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FANselect Web API

Developer's Manual

ZIEHL-ABEGG

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1 Introduction

The FANselect web API serves as an Application Programming Interface to FANselect. It requires a request string as input and outputs a response string.

Both request and response strings are as JSON. It is up to the calling application to create the required input and parse the API's output.

This API can be accessed via the following link:
https://fanselect.ziehl-abegg.com/api/webdll.php

If you do not have a FANselect account, please register using the link below:
https://www.ziehl-abegg.com/en/product-range/digital-solutions/software/fanselect

FANselect also offers a web interface, in which you can test API inputs and outputs.
This test tool will be an additional tab in your FANselect application.

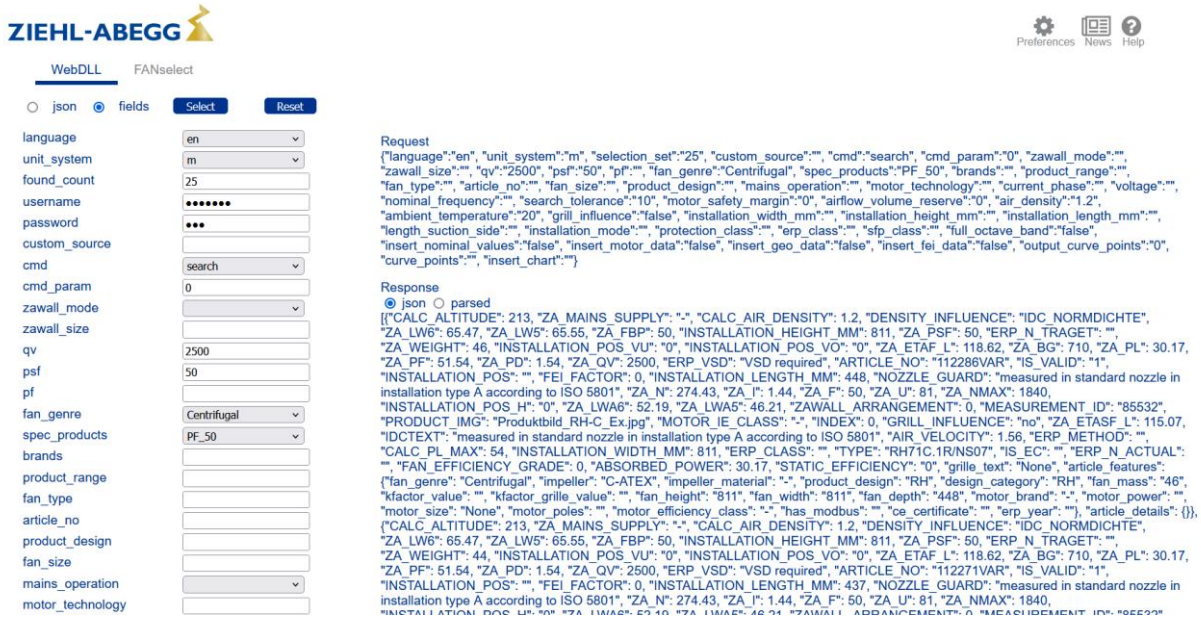


Image 1: Left is the input area whereas the right side contains the request and response produced by the API.

Please contact fanselect@ziehl-abegg.com should you require access to this test tool.

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2 Connect to FANselect API

2.1 Minimal Required Inputs:

username:	Your FANselect username
password:	Your FANselect password
cmd:	search (see section 2.2)
qv:	airflow at required duty point
psf:	static pressure at required duty point
spec_products:	Portfolio holding required fans (see section 3.1)

2.2 Access API

Below is a Python sample program showing you how to access the FANselect API

API Access in Python

```
import requests

api_request = {'username': '…', 'password': '…', 'cmd': 'search', 'qv': '8000', 'psf': '800', 'spec_products': 'PF_50'}
api_url = 'https://fanselect.ziehl-abegg.com/api/webdll.php'

api_response_object = requests.post(api_url, json = api_request)
api_response_json = api_response_object.text
print(str(api_response_json))
```

Further Examples can be downloaded from the links below

C#	https://downloads.fanselect.net/api_access_samples/c_sharp_sample.txt
C++	https://downloads.fanselect.net/api_access_samples/c++_sample.txt
C	https://downloads.fanselect.net/api_access_samples/c_sample.txt
Java	https://downloads.fanselect.net/api_access_samples/java_sample.txt
JavaScript	https://downloads.fanselect.net/api_access_samples/javascript_sample.txt
Python	https://downloads.fanselect.net/api_access_samples/python_sample.txt
VisualBasic	https://downloads.fanselect.net/api_access_samples/visualbasic_sample.txt

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3 Inputs & Outputs

3.1 All Inputs Explained

language
Set language of outputs

input options:

CS: Czech	**DA:** Danish	**DE:** German	**EN:** English
ES: Spanish	**FR:** French	**FI:** Finnish	**HU:** Hungarian
IT: Italian	**JA:** Japanese	**NL:** Dutch	**PL:** Polish
PT: Portuguese	**RU:** Russian	**SV:** Swedish	**TR:** Turkish
ZH: Chinese			

unit_system
unit system to be used in calculations.

