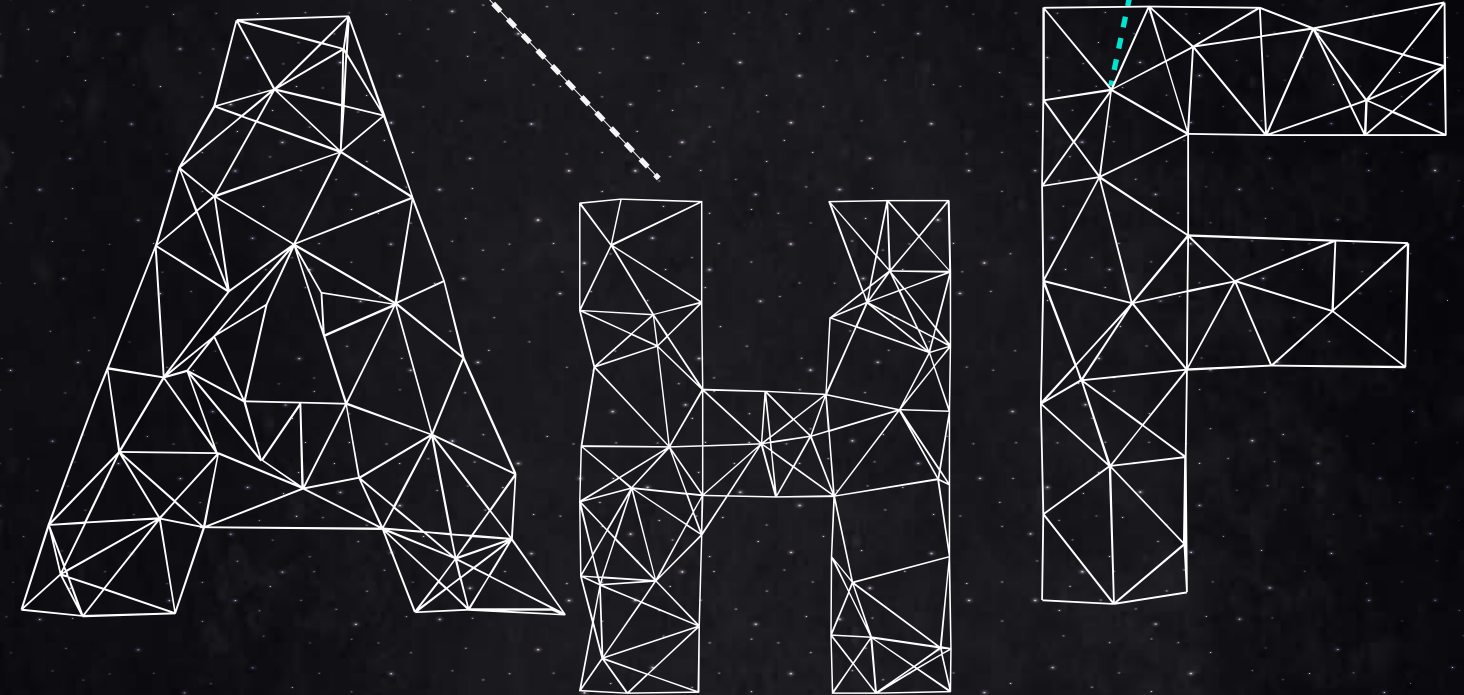




Sinexcel

Power Quality

Energy Efficiency



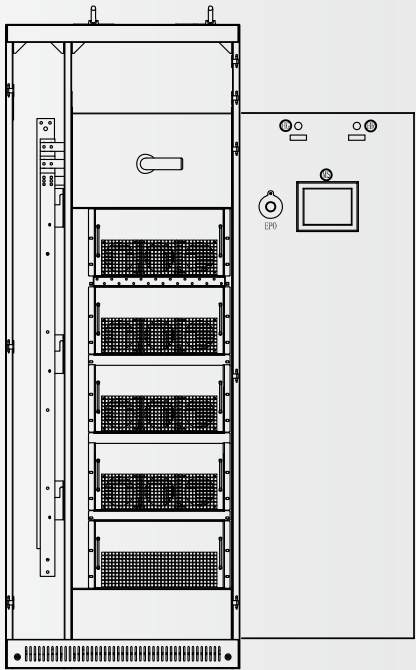
Flexible Alternative Current
Harmonic Mitigation

