



ON LINE WATER ANALYSER

UV400



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THE **UV400**, BASED ON A MODULAR CONCEPT, ALLOWS TO MONITOR SIMULTANEOUSLY MANY DIFFERENT PARAMETERS FOR WASTE WATER OR DRINKING WATER TREATMENT PLANTS AS WELL AS RIVER MONITORING STATIONS. EACH PARAMETER CORRESPONDS TO A SPECIFIC OPTICAL MODULE THAT CAN BE SELECTED BY THE USER WHILE ORDERING THE ANALYSER, DEPENDING ON THE APPLICATION.

MAINLY BASED ON **UV** SPECTROSCOPY, WELL KNOWN FOR ITS STABILITY AND LOW OPERATING COST, THE **UV400** CAN MEASURE PARAMETERS LIKE ORGANIC MATTER, AMMONIA, NITRATE, AROMATICS HYDROCARBONS (**PAH**), COLOUR, HYDROGEN SULPHIDE AND CHLOROPHYLL **A**. COMPLEMENTARY MODULES ALLOWS THE MEASUREMENT OF PHOSPHATE BY COLORIMETRIC METHOD AND TURBIDITY BY A VISIBLE OR INFRA-RED LASER DIODE.

EXTERNAL PROBES CAN BE ADDED FOR PHYSICO-CHEMICAL PARAMETERS LIKE **pH**, **ORP**, DISSOLVED OXYGEN AND CONDUCTIVITY.

THANKS TO ITS AUTOMATIC CLEANING SYSTEM AND ITS EXTREMELY LONG LIFE TIME LAMP, THE MAINTENANCE IS ROUGHLY LIMITED TO THE PERIODIC REFILL OF THE INEXPENSIVE CLEANING SOLUTION AND EVENTUALLY REAGENTS DEPENDING ON THE PARAMETERS.

A NEW WEB-BASED INTERFACE ALLOWS THE CONTROL AND THE TROUBLESHOOTING AT DISTANCE USING AN INTERNET BROWSER ON COMPUTER, TABLET OR I-PHONE.

ADVANTAGES

UV400

MAIN METHOD : UV - VIS SPECTROSCOPY

MOST OF THE MEASUREMENTS (UV254, NH₄, H₂S, NO₃, COLOUR, PO₄, PAH, CHLOROPHYLL A) ARE BASED ON THE UV-VIS SPECTROSCOPY THAT BRINGS FAST AND STABLE MEASUREMENTS WITH A SIMPLE HYDRAULIC CIRCUIT FOR A HIGH RELIABILITY.

ALL THE MEASUREMENTS ARE DONE WITHIN 5 SECONDS EXCEPT PO₄, NH₄ AND H₂S THAT REQUIRE ABOUT 3 MINUTES.

THE PATENTED FLOW CELL ALLOWS VERY HIGH LEVEL OF SUSPENDED SOLID WITHOUT CLOGGING. THE TURBIDITY IS AUTOMATICALLY COMPENSATED BY A DUAL-WAVELENGTH METHOD AS SHOWN ON THE FIGURE.

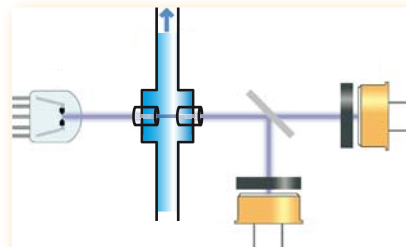
THE UV SOURCE IS A XENON FLASH LAMP SPECIFIED FOR 10⁹ FLASHES THAT CORRESPONDS TO MORE THAN 10 YEARS OF LIFE TIME WITH ONE MEASUREMENT EVERY MINUTE.

PHYSICO-CHEMICAL MEASUREMENTS (pH, ORP, DISSOLVED OXYGEN, CONDUCTIVITY) CAN BE ADDED TO THE INTERNAL MEASUREMENTS BY USING EXTERNAL PROBES. THE DISSOLVED OXYGEN PROBE IS BASED ON FLUORESCENCE METHOD FOR A LOWER MAINTENANCE AND HIGHER STABILITY.