Input options:

m: metric	**i**: imperial

selection_set
Set a digit to signify the number of items you wish the API to return.

username
Your FANselect account's username.

password
Your FANselect account's password

cmd
cmd, short for command, is needed to instruct the DLL on the type of outputs required

Input Options:
search: selection by duty point + filters such as size, design etc.
status: Delivers **username** and software version.

The following **cmd**'s require an article number in **article_no:**
select: Select by article number. Article's nominal data is output if duty point is not achieved
status: Get the API's version details
nominal_values: Obtain article's electric nominal values.
motor_data: Article motor data.
geo_data: Article (geometric) dimensions.
accessories: Depict accessories associated with article

cmd_param
You can set the index of the article you wish

zawall_mode
Pick whether you want to select multiple fans, with either one of two options

ZAWALL:	Select using multiple fans only
ZAWALL_PLUS:	Select using multiple and single fans
ZAWALL_BOX:	Select using multiple fans – solely rectangular layouts are allowed. Ie 3 X 8 or 2 X 10

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zawall_size
Set the number of fans you want to use in your multiple fans array. Maximum number of fans is set to 40. **zawall_size** can also be left empty. FANselect will automatically determine the number of fans required. Selections without a pre-set number of fans usually come with a longer response time.

qv
Airflow in m^3/h for unit_system choice m or CFM for unit_system choice i.

psf
Static pressure either in Pa for unit_system choice m or in wg for unit_system choice i**.**

pf
Total pressure either in Pa for unit_system choice m or in wg for unit_system choice i
In your request string, you either specify **psf** or **pf**.

spec_products
Fans in FANselect are placed in discrete portfolios, denoted by the PF codes listed below. It is mandatory to input a specific portfolio. Currently it is not possible to select across multiple portfolios.

Input Options

PF_50:	Standard Worldwide	**PF_57:**	AMCA Germany Products
PF_51:	USA Portfolio	**PF_59:**	AMCA India
PF_52:	South America	**PF_60:**	China Portfolio
PF_53:	AMCA USA Products	**PF_61:**	Products for Europe
PF_54:	AMCA Thailand Fans	**PF_62:**	America Portfolo
PF_56:	India Portfolio		

product_range
Fans are placed in clusters aka product ranges, denoted by the BR codes listed below. **product_range** is not mandatory and can hold multiple BR codes separated by |, e.g. BR_01 | BR_57 | BR_59

product_design
Every article can come in one of a multitude of designs. Leave empty if design is not known

Input Options

Centrifugal Fans

ER:	Centrifugal plug fan design
GR-H:	Wall mounted centrifugal fan design, horizontally mounted
GR-Vo:	Wall mounted centrifugal fan design, vertically mounted facing upward **GR-Vu**: Wall mounted centrifugal fan design, vertically mounted facing downward **GR**: Wall mounted centrifugal fan design
RH:	Centrifugal fan consisting only of impeller
WR:	Centrifugal fan placed in cube design

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Axial flow fans with airflow direction A: Air is sucked over motor

A-A: Axial fan consisting only of impeller
A-D: Axial fan sucking through grille
A-F: Tube axial fan with longer tube, round housing
A-L: Tube axial fan with shorter tube, round housing
A-Q: Tube axial fan with shorter tube, rectangular housing
A-W: Axial fan sucking through grille

