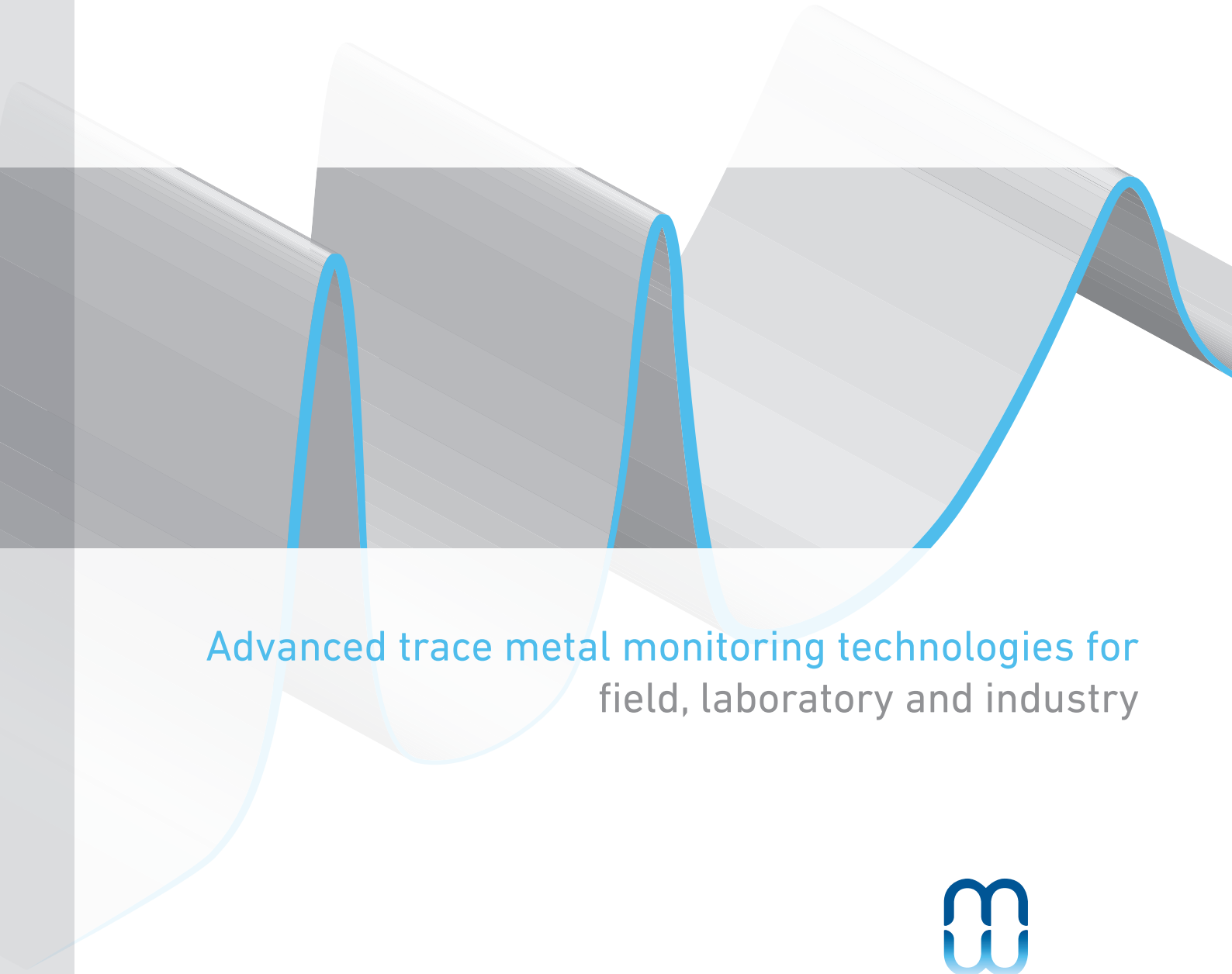
MODERNWATER | MicroTrace™



Advanced trace metal monitoring technologies for
field, laboratory and industry

MODERNWATER

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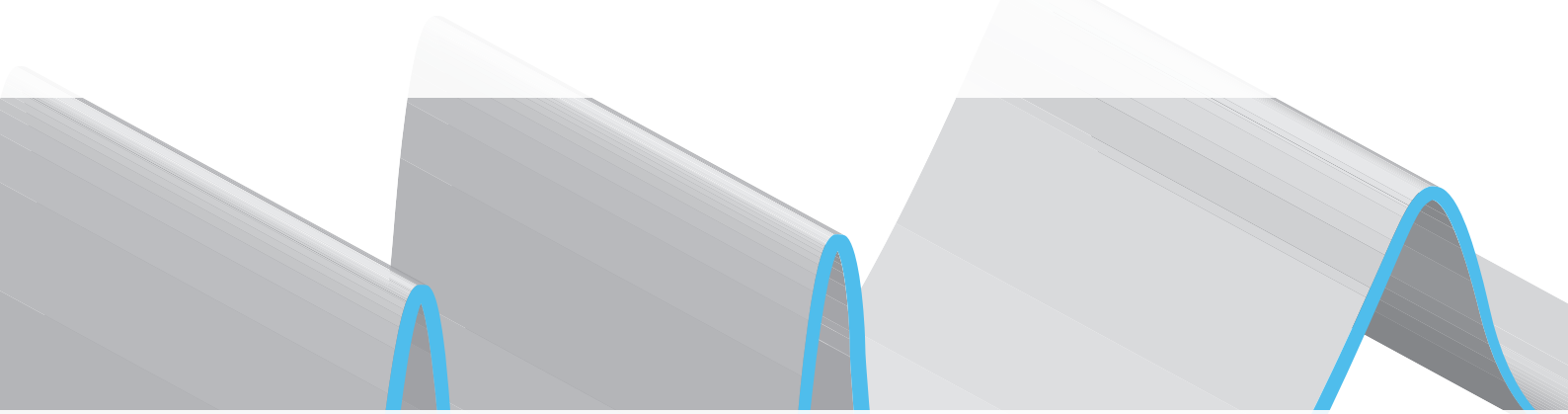


Modern Water is expert in the design, development and application of analytical instruments for monitoring trace metals in water, soil, food and industrial process streams. Our systems use solid state electrodes to perform voltammetry for the analysis of metals in solution.

Our trace metal product range includes the portable PDV6000*ultra* and the two on-line, continuous systems: the OVA7100 and OVA7100 Dual Cell. Our technology is robust and reliable, can be operated by technicians anywhere in the world and is relatively low maintenance. The portable, laboratory and online systems have a worldwide reputation for quality, reliability and ease of use, enabling customers to monitor pollutant levels, optimise their processes, minimise damage to the environment and protect the health of employees and communities at large.

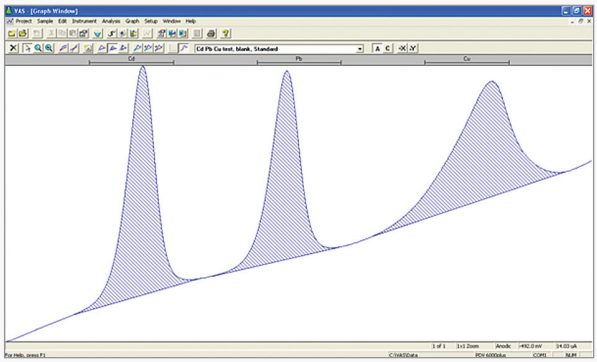
Trace Metal Monitoring with PDV6000*ultra*

PDV6000*ultra*
Portable Laboratory Monitor

The PDV6000*ultra* is an ideal tool for site monitoring and laboratory use, offering an enhanced measurement range and VAS software for real time visualisation of analytical results. Ten standard methods can be stored in the handset for stand-alone use and an unlimited number when used in conjunction with a laptop or PC. The PDV is supplied complete with one set of electrodes, VAS software and a water tight carrying case. Results from the PDV are directly comparable to those obtained from AA and ICP methods.

The PDV6000*ultra with standard cell*