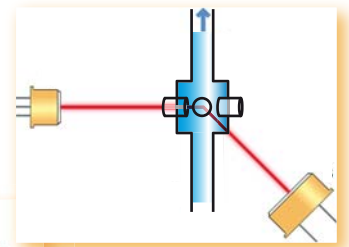
TWO EXTERNAL TURBIDITY PROBES (HIGH AND LOW RANGE) ARE ALSO AVAILABLE IF THE MEASUREMENT NEED TO BE DONE IN SITU, FOR EXAMPLE BEFORE FILTERING.



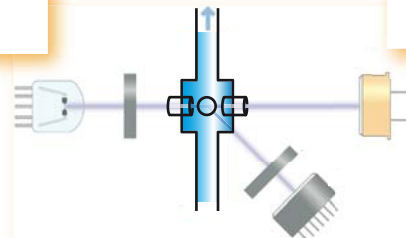
PATENTED CLOGGING-FREE FLOW CELL



UV DOUBLE WAVELENGTH ABSORBANCE PRINCIPLE



TURBIDITY BY LASER DIODE PRINCIPLE



UV FLUORESCENCE PRINCIPLE

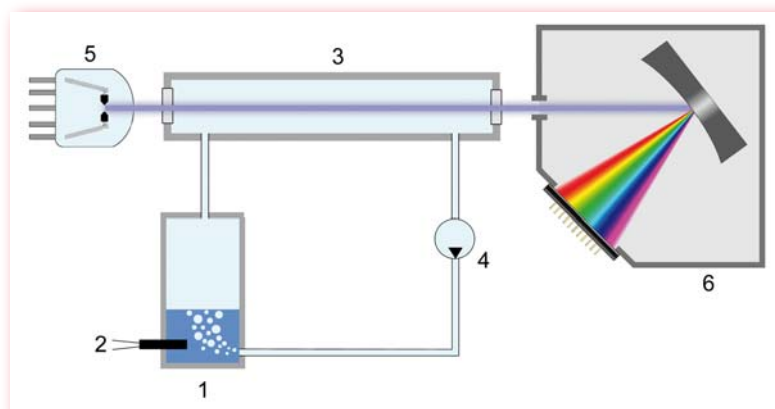
AMMONIA AND HYDROGEN SULPHIDE: A UNIQUE METHOD

THE AMMONIA AND HYDROGEN SULPHIDE MEASUREMENT ARE BASED ON THE UV ABSORPTION OF THE AMMONIA GAS OR HYDROGEN SULPHIDE GAS AFTER A STRIPPING PHASE.

CONSEQUENTLY, THE TURBIDITY OR COLOUR OF THE SAMPLE HAS ABSOLUTELY NO INFLUENCE AND MEASUREMENTS CAN EVEN BE CARRIED ON ACTIVATED SLUDGE.

THE AMMONIA GAS HAS A TYPICAL PERIODIC ABSORPTION SPECTRUM THAT IS ANALYSED USING A FAST FOURIER TRANSFORM (FFT) THAT BRINGS AN EXCEPTIONAL SELECTIVITY. NO INTERFERENCE HAS NEVER BEEN REPORTED AFTER YEARS OF OPERATION ON MANY DIFFERENT APPLICATIONS.

A SMALL QUANTITY OF NaOH SOLUTION IS ADDED TO THE SAMPLE FOR AMMONIA, OR HYDROCHLORIC ACID FOR HYDROGEN SULPHIDE.



1 : stripping pot, 2 : temperature probe, 3 : gas flow cell,
4 : gas pump, 5 : xenon flash lamp, 6 : spectrograph

LOW MAINTENANCE AND HIGH RELIABILITY

THE DESIGN HAS BEEN SPECIALLY ORIENTED FOR LOW MAINTENANCE AND HIGH RELIABILITY ON THE MEASUREMENTS.

TO AVOID DEPOSITS ON THE OPTICAL WINDOWS AND TUBING, THE UV400 HAS A BUILT-IN AUTOMATIC CLEANING SYSTEM THAT INJECTS A 5% SULPHURIC SOLUTION NORMALLY ONCE DAY. AN AUTO-ZERO IS PERFORMED AT THE SAME TIME TO AVOID ANY DRIFT OF THE MEASUREMENT. THE PATENTED FLOW-CELL LIMIT THE RISK OF CLOGGING INSIDE THE FLOW CELL.