Inverter Based PQ
Active Harmonic Filter

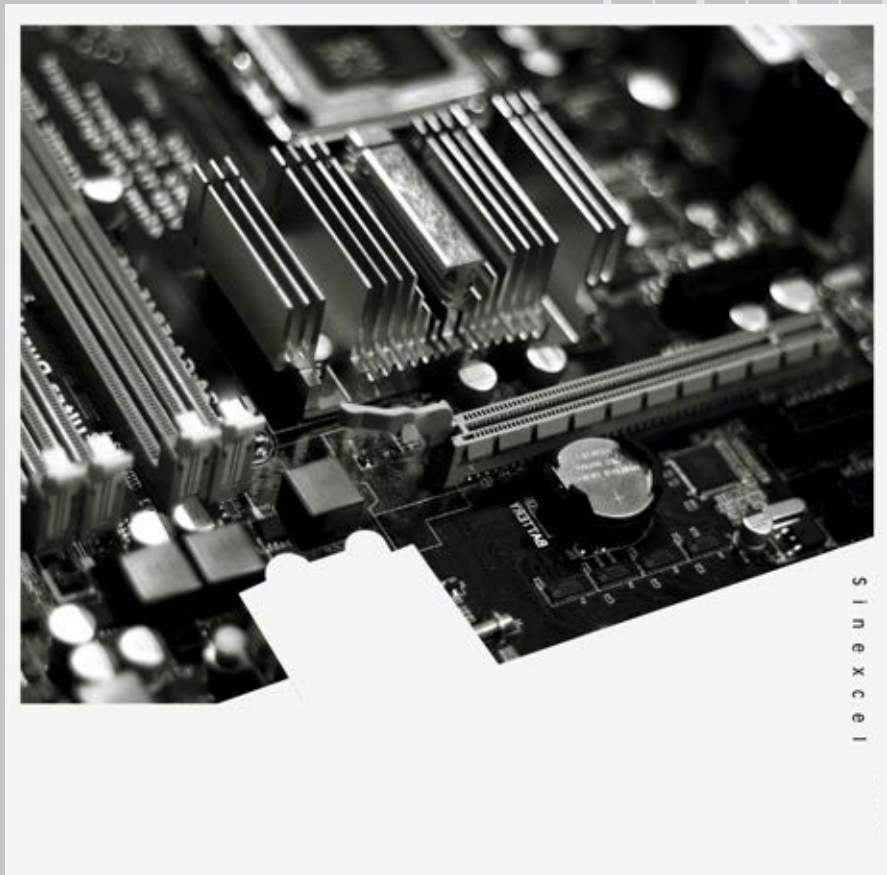
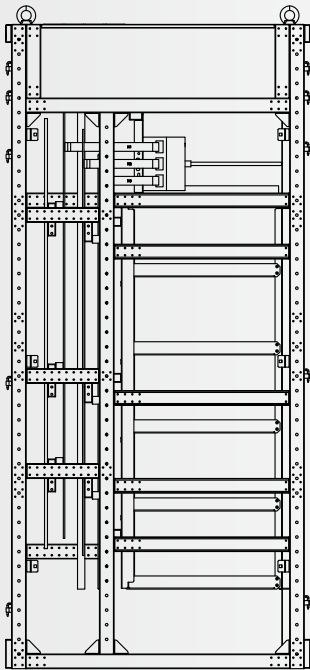
**Modular
Solution**



Front View



Left Side View



NONLINEAR LOADS

Different compensation models for different loads

NONLINEAR LOADS

INDUSTRIAL EQUIPMENT

Induction furnaces,
static converters,VFD,
welding machines

OFFICE EQUIPMENT

Computers, servers, printers

HOUSEHOLD APPLIANCES

Fluorescent lightings, TV light,
dimmers, microwave ovens.

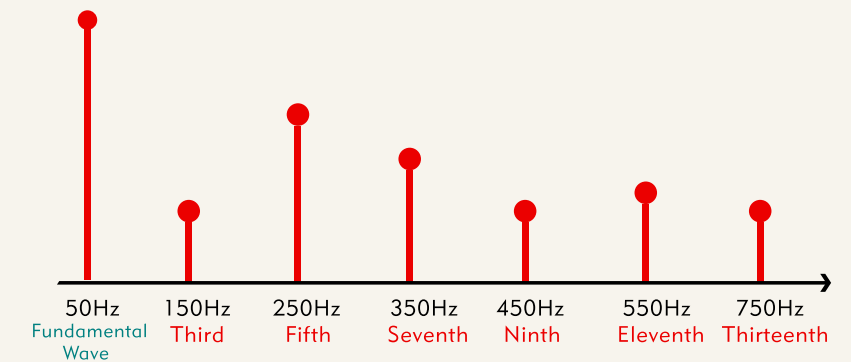
UNINTERRUPTIBLE POWER SUPPLIES (UPS)

WHY HARMONIC HURT YOUR SYSTEM?

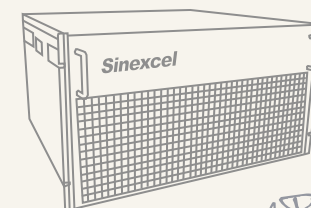
Higher harmonic current would lead to capacitors' inner swelling, oil spilling and fire risk, severe discharge, flashover and overheat, resulting in over-current and over-voltage, accelerating the aging of the capacitor dielectric, lower safety levels of installations , which cause the unnecessary financial losses .

Higher orders harmonic cause more serious distortion on the grid voltage and current waveform ,which will increase the transformer copper and iron losses or load imbalance.

Affect the equipment efficiency and occupy unnecessary grid capacity cause overheating of equipment and shortening the lifetime.



Electrical network with poor power quality results in financial loss and safety concerns. Good power quality not only improves the efficiency of the energy by decreasing the loss of electrical equipment, but also guarantees that the power system could support stable and healthy operation. It becomes more and more convenient for us both in daily life and industry because of fast developing technology, which is also accompanied with the development of non-linear loads .



