LAS ASD LRA ACD

Technical documentation

ULT 160.1

Version 002

air quality

Contents

Annexes:

- Drawing ULT 160.1
- Interface plan SUB D9 & control elements

Description of Product Series

The ULT 160.1 product range is suited to collecting and filtering contaminants and impurities in the form of dusts and gases. There are suitable multi-level filtering systems for every possible industrial application and the most diverse compositions of harmful or unwanted substances.

The contaminants and impurities generated during the customer's process are collected directly from the point of origin via the collection elements and filtered by the ULT 160.1 devices. High precipitation rates are achieved thanks to the targeted combination of the available single filters.

The underlying filter technology uses the principles of particle separation for dust and the principle of adsorption for gaseous substances.
Thanks to the high degree of cleaning, the filtered clean gas can then be returned to the working area (recirculated-air operation). This avoids any loss of heat.

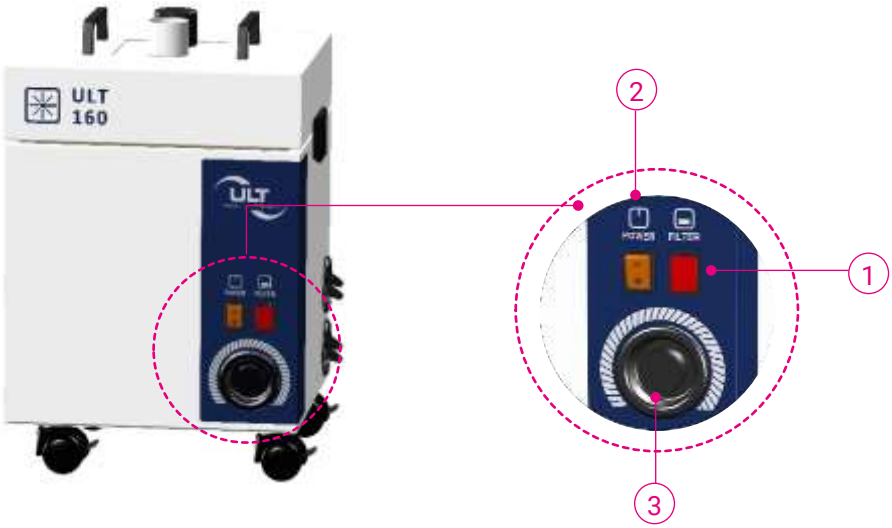
The ULT 160.1 devices can be perfectly combined with a diverse range of accessories. The right accessories can be selected according to the customer requirements.

Features ULT 160.1 extraction and filtration unit

- with an **exchangeable filter system** – low-contamination removal
- **low replacement filter** costs thanks to the multi-level filter system with competitively priced prefilter elements with increased absorption capabilities
- **very low energy consumption** thanks to energy-efficient electronics
- The electrical equipment provided enables **worldwide use**: operable at 230 V (MD.11) or at 100 - 120 V (MD.11b)
- all electrical components are available in UL and CE-compliant versions
- integrated sound insulation ensures that the device **operates extremely quietly**
- exhaust position freely selectable, right or left
- robust sheet steel housing with **powder coating** RAL7035 light gray
- device optionally **mobile** with wheels or **fixed** equipped with vibration dampers
- all interfaces on the back
- operating and display elements on the front

Equipment

Figure 1: Front operating panel



1 Loaded particle filter indicator

- When the particulate filter is saturated, the indicator lights up (red)

