PCU

PROCESS CONTROL UNIT

TI.40.200.GE

Introduction

The Wallace & Tiernan microprocessor based PCU (Process Control Unit) is designed for the automatic control of disinfection and chemical treatment processes in water conditioning or industrial process applications. The PCU provides accurate control of gas feed equipment as well as chemical metering pump stroke position and variable speed drive applications. The chosen operation mode can be quickly selected by the user for compound loop, single feedback, closed-loop control or feed forward control schemes. Simple set-up, calibration and operation is provided through menu driven selections featuring a full text multi-function display with an easily understood operator interface, output bar graph and a six button keypad on the front panel. The PCU provides a low cost yet sophisticated option for control functions associated with water treatment.

Operation

The PCU provides automatic control with manual over-ride for a variety of chemical feed devices. In the automatic mode, the PCU accepts up to four external inputs depending on the operation mode selected. Three of these inputs are for process variables, such as Chlorine residual, flow rate and spare flow or residual. The fourth input is a positioner feedback signal to provide precise mechanical operation in response to the PCU output signal. Relay output signals are provided for gas control positioners, dosing pumps or solenoid operated pulse pumps. A continuous mA output signal is available for equipment requiring a variable speed drive.

The system set point, as well as all other operation parameters, is entered using the keypad with actions clearly indicated on the display. There are eight upper level menu selections to prompt the operator in easy selection of all system inputs/outputs, control modes and values, alarm selection and calibration/diagnostic routines.

The PCU can communicate with other supervisory control systems through a built-in serial interface. This allows remote input of all operational parameters. Two digital inputs provide additional remote programmed control capability. Typically, these could be used for safety switching or changing of the operation mode.

All status, alarm or error messages are displayed in full text on the LCD multi-function display. The operator can acknowledge the alarm, thereby cancelling the flashing alarm display.

Four separate alarm relays are available for user selection of a number of alarm condition for remove indication or interlocking with other control systems. Typically, these alarms would be for high or low measured value (residual), flow or set point deviation.

Specification

The PCU is available with panel mounted housing up to IP65 protection. The unit itself is built in an enclosed metal housing, 20TE large, which can be installed in all standard 19” installation frames.

The front panel includes the keypad, the multi-function display and a 0 to 100% bar graph for quick indication of output position, or flow, residual, etc. The panel is acid and solvent resistant. The display is operator selectable from the following four languages: English, French or Spanish.

All settings can be protected against unauthorised changes with a user-selectable security code number. The PCU has a built-in RS-485 serial interface for transmitting measured and set up data for remotely operating the PCU. All inputs and outputs are connected to three 16-pole terminals for the rack mounted unit and via screw terminal connectors in lower section of the wall mounted unit. The PCU conforms to the EMC regulations concerned with emission and immunity. The whole unit is designed to EC regulations and carries the CE mark.

Advantages

- Menu Driven for clear operational instruction.
- Selectable display for all parameters and process values.
- Accepts up to 4 analogue inputs.
- CE marked
- Four configurable alarm relays.
- Programmable digital inputs.
- RS-485 serial interface.
- Galvanic isolation of all inputs and outputs.
- Diagnostic menu for assistance at installation and during maintenance.
- EMC tested

DIMENSIONS

(Electronic Module only)

Front panel 102 x 129mm (L x H)

WEIGHT

(Electronic Module only)

2.0kg

ENCLOSURE

(Wall Mounting)

Dimensions:	208 x 237 x 235mm (L x H x D)
Protection:	IP65
Weight:	1.8kg
Flammability:	UL94 = HB1.6

TEMPERATURE RANGE

Operation: 0....50°C

(rel. humidity 90% max, not condensing)

Storage: -20.....70°C

MAINS SUPPLY

230V ± 10%, 50-60Hz

14 VA, fuse T100 mA, 5 x 20mm

or

115V ± 10%,50 -60 Hz

14VA, fuse T200 mA, 5 x 20mm

or

24V DC

14W, fuse T1A, 5 x 20mm

OPERATOR INTERFACE

Ergonomic membrane keypad with 6 keys.

Multi-function display with back light:

4 character numeric display for measured value.

5 Character text display for units.

2 x 12 character display for operation, status and error messages; bar graph 0...100%

Contract selectable

COMMUNICATION

RS484 according to ISO8482, 19200 Baud data rate.

RELAY OUPUTS, MAXIMUM RATING

3A, 1/6 HP, 250 VAC, 750VA max

3A, 125VDC, 30 W max

1A, 30VDC - 0.24A, 125VDC

Shortest switch-on time 300ms.

Shortest switch-off time 200ms

Protection with RC module.

ANALOGUE OUTPUT

0....20/4....20mA.

Accuracy 0.1% FS

Load maximum 600Ω

Galvanically insulated from earth to 500V.