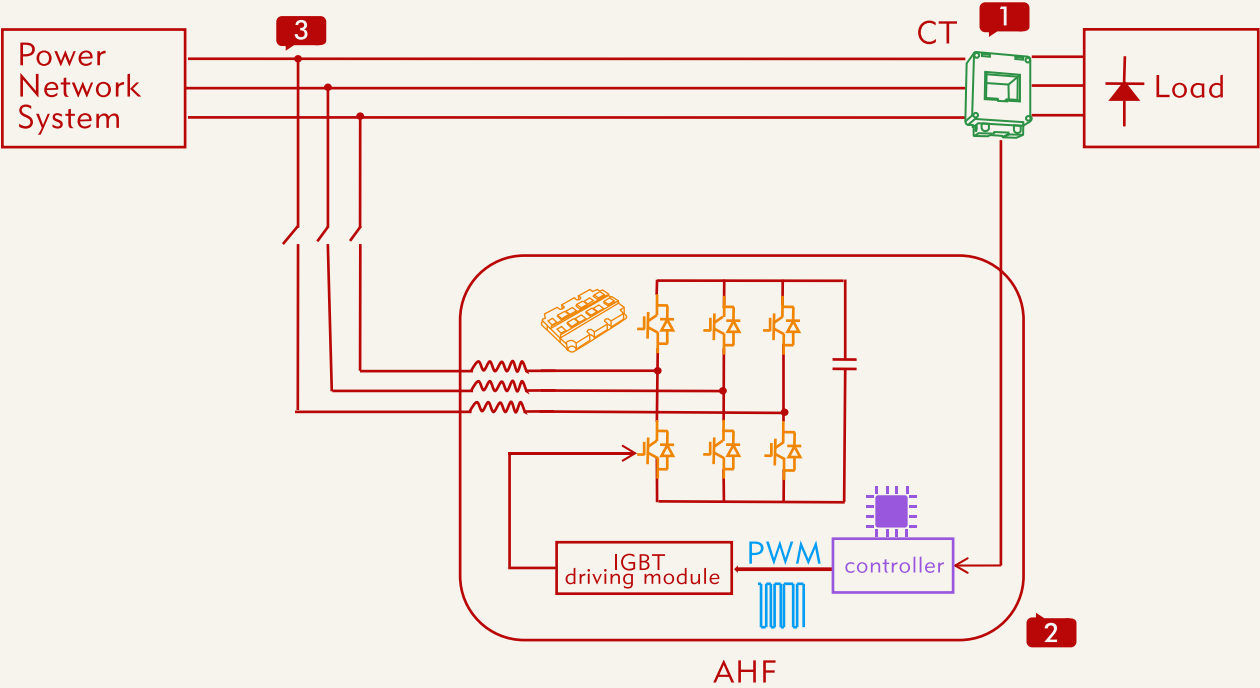
ADT Inverter Base

AHF WORKING PRINCIPLE

Optimize your harmonic compensation efficiency

- Flexible Alternative Current
- Harmonic Mitigation
- Inverter Based PQ
- Active Harmonic Filter

External CT detect the load current, DSP as CPU has advanced logic control arithmetic, could quickly track the instruction current, divides the load current into active power and reactive power by using the intelligent FFT, and calculates the harmonic content rapidly and accurately. Then sends PWM signal to internal IGBT's driver board to control IGBT on and off at 20KHZ frequency. Finally generates opposite phase compensation current on inverter induction, at the same time CT also detects the output current and negative feedback goes to DSP. Then DSP proceeds the next logical control to achieve more accurate and stable system.

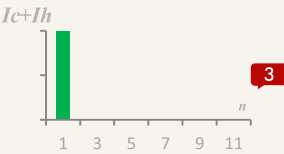
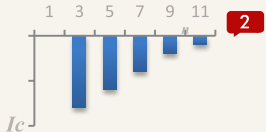
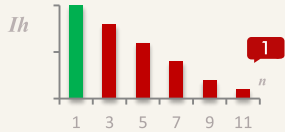