2 On/Off switch

3 Potentiometer

Direct control of the blower speed

Figure 1: Interfaces on the rear

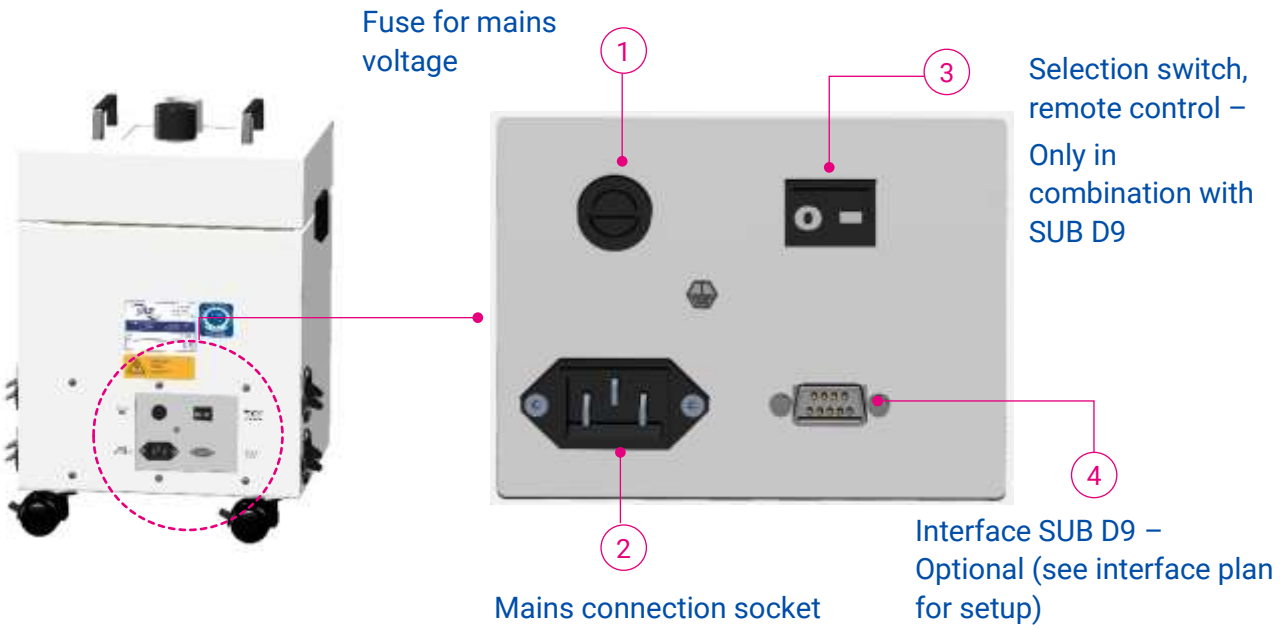


Figure 3: Suction versions

Standard configuration
2x intake nozzles Ø 50 mm

Option:
(Art.-No. 9-00035)
Console for extraction arm assembly
1x Alsident S50

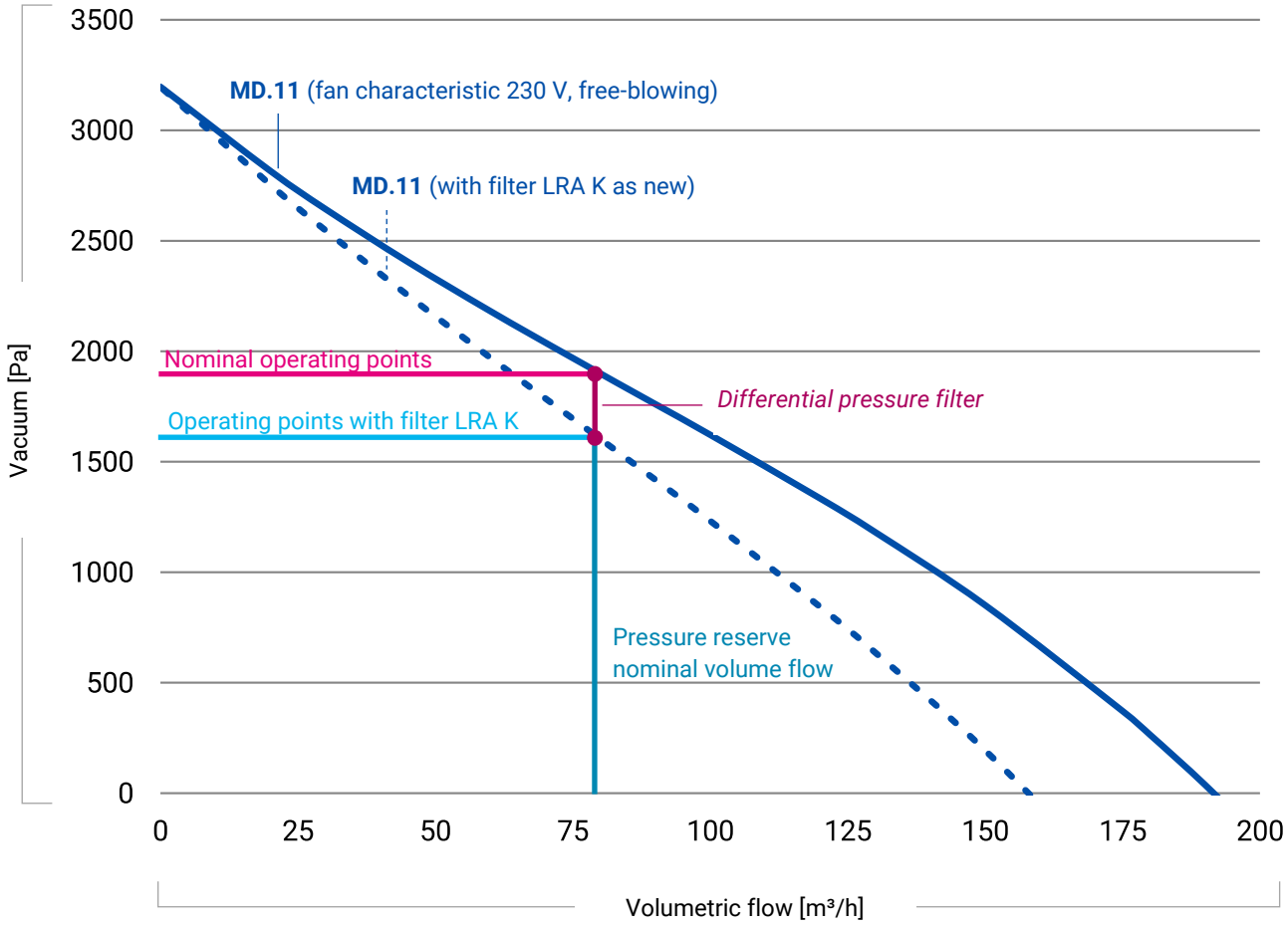
Technical Data ULT 160.1 MD.11

Table 1: Technical Data ULT 160.1 MD.11 (230V) / MD.11b (100-120V)

PARAMETER	UNIT	MD.11	MD.11b
Volumetric flow, max.	m³ / h	190	150 (100V) – 160 (120V)
Vacuum max.	Pa	3.200	2.500 (100V) – 2.700 (120V)
Rated operating point	m³/h @ Pa	80 @ 1.900	65 @ 1.300 (100V) 80 @ 1.400 (120V)
Protection rating	IP	54	54
Noise level (@ 50 - 100% air throughput)	dB(A)	49 - 54	49 - 54
Vacuum generator type		EC blower	EC blower
Rated voltage	VAC	1~230	1~100 - 120
Rated frequency	Hz	50/60	50/60
Motor rating	kW	0.15	0.15
Rated current	A	1.0	2.0
Air flow controller		yes	
Loaded particle filter indicator	optical	yes	
Interface SUB D9		optional	
Dimensions (Width x Depth x Height)	mm	405 x 355 x 545 (with wheels) / 492 (with feet)	
Weight (without filter)	kg	approx. 21	
Max. filter weight	kg	approx. 15	
Air intake versions:	Standard Option	2x ∅ 50 mm nozzles 1x console with Alsident® S50 flange	
	Connection options	Hose connection or optional Arm assembly on console	
Air outlet:		4 adjustable exhaust nozzles	
	position	On the bottom on both sides	
Mains power cable	m	3.0 (country-specific versions selectable)	

Characteristic Curves and Operating Modes MD.11 (230 V)

