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OPENPATH INSTRUMENTS









OpenPath Instruments

<p>OP-UV2-LED3-200R</p>	<p>OPEN PATH REMOTE SENSING INSTRUMENT LED</p> <ul style="list-style-type: none"> > Trace gas measurements along open pathway between 0.2 km up to 3 km (long path DOAS method) > Trace gases: Nitrogen dioxide (NO₂), Sulphur dioxide (SO₂), Ozone (O₃), Formaldehyde (HCHO), Nitrous acid (HONO), Bromine Monoxide (BrO) > Time resolution up to 2 seconds <p>TELESCOPE:</p> <p>Focal length 800 mm • Diameter 200 mm • UV/VIS mirrors (aluminium coated) • Closed telescope (IP64) with front quartz glass window for UV application • Automatic light path adjustment on retro reflector • Light transmission with optical quartz glass fibre bundles • Length of fibre bundles 5 m • Automatic reference measurement • Optical camera with zoom objective for monitoring • Integrated telescope heating • Telescope unit size (approximately): 110x40x36 cm³</p> <p>CONTROLLER UNIT WITH LED LIGHT SOURCE AND ANALYZER (SEPERATE):</p> <p>Light source: 3 high-power UV LEDs @ 280 nm, 325 nm and 370 nm • Light merged with a fibre bundle • Controller • UV Spectrometer (270 - 380 nm) with back-thinned detector for high UV sensitivity • Temperature stabilised (better 0.1 °C) • Analyser unit size: 40 x 40 x 13.2 cm³ • Data analysis software for gases providing average concentrations along the light path.</p>	<p>GENERAL: Open path instruments measure trace gases along a measurement path of several 100 meters to few kilometres. The built in light source enables non-stop 24h measurements. The system is self-aligning for constant high precision and light throughput. We recommend to use multiple retro reflector arrays for longer light paths above 1 km or if, on average, the viewing distance (and loss of light due to scattering) is decreased by fog or dust. The system consists of an IP64 rated telescope and an analyser unit, the latter is meant to be set up indoors sheltered from weather and direct sunlight and requires a control PC/Notebook which is not included and needs to be ordered separately. The two components are connected by 5m long cables.</p> <p>This version uses several high power LEDs as light source.</p>	<p>REQUIRED ARTICLES: Open Path Retro Reflector Array [OP-RETRO20] • External power supply [ACC-PWR-11A] • Measurement computer [PC-NBHP]</p> <p>RECOMMENDED ARTICLES: Open Path azimuth & elevation extension [OP-UV2-LED3-200REA] • Open Path tripod [ACC-OP-TP] • Open Path tripod floor mount [ACC-OP-TPFM]</p>	
<p>OP-UV2-LDLS-200R</p>	<p>OPEN PATH REMOTE SENSING INSTRUMENT LDLS</p> <ul style="list-style-type: none"> > Trace gas measurements along open pathway between 0.2 km up to 3 km (long path DOAS method) > Trace gases: Nitrogen dioxide (NO₂), Sulphur dioxide (SO₂), Ozone (O₃), Formaldehyde (HCHO), Nitrous acid (HONO), Bromine Monoxide (BrO) > Time resolution up to 2 seconds <p>TELESCOPE:</p> <p>Focal length 800 mm • Diameter 200 mm • UV/VIS mirrors (aluminium coated) • Closed telescope (IP64) with front quartz glass window for UV application • Automatic light path adjustment on retro reflector • Light transmission with optical quartz glass fibre bundles • Length of fibre bundles 5 m • Automatic reference measurement • Optical camera with zoom objective for monitoring • Integrated telescope heating • Telescope unit size (approximately): 110x40x36 cm³</p> <p>CONTROLLER UNIT AND ANALYZER (SEPERATE):</p> <p>Controller • UV Spectrometer (270 - 380 nm) with back-thinned detector for high UV sensitivity • Temperature stabilised (better 0.1 °C) • Analyser unit size (approximately): 40x44x13 cm³ • Data analysis software for gases providing average concentrations along the light path</p> <p>LDLS LIGHTSOURCE:</p> <ul style="list-style-type: none"> > High power broad band LDLS (laser driven light source) ISTEQ XWS-30 (250 - 700 nm) > Light coupling to fibre with optical UV lens, adjustable • Motorised focal length adjustment for optimal light coupling and chromatic wavelength filtering • Motorised filter wheel with pre-selected filters according to the measurement wavelength range • Integrated shutter • Integrated Controller • for 24V 	<p>GENERAL: Open path instruments measure trace gases along a measurement path of several 100 meters to few kilometres. The built in light source enables non-stop 24h measurements. The system is self-aligning for constant high precision and light throughput. We recommend to use multiple retro reflector arrays for longer light paths above 1 km or if, on average, the viewing distance (and loss of light due to scattering) is decreased by fog or dust. The system consists of an IP64 rated telescope and an analyser unit, the latter is meant to be set up indoors sheltered from weather and direct sunlight and requires a control PC/Notebook which is not included and needs to be ordered separately. The two components are connected by 5m long cables.</p> <p>This version uses a laser driven xenon light sources with extremely high luminosity in the UV/range.</p>	<p>REQUIRED ARTICLES: Open Path Retro Reflector Array [OP-RETRO20] • External power supply [ACC-PWR-11A] • External power supply [ACC-PWR24-9A] • Measurement computer [PC-NBHP]</p> <p>RECOMMENDED ARTICLES: Open Path azimuth & elevation extension [OP-UV2-LED3-200REA] • Open Path tripod [ACC-OP-TP] • Open Path tripod floor mount [ACC-OP-TPFM]</p>	










