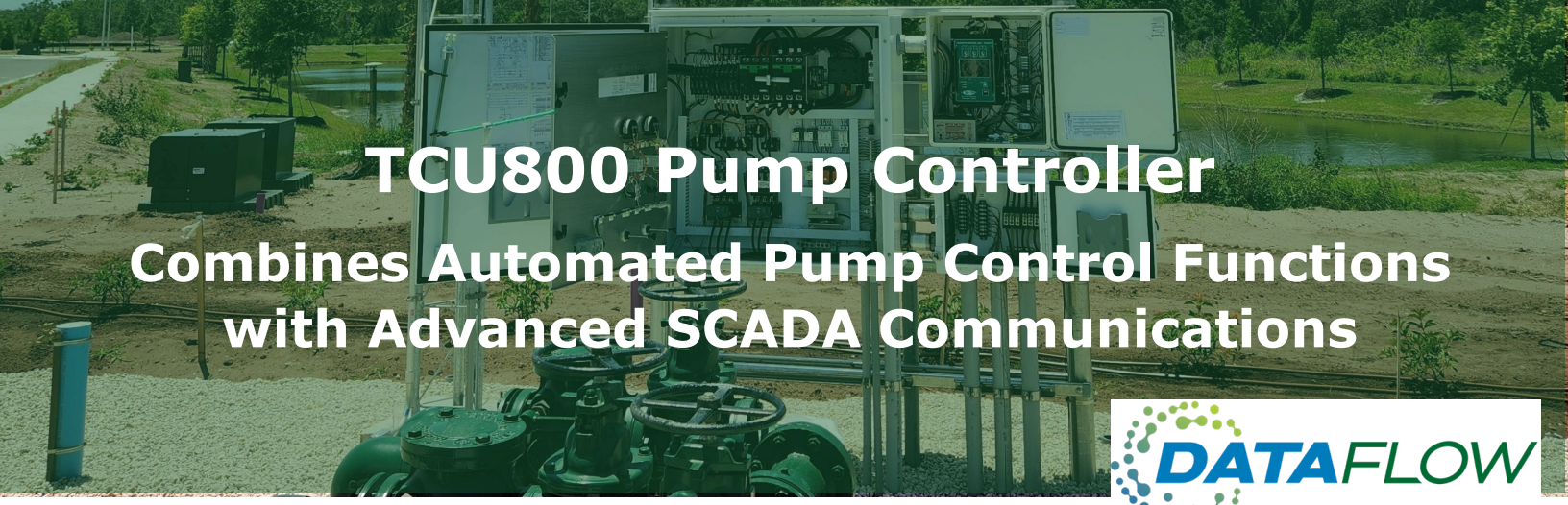

TCU800 Pump Controller

Combines Automated Pump Control Functions with Advanced SCADA Communications

DATAFLOW

The TCU800 pump controller automates the management of simplex, duplex, and triplex sewer pumping stations. Building upon the successful TCU001 pump controller, which is in use in tens of thousands of pumping stations across the US, the TCU800 boasts a 5” touchscreen interface for operators, enhanced processing speed, and expanded on-board inputs to bolster monitoring and motor protection functionalities. The base programming is designed for fixed-speed or soft-start motor controllers. However, the TCU800 has expanded capabilities where Variable Frequency Drives (VFD) can be controlled and monitored using user-selectable modes of operation with an external Modbus I/O device.

The TCU800 is equipped with all necessary hardware and software to control pump operations based on level input from floats and/or analog level-indicating transducers. An integrated True RMS AC phase monitor provides accurate three-phase voltage readings and under/overvoltage motor protection. It also can give motor current readings (with optional CTs) with specialized user-selectable display options for optimal data usage.

SCADA-ready with open Modbus RTU and ASCII protocols, the TCU800 is available with optional factory integrated TAC II radio, network interface, and/or Verizon cellular modem. The TCU800 introduces additional on-board monitoring of motor seal fail and high-temperature contacts for motors so equipped. These additional inputs are user-programmable to be used by the TCU800 to remove a motor from service, simply create an alarm, or used as additional discrete inputs. Its integrated HOA switches ensure fail-safe operation, functioning even when the TCU800 is unpowered. The touchscreen Graphical User Interface (GUI) offers intuitive access to operation menus, set-point adjustments, fault resets, and status indications with a simple touch. Additionally, ultra-bright LEDs offer instant feedback on pump, power, and alarm status, as well as active communication usage.