PDV6000*ultra*



The PDV6000*ultra* and VAS Software

The PDV6000*ultra* is supplied with the VAS software package, which provides intuitive operation and is compatible with Windows 7 and Windows 10. VAS enables storage and manipulation of Voltammograms, operating data and analysis. Using VAS, voltammetric and electrode conditioning parameters are fully programmable and all data is automatically saved. Reports for laboratory records can be printed or exported to spreadsheet readable files. Operating parameters can be uploaded into the PDV6000*ultra* for field use.

PDV product features

- Portable, enabling easy monitoring in remote locations
- Multiple metal analysis when using VAS
- AC or rechargeable battery for onsite use
- Pre-treating with acid can eliminate interferences
- Solid-state robust electrodes and stand provided
- Results stored on PC when using VAS
- Detection limits below 1ppb, depending on sample
- Report generation capability using VAS
- Precision ± 5% at 100ppb levels
- Quick and accurate results, allowing defensible real-time decision to be made on-site
- Low running costs and maintenance
- VAS enables automatic data save, print facility for all traces, reports and analytical data, and accurate trouble-shooting via email or Skype

24/7 Online Monitoring with Microtrace OVA Systems

The OVA is a fully automated on-line metal monitor, developed as a modular system, to provide continuous or intermittent monitoring of metals in process streams, effluent discharges, river and potable water. The OVA is based on internationally recognised voltammetry (ASV and CSV) technology, which provides quick and accurate determination of metals at the micrograms per litre level, directly comparable with laboratory analysis using AAS or ICP.