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					LED	LDLS
OP-UV2-LED3-200REA	<p>OPEN PATH AZIMUTH & ELEVATION EXTENSION</p> <p>Extension of OP-telescope for motorised elevation and azimuth rotation</p> <ul style="list-style-type: none"> > Azimuth rotation of telescope by -130° to 130° > Elevation of telescope between approximately 0° - 30° > Motors protected by a cover to protect mechanics from dust and rain > Accuracy of elevation and azimuth rotation for light paths up to 4 km > Motors controlled by OP system 	This extension allow to realise several Open Path measurement paths to different reflectors. Further, in contrast to the basic Open Path version, the extension allows an easy and flexible set up of the telescope since the fine alignment on the retro reflector(s) can be done automatically using the telescope motors.			•	•
OP-RETRO20	<p>OPEN PATH RETRO REFLEKTOR ARRAY</p> <ul style="list-style-type: none"> > Each array with 20 x 1 inch fused silica corner cube reflectors > Material fused silica suitable for UV (JG51) > In waterproof housing (IP67) > With desiccant and changeable reservoir 	Retro reflector are used to reflect the light of the Open Path system back to the telescope. recommended are min. two arrays for each light path up to 1 km. More Retro reflector arrays increase the reflected light and allow shorter measurement times. Measurements in the deep UV require more reflectors than in the visible spectral range.			•	•
OP-LDLS-UV	<p>OPEN PATH LIGHT SOURCE LDLS</p> <ul style="list-style-type: none"> > Light source: high power broad band LDLS (laser driven light source) ISTEQ XWS-30 (250 nm - 700 nm) > Light coupling to fibre with optical UV lense, adjustable > Motorised focal length adjustment for optimal light coupling and chromatic wavelength filtering > Motorised filter wheel with pre-selected filters according to the measurement wavelength range > Integrated shutter > With 24 V power input > Lamp lifetime 10.000 h > Laser and unit lifetime - 25.000 h to 50.000 h 	Ultra high intensity in UV for short and fast exposure times. An IR laser powers a xenon arc lamp with extra high radiation density and high spectral stability.	External Power Supply - 110 to 220 V - 24 V [ACC-PWR24-9A]			•











