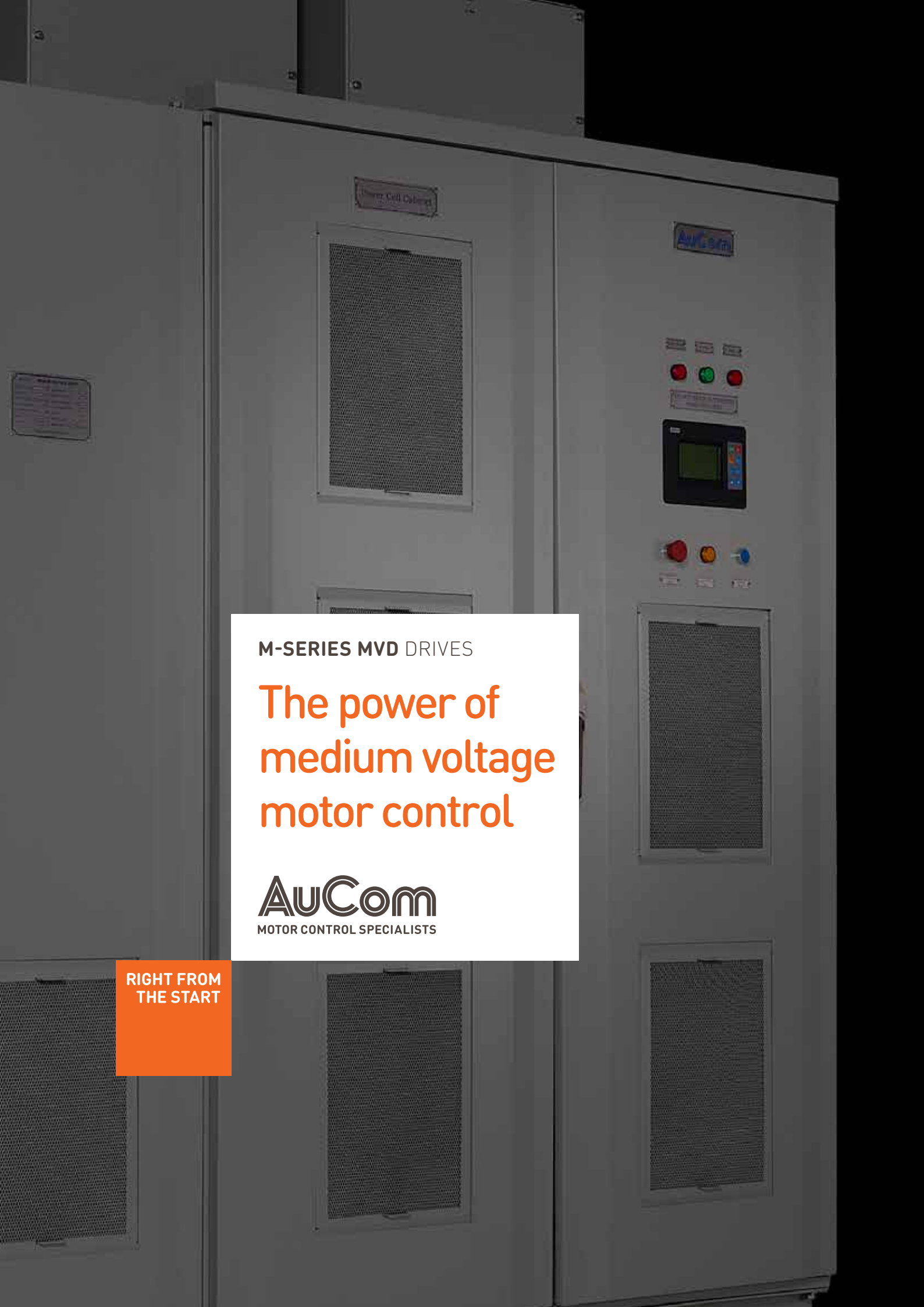


M-SERIES MVD DRIVES

The power of medium voltage motor control

AuCom
MOTOR CONTROL SPECIALISTS

RIGHT FROM THE START

Compact cabinet

DOUBLE-SIDE SERVICE ZONE

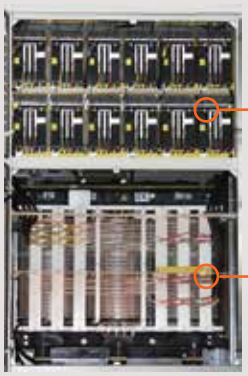
3.3 kV / 150 – 590 kW
4.16 kV / 180 – 750 kW
6 kV / 315 – 500 kW
10 kV / 400 – 800 kW