The OVA provides real-time monitoring of several concurrent sample streams, configured to individual customer requirements. Sample pre-treatment may include digestion for elimination of potential interferences, although ASV is not directly affected by sodium, calcium, magnesium, chloride or other salts often present in industrial samples.

Detection parameters - specified metals, sampling regime, detection limits and 'alert' systems, are installed and configured to individual site requirements and can be easily modified to cope with different combinations of metals. Sampling can be programmed to be taken at specified times, on demand or when triggered by an external event. Integration of the OVA in a plant control system allows users full control over the metal content of their process streams, ensuring regulatory compliance for any discharges.

OVA Systems

Ability to react to unexpected events and protect reputation

Should the level of metals in process streams or waste rise unexpectedly, the OVA enables operators to take immediate preventative action and modify their process accordingly and efficiently. These short events would often be missed by laboratory monitoring regimes and only be recognised on final discharge.

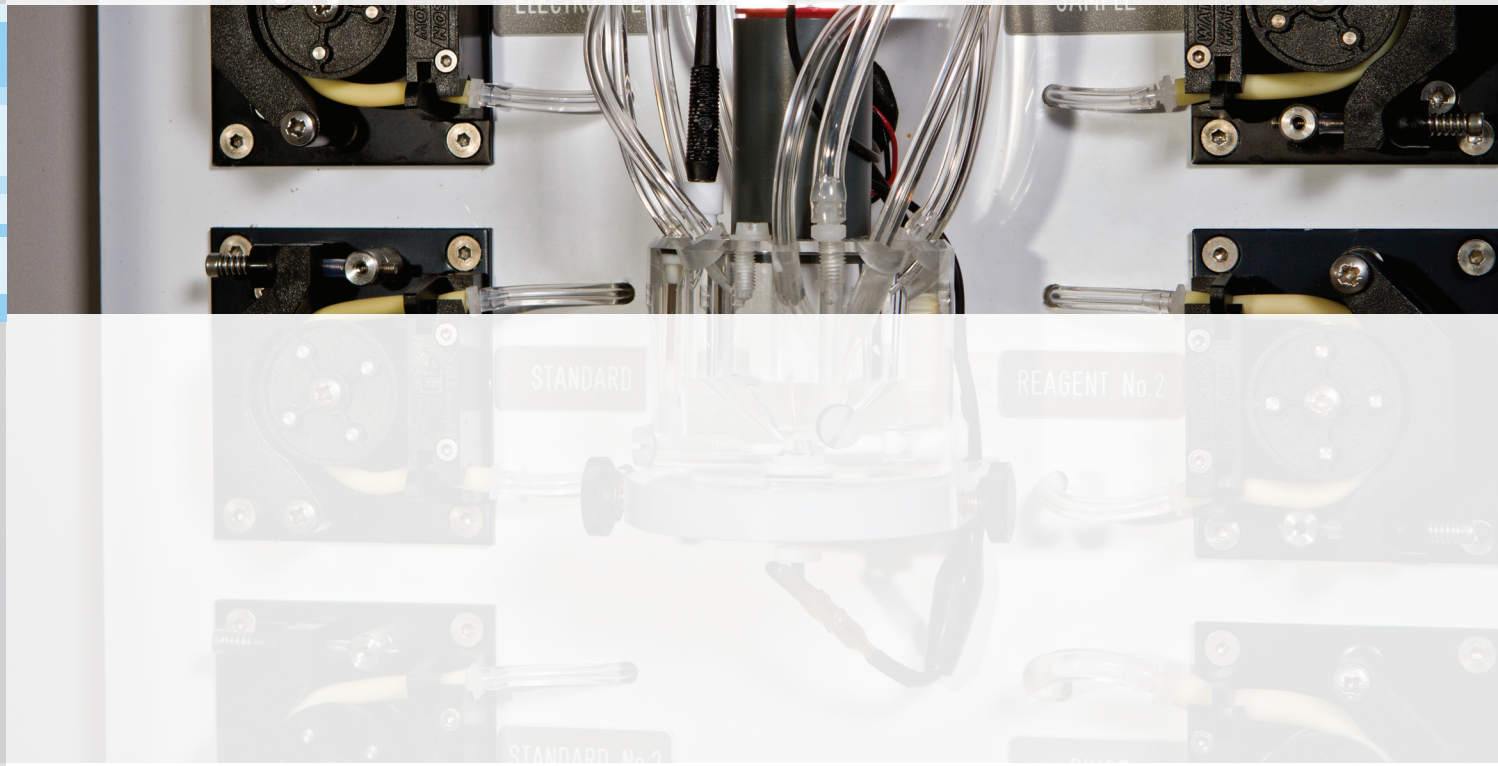
Improves treatment efficiency and lowers operating costs