Figure 4: Characteristic Curves and Operating Modes MD.11(230 V)



Application ACD – Odor, Gas and Vapors

Areas of application

Adhesive Bonding | Pre-treating | Varnishing/Printing | Cleaning | Laminating | Casting

Functional principle

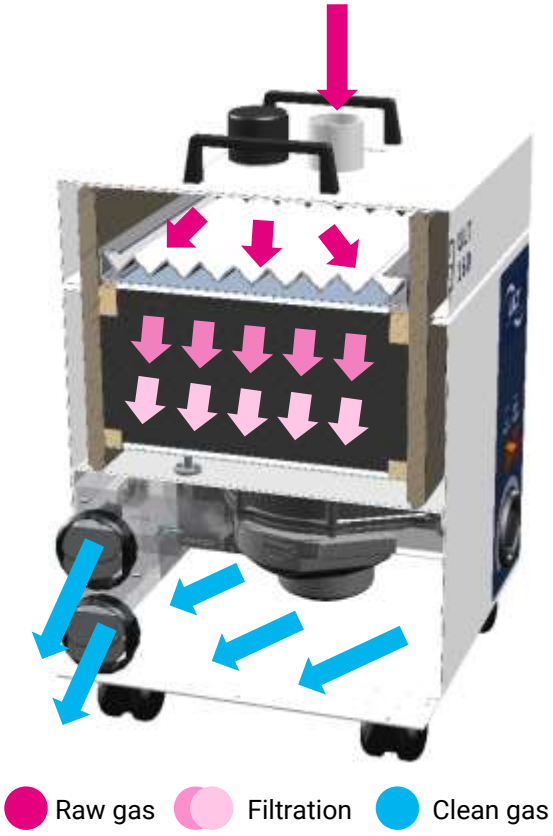
An EC blower generates a volumetric flow suitable for the application on the clean-gas side of the filter. The volumetric flow can be controlled individually and steplessly. In this way, the pollutant-laden raw gas is extracted in a reliable manner.

The coarse-dust particles are precipitated and held back in the first filter stage. The precipitation (adsorption) of gaseous and vaporous air contaminations takes place in the activated charcoal filter.

The filter effect of the activated carbon is based on adsorption, i.e. on the depositing of (gaseous) substances on the surface of the activated carbon. In general, no chemical changes of the adsorbed substance take place in physical adsorption. The filter construction is adapted to the nominal volumetric flow of the devices so that the contact period is sufficient for achieving a good adsorption response.

Thanks to the high degree of cleaning, the filtered clean gas can then be returned to the working area (recirculated-air operation). This avoids any loss of heat.

Recirculated air operation is not permitted for the suctioning and filtration of carcinogenic, mutagenic or reprotoxic substances.



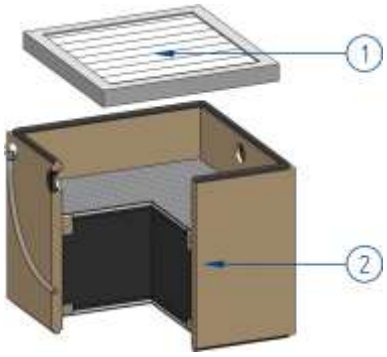
Device variants

The ULT 160.1 devices can be equipped with the following filter set-up for suctioning and filtering gaseous and vaporous air contaminations:

ACD 160.1 MD.11 A6

Table 2: ACD 160.1 MD.11 A6

Part number for complete device:		1-00002
Filter for organic gases:		Main filter module A6
(1)	Z-Line filter G4	
	Filter class:	ISO Coarse 90% according to ISO 16890
(2)	Adsorption filter cassette A6	
	Filter medium:	Activated carbon bed (6 kg)



Application ASD – dust and smoke

Areas of application

Grinding | Engraving | Polishing | Filling and dosing processes | Restoration work

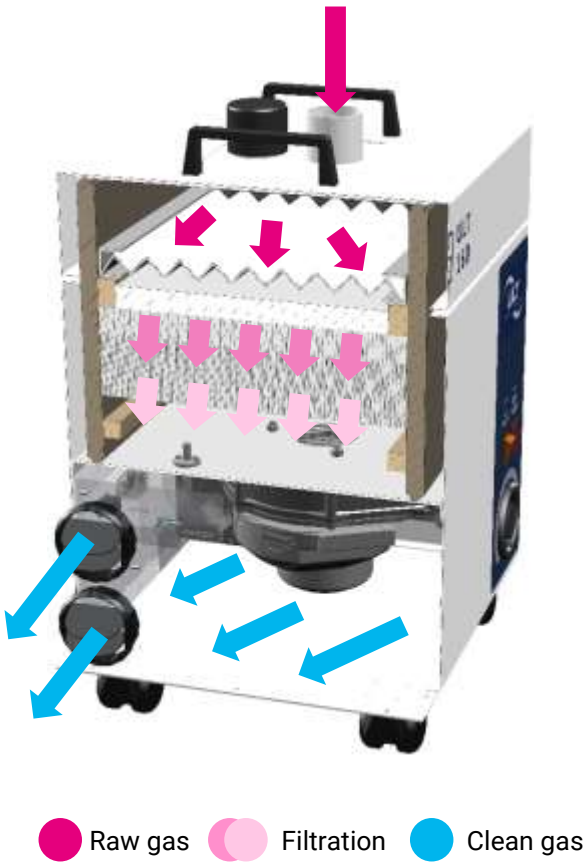
Functional principle

An EC blower generates a volumetric flow suitable for the application on the clean-gas side of the filter. The volumetric flow can be controlled individually and steplessly. In this way, the pollutant-laden raw gas is extracted in a reliable manner.

In production processes in which powder materials are processed or materials are sawed, milled or ground, dust contaminates the working area. In addition, mechanical processes can generate smoke by heating the processed materials. Dust and smoke are harmful to health and affect the quality of production processes. For this reason, these pollutants must be removed from the work area.