Axial flow fans with airflow direction V: Air is blown over motor

V-A: Axial fan consisting only of impeller
V-E: Tube axial fan with shorter tube and sucking through contact protection
V-F: Tube axial fan with very long tube
V-H: Tube axial fan with shorter tube, round housing
V-H: Wall-mounted Tube axial fan with shorter tube and guide-vanes **V-L**:
Wall-mounted Tube axial fan with shorter tube and guide-vanes **V-Q**:
Wall-mounted Tube axial fan with shorter tube and guide-vanes **V-I**:
Axial fan blowing through grille
V-K: Axial fan blowing through grille
V-L: Tube axial fan with shorter tube, round housing
V-Q: Tube axial fan with shorter tube, rectangular housing
V-S: Axial fan blowing through grille, surrounding whole backside of fan

fan_type

Filter by defining part of fan's type key. You can use ? as a wildcard for single characters.
The API will then return all items starting with your inputs.
i.e.:
- GR??I Get all ZAbluefin fans in GR design.
- ER??C-4 Get all C fans in ER design and with 4 pole motors

article_no

Article number (if known) of the required fan.
You can also insert the initial part of an article number. The API will then return all articles starting with the fragment you had input.
Multiple article numbers can also be input by separating them with a |.
i.e.: 116908/A01|116181/A01|118555/A11

fan_size

fan size of required fans (if known)

mains_operation

Choose whether required fan should be connected to a controller or not.

Input Options:

mains Direct connection to the electric grid
controller Fan is connected to a frequency inverter

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motor_technology

Select the type of motor best suited for your application. Multiple choices can be input separated by a |
e.g.: ZAmotpremium IE2 | PMblue IE4 | ZAmotpremium IE3

Input Options:

AC:	External rotor AC motor
AMblue IE3:	Internal rotor IE3 motor with controller
ECblue:	External rotor EC motors
ECQ:	External rotor EC motor
PMblue IE4:	Permanent magnet IE4 internal rotor motor
PMblue Standalone:	Permanent magnet IE4 internal rotor motor without controller
ZAmotbasic EX:	Low cost internal rotor ATEX motor
ZAmotbasic IE2:	Low cost internal rotor IE2 motor
ZAmotbasic IE3:	Low Cost iInternal rotor IE3 motor
ZAmotpremium IE2:	Premium internal rotor IE2 motor
ZAmotpremium IE3:	Premium internal rotor IE3 motor
ZAmotpremium PE:	Premium internal rotor Premium Efficiency (USA) motor

current_phase

Electric current phases.

Input Options:
1 or **3.**

voltage

Electric voltage

Input Options:
230 400 460 690

nominal_frequency

Electric nominal frequency.

Input Options:
50 60

search_tolerance

Required selection tolerance

motor_safety_margin

Motor power reserve, if required
e.g. **motor_safety_margin** = 10 => 10 kW shaft power requires 11 kW motor

airflow_volume_reserve

Airflow volumetric reserve, if required
e.g. **airflow_volum_reseve** = 10 => 1000 m³/h required flow means fan must deliver 1100 m³/h

air_density

Fan operating air density. Fan selection and duty point calculations will adjust to the density.

ambient_temperature

Medium Temperature at which fan is operating

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grill_influence
Only applicable to centrifugal fans

Input Options:
false: no grill considered
true: duty point calculations affecting fan performance and acoustics take grill into account

installation_height_mm
Height of enclosure in mm. Placing fans within enclosures requires the overall dimensions of these enclosures. The smaller the enclosure is relative to fan size the more detrimental it is to fan performance.

installation_width_mm
Width of enclosure in mm.

installation_length_mm
Length of enclosure in mm.

installation_mode
Enclosure performance losses are calculated by specific algorithms. FANselect offers multiple loss calculating algorithms for single fans, yet only one (**RLT_2017**) for multiple fan layouts

Input Options:
ZA: Inhouse developed algorithm
RLT: Most recent Algorithm developed by the AHU Manufacturer's Association

protection_class
Input required protection class as an IPxx number.

erp_class
Input ERP (Energy Related Products-Directive) class ie 2015.
The ErP class defines the minimum efficiency a fan can have to be sold in certain markets

sfp_class
Input SFP (Specific Fan Performance) Class as a digit, ie 3, 4. SFP is basically the input electric power in relation to the output airflow.

full_octave_band
To display the full octave band with **cmd: search**, set this parameter to **true**.

insert_article_details
Set this parameter to **true** to show all relevant details associated with the item in question with **cmd: search**.

insert_drawing_details
Set this parameter to **true** to depict article's dimensioned drawing + dimensions

insert_fei_details
Set this parameter to **true** to show article data required by California Titel 20 Fan Efficiency Index.
This is currently required solely for the U.S. market

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focus_criteria

This parameter allows you to limit the found set to those fans with the best focus criteria you had set.