LOAD

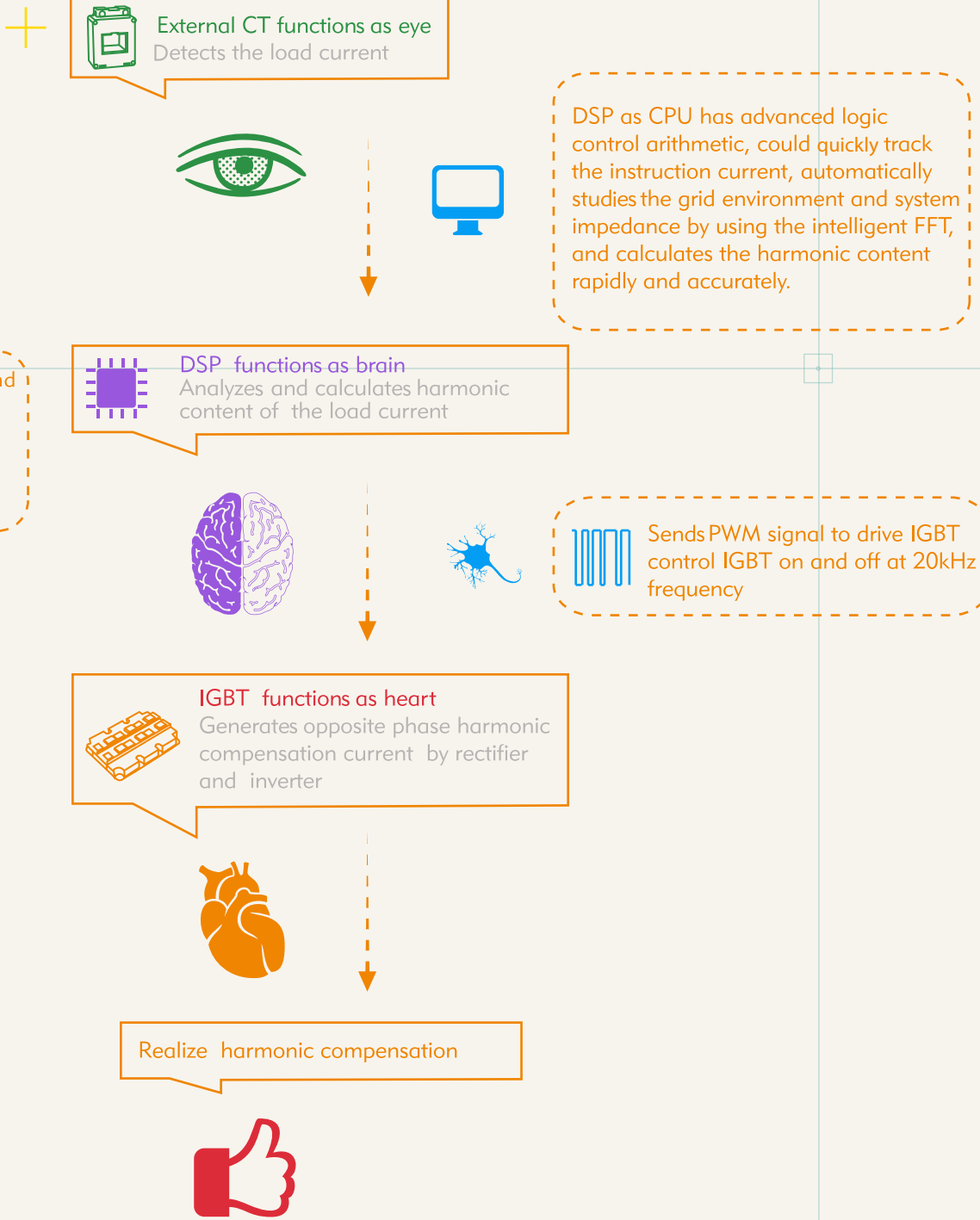
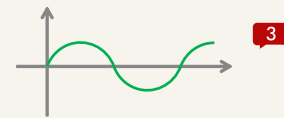
AHF

SOURCE

SPECTRUM

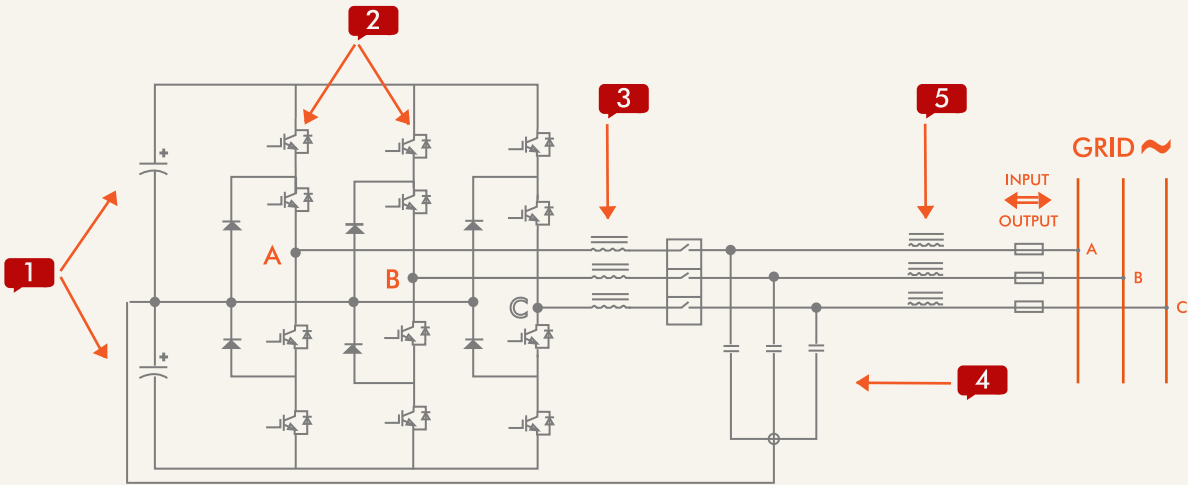


WAVEFORM



UNDERSTAND HOW AHF COMPENSATE HARMONIC

Optimize your harmonic compensation efficiency



DC BUS CAPACITOR

AC to DC rectifier storage

IGBT

Controlled by DSP software algorithm, IGBT on-off timing selection and length could control inverter to generate a harmonic current.