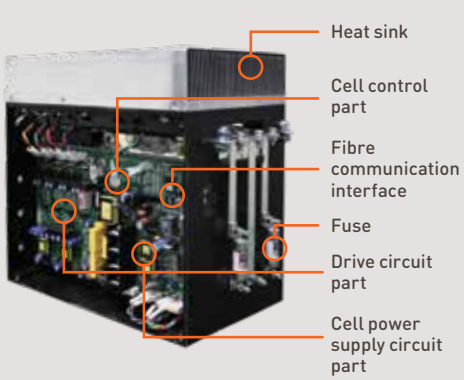
Smallest footprint layout with the full performance of a standard drive

Ideal solution for retrofit projects or any installations with space constraints

CONTROL CABINET

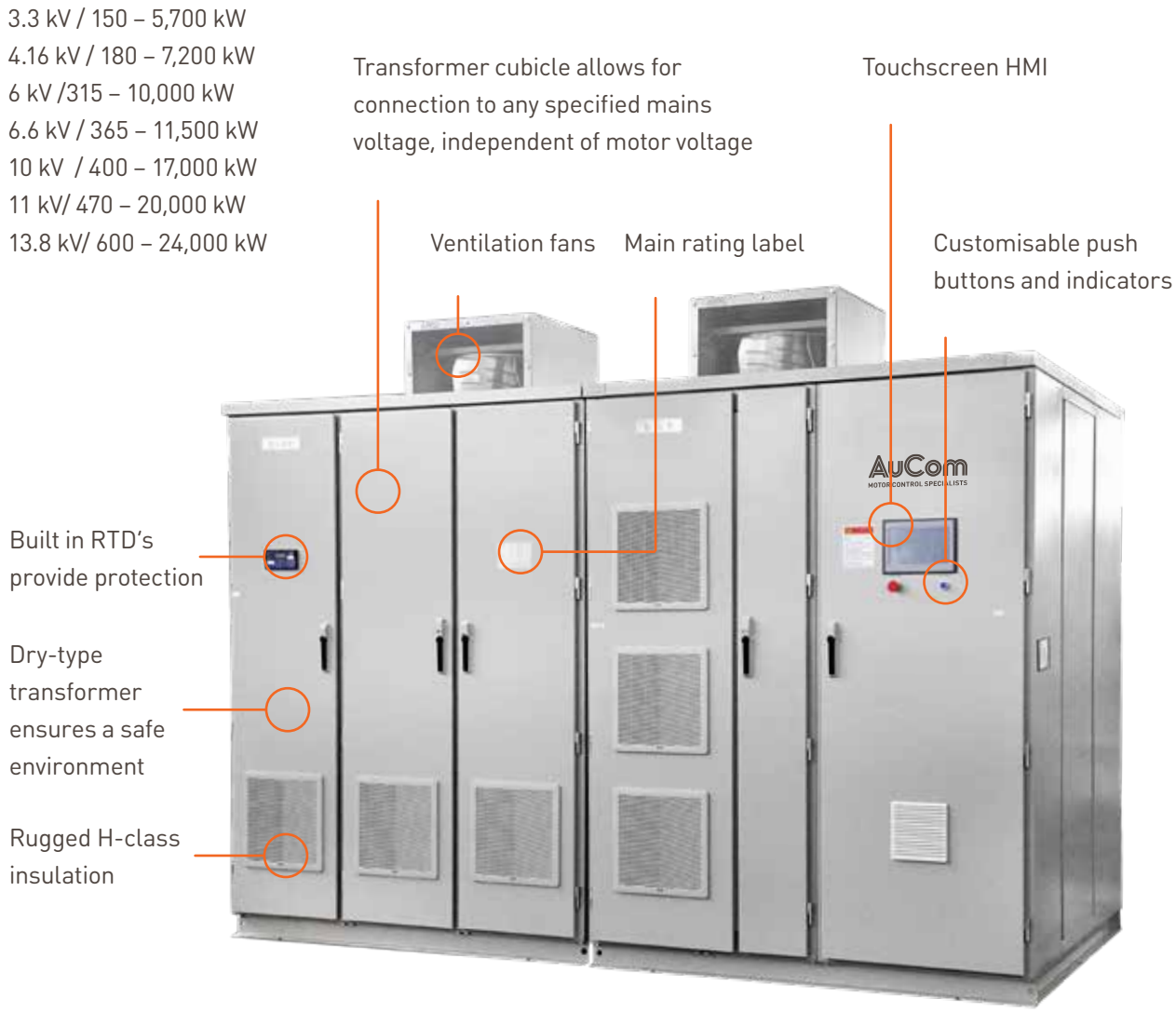
POWER CELL CABINET (TOP) TRANSFORMER CABINET (BOTTOM)