Chemicals are often used to remove metals from process effluent and wastewater. As operators may have limited knowledge of the actual metal concentrations present, these chemicals are often added in excess to ensure regulatory compliance.

Monitoring the metal concentrations using an OVA allows operators to use the optimum amount of chemicals, significantly reducing their costs. The OVA is compatible with most plant control systems, enabling fully automated control of wastewater and effluent treatment, control of buffer capacity and discharge procedures.

Reagents

Modern Water provides a range of standards, electrolytes and other reagents used in the routine operation of both PDV6000*ultra* and the OVA range. The use of these high purity reagents ensures longevity of the electrodes and reliability of the analysis and is an essential part of the equipment warranty.



Working with the OVA7100 Dual Cell and OVA7100

The OVA7100

The OVA7100 has a built in PC, which can be controlled either by the top-box touch-screen accessory, a separate VGA screen and keyboard or by a laptop connected via Wi-Fi or LAN. This external control prevents unauthorised users from making any changes. It is housed in a modular cabinet made of durable, light-weight plastic which enables the user to separate the reagent cabinet from the main body of the unit, for easier transportation and installation.

The OVA7100 can run on a lower power 12V DC (or standard 90 – 265 V AC) making it the ideal solution for remote locations.

The OVA7100 Dual Cell

The OVA7100 Dual Cell is designed to extend the range of detectable metals in a single unit. It has two analytical cells and each can be fitted with a different electrode, whilst sharing one pre-treatment unit.

Voltammetry methods often require different electrodes in order to optimise the detection of a specific metal. By having this single unit with two electrode sets the Dual Cell allows combinations of metals that would previously have required two separate instruments.

OVA7100 Dual Cell and OVA7100

OVA7100

OVA product features

- Can be configured to monitor 23 different metals
- Very low detection levels (down to 0.1 µg/L*)
- High levels of accuracy and repeatability – Excellent Correlation with Laboratory Methods (AAS, ICP-MS)
- 24-hour monitoring at high frequency can identify and isolate events that daily average sampling may miss
- Short analysis times allow identification of events as they occur – laboratory analysis typically identifies an event only after it occurred
- Single cell unit can measure up to six metals. Dual cell unit can measure up to 10 different metals
- Programmable alarm and outputs for out-of-range samples or system faults.
- Remote access and data communication with many different secure communication options available including wireless
- Easy connection to process control room allows integration into automated plant control systems (dosing, flow diversion).
- Pre-treatment options available to eliminate interferences and allow total and dissolved concentrations to be monitored
- Solid electrodes-no hazardous mercury drop electrodes
- Automated testing of pump operation and reagent/ sample supply
- Standard addition or multiple point calibration curves
- Multiple language interface options - including traditional and simplified Chinese
- Online technical support (requires internet connection)

**All values are dependent upon the metal(s) being analysed and the nature of the sample*

Applications

Regulations for heavy metal effluent limits are becoming stricter as regulatory agencies and industry realize their potential environmental and health impact. Modern Water's MicroTrace monitoring products are used in numerous industries to ensure regulatory compliance, reduce chemical consumption, improve production yields and product quality; and help companies achieve their environmental stewardship goals.

Modern Water's MicroTrace products have a proven track of effectively detecting the presence of harmful trace metals at very low detection levels in a wide array of applications including:

- River water monitoring for hazardous metals such as arsenic, mercury, lead and cadmium.
- Drinking water protection
- Municipal incineration wastewater
- Mining and minerals tailings
- Power plant scrubber water
- Mine process water and leachate
- Automobile and aerospace manufacturing effluent
- Copper lead and zinc smelting
- Battery production and recycling
- Land/Ground Water Remediation
- Semiconductor effluent
- Protection of agricultural water supplies

Modern Water's team of applications engineers and global technical centers can assist you in the qualification of your application.