IGBT generates square wave, it's outline is like sinusoid.



INVERTER INDUCTION

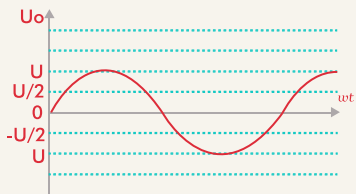
The square wave will convert into triangular wave, which is more like sinusoid after inverter inductor.



LCL FILTER CIRCUIT

LC FILTER CIRCUIT

LC filter circuit filter out impurities of the harmonic. The rest of high frequency harmonic will be filtered by the high frequency inductor.



HIGH FREQUENCY INDUCTOR

Both for filtering. The combination of LC filter circuit and high frequency inductor are called LCL filter circuit

KEY FEATURES AND BENEFITS

Impressive compensation effect of AHF

MODULAR DESIGN

Ultra-compact design, wall and rack mount installation, easy to use in new or upgrade exiting switch room

Module structure with highest reliability of system

3P4W and 3P3W adapted by same modules, same harmonic mitigation capability

INTELLIGENT FFT

Unique intelligent FFT algorithm automatically studies the electrical system impedance, to prevent system from resonance, high system reliability

Real time electrical system resonance monitor and management

GRAPHICAL USER INTERFACE

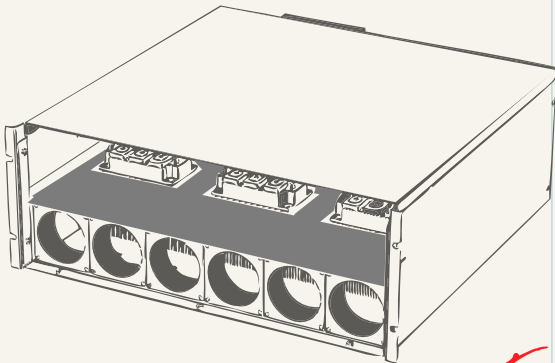
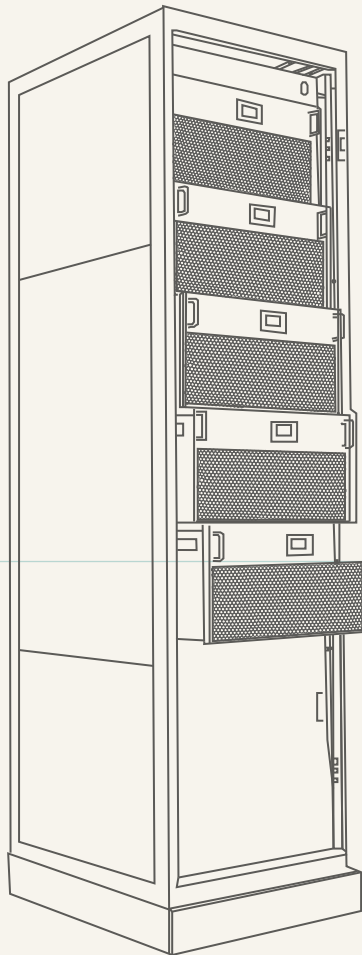
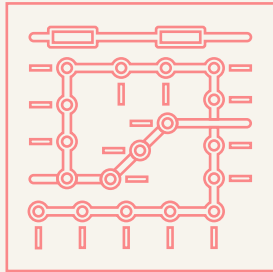
Module 4.3 inch HMI, cabinet 7 inch HMI central

Display electrical system voltage, current, frequency, before and after THDi, Apparent/Active/Reactive power, etc

Display before and after waveform, spectrum in same page with clearly comparison

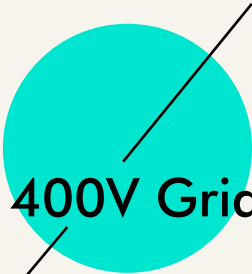
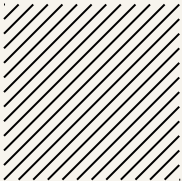
MAINTENANCE FREE DESIGN

Independent air flow, separates electronic components from air flow. Free of dust cleaning maintenance requirement improves product reliability



AHF Cabinet

POWER INVERTER

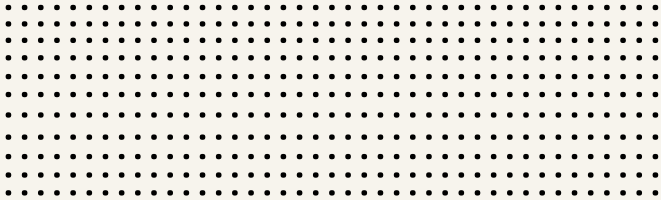


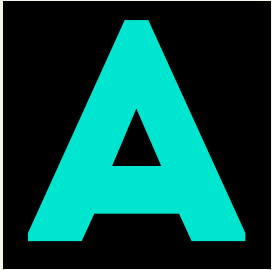
400V Grid Voltage

Specification

Items
Input phase voltage range
Power grid fenquency
Parallel operation
Overall efficiency
Power grid structure
CT Ratio
Circuit topology
Rated capacity
Function
Control algorithm
Filtering range
Filtering performance
Reaction time
Overall response time
Target power factor
Switch frequency
Cooling air requirement
Noise level
Communications ports
Communications protocols
Module display interface IR
Protection functions
Monitoring alarm
Fault alarm
Mounting type
Dimensions(W x D x H)mm
Module net weight
Color
Attitude
Ambient temperature
Relative humidity
Protection class
Qualifications
Standards compliance