MEASUREMENT COMPUTERS








PC-DE	<p>MEASUREMENT COMPUTER - DESKTOP PC</p> <ul style="list-style-type: none"> > Windows 10 installed and optimised for Airyx instrument measurement applications > Installation and configuration of measurement and (if included) evaluation software packages. 	If a measurement computer is ordered with a Airyx instrument, the required measurement software (e.g. SKY-SOFT-*) will be installed and preconfigured on the computer at Airyx GmbH. Same applies if software extensions (e.g. SkySpec evaluation package SKY-EVAL-*) are ordered • The system will be pre-configured as a plug-and-play setup.			•	•
PC-NB	<p>MEASUREMENT COMPUTER - NOTEBOOK</p> <ul style="list-style-type: none"> > Windows 10 installed and optimised for Airyx instrument measurement applications > Installation and configuration of measurement and (if included) evaluation software packages. 	If a measurement computer is ordered with a Airyx instrument, the required measurement software (e.g. SKY-SOFT-*) will be installed and preconfigured on the computer at Airyx GmbH. Same applies if software extensions (e.g. SkySpec evaluation package SKY-EVAL-*) are ordered • The system will be pre-configured as a plug-and-play setup.			•	•
PC-NBHP	<p>MEASUREMENT COMPUTER - NOTEBOOK - HIGH PERFORMANCE</p> <ul style="list-style-type: none"> > Windows 10 installed and optimised for Airyx instrument measurement applications > Installation and configuration of measurement and (if included) evaluation software packages. 	If a measurement computer is ordered with an Airyx instrument, the required measurement software (e.g. SKY-SOFT-*) will be installed and preconfigured on the computer at Airyx GmbH. Same applies if a software extension (e.g. SKY-EVAL-*) is ordered • the system will be pre-configured as a plug-and-play setup • In the "HIGH PERFORMANCE" configuration a fast (i7 processor with 16GB RAM will be used); recommended for Open Path systems and SkySpec applications with calculation intensive data processing (going beyond the Airyx standard software packages)			•	•

Item#	Description	Comments	Related articles	Image	LED	LDLS
EXTENSIONS AND ACCESSORIES						
ACC-PWR-11A	EXTERNAL POWER SUPPLY - 110 TO 220 V - 12 V / 11.5 A IP68 connector configured for Airyx instruments with higher power consumption.	Power supply for Airyx instruments with IP68 connector configured for Airyx instruments • Input: 110 V to 220 V • Output: regulated 12 V / 11.5 A			•	•
ACC-PWR24-9A	EXTERNAL POWER SUPPLY - 110 TO 220 V - 24 V / 9.2 A for LDLS light source	Power supply for Airyx LDLS light source • Input: 110 V to 220 V • Output: regulated 24 V / 9.2 A			•	•
ACC-EXT-HG	HANDHELD HG (MERCURY) CALIBRATION-LAMP > with SMA optical fibre connector > Battery powered (4 x AA cells)	For manual acquisition of mercury emission line spectra with Airyx spectrometer systems • Useful for spectrometer wavelength calibration.			•	•
ACC-USB2	USB-B TO USB-A CABLE IP68 - 2 m	2 m IP68 connector on the instrument side. Only with these Usb cables the Usb connection on the IP65 Airyx instrument boxes are air and water tight. This is important to avoid humidity in the instrument.			•	•
ACC-USB3	USB-B TO USB-A CABLE IP68 - 3 m	3 m IP68 connector on the instrument side. Only with these Usb cables the Usb connection on the IP65 Airyx instrument boxes are air and water tight. This is important to avoid humidity in the instrument.			•	•
ACC-USB5	USB-B TO USB-A CABLE IP68 - 5 m	5 m IP68 connector on the instrument side. Only with these Usb cables the Usb connection on the IP65 Airyx instrument boxes are air and water tight. This is important to avoid humidity in the instrument.			•	•
ACC-PWR3	12 V POWER CABLE EXTENSION IP68 - 3 m	3 m extension 12 V connection between power supply and instrument • PUR outdoor cable with IP68 connectors on both sides • Can also be used to connect LiPo battery packs [ACC-BATPACK].			•	•
ACC-PWR5	12 V POWER CABLE EXTENSION IP68 - 5 m	5 m extension 12 V connection between power supply and instrument • PUR outdoor cable with IP68 connectors on both sides • Can also be used to connect LiPo battery packs [ACC-BATPACK].			•	•