TCU800 Features at a Glance

- Easy to understand, install and use
- No PLC knowledge required
- Multiple operation profiles
- Redundant level sensing
- Configurable pump alternation
- Digital elapsed time meters
- True RMS 3-phase monitoring
- Alarm light and horn control
- Integrated charger for Backup Battery
- Free TCU800 configuration software
- Configurable via on-board 5” touchscreen
- Free factory support for life of product
- Three-year parts and labor warranty
- Three-year lightning damage warranty
- Expandable I/O Interface for VFD applications
- Multiple modes of communication
- UL Listed for process control equipment
- Cellular capable for Cloud-SCADA Systems
- Dual USB 2.0 ports for laptop or USB download / upload of TCU configurations and firmware updates

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The Data Flow TAC II SCADA System, Symphony-Harmonious Pump & Flow Management software, and Telemetry Control Units (TCUs) can be utilized to coordinate the system-wide operation of pump stations for the purpose of reducing force main pressures, equalizing flow into a treatment plant, reducing energy costs and solving daily peak-flow problems.

Technical Specifications

- Box Dimensions: 5.75" X 8.75" X 5.45"
- Supply Voltage: 120VAC +/-10%, 60 Hz
- Supply Current: 0.5-1.5A
- Processor Core: AM335x SoC with an ARM Cortex A8 (1GHz) + dual PRU (200MHz); 512MB DDR3 and 4 GB onboard flash
- 5" TFT LCD w/ capacitive touchscreen and overlay push-button
- H-O-A Switches: 3 x 3-position switches for Hand-Off-Auto operation
- Internal Phase Monitor: 240 VAC @ 60Hz single- or three-phase; 480 VAC @ 60Hz three-phase using external resistors
- Current Transformer Inputs: (3) configurable from 0-250A (single or 3 phase); CT, 0 - .333VAC, internal shunt resistor.
- Analog Inputs: (4) 4-20mA @ 250Ω / 0-5VDC or 0-10VDC @ 120KΩ, 15-bit precision
- Digital Inputs: (18; 2 are dedicated) 10-30V @ 6KΩ / 30-300V with external resistors, 10-30VDC / pulse input <1000 PPS
- Digital Outputs: (4) Solid State Relays, 120-240VAC @ 60Hz, 1A, Pilot Duty
- Isolated 24VDC Bias: 300 mA current limited and regulated
- Alarm Relays: (2) Electromechanical Relays, 120VAC @ 60Hz, 0.5A / 0-24VDC, 1.0A; NO (Alarm Horn), NC (Alarm Light)
- Input Protection: MOV (Metal Oxide Varistor), TVS (Transient Voltage Suppressor), and on-chip transformer isolation
- Integrated Radio: 2W @ 200 MHz or 5W @ synthesized 400 MHz (Optional)
- Ethernet Interface: 10/100base-T (Optional)
- Cellular Interface: Verizon Wireless (Optional)
- RS-232 Interface: Used when TCU800 is operating as MODBUS Server; 9600-115200 baud serial interface for Modbus ASCII devices (Pending Release)
- RS-485 Interface: Used by TCU800 as a MODBUS Client polling local devices; 9600-115200 baud serial interface for Modbus ASCII/RTU devices
- USB 2.0 (Full Speed): 2 ports external, 1 port internal
- Built-in Backup Battery Charging Circuit
- Recommended Battery Backup: 12-volt, sealed, lead-acid battery (sold separately)

Environmental Conditions

- Ambient Operating Temperature Range: -10°C to 60°C (14°F to 140°F). The upper temperature limit is 50°C (122°F) when using the recommended backup battery
- Relative Humidity: 0-100%
- Atmospheric Pressure: 75-106 KPa
- Overvoltage Category II
- Pollution Degree 2
- Safety Approval: UL listed for Process Control Equipment (UL1092)

Warranty

The TCU800 carries a one (1) year return-to-factory warranty against defects in material and workmanship. When installed with factory recommended surge protection, the warranty is extended to three (3) years and covers damage due to lightning and surge. Data Flow will repair or replace (at its option, F.O.B. Melbourne, Florida) any part or parts of the TCU800 during the warranty period. A Return Authorization (RA) must be obtained by contacting the Data Flow Factory Repair Center at 321-259-5009 or by email at rma@dataflowsys.com.