400V					
Sinexcel AHF 005/010/015	Sinexcel AHF 025/035	Sinexcel AHF 050/060	Sinexcel AHF 075/100	Sinexcel AHF 150	Sinexcel AHF 300
System Parameter					
380 (228V~456V)					
50/60Hz		(range: 45Hz~62Hz)			
Unlimited					
≥97% (Full load)					
3P3W/3P4W					
50/5~10000/5	50/5-10000/5 (15A); 150/5~30,000/5 (25~150A) module; 600/5~10000/5 (300A)				
3-Level					
Performance Indicator					
5A/10A/15A	25A/35A	50A/60A	75A/100A	150A	300A
Harmonic compensation, Reactive power compensation, Unbalance compensation					
Intelligent FFT/ Instantaneous Reactive Power/FFT					
2 nd to 61 th orders		2 nd to 50 th orders			
≥95%					
20μs		<50μs			
5ms		<5ms			
Adjustable from -1 to +1					
Average 50KHz		Average 20KHz			
96CFM	321CFM	321CFM	543CFM	825CFM	1060CFM
<68dB	<56dB			<65 dB	<75dB
Communication & Monitoring Capability					
RS485	RS485, Ethernet port (RJ45)				
MODBUS (RTU)	MODBUS (RTU, TCP/IP)				
WIFI display,7-inchHMI(central monitor)	4.3-inch HMI (module), 7-inch HMI(central monitor), LED				
Abnormal voltage/frequency protection;Inverter short-circuit protection;Abnormal output current protection;Inverter over-loaded protection,Over-tempearture protection etc.,					
Available					
Available	Availabl e, 500 alarm records				
Mechanical Properties					
Wall-mounted/Rack-mounted	Wall-mounted/ Rack-mounted/Cabinet				
410*340*45(Rack-mounted)	400*490*150 (Rack-mounted)	440*590*190 (Rack-mounted)	500*586*190(75A) 440*599*230(100A) (Rack-mounted)	500*605*270 (Rack-mounted)	500*722*370 (Rack-mounted)
410*45*340(Wall-mounted)	440*150*470 (Wall-mounted)	440*190*610 (Wall-mounted)	500*190*560(75A) 440*232*625(100A) (Wall-mounted)	500*273*623 (Wall-mounted)	500*370*722 (Wall-mounted)
4.98kg	18kg	35kg	40kg	48kg	110kg
Silver	Black				
Environment Requirement					
≤1500m; Between 1500m to 4000m, derating 1% every additional 100m					
~10℃~40℃ (may derating if ambient temperature exceeds 45℃)					
5%		~95%, non-condensing			
IP20 (IP degree		es can be customizd)			
Related Qualifications & Standards					
CE, CCS					
IEEE519		, ER G5/4, IEC 61000			





America
Grid voltage



Specification





400V



400V



○ 25A/35A wall 440*150*470mm³
rack 400*490*150mm³ 18kg



○ 50 /60A wall 440*190*610mm³ rack 440*590*190mm³ 35kg
75A wall 500*190*560mm³ rack 500*586*190mm³ 40kg
100A wall 440*232*625mm³ rack 440*599*230mm³ 40kg

RE
FE
AN
T



400V



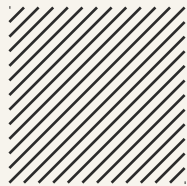
300A wall/rack
500*690*370 110kg



150A wall 500*273*623mm³
rack 500*630*270mm³ 48kg



50A wall 500*184*627mm³ rack 500*540*180mm³ 40kg
100A wall 500*250*723mm³ rack 500*675*250mm³ 70kg



