



TECHNICAL INFORMATION

ADVANTAGES

- Adaptive combined control
- Compensation of control parameters with combined control (fuzzy-controlled)
- Automatic error detection which is displayed
- Substantially increased control quality and prevention of over or under chlorination
- User definable display for all parameters and process values
- Output range selectable on display ($\mu\text{g/l}$, mg/l , pH , $\%$)
- Pretuning capability for simple commissioning
- Four configurable alarm relays
- Programmable external digital inputs
- Electrical isolation of all signal inputs and outputs
- CE-marked (89/336/EC)
- Low voltage LVD 73/23/EEC
- Diagnostic menu to support maintenance and installation
- RS485 serial interface

PCU-FUZZY

PROCESS CONTROL UNIT

The Wallace & Tiernan microprocessor based **PCU-fuzzy** (Process Control Unit) is designed for the automatic control of disinfection and chemical treatment processes in any water conditioning or industrial process application. With the integral PI controller it can also be used in standard control operations. The **PCU** can be quickly configured for operation without special programming knowledge. The **PCU-fuzzy** provides accurate control of gas feed equipment as well as chemical metering pump stroke position and variable speed drive applications. The simple set-up, calibration and operation is provided through menu driven selections featuring a full text multi-function display with a easily understood operator interface, output bar graph and a sealed six button keypad on the front panel.



PROCESS

The basic operating modes available with the **PCU-fuzzy** are:

- Ratio control
- Set value control
- Combined control (with **fuzzy** support).

Depending on the operating mode, the input variables are:

- an actual value signal (e.g. chlorine residual)
- a controlled variable (e.g. flow rate)
- a proportioning signal (e.g. actuator feedback) and an external setpoint or dosage level.

When using combined control for both flow rate and chlorine residual, with the **fuzzy** technology, the control quality substantially increases. The **PCU-fuzzy** continually stores its reactions to system deviations and uses the data as the basis for future control actions. As a result, the compensating outputs of the **PCU-fuzzy** are optimally pre-controlled by the flow variable and the process control parameters are adapted on-line.

When used as a set point controller, the initial control parameters can be automatically set by means of the built-in pretuning facility.

All settings are entered using the keypad with actions clearly indicated on the display or set externally through the serial interface.

In addition to the continual display of a selected process variable, any alarm or error messages are also displayed cyclically. The alarm can be acknowledged manually and then ceases to be displayed.

The function of the **PCU-fuzzy** can be externally controlled via two digital switch inputs. Four separate alarm relays are available for user selection of a number of alarm conditions for remote indication or interlocking with other control systems. Typically, these alarms would be for high or low measured value (residual), flow or set point deviation.

DEVICE SPECIFICATION

The front of the **PCU-fuzzy** plug-in module has an IP 65 enclosure with a housing for panel mounting. The plug-in module itself is designed as a stable metal housing with 20TE width, fitting all standard 19" mounting frames.

The front laminate contains the input keypad, the multifunction display and a 0...100% LED bar graph. It is scratch, acid and solvent resistant.

Operating menus can be selected in English, French, German, Italian or Spanish.

The device has an RS485 serial interface. This enables transmission of measured data and remote control of the **PCU-fuzzy**.

All menu entries and the serial interface can be protected by an operator defined code number.

The **PCU-fuzzy** controller fulfils the EMC requirements with regard to emitted interference and immunity to interference in accordance with EN 50081/82.

All electrical connections on the panel mounted version are via three 16-pole plug-in terminal strips at the back of the device accepting max. 2.5 mm² size cabling.

US WALLACE & TIERNAN

a U.S. Filter Company

Wallace & Tiernan GmbH
Postfach 1563, D-89305 Günzburg, GERMANY
Street address: Auf der Weide 10,
D-89312 Günzburg, GERMANY
Tel.: (49) 8221-9040, Fax: (49) 8221-904203

TECHNICAL DATA

PCU-FUZZY AAA 4906 AND AAA 4909

Dimensions and weight:

PCU module:
Front panel 102 mm x 129 mm (W x H),
Depth incl. terminal strip 175 mm
Weight: 2.0 kg

Panel mounted housing without transparent cover:
144 mm x 144 mm x 181 mm (W x H x D)
Bay depth without module 173 mm
Weight: 1.0 kg

Panel mounted housing with transparent cover:
144 mm x 144 mm x 226 mm (W x H x D)
Bay depth without module 173 mm
Weight: 1.1 kg

Wall mounted housing with transparent cover:
240 mm x 233 mm x 224 mm (W x H x D)
Weight: 2.1 kg

Enclosure:

Housing for mounting in panel	Enclosure
UXB-96230 (without cover)	IP 41
UXB-96231 (with cover)	IP 65
Housing for wall mounting	
AAA 7275 (with cover)	IP 65

Temperature range:

Operation 0 ... 50 °C (non-condensing)
Storage -20 ... 70 °C

Power supply:

230/115 V ± 10%, 50–60 Hz, 14 VA
or 24 V according to EN 61131-2 DC

Operation:

Ergonomic sealed keypad with six keys
Self-illuminating multifunction display
Illuminated bar display 0 ... 100%

Interface:

RS485 asynchronous, to EIA RS485,
DIN 66259 Part 4/ISO 8482
19.2 Kbaud, non-isolated

Relay outputs, load rating:

Max. switching voltage	250 V AC	220 V DC
Max. switching capacity	1250 VA	150 W

Interference suppression of contact via RC elements

Analogue output:

0 ... 20/4 ... 20/0 ... 10/0 ... mA
Load ≤ 600 Ω accuracy ± 0.1 % FS
Electrically isolated up to 500 V to earth

Analogue input E1, E3, E4:

0 ... 20/4 ... 20 mA
for reference signal, ext. setpoint/dosage factor,
flow signal at R_{in} = 47 Ω,
electrically isolated up to 100 V to earth

Analogue input E2:

100 Ω, 1 KΩ, 5 KΩ, 1 V, 5 V, 0 ... 20 mA
Potentiometer 1 KΩ (factory setting)
for servo motor position feedback
electrically isolated up to 100 V to earth

Digital inputs:

Basic setting as mains voltage (230 V)
Available for selection: 230 V AC/DC
115 V AC/DC
24 V AC/DC
electrically isolated up to 500 V to earth

Ranges which can be selected for analogue input E1:

0 ... 100 µg/l	0 ... 1.00 mg/l
0 ... 200 µg/l	0 ... 2.00 mg/l
0 ... 500 µg/l	0 ... 5.00 mg/l
	0 ... 10.0 mg/l
0 ... 14 pH	0 ... 50.0 mg/l
0 ... 100.0 %	0 ... 100 mg/l

WALLACE & TIERNAN WORLDWIDE

Australia

WALLACE & TIERNAN Pacific Pty. Limited
89-93 Reserve Road
Artarmon New South Wales 2064, AUSTRALIA
P.O. Box 373
Artarmon New South Wales 2064, AUSTRALIA
Tel.: (61) 2-9436-0375
Fax: (61) 2-9438-4881
Email: wtpac@wtpacific.com.au

Brazil

U.S. FILTER DO BRASIL LTDA.
Av. Alfredo Egydio de Souza Aranha, 384 – 4° a.
04726-170 Sao Paulo / SP.
BRASIL
Tel.: (55) 11-521 6011
Fax: (55) 11-522 9288

Canada

U.S. FILTER/WALLACE & TIERNAN
250 Royal Crest Court
Markham, Ontario L3R 3S1
CANADA
Tel.: (905) 944-2800
Fax: (905) 474-1660

France

WALLACE & TIERNAN S.A.R.L.
1/3 rue Pavlov
F-78190 Trappes, FRANCE
Tel.: (33) 1-34 82 18 50
Fax: (33) 1-30 50 98 08

Germany

WALLACE & TIERNAN GmbH
Auf der Weide 10
D-89312 Günzburg, GERMANY
Postfach 1563, D-89305 Günzburg, GERMANY
Tel.: (49) 8221-9040
Fax: (49) 8221-904203
Email: wtger@usfinternational.com

Mexico

U.S. Filter / WALLACE & TIERNAN De Mexico
SA de CV
Via Jose Lopez Portillo No. 321
Col. Santa Maria Cuauhtepc
54900 Tultitlan, Edo. Mexico, MEXICO
Tel.: (52) 5 875-5127
(52) 5 875-2309
Fax: (52) 5 879-8183
(52) 5 875-2171
Email: tserratos@usf.com.mx

United Kingdom

USF Limited
USF WALLACE & TIERNAN
Priory Works
Tonbridge
Kent TN11 0QL, ENGLAND
Tel.: (44) 1732-771777
Fax: (44) 1732-771800
Email: inform@usfw.co.uk

USA

U.S. Filter/WALLACE & TIERNAN Inc.
1901 West Garden Road
Vineland, NJ 08360, USA
Tel.: (609) 507-9000
Fax: (609) 507-4125



a U.S. Filter Company

Wallace & Tiernan GmbH
Postfach 1563, D-89305 Günzburg, GERMANY
Street address: Auf der Weide 10,
D-89312 Günzburg, GERMANY
Tel.: (49) 8221-9040, Fax: (49) 8221-904203