THE LEVEL OF THE CLEANING SOLUTION AS WELL AS REAGENTS FOR PO₄, NH₄ OR H₂S CAN BE CONTROLLED AT DISTANCE TO PLAN THE REFILL. AN ACID RESISTANT PROTECTION FILM ON THE SCREEN ASSUME A EFFICIENT LONG TERM PROTECTION OF THE ANALYSER. FOR DEMANDING APPLICATION, AN IP65 ENCLOSURE CAN BE PROVIDED AS AN OPTION.

ADVANTAGES

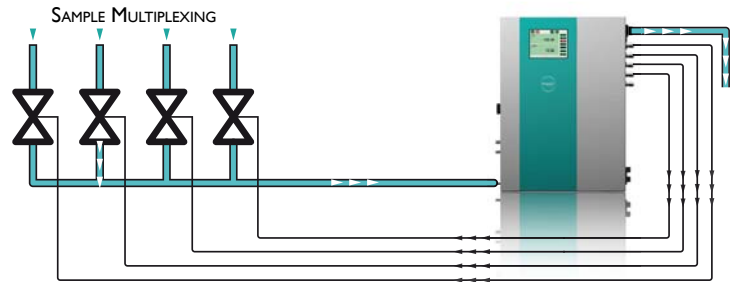
UV400

MULTIPLEXING SYSTEM

WHEN DIFFERENT STREAMS NEED TO BE ANALYSED, FOR EXAMPLE INLET AND OUTLET OF A PLANT, A OPTIONAL MULTIPLEXING SYSTEM DELIVERS RELAY CONTACTS TO CONTROL EXTERNAL ELECTRIC-VALVES OR EXTERNAL PUMPS.

UP TO 6 DIFFERENT STREAMS CAN BE SELECTED.

THE MEASURING CHANNELS CAN BE EITHER DUPLICATED (EACH ONE HAVING ITS OWN 4-20mA OUTPUT OR MODBUS REGISTER), OR MEASURED SEQUENTIALLY TO FIT WITH THE MAXIMUM OF 16 MEASURING CHANNELS (A MODBUS REGISTER INDICATES WHICH STREAM IS CURRENTLY BEING MEASURED).

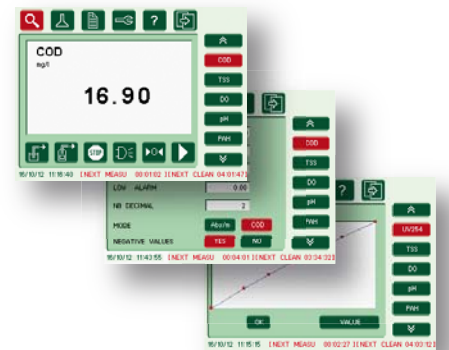


USER-FRIENDLY INTERFACE

THE COLOUR TOUCH SCREEN AND INTUITIVE INTERFACE AVAILABLE IN 8 DIFFERENT LANGUAGES (CHINESE, ENGLISH, FRENCH, GERMAN, ITALIAN, PORTUGUESE, SPANISH, TURKISH) MAKES VERY EASY TO TEST OR CONFIGURE THE ANALYSER.

MANY TEST FUNCTIONS ALLOW TO TEST AND TROUBLESHOOT EACH ELEMENT OF THE ANALYSERS (LIGHT SIGNAL, PUMPS, SOLENOID VALVES, ETC...) TO SETUP QUICKLY A MAINTENANCE DIAGNOSTIC.

THE COMPLETE CONFIGURATION OF THE ANALYSER CAN BE STORE ON A USB KEY AND RESTORED WHEN NECESSARY.



SAMPLING SYSTEM

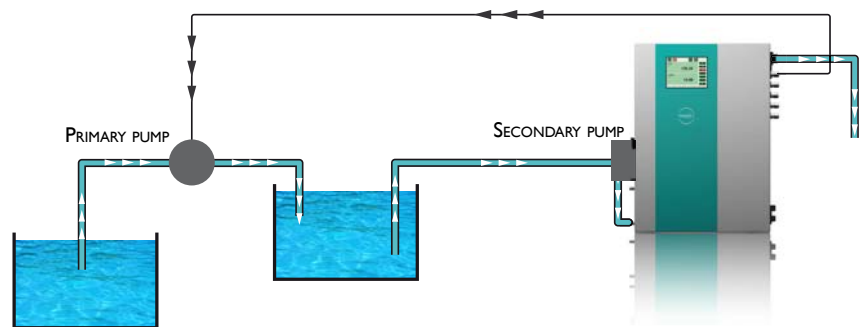
THE UV400 CAN ADAPT TO MANY DIFFERENT KIND OF SAMPLING DEPENDING OF THE APPLICATION: SURFACE WATER, DRINKING WATER, PROCESS WATER OR WASTEWATER.