480V
600V
690V

POWER
E
N



400V



5A/10A/15A wall/rack 410*340*45mm³ 4.98kg

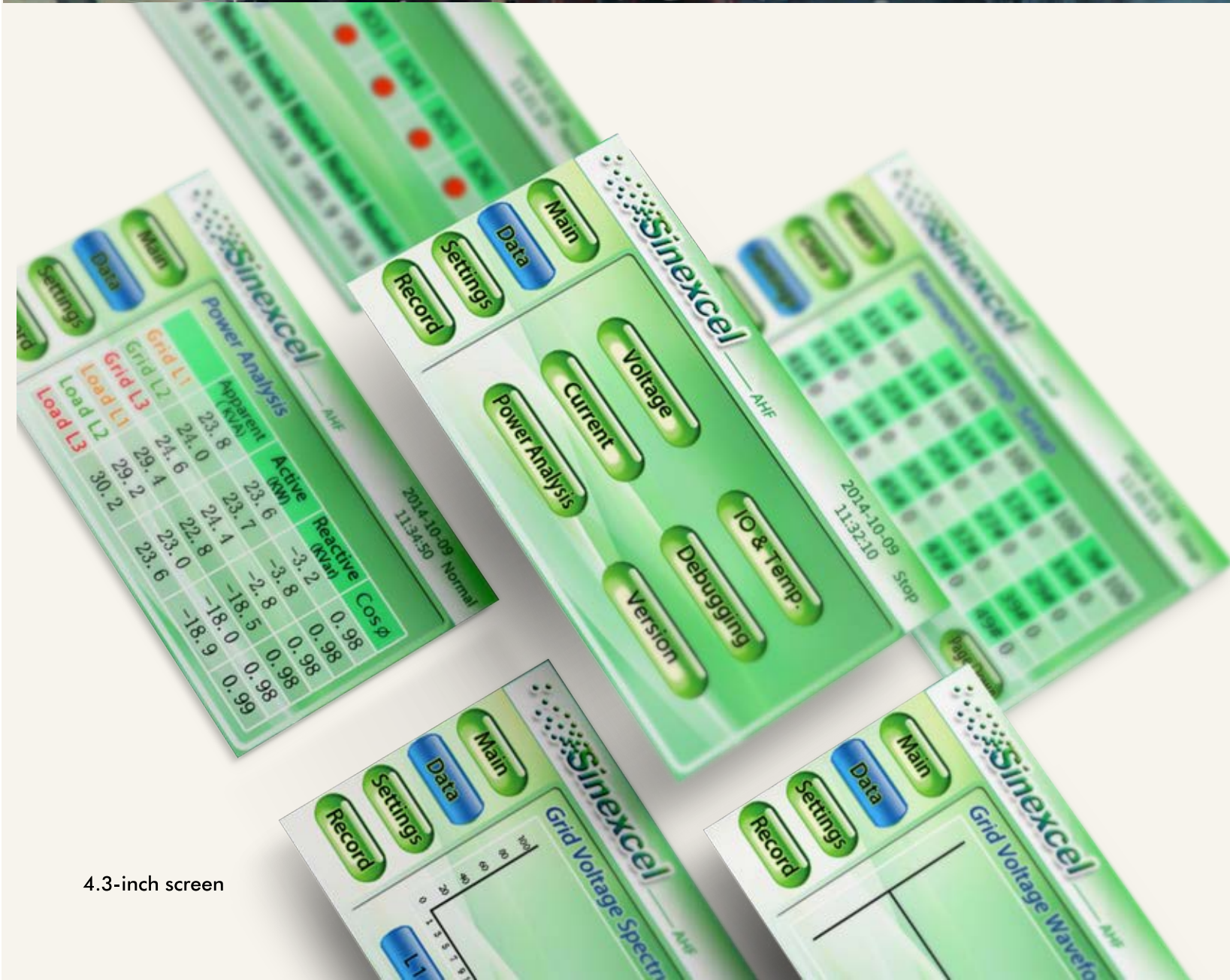


400V

Flexible Engineering Cabinet

- Flexible dimension
600*1000*2200mm³, 800*1000*2200mm³, 800*800*2200mm³, 1000*1000*2200mm³, 800*600*2200mm³
- Flexible Capacity
AHF, 25A/35A/50A/60A/75A/100A/150A/300A adapt to cabinet
SVG, 30kvar/50kvar/100kvar/200kvar adapt to cabinet
AHF, SVG module adapt to cabinet
- Flexible incoming connection
Top/ Bottom cable entrance
Top/ Bottom MCCB position

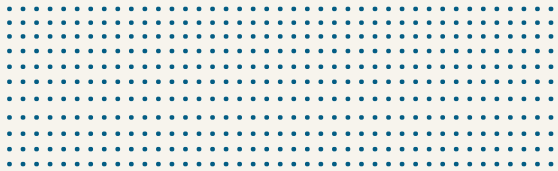
MONITORING



4.3-inch screen



Centralized monitoring System





GLOBAL APPLICATION

Industrial Manufacturing

Food and beverage, plastic, paper, semiconductor, chemistry, pharmacy,
paper, cement, oil drilling, automotive

Infrastructure

Airport-metro and railway, tunnel, water treatment, schools/campus,
museums, hospital, government building

More than 2.5million Ampere installation around the world

Application cover Automation Manufacturing, Infrastructure, ECO building, IDC

Application cover indoor/outdoor, high altitude hot/cold mechanical environment/dusty application,
land/offshore severe environment