Input Options:
ZA_ETASF_SYS: Best ...% at system static efficiency
ZA_PSYS: Best ...% at system absorbed power
ZA_LWA5: Best ...% at suction side acoustics
ZA_LWA6: Best ...% at pressure side acoustics
ZA_BG: Best ...% at fan size

focus_tolerance

Setting this parameter to 0 would produce only one article, namely the one with the best preset **focus_crtieria**. Inputting a number X would produce the best fan for the preset **focus_criteria** plus all fans up to X% worse than the best fan.

e.g.: **focus_criteria** = **ZA_ETASF_SYS** and **focus_tolerance** = 7
yields: Fan with best system static efficiency + all fans up to 7% worse than that best fan

output_curve_points

Set to 1 if you wish to output points for each of a fan's performance curves. These would useful, if you wish to generate your own charts

curve_points

Input the number of points you wish to have per curve.

Insert_chart

Input the charts you wish to output.

Input Options:
air_performance: Airflow to static pressure chart
power_input_p1: Airflow to power chart
efficiency_sf: Airflow to efficiency chart

Multiple charts can be requested at once. Insert the required charts separated by commas,
i.e. air_performance, power_input_p1

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3.2 Main Outputs Explained

ARTICLE_NO	Article number
CALC_AIR_DENSITY	Air Density used in selection and calculation (kg/m³)
CALC_ALTITUDE	Altitude used in selection and calculation (m above sea level)
CALC_LW5_OKT	Suction side octave band, values separated by commas (dB)
CALC_LW6_OKT	Pressure side octave band, values separated by commas (dB)
CALC_LWA5_OKT	Suction side weighted octave band values (dBA)
CALC_LWA6_OKT	Pressure side weighted octave band values (dBA)
CALC_NOZZLE_PRESSURE	Pressure in nozzle, used to determine air flow (Pa)
CALC_N_RATED	Ratio of duty point fan rpm to maximum fan rpm (%)
CALC_P1_MAX	Maximum absorbed electrical power at duty point (W)
CALC_PL_MAX	Maximum absorbed shaft power at duty point (W)
CALC_PSYS_MAX	Maximum absorbed system power = motor + controller absorbed power (W)
CALC_TEMP_C	Medium temperature (°C)
CAPACITOR_CAPACITANCE	Capacitor capacitance (μF)
CAPACITOR_VOLTAGE	Capacitor voltage (V)
CIRCUIT	Type of electrical circuit
COSPHI	Fan motor Cosine Phi value
CURRENT_PHASE	Fan motor phases
DENSITY_INFLUENCE	Density used in determining duty point measurement density => Selection at fan's measured density density => Selection at density different from measured density
EC_TYPE	Output is 1 if fan is powered by an EC motor And an empty string if fan motor is not an EC motor
EFFICIENCY_CLASS	Efficiency Class of IEC motor. Parameter only shows up alongside fans powered by IEC motors
EFFICIENCY_STAT	Static efficiency of fan = Airflow X Static Pressure / Power Absorbed (%)
EFFICIENCY_TOT	Total efficiency of fan = Airflow X Total Pressure / Power Absorbed (%)
ERP_CLASS	Fan ERP class
ERP_METHOD	Method used to measure ERP class
ERP_N_ACTUAL	Actual normalized Degree of efficiency (N_{ist})
ERP_N_STAT	Static efficiency (h_{statA})at duty point (%) according to measurement method A
ERP_N_TRAGET	Required standardized degree of efficiency (N_{soll})

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ERP_VSD	Returns EC controller integrated if fan is so equipped And an empty string for fans without an integrated speed control system
FAN_EFFICIENCY_GRADE	Factor assigned to individual fans and only relevant for US-destined fans
FEI_FACTOR	Calculated based on duty point and is relevant for US-destined fans
GRILL_INFLUENCE	Returns no if grill influence is not factored into calculations And yes if grill's influence is taken into account.
INCREASE_OF_CURRENT	Current increase (%)
INDEX	Sequence number of individual fan.
INSTALLATION_HEIGHT_MM	Height of enclosure
INSTALLATION_LENGTH_MM	Depth of enclosure
INSTALLATION_POS	Returns fan orientation(s): **H**: Horizontal **VO**: Vertical facing up **VU:** Vertical facing down
INSTALLATION_POS_H	Returns 1 for horizontally oriented fans
INSTALLATION_POS_VO	Returns 1 for vertical upwards facing fans
INSTALLATION_POS_VU	Returns 1 for vertical downwards facing fans
INSTALLATION_WIDTH_MM	Width of enclosure
IS_EC	Returns 1 if fan has EC motor
KFACTOR	Fan's nozzle pressure
MAX_CURRENT	Fan's maximum current (A)
MAX_FREQUENCY	Fan's maximum frequency (Hz)
MAX_TEMPERATURE_C	Fan's maximum temperature (°C)
MAX_VOLTAGE	Fan's maximum voltage (V)
MIN_CURRENT	Fan's minimum current (A)
MIN_TEMPERATURE_C	Fan's minimum temperature (°C)
MIN_VOLTAGE	Fan's maximum voltage (V)
MOTOR_DESIGN	Type of motor design: (only for IEC motors) **IMB 3**: Foot mounted **IMB 5: Flange mounted**
MOTOR_POLES	Number of motor poles (for IEC powered fans)
MOTOR_SHAFT	IEC motor shaft description: number / diameter X length
MOTOR_SIZE	IEC motor size
NOMINAL_CURRENT	Fan motor nominal current (A)
NOMINAL_FREQUENCY	Fan motor nominal frequency (Hz)