IF THE WATER IS ALREADY PRESSURIZED, THE SAMPLE CAN BE ADMITTED DIRECTLY INSIDE THE ANALYSER WITH A MAXIMAL PRESSURE OF 4 BARS. OTHERWISE AN OPTIONAL BUILT-IN PERISTALTIC PUMP, SYNCHRONISED WITH THE MEASUREMENT TO EXTEND THE TUBING LIFE TIME, ALLOWS TO TAKE THE SAMPLE DIRECTLY FROM A TANK LOCATED UP TO 6 METERS BELOW THE ANALYSER.

FOR DEMANDING APPLICATIONS WITH LONG DISTANCES, ANOTHER PERISTALTIC PUMP IN A SEPARATE ENCLOSURE IS PROPOSED AS AN OPTION.

FOR SOME APPLICATIONS ON RIVER WATER OR WASTEWATER WHERE TWO SAMPLING PUMPS ARE NECESSARY, THE UV400 DELIVER A RELAY CONTACT TO SYNCHRONISE THE PRIMARY PUMP. THE DELAY AND RUNNING TIME OF EACH PUMP CAN BE ADJUSTED EASILY IN THE PARAMETERS MENU OF THE ANALYSER.

IN CASE FILTERS ARE USED IN THE SAMPLING SYSTEM, THE UV400 IS ALSO ABLE TO PROVIDE A RELAY CONTACT TO CLEAN THE FILTER SYNCHRONISED WITH THE MEASUREMENTS.



COMMUNICATION

4-20 mA OUTPUT MODULES CAN BE PLUGGED ON THE MAIN BOARD FOR EACH MEASURING CHANNEL, IN THE LIMIT OF 12 MODULES.

THE RS232 PORT SUPPORT THE MODBUS PROTOCOL TO TRANSMIT EACH MEASURING CHANNEL VALUE TO A SCADA SYSTEM. ADDITIONAL PARAMETERS ARE AVAILABLE LIKE STATUS CODE, ERROR CODE, CALIBRATION VALUES AND PUMPS RUN TIME.

THE NEW WEB INTERFACE MAKES POSSIBLE TO DRIVE REMOTELY THE ANALYSER FROM ANY COMPUTER, TABLET OR I-PHONE WITH A WEB BROWSER. FOR THIS, AN OPTIONAL WI-FI OR ETHERNET MODULE IS ADDED INSIDE THE ANALYSER TO CONNECT IT TO AN EXISTING NETWORK WITH AN INTERNET GATEWAY.

A USB PORT ENABLE TO DOWNLOAD ON ANY USB KEY THE LAST 5000 RECORDED MEASUREMENTS AS WELL AS A DIAGNOSTIC FILE CONTAINING THE CONFIGURATION AND USEFUL INFORMATION FOR REMOTE TROUBLESHOOTING.

THE RECORDED MEASUREMENTS FILE CAN BE IMPORTED TO EXCEL FOR GRAPHS OR OTHER TREATMENTS.

THE SOFTWARE OF THE ANALYSER CAN BE UPGRADED BY CONNECTING A USB KEY.