Standard cabinet

3.3 kV / 150 – 5,700 kW
4.16 kV / 180 – 7,200 kW
6 kV /315 – 10,000 kW
6.6 kV / 365 – 11,500 kW
10 kV / 400 – 17,000 kW
11 kV/ 470 – 20,000 kW
13.8 kV/ 600 – 24,000 kW



TRANSFORMER CABINET

The multi-windings at the secondary side can provide independent phase-shift power supply for the power cells. It can effectively reduce harmonic distortion and improve the current waveform of the grid system.

POWER CELL CABINET

Dedicated panel section to house all power cells and its associated electronics.

Modular power cell design allows for easy and safe commissioning or servicing without interacting with any MV supply or components.

CONTROL CABINET

Provides easy and quick access to all LV components such as the main controller, HMI, control power transformer and customer I/O terminals.

Product features

INTERFACE LOGIC CONTROLLER

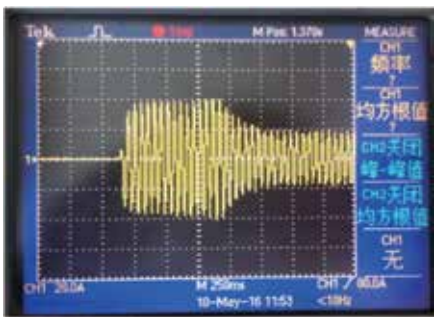
Interface logic controller uses a standard Siemens S7200 smart PLC as the core component, and this PLC is equipped with Siemens dedicated high-speed processor chip – its basic instruction execution time can be up to 0.15 μs. 24 DI, 16 DO, 4 AI, 4 AO have been selected for use according to the MV drive requirements, so it can guarantee adequate interface and ensure fast processing.

INTERFACE BOARD

The core of the new interface board is S7200 SMART CPU, the module comes standard with Ethernet interface, support Siemens S7 protocol, TCP / IP protocol, effectively supporting a variety of terminal connections. In addition, the CPU module is integrated with one RS485 interface, able to communicate with the third-party equipment such as the MV drive and touch screen. At the same time, it is equipped with expansion CM01 signal board to realize RS232 / RS485 free communication and support profibus and Ethernet TCP / IP communication protocol.

PARAMETERS DOWN- LOADING AND UP- LOADING

System and motor parameters can be easily downloaded and uploaded with a windows based software tool. The software provides an advanced service functionality and guarantees the correct parameter settings after the replacement of components.



Flying start motor / network waveform

ADVANCED FUNCTIONS

FLYING START

The drive will automatically estimate the motor speed, and output the same voltage waveform with the motor frequency applied after power loss, or when switching from bypass to drive control.

INSTANT POWER LOSS

When grid voltage drop or power off for less than 1000 ms, VFD can run without stop to support process at site.

TORQUE BOOST

Increasing the output voltage at low frequency, to boost the motor torque when running with low speed. This can solve the big torque load starting problem.

MASTER-SLAVE CONTROL

Supporting multiple VFD system, with several motors running on the same load such a mills or conveyor belts. The VFD analyzes torque and load to balance motors speed and torque.