Product overview of Airyx GmbH

Item#	Description	Comments	Related articles	Image	OpenPath (OP) Subtypes	
					LED	LDLS
ACC-PWRX	12 V POWER CABLE EXTENSION IP68 - CUSTOM LENGTH Price: 30 € + 5 €/m (Example price for 10 m)	Custom length extension 12 V connection between power supply and instrument • PUR outdoor cable with IP68 connectors on both sides. Flexible length, 30€ + 5€/M • Can also be used to connect LiPo battery packs [ACC-BATPACK].			•	•
ACC-PWR1.5BE	12 V POWER CABLE IP68- 1.5 m - BLANK END	1.5 m connection between instrument and arbitrary 12 V power supply • PUR outdoor cable with IP68 connector on the instrument side • Other end with blank wires for flexible assembly.			•	•
ACC-PWR3BE	12 V POWER CABLE IP68 - 3 M - BLANK END	3 M connection between instrument and arbitrary 12 V power supply • PUR outdoor cable with IP68 connector on the instrument side • Other end with blank wires for flexible assembly.			•	•
ACC-LAN3	LAN DATA CABLE IP68 - 3 M	3 m LAN cable to connect Airyx instruments to an external PC • PUR outdoor cable with IP68 connector on the instrument side.			•	•
ACC-LANX	LAN DATA CABLE IP68 - CUSTOM LENGTH PUR Outdoor cable CAT 7 Price: 40€ + 7€/m (example price for 10 m)	Custom length LAN cable to connect Airyx instruments to an external PC • PUR outdoor cable with IP68 connector on the instrument side • Flexible length, 40 € + 7 €/m			•	•
ACC-PWR3CAR	12V POWER CABLE FOR CAR CIGARETTE LIGHTER IP68 - 3 m	3 m power cable for connection of Airyx instruments to a 12 V cigarette lighter in a car • connectable additional 12 V power source (battery) • PUR outdoor cable • IP68 connector on instrument side.			•	•
ACC-BAT-50Ah	LIPO BATTERY 12 V/50.4 Ah IP67 - PELICASE > Included: 5 A charger > Included 1.5 m power cable for Airyx instrument connection > 3.37 kg > Rugged Peli 1150 case (24 x 19 x 11 cm ³)	Battery pack for instrument power supply in remote areas • IP67 • 3.37 kg • Allow -15 h of ICAD operation • 3 IP67 power connectors			•	•
ACC-OP-TP	OPEN PATH TRIPOD for setting up Open Path telescopes on flat surface. Stability for high weight. Including OPEN PATH TRIPOD FLOOR MOUNT [OP-TPFM]	This tripod can carry any Open Path telescope configuration. Floor mount [OP-TPFM] required for application of hard surfaces (e.g., asphalt, metal).	OPEN PATH TRIPOD FLOOR MOUNT [OP-TPFM]		•	•
ACC-OP-TPFM	OPEN PATH TRIPOD FLOOR MOUNT required for setup of tripod on hard surfaces (e.g., asphalt, metal).				•	•