The filter set-up used is specially designed for this purpose. An upstream Z-Line filter retains coarse dust particles. The particles contained in the raw gas are precipitated in a multi-stage storage filter system. Thanks to their depth penetration, the filter mats used are particularly suitable for the precipitation of a wide spectrum of particles and for cooled smoke constituents.

The prefilter elements prevent premature clogging of the downstream H13 main filter element. Regularly changing the prefilter elements at shorter intervals significantly extends the functionality of the main filter.



Extremely fine suspended substances are held back by the High Efficiency Particulate Air filter H13 in the particle filter cassette H13. This guarantees a precipitation rate of 99.95%.

Thanks to the high degree of cleaning, the filtered clean gas can then be returned to the working area (recirculated-air operation). This avoids any loss of heat.

Recirculated air operation is not permitted for the suctioning and filtration of carcinogenic, mutagenic or reprotoxic substances.

Device variants

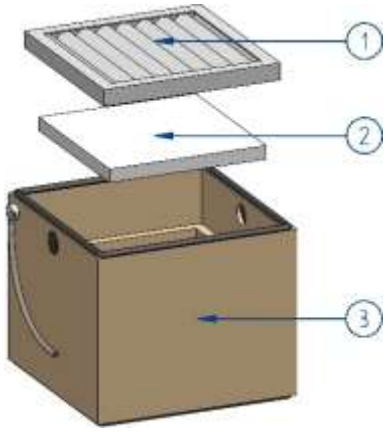
The ULT 160.1 devices can be equipped with the following filter set-up for suctioning and filtering dust and smoke air contaminations:

ASD 160.1 MD.11 H

An upstream Z-Line filter G4 retains most of the particles that accumulate. Due to its special folding, a large volume is provided for absorbing coarse dust. At the same time, a large filter surface enables the precipitation of the finest dusts even at high raw gas flow rates.

Table 3: ASD 160.1 MD.11 H

Part number for complete device:	1-00023
Filter set-up for dust and smoke:	Main filter module H
(1) Z-Line filter G4	
Filter class:	ISO Coarse 90% according to ISO 16890
(2) Filter mat M5	
Filter class:	ISO Coarse 85% according to ISO 16890
(3) Particle filter cassette H13	
Filter class:	H13 HEPA filter, suspended matter filter to DIN EN 1822



Application LAS – laser smoke

Areas of application

Laser Cutting | Laser Marking | Laser Structuring | Laser Engraving

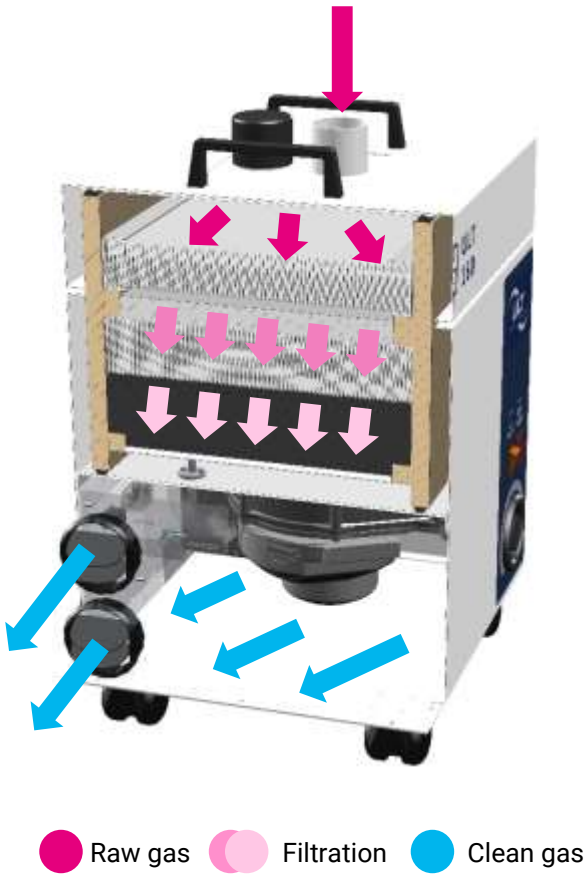
Functional principle

An EC blower generates a volumetric flow suitable for the application on the clean-gas side of the filter. The volumetric flow can be controlled individually and steplessly. In this way, the pollutant-laden raw gas is extracted in a reliable manner.

The versatile work processes in which lasers are used generate laser smoke. This toxic, corrosive mixture of aerosol, gas and nanoparticles poses a health hazard and adversely affects the product and process quality. Depending on the process, very different precipitating mixtures of substances can be created, which must be removed from the raw gas.

The filter set-up used is specially designed for this purpose. An upstream filter combination retains aerosols and particles and prevents premature clogging of the downstream H13 main filter element.

Alternatively, a prefilter set-up with an upstream expanded metal filter is available. This can be cleaned in an industrial washer, making it reusable. Regularly changing the prefilter elements at shorter intervals significantly extends the functionality of the main filter.



Thanks to their depth penetration, the prefilters used are particularly suitable for the precipitation of laser smokes. A majority of the particles contained in the laser smoke are trapped at this stage. Extremely fine suspended substances are held back by the High Efficiency Particulate Air filter H13 in the combined filter cassette H13A. This guarantees a particle precipitation rate of 99.95%. The precipitation (adsorption) of gaseous and vaporous air contamination takes place in the activated carbon bed of the combined filter cassette H13A.

The filter effect of the activated carbon is based on adsorption, i.e. on the depositing of (gaseous) substances on the surface of the activated carbon. In general, no chemical changes of the adsorbed substance take place in physical adsorption. The nominal volumetric flow of the devices is based on the filter construction, the contact period is oriented to a medium adsorption response.

Thanks to the high degree of cleaning, the filtered clean gas can then be returned to the working area (recirculated-air operation). This avoids any loss of heat.

Recirculated air operation is not permitted for the suctioning and filtration of carcinogenic, mutagenic or reprotoxic substances.