DOUBLE WINDING MOTOR CONTROL

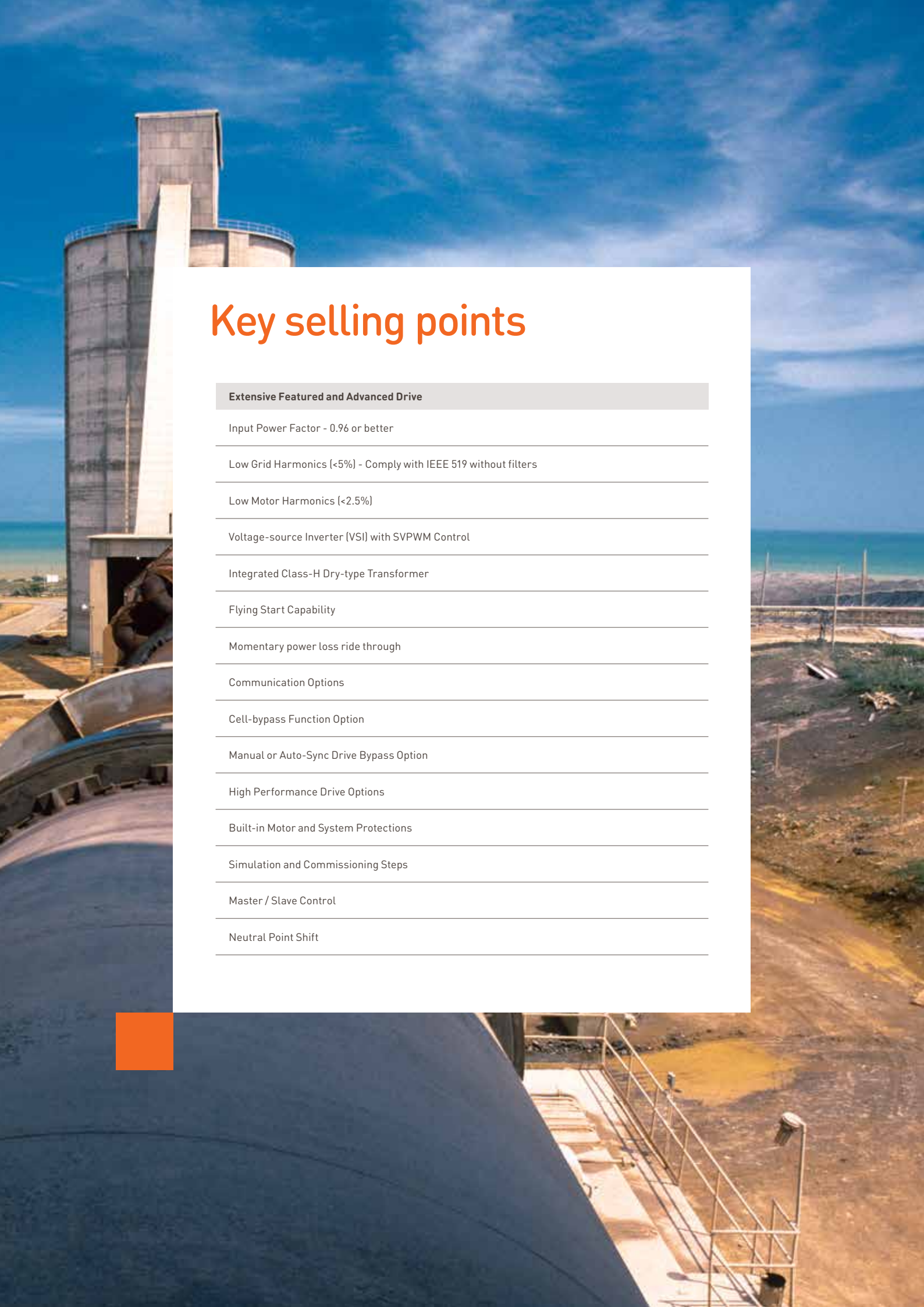
VFD driving the double winding motor can realize full speed with half load, half speed with full load, improve system stability.

POWER CELL BRAKING FUNCTION

This function enables high braking torque at low speed and guarantees a quick stop time if required.

NEUTRAL POINT SHIFT

In case one power cell is internally bypassed because of a fault, the other power cells can adjust the output voltage to keep a balanced output voltage.



Key selling points

Extensive Featured and Advanced Drive
Input Power Factor - 0.96 or better
Low Grid Harmonics (<5%) - Comply with IEEE 519 without filters
Low Motor Harmonics (<2.5%)
Voltage-source Inverter (VSI) with SVPWM Control
Integrated Class-H Dry-type Transformer
Flying Start Capability
Momentary power loss ride through
Communication Options
Cell-bypass Function Option
Manual or Auto-Sync Drive Bypass Option
High Performance Drive Options
Built-in Motor and System Protections
Simulation and Commissioning Steps
Master / Slave Control
Neutral Point Shift

Take control from the start

USER FRIENDLY INTERFACE

10.2" TFT LCD touchscreen with 1024 x 600 resolution.