Limits of Detection

Typical limits of detection for PDV and OVA monitors

METAL	METAL NAME	PDV (PORTABLE ANALYSER)	OVA (ON-LINE ANALYSER)
Ag	Silver	0.5µg/l	2µg/l
As(III)	Arsenic (III)	0.5µg/l	2µg/l
As(total)	Arsenic	0.5µg/l	2µg/l
Au	Gold	2µg/l	5µg/l
Bi	Bismuth	2µg/l	--
Cd	Cadmium	0.5µg/l	0.5µg/l
Co	Cobalt	10µg/l (1*)	10µg/l
Cr(VI)	Chromium (VI)	5µg/l (1*)	10µg/l
Cr(total)	Chromium	10µg/l	10µg/l
Cu	Copper	0.5µg/l	1µg/l
Fe	Iron	5µg/l	10µg/l
Hg	Mercury	0.1µg/l	0.1µg/l
Mn	Manganese	2µg/l	10µg/l
Mo	Molybdenum	1ug/l*	1ug/l
Ni	Nickel	5µg/l	10µg/l
Pb	Lead	0.5µg/l	0.7µg/l
Pd	Palladium	5µg/l	5µg/l
Sb(III)	Antimony (III)	5µg/l	5µg/l
Se(IV)	Selenium (IV)	5µg/l	10µg/l
Sn	Tin	5µg/l	5µg/l
Te	Tellurium	10µg/l	10µg/l
Tl	Thallium	2µg/l	0.5µg/l
U	Uranium	1µg/l*	5µg/l
Zn	Zinc	0.5ug/l	10µg/l

Limits vary with sample type. Typical clean water values are shown.
** using the LabCell method.*

Methods are available for the determination of metals from USEPA, NIOSH, ASTIM, DIN, AOAC.

OVA SPECIFICATIONS

Working Electrode	Glassy carbon, used with a variety of films, or solid gold
Counter Electrode	Platinum
Reference Electrod	Ag/AgCl in KCl
Cell Material	Acrylic and PTFE
Cell Stirrer	Adjustable speed stirrer
Cell Volume	10 ml nominal
Drain	Pumped to waste
CE Compliant	YES
Voltammetry Range	-2V to +2V
Sensitivity	1nA
Analysis methods available	Anodic stripping, Cathodic stripping
Waveforms available	Linear sweep, square wave and differential pulse
Calibration	Standard comparison
Result Output	Voltammetry curves, element concentration(s), historical data
Variation (% CV)*	5 to 10%
Operating Software	Windows 10 OS

OVA7100 & OVA7100 DUAL CELL SPECIFICATIONS

Power Supply	90 - 265V AC, 12V DC
Operating Temp	5°C - 60°C
Humidity	5% - 95% non-condensing
IP Rating	IP 65
Communications	LAN Modbus TCP/IP, WIFI, USB
Outputs	RS232 or RS485
Dimensions	1400mm (analytical compartment 700mm, reagent compartment 700mm) x 482mm (Dual Cell 715mm) x 400mm (H x W x D)
Mass	22kg (analyser) 6kg (reagents) approx. 46kg (Dual Cell)
Application Software	LabView OVA7000

Specifications

PDV6000*ultra* SPECIFICATIONS

Power Supply	AC, 110 - 240V or DC 8 - 12V or 4 x AA batteries
Dimensions PDV6000*ultra*	14.2" (360mm) x 10.6" (270mm) x 6.1" (155mm) (L x W x D)
Dimensions SV LabCell	8.7" (220mm) x 6.3" (160mm) x 6.3" (160mm) (L x W x D) Drain tank, solid-state electrodes and stand provided
Working Electrode Std. Cell	Glassy carbon, used with a variety of films, or solid gold
Working Electrode SV LabCell	Glassy carbon with bismuth film
Counter Electrode	Platinum
Reference Electrode	Ag/AgCl in KCl
Cell Material	Acrylic and PTFE
Cell Stirrer	DC magnetic motor and magnetically coupled stirrer
Display	LCD graphic screen
CE Compliant	YES
Operating Software	Windows OS, VAS, internal firmware
Communications	USB connector
Keypad	5 button keypad
Metal Menus	Up to 10 programmable menus in stand-alone mode
Analysis Methods Available	Anodic stripping, Cathodic stripping
Waveforms Available	Linear sweep, square wave and differential pulse
Voltammetry Range	+/-2V
Sensitivity	2 nA
Variation (%CV)*	5 to 10%
Outputs	CSV file, VAS file
Result Output	Voltammetry curves, element concentration(s), historical data
Calibration	Standard comparison or standard addition
Packing	Sturdy water-proof carry case

** All values are dependent upon the metal(s) being analysed and the nature of the sample.*

To find out how we can help you please contact us on:

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