Device variants

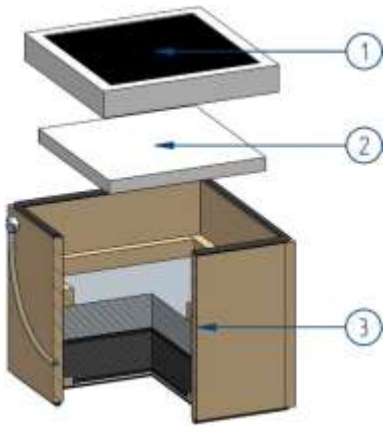
A variety of filter combinations is available for the suctioning and filtration of harmful gas/dust mixtures from laser machining processes. The precipitation effectiveness of the available filter combinations depends on the machining process used. For expert advice when choosing the correct filter combination, please contact your local dealer or ULT AG directly using ult@ult.de.

In accordance with customer-specific requirement, the ULT 160.1 devices can be equipped with the following filter set-ups:

LAS 160.1 MD.11 K

Table 4: LAS 160.1 MD.11 K

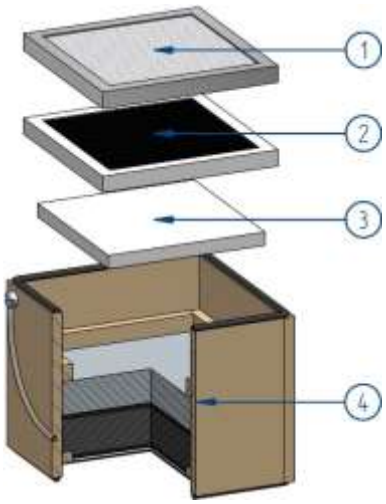
Part number of complete device:	1-00052
Filter set-up for laser smoke:	Main filter module K
(1) Panel filter F9	
Filter class:	ISO ePM1 60% according to ISO 16890
(2) Filter mat M5	
Filter class:	ISO Coarse 85% according to ISO 16890
(3) Combined filter cassette H13A	
(3.1) Particulate filter H13	
Filter class:	H13 HEPA filter, suspended matter filter to DIN EN 1822
(3.2) Adsorption filter A	
Filter medium:	Activated carbon bed



LAS 160.1 MD.11 SK

Table 5: LAS 160.1 MD.11 SK

Part number of complete device:	1-00053
Filter set-up for laser smoke with reusable expanded metal insert:	Main filter module SK
(1) Expanded metal prefilter Metal mesh, condensation filter	
(2) Panel filter F9 Filter class:	ISO ePM1 60% according to ISO 16890
(3) Filter mat M5 Filter class	ISO Coarse 85% according to ISO 16890
(4) Combined filter cassette H13A	
(4.1) Particulate filter H13 Filter class:	H13 HEPA filter, suspended matter filter to DIN EN 1822
(4.2) Adsorption filter A Filter medium:	Activated carbon bed



Application LRA – Soldering smoke

Areas of application

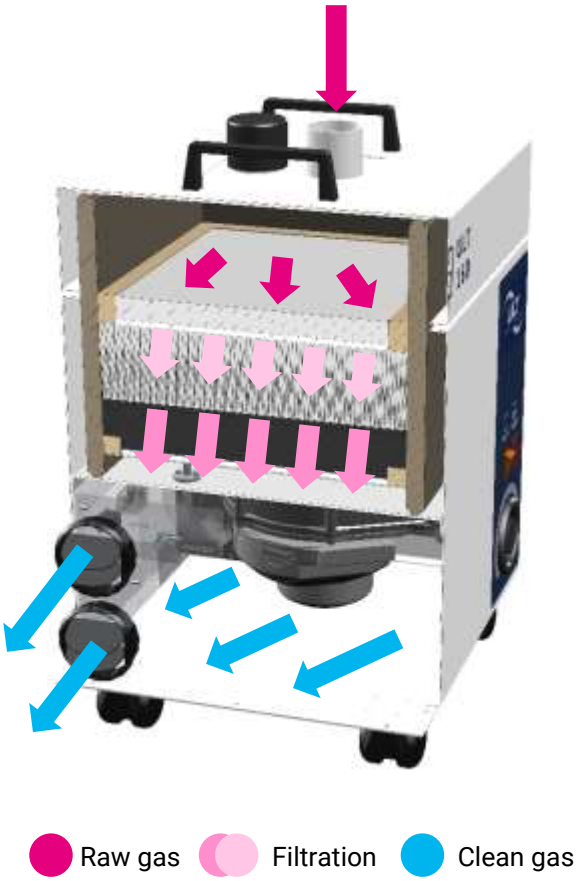
Manual Soldering | Robot Soldering | Soldering Systems at Special Workstations

Functional principle

An EC blower generates a volumetric flow suitable for the application on the clean-gas side of the filter. The volumetric flow can be controlled individually and steplessly. In this way, the pollutant-laden raw gas is extracted in a reliable manner.

When soldering work is performed, soldering smoke forms out of vaporizing flux, small quantities of solder and gas-emitting substances from working circuit boards and components. This is comprised of a mixture of adhesive aerosols, particles and gases that must be removed from the raw gas.

The filter set-up used is specially designed for this purpose. An upstream filter mat combination retains cooled, sticky aerosols in the suction line and prevents premature clogging of the subsequent H13 main filter element. Regularly changing the filter mat combination M5/F7 at shorter intervals significantly extends the functionality of the main filter.



The particles contained in the soldering smoke are precipitated in a multi-stage storage filter system. Thanks to their depth penetration, the filter mats used are particularly suitable for the precipitation of soldering smokes. A majority of the particles contained in the soldering smoke are trapped at this stage. Extremely fine suspended substances are held back by the High Efficiency Particulate Air filter H13 in the combined filter cassette H13A. This guarantees a particle precipitation rate of 99.95%.

The precipitation (adsorption) of gaseous and vaporous air contaminations takes place in the activated carbon bed of the combined filter cassette H13A.