Provides quick view screen solutions:

- Status indicator
- Menu selection
- Main screen
- Fault / alarm notification

Provides quick access to:

- Monitoring
- Trend curve
- Function parameters
- System parameters
- Fault record
- Other settings
- Power cell status
- Excitation monitor

FUNCTION AND SYSTEM PARAMETERS

Password protected.

Restore to default:

- Restore parameters to factory settings

Parameter download and upload:

- Used to restore parameters when HMI or PLC is changed

STANDARD BUILT-IN PROTECTIONS

- Transformer overheat
- Power cell cabinet over-heat
- Cabinet over-heat
- Cabinet door interlock
- Communication fault
- Parameters error
- External fault
- Power loss
- VFD over-current
- Motor over-current
- Cell fault
- Fuse fault
- Drive fault
- Cell over-heat
- Cell over-voltage
- Optic fibre fault

... and more

Function and system parameters interface

Simple and swift service

TOOLS FREE MAINTENANCE

Removing filters for inspection is very easy. Just lift and remove. No tools are needed.

- While the filter is removed, safety of personnel is maintained by the mesh in the panel
- Set of filters included with every MVD order

No special tools are needed for installation and general maintenance.

- Set of basic tools, e.g. spanner, provided with every MVD order

Front and rear access.

- Option for front access only

More flexibility

MANUAL OR AUTO-SYNC BYPASS

Operate the motor direct from mains supply bypassing the drive:

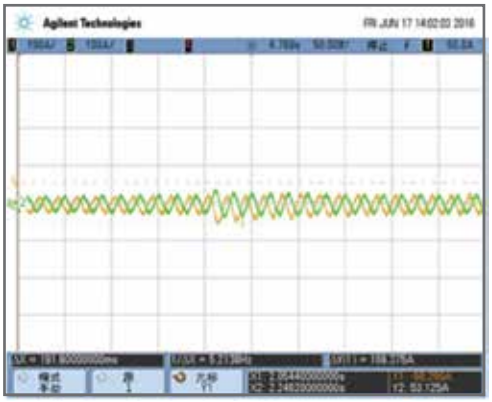
- Maximise efficiency (99.9%) for fixed or full speed applications after start up
- Provide operational redundancy while drive is being serviced

Using phase lock loop technology:

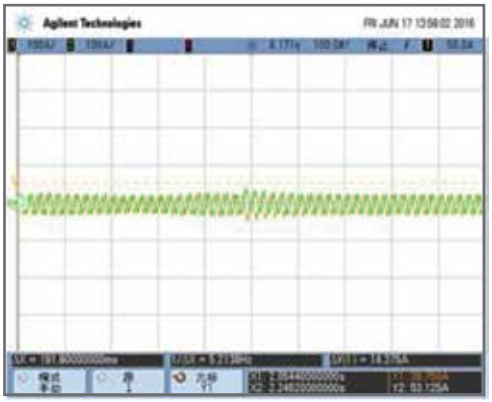
- Adjust and match the drive output with the grid: frequency, phase angle and amplitude
- Minimises or eliminates undesirable switching transient

Multi-motor Synchronous Transfer Function:

- Multi-motor synchronous transfer function allows users to start multiple (up to 4) MV motors sequentially in drive mode and control the last motor speed.



Current valid value 15 A, switch peak 31 A before sync transfer



The motor current waveform during sync transfer

NOMINAL CURRENT SOFT STARTING

Utilise the drive for soft starting or soft stopping only.

- Full torque start
- Ability to start at motor nominal current
- Maximum efficiency during running with bypassed operation
- Operate with standard MV motor
- Reduced footprint compared to full standard drive

Knowledge is power

FAULT RECORD INTERFACE

Real date and time stamped.

Each fault recorded includes:

- Fault time
- Fault name
- VFD running frequency during fault
- VFD output voltage during fault
- VFD output current during fault

Fault data is stored for up to 1 year. Clear automatically or manually.

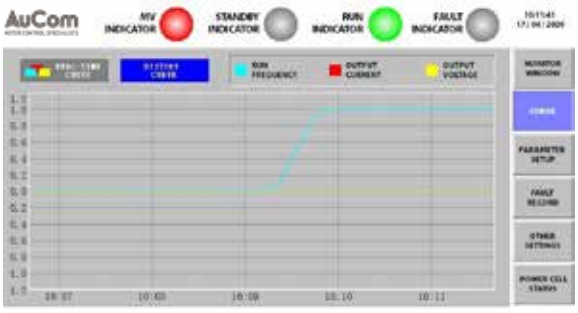
- Can be saved to external USB storage.