ANALOGUE INPUT 1

Flow Signal:

0...20/4...20 mA, 0...1V, 0...5V

Input impedance 47Ω

(for 0...20/4...20mA)

Galvanically isolated from earth to 100V

ANALOGUE INPUT 2

Positioner feedback signal:

100Ω , 1KΩ (factory setting),

5KΩ, 1V, 5V, 0/4...20mA

Galvanically isolated from earth to 100V

ANALOGUE INPUT 3

Spare signal: 4...20mA

Function: software selectable (Flow, Residual or External Setpoint)

Input impedance 47Ω

Galvanically isolated from earth to 100V

ANALOGUE INPUT 4

Residual signal: 4-20mA

Input impedance 47Ω

Galvanically isolated from earth to 100V

DIGITAL INPUT A

Volt free contact, 230VAC/DC, 115VAC/DC, 24VAC/DC

Function: software selectable

Galvanically isolated from earth to 500V

DIGITAL INPUT B

230VAC/DC, 115VAC/DC, 24VAC/DC

Function: select Job 1/Job 2

Galvanically isolated from earth to 500V

INTERNAL OPTIONS

DISPLAY OPTIONS

Residual mg/l (Default)

Actuator Position

Chemical Flow Rate

Deviation between set & measure in mg/l

Dosage Rate

Set Point

Control State...Auto (Graphic Icon)

Manual (Graphic Icon)

DISPLAY OPTIONS

3 languages

Set Security Lock Code

Set Control Type from:

Flow + Residual	(Compound Loop)
Manual Flow	(Residual Only)
Manual Residual	(Flow Only)

Ratio

RESIDUAL SETTINGS RANGES

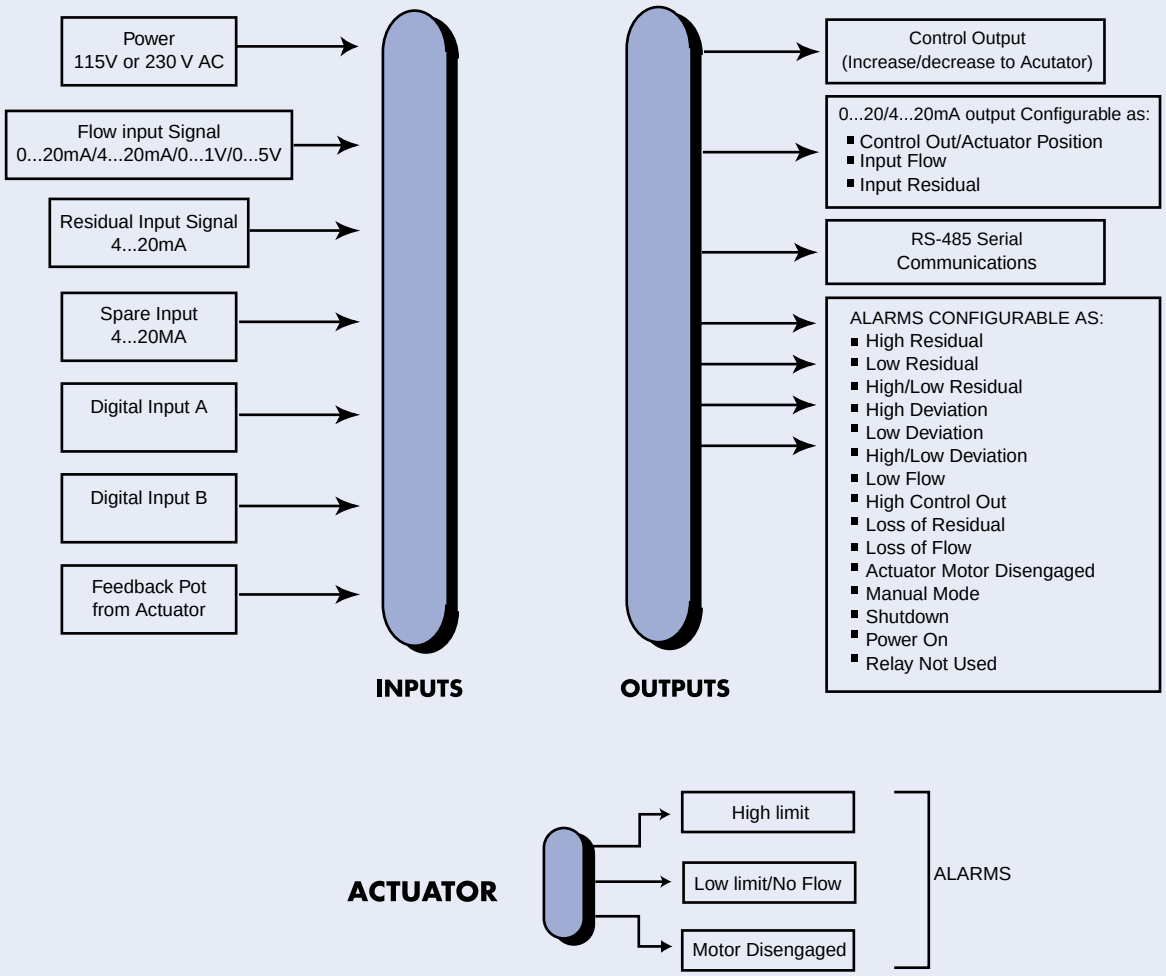
0 - 0.100mg/l	0 - 5*
0 - 0.200	0-10*
0 - 0.500*	0 - 20
0 - 1*	0 - 50
0 - 2*	0 - 100

CALIBRATION

All Inputs and Outputs

* Centre zero control for Cl_2/SO_2 or SO_2/O_3

Input / Output Diagram



WALLACE & TIERNAN PRODUCTS

Chemfeed Limited
Priory Works
Tonbridge, Kent TN11 0QL
Telephone: +44 (0) 1732 771777
Fax: +44 (0) 1732 771800

Email: inform@wallace-tiernan.com
http://www.wallace-tiernan.com

CE

BSI REGISTERED UKAS QUALITY MANAGEMENT 003
FM53933

VIVENDI water company