The filter effect of the activated carbon is based on adsorption, i.e. on the depositing of (gaseous) substances on the surface of the activated carbon. In general, no chemical changes of the adsorbed substance take place in physical adsorption. The nominal volumetric flow of the devices is based on the filter construction, the contact period is oriented to a medium adsorption response.

Thanks to the high degree of cleaning, the filtered clean gas can then be returned to the working area (recirculated-air operation). This avoids any loss of heat.

Recirculated air operation is not permitted for the suctioning and filtration of carcinogenic, mutagenic or reprotoxic substances.

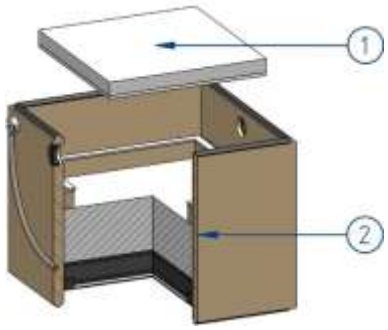
Device variants

The ULT 160.1 devices can be equipped with the following filter set-up for suctioning and filtering harmful gas/dust mixtures from soldering processes:

LRA 160.1 MD.11 K

Table 6: LRA 160.1 MD.11 K

Part number of complete device:	1-00086
Filter set-up for soldering smoke:	Main filter module K
(1) Filter mats M5/F7	
Filter mat M5:	ISO Coarse 85% according to ISO 16890
Filter mat F7:	ISO ePM10 75% according to ISO 16890
(2) Combined filter cassette H13A	
(2.1) Particulate filter H13	
Filter class:	H13 HEPA filter, suspended matter filter to DIN EN 1822
(2.2) Adsorption filter A	
Filter medium:	Activated carbon bed



Accessory items

DN50 extraction system

Hoses

Flexible extraction hose DN 50, 2m	Antistatic, incl. 90° bend, socket and worm drive hose clips	3-00485
Flexible extraction hose DN 50, 3m	Antistatic, incl. 90° bend, socket and worm drive hose clips	3-00486
Flexible extraction hose DN 50, 5m	Antistatic, incl. 90° bend, socket and worm drive hose clips	3-00487
Flexible extraction hose DN 50, per meter	Antistatic, without accessories	6-06872

Hose accessories

Bend 90° DN 50	Antistatic, incl. worm drive hose clip	3-00494
Socket DN 50	Antistatic, incl. worm drive hose clip	3-00495
Y-piece DN 50 - 2*DN 50	Antistatic	6-06970

Extraction arm mounting elements

Table bracket black	Alsident System 50, accessory	2-5010-050

Extraction arms

Alsident system 50, antistatic extraction arm	945 mm for table/device mounting	50-4737-1-6

Collecting elements

Flat screen antistatic	Alsident System 50, accessory	1-503324-6
Round hood aluminum antistatic	Alsident System 50, accessory	1-5024-6
Extractor tube antistatic	Alsident System 50, accessory	1-5021-6
Suction gap antistatic	Alsident System 50, accessory	1-5020-6

Interface accessories

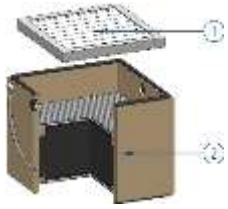
Interface cable SUB D9	incl. SUB D9-Male adapter, Length 10,00 m	6-06293

Device power cables – supplied free of charge with ordered device

Swiss device power cable	Length 3.00 m	6-06056
UK device power cable	Length 2.00 m	6-06063
USA device power cable	Length 2.00 m	6-06091
EU device power cable (CEE 7/7)	Length 3.00 m	6-05990

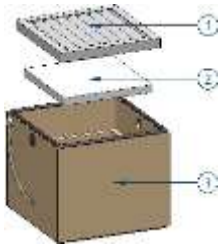
Replacement filter

ACD



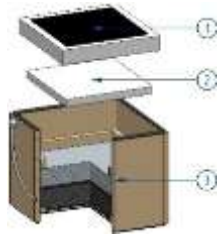
Filter A6	
Z-Line filter G4	4-00299
Adsorption filter cassette A6	4-00389

ASD

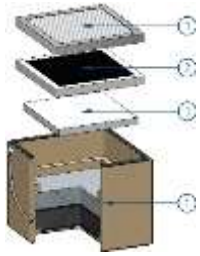


Filter H	
Z-Line filterG4	4-00299
Filter mat M5-02	4-00238
Z-Line G4 + Mat M5 – Set of 5+5 pcs	4-00306
Particle filter cassette H13	4-00070

LAS

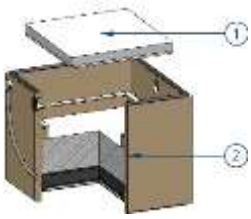


Filter K	
Panel filter F9	4-00302
Filter mat M5-02	4-00238
Panel F9 + Mat M5 – Set à 5+5 pcs	4-00307
Combined filter cassette H13A	4-00002

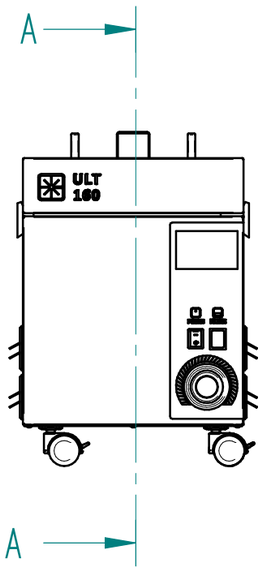


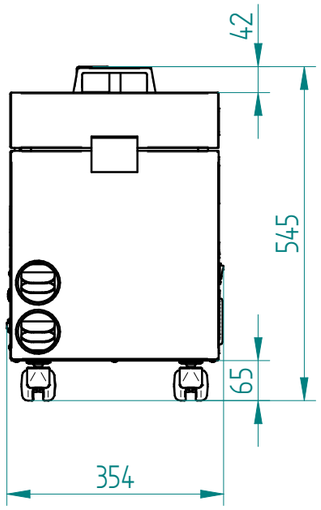
Filter SK	
Expanded metal	4-00301
Panel filter F9	4-00304
Filter mat M5-02	4-00238
Panel F9 + Mat M5 – Set à 5+5 pcs	4-00308
Combined filter cassette H13A	4-00002