TREND CURVE INTERFACE

Provide real-time curve and historical curve.

- Historical curve is recorded at 1s interval, up to 5 minutes.
- Historical curve data is stored automatically for 1 month. Clears automatically or manually.
- Historical curve data can be saved to external USB storage.

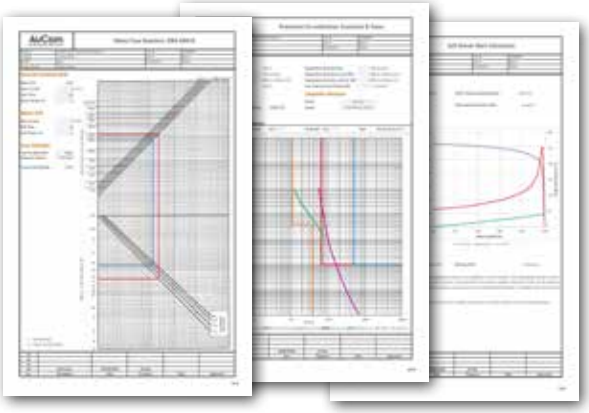
5 Hz sampling rate, up to 5 minutes rolling.



Trend curve interface

AUCOM TECHNICAL DATASHEET

Our medium voltage motor control specialists use advanced proprietary tools to specify the ideal AuCom medium voltage solution for your application. We provide a detailed technical datasheet including calculations for motor starting, heat dissipation, supply capacity, transformer & cable voltage drops, and selection of fuses and power factor correction.



Even safer with IBT technology

AuCom Interface Board Technology (IBT), a unique concept within the medium voltage motor control market, separates the core control system (including the controller and complex, time critical algorithmic processing) from the medium voltage power section.

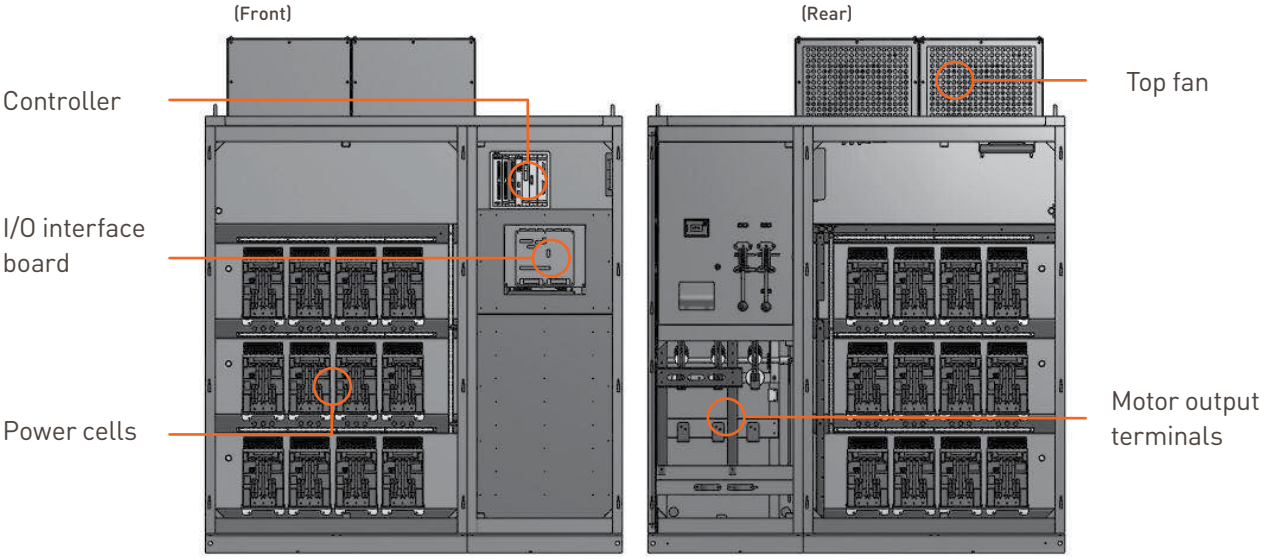
100% GALVANIC ISOLATION

The interface board is located in a separate, dedicated section of the medium voltage compartment. Fibre optic wires connect the control and power sections of the drive through the interface board, eliminating the need for any copper wiring and providing complete galvanic isolation of the low voltage compartment.

Panel overview