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NOMINAL_SPEED	Fan's nominal speed (1/min)
NOMINAL_VOLTAGE	Fan motor nominal voltage
NOZZLE_GUARD	Information on how fan was measured. Predominantly for axial fans
NUMBER_OF_POLES	IEC motor number of poles
PHASE_DIFFERENCE	Phase difference
POWER_INPUT_KW	Power required by motor (kW)
POWER_OUTPUT_KW	Power Output by motor (kW)
PROTECTION_CLASS_IP	Protection class as IP number
PROTECTION_CLASS_THCL	Temperature protection class as THCL number
RUBBER_MOT_DIAMETER	Motor rubber damper diameter
RUBBER_MOT_HEIGHT	Motor rubber damper height
SPRING_MOT_DIAMETER	Motor spring damper diameter
SPRING_MOT_HEIGHT	Motor spring damper height
TYPE	Type key of fan
VOLTAGE_TOLERANCE	**V**oltage tolerance (%)
ZAWALL_ARRANGEMENT	Multiple fan layout. Returns 0 if no multiple fans are selected
ZA_BG	Fan size
ZA_COSPHI	Fan motor Cos Phi
ZA_ETAF	Total efficiency of fan = Airflow X Total Pressure / Power Absorbed (%)
ZA_ETAF_L	Fan impeller total efficiency (%)
ZA_ETAF_SYS	System total efficiency (%)
ZA_ETAM	Motor efficiency (%)
ZA_ETASF	Static efficiency of fan = Airflow X Static Pressure / Power Absorbed (%)
ZA_ETASF_L	Fan impeller static efficiency (%)
ZA_ETASF_SYS	System static efficiency (%)
ZA_F	Fan nominal electrical frequency (Hz**)**
ZA_FBP	Fan electrical frequency at duty point (Hz)
ZA_I	Fan current at duty point (A)
ZA_IN	Fan nominal current (A)
ZA_LW5	Duty point acoustic power level suction side (dB)
ZA_LW6	Duty point acoustic power level pressure side (dB)

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ZA_LWA5	Duty point weighted acoustic power level suction side (dBA)
ZA_LWA6	Duty point weighted acoustic power level pressure side (dBA)
ZA_MAINS_SUPPLY	Mains supply: phases, voltage and electric frequency
ZA_N	RPM at duty point (1/min)
ZA_NMAX	Maximum RPM of fan (1/min)
ZA_PD	Dynamic pressure at duty point (Pa)
ZA_PF	Total pressure of fan. ZA_PF = ZA_PSF + ZA_PD (Pa)
ZA_PF_MAINS_OPERATED	Total Pressure of fan in mains operation (Pa)
ZA_PSF	Static pressure of fan (Pa)
ZA_PSF_MAINS_OPERATED	Static pressure of fan in mains operation (Pa)
ZA_P1	Electrical power required at duty point (W)
ZA_PF	Duty point total pressure (Pa)
ZA_PL	Calculated shaft power at duty point (W)
ZA_PSYS	Absorbed power by system (W)
ZA_QV	Duty point volumetric flow rate (m^3/h)
ZA_QV_MAINS_OPERATED	Duty point volumetric flow rate in mains operation (m^3/h)
ZA_SFP	SFP number of fan
ZA_SFP_CLASS	Fan's SFP class
ZA_U	Fan voltage at duty point (V)
ZA_UN	Fan nominal voltage (V)
ZA_WEIGHT	Mass of fan

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4 Help and Support

4.1 Contact Information

Please feel free to contact us, should you need further help or council on how to integrate the FANselect API into your application.
Contact FANselect Support: fanselect@ziehl-abegg.com

4.2 Links

Ziehl-Abegg: https://www.ziehl-abegg.com/

FANselect: https://fanselect.ziehl-abegg.com/

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