LRA

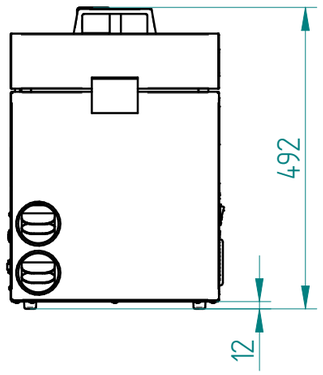


Filter K	
Expanded metal	4-00301
Filter mat M5-02/F7-02	4-00003
Filter mats M5-02/F7-02 - Set à 10 pcs	4-00241
Combined filter cassette H13A	4-00075

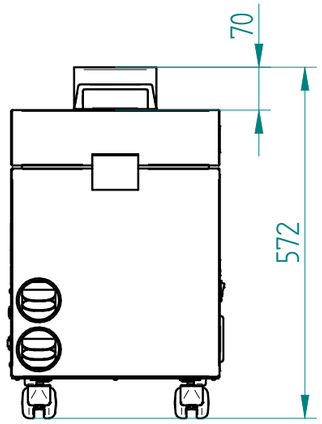


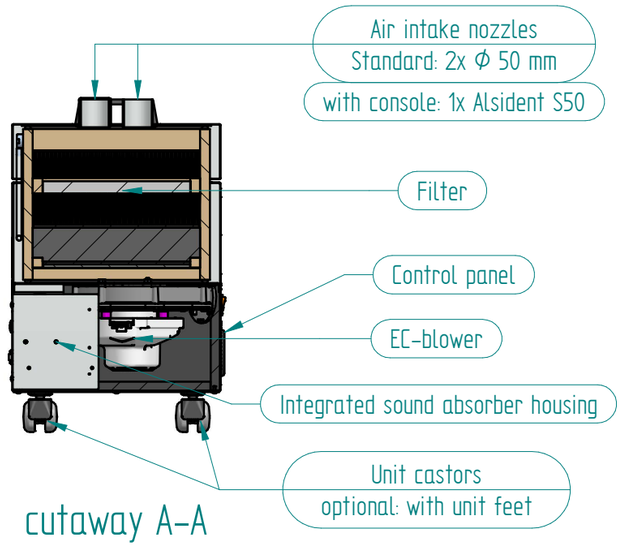


with unit feet:

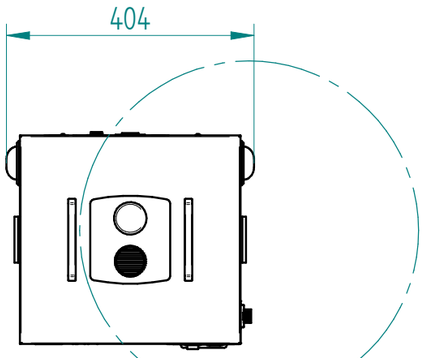


with extraction arm console
for 1x Alsident S50:

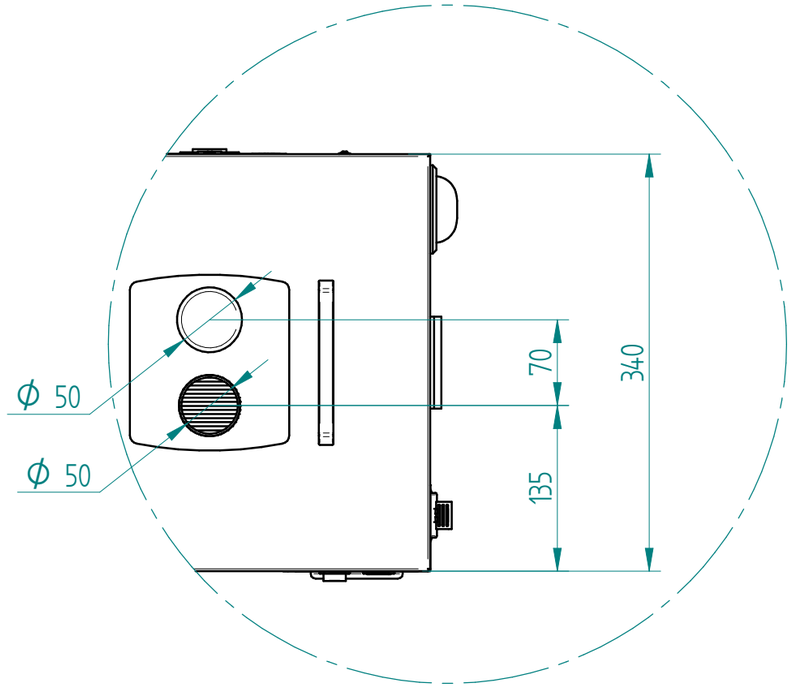




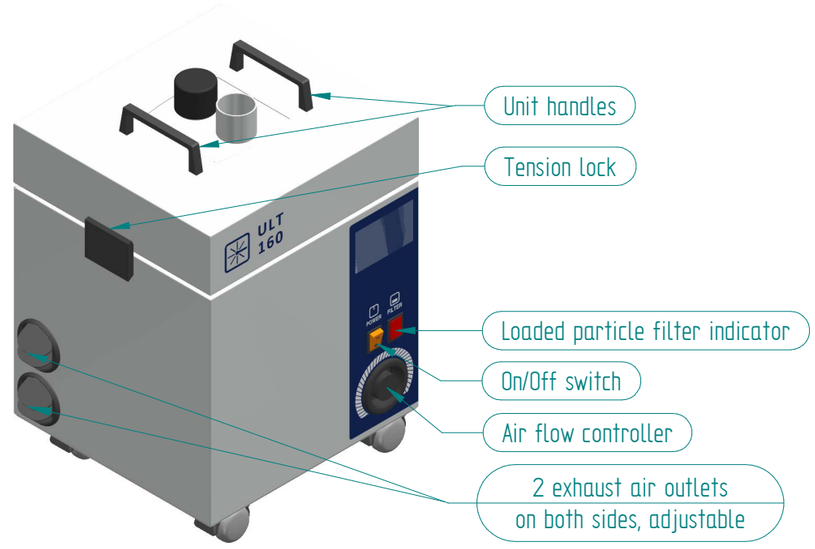
cutaway A-A



B



DETAIL B



ULT
UMWELT - LUFTTECHNIK

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issue	revision	day	name	veri.		drawing number: ULT0160 00 301 100
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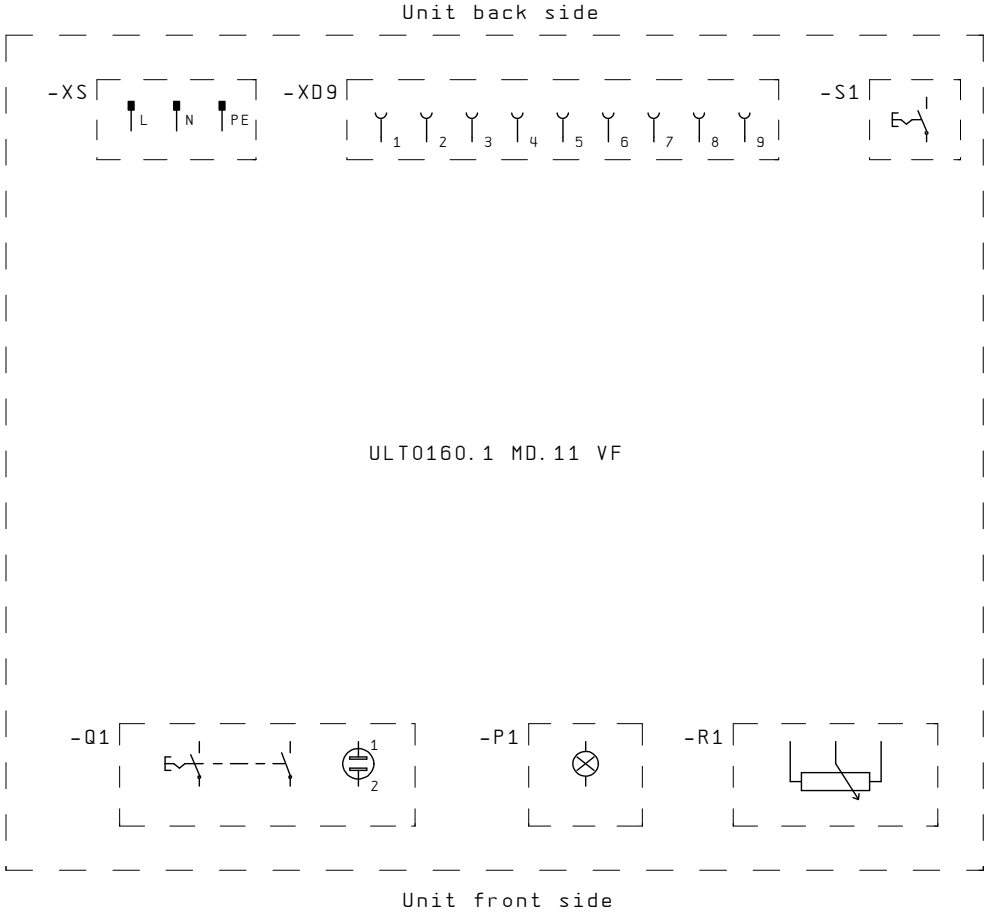
Interface overview

Schematic device view



Function description

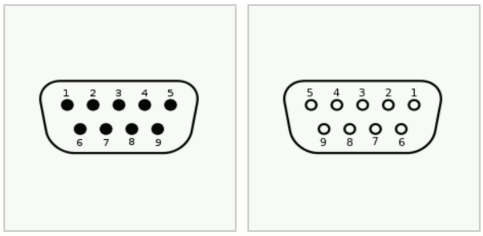
-XS connector power supply 230 VAC / 50 Hz / 10 A

-XD9 connector Sub-D9 signal interface (female)

contact	function	potential	states	description	
-XD9: 1/2	output	-	closed open	unit in operation (flow okay) unit out of operation	
-XD9: 3	output	GND	-	GND	
-XD9: 4/5	output	-	closed open	filter okay filter worn out	
-XD9: 4/6	output	-	closed open	filter worn out filter okay	
-XD9: 8	output	+24 VDC	-	+24 VDC	bridge switch possible
-XD9: 9	input	-	+24 VDC GND	unit remote on unit remote off	

-S1 switch operation mode	I O	remote local
-Q1 main switch	I O	unit ON + indicator light (main=OK) unit OFF
-P1 indicator light filter	On Off	filter okay filter worn out
-R1 potentiometer "volume flow"	0 % 100 %	volume flow min (left end stop) volume flow max (right end stop)

SubD9 pin assignment



DE-9
9-pol male

DE-9
9-pol female

1

3

ULT AG
Am Göpeöteich 1
02708 Löbau

Title: ULT 160.1 230V MD.11VF Schnittstellen

Issue	Revision	Date	Reviser
005	Schnittst	22.01.19	PS
002	Relais	03.06.16	PS

2015	Date	Name
Drawn	27.10	PST
Checked		

Drawing number: ULT 0160_60_010_100

Sheet 2
3 Sheets

ULT AG
Am Göpelteich
02708 Löbau
Germany

Phone: +49 3585 4128 0
Fax: +49 3585 4128 11
E-Mail: ult@ult.de
Web: www.ult.de

air quality