ECO Building

Skyscraper-Commercial building, shopping mall, apartments

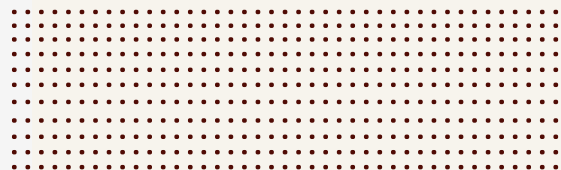
IDC

Telecom, bank, internet companies



Canada, Hylife Food, AHF 1440A

Industrial Manufacturing



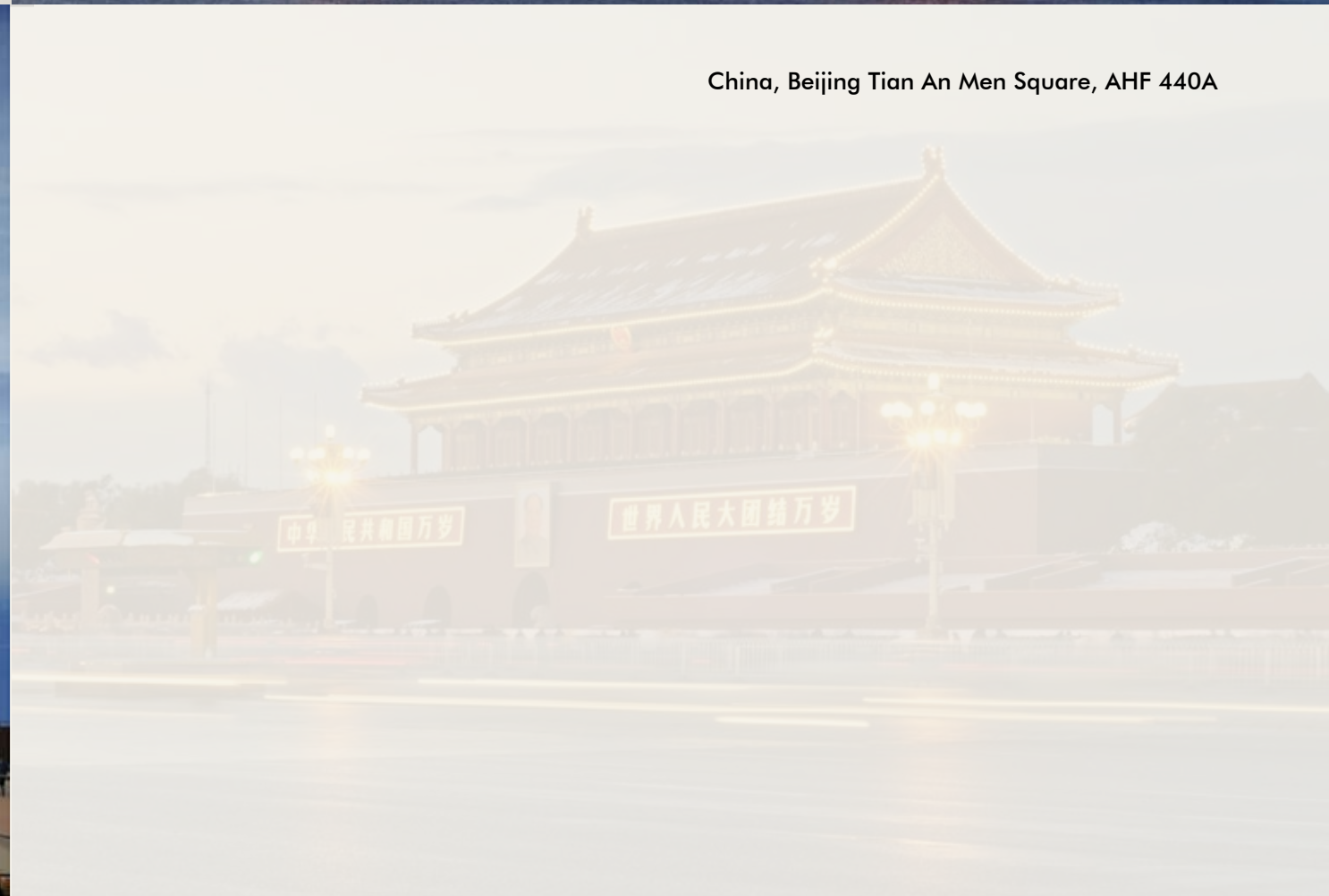
The United Kingdom, Glabina cheese, AHF 350A

Infrastructure

Australia, Sydney Opera house, AHF 200A



China, Beijing Tian An Men Square, AHF 440A





Hong Kong International Airport, AHF 6500A



Dubai International Airport, AHF 700A



Singapore Changi Airport, AHF 1950A



Gothenburg-Land Vetter Airport, SVG 270kvar

ECO building

Singapore, Microsoft Headquarter of Southeast Asia, AHF 1800A



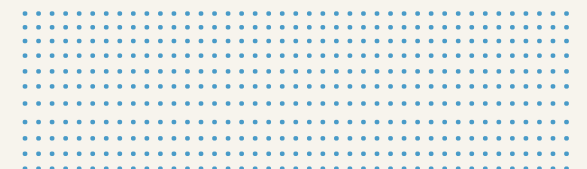
IDC



South Korea
Daegu bank AHF 150A/SVG 400kvar



HongKong(China)
China Unicom Data Centre, AHF 4425A





GLOBAL APPLICATION

Sinexcel AHF application covers Asia, Oceania, Europe, Africa, North America, South America.