Item#	Description	Comments	Related articles	Image	OpenPath (OP) Subtypes	
					LED	LDLS
MAINTENANCE EQUIPMENT AND SPARE PARTS						
SPARE-TSENS-SPD	DIGITAL TEMPERATURE AND HUMIDITY SENSOR FOR SPECTROMETER CONTROL	1 x digital sensor to control spectrometer temperature and monitor humidity • On micro printed circuit board with 30 cm connection ribbon cable • Humidity monitoring to avoid water condensation on sensitive spectrometer • I2C digital address 0 • Direct connection to internal Airyx controller board.			•	•
SPARE-TSENS-DX	DIGITAL TEMPERATURE SENSOR FOR MONITORING > Digital sensor address selectable = 0, 1, 2, 3	1 x digital ADT temperature sensor for monitoring. Internal used in Airyx instruments • On micro printed circuit board with 30 cm connection ribbon cable • Digital I2C-adress is selectable (0, 1, 2 or 3) • Also used in older instruments (instead of [SPARE-TSENS-SPD]) to control spectrometer temperature • Direct connection to internal Airyx controller board.			•	•
SPARE-CGLAND	WATERPROOF M16 CABLE GLAND WITH SEALING, UV	Waterproof M16 power and data cable gland with sealing (large size). For a water and air tight cable feedthrough. For outdoor use (UV resistant).			•	•
SPARE-TGLAND	WATERPROOF M12 CABLE GLAND WITH SEALING, UV	Waterproof M12 temperature sensor cable gland with sealing (small size). For a water and air tight cable feedthrough. For outdoor use (UV resistant).			•	•
OP-SPARE-SET-LED	SPARE PART SET WITH LEDS FOR OP-UV2-LED3-200R > 3 high-power UV LEDs @ 280nm, 325nm and 370nm > LED lifetime >15.000h > Mounted on electronic board with connection cable				•	
OP-SPARE-SET-LDLS	SPARE PART SET WITH SPARE LDLS LIGHT BULB > Spare light bulb for replacement in open path light source LDLS > lamp lifetime 10.000h		COMPATIBLE WITH: OPEN PATH REMOTE SENSING INSTRUMENT LDLS [OP-UV2-LDLS-200R] or OPEN PATH LIGHT SOURCE LDLS [OP-LDLS-UV]		•	
SPARE-PELTIER-V2	PELTIER COOLER AIRYX	Peltier cooler in Airyx instruments with cooling function. Peltier regulate the heating / cooling of the instrument between the heat sinks. Silicon sealed version			•	•
SPARE-FAN80V3	HEAT EXCHANGER FAN - 80 MM Long life and high power	Fan fitting to Airyx temperature stabilisation heat exchangers.			•	•
SPARE-FANFIL80	FAN FILTER - 80 MM - WASHABLE	Fan filter fitting to Airyx temperature stabilisation heat exchangers.			•	•
SPARE-SILICA	SILICA DESICCANT - 0.9 KG (1L)	0.9 kg silica desiccant with colour indicator (orange -> greenish) to be used in Airyx instruments and zero air filter systems (ICAD instruments).			•	•

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					LED	LDLS
SERVICES						
IC-SERV-OP-LED	POST WARRANTY MAINTENANCE SERVICE EXTENSION - OPEN PATH REMOTE SENSING INSTRUMENT LED Optional extension package • Starts after expiring of warranty • Price per year and OP system • Consumption parts like lamps, LEDs, filters and pumps not included.	This is analogue to a longer warranty for this instrument. This does not include shipping costs if required. Required to be ordered with a new instrument.			•	
IC-SERV-OP-LDLS	POST WARRANTY MAINTENANCE SERVICE EXTENSION - OPEN PATH REMOTE SENSING INSTRUMENT LDLS Optional extension package • Starts after expiring of warranty • Price per year and OP system • Consumption parts like lamps, LEDs, filters and pumps not included.	This is analogue to a longer warranty for this instrument. This does not include shipping costs if required. Required to be ordered with a new instrument.				•
OP-SERV-INSTL	ONLINE INSTALLATION AND OPERATION SUPPORT - OPEN PATH Open Path online installation and operation support via remote desktop (not on site) for 1 year. Price per instrument.				•	•
RENTAL / TRAINING / MEASUREMENT SERVICE						
	Airyx provide a large range of Measurement services, instrument rental and training. Please contact Airyx for more details.				•	•
SHIPPING / PACKING CUSTOMS (REGULAR)						
SHIP-D-54	SHIPPING TO GERMANY - SIZE 4	> 40 kg, large size			•	•
SHIP-EU-54	SHIPPING TO EU COUNTRIES - SIZE 4	> 40 kg, large Size EU countries excl. Germany			•	•
SHIP-W1-54	SHIPPING TO WORLD 1 DISTANCE COUNTRIES - SIZE 4	> 40 kg, large size incl. export customs, Europe excl. EU			•	•
SHIP-W2-54	SHIPPING TO WORLD 2 DISTANCE COUNTRIES - SIZE 4	> 40 kg, large size incl. export customs, non-Europe countries			•	•