TECHNICAL DOCUMENTATION

UV400



PARAMETERS	STANDARD RANGE**	TYPICAL REPEATABILITY
UV254 (COD BY CORRELATION)	0 - 200 ABS/M (0-100 MG/L COD ON RIVER WATER) 0 - 600 ABS/M 0 - 2000 ABS/M (0 - 20,000 MG/L COD ON MUNICIPAL WASTE WATER)	+/- 0.05 ABS/M * +/- 0.15 ABS/M * +/- 0.5 ABS/M *
AMMONIA	0 - 100 MG/L NH4	+/- 0.2 MG/L *
NITRATE	0 - 100 MG/L NO3	+/- 0.1 MG/L NO3 *
COLOUR	0 - 100 PT-CO 0 - 1000 PT-CO	+/- 1 PT-CO * +/- 2 PT-CO *
AROMATICS HYDROCARBONS (PAH)	0 - 10 MG/L C6H6	+/- 0.01 MG/L C6H6 *
CHLOROPHYLL A	0 - 100 µG/L CHLA	+/- 1 µG/L CHLA *
PHOSPHATE	0 - 2 MG/L P-PO4 0 - 20 MG/L P-PO4	+/- 0.01 MG/L P-PO4 * +/- 0.1 MG/L P-PO4 *
HYDROGEN SULPHIDE	0 - 20 MG/L H2S	+/- 1 MG/L H2S *
TURBIDITY (TSS BY CORRELATION)	0 - 100 NTU 0 - 1000 NTU	+/- 0.1 NTU * +/- 1 NTU *
pH	0 - 14	+/- 0.01 pH
ORP	+/- 2000 mV	+/- 1 mV
DISSOLVED OXYGEN	0 - 25 MG/L O2	+/- 0.1 MG/L O2
CONDUCTIVITY	0 - 2000 µS	+/- 1 µS
EXTERNAL TURBIDITY (TSS BY CORRELATION)	0 - 1500 MG/L TSS 0 - 30,000 MG/L TSS	+/- 1% OF READING OR +/- 2 MG/L TSS +/- 1% OF READING OR +/- 2 MG/L TSS
TEMPERATURE	0 - 80 °C	+/- 0.1 °C

* : FOR LOW VALUES OR +/-5% OF THE READING OVER THE RANGE, WHICHEVER IS GREATER

** : OTHER RANGES ON REQUEST

NOTE: THE TYPICAL REPEATABILITY MAY BE AFFECTED BY MEASURING CONDITIONS AS HIGH TURBIDITY OR INTERFERENCES

SPECIFICATIONS

UV400

SAMPLE FLOW	RECOMMENDED: 0 - 5 L/MIN 0 - 0.5 L/MIN FOR NH4 OR H2S
SAMPLE PRESSURE	0 - 4 BAR (0 - 1 BAR WITH SAMPLING PERISTALTIC PUMP) 0 - 0.5 BAR FOR NH4 OR H2S
SAMPLE TEMPERATURE	0 - 80 °C 0 - 30 °C FOR NH4 OR H2S
WET PARTS MATERIALS	QUARTZ, POLYPROPYLENE, POLYETHYLENE, FPM (VITON), PMMA (+ PHARMED AND GLASS FOR NH4 OR H2S)
MEASURING TIME	5 SEC (EXCEPT PO4, NH4, H2S : 3 MIN)
MEASUREMENT INTERVAL	1 MIN TO 720 MIN (EXCEPT PO4, NH4, H2S : 4 MIN) PHYSICO-CHEMICAL PARAMETERS MAY BE CONTINUOUS
MEMORY	5000 LINES OF MEASUREMENTS (UP TO 16 CHANNELS) WITH DATE AND TIME
CONSUMPTION	CLEANING SOLUTION (5% SULFURIC ACID): 220 ML/DAY REAGENT FOR PO4: 2 ML PER MEASUREMENT NAOH 10% FOR NH4: 2 ML PER MEASUREMENT HCL 10% FOR H2S: 2 ML PER MEASUREMENT
MAINTENANCE INTERVAL	RECOMMENDED: 6 MONTHS TO 1 YEAR (EXCEPT FOR REFILLING)
POWER SUPPLY	90 - 264 VAC 50/60 HZ 40 VA - 12V DC 3A MAXI (EXCEPT FOR NH4 OR H2S)
SCREEN	COLOUR TFT LCD 320X240 PIXELS WITH LED BACKLIGHT
COMMUNICATION	RS232, MODBUS OR HTTP/WEB INTERFACE (COMPATIBLE WITH WINDOWS 7 WITH INTERNET EXPLORER VERSION 9, NEXUS 7 TABLET UNDER ANDROID WITH OPERA VERSION 12.10, APPLE I-PHONE 4S WITH SAFARI) RS485 FOR EXTERNAL PROBES (DO, TSS) USB WI-FI (IEEE802.11B) OPTIONAL ETHERNET (IEEE802.3) OPTIONAL
CERTIFICATIONS	CE, EN 61010-1, EN 61326
ENCLOSURE	STEEL WITH EPOXY COATING, IP54 (IP65 AS OPTION), WALL MOUNTING BRACKETS
DIMENSIONS	520 X 390 X 220 MM
WEIGHT	20 TO 30 KG DEPENDING ON THE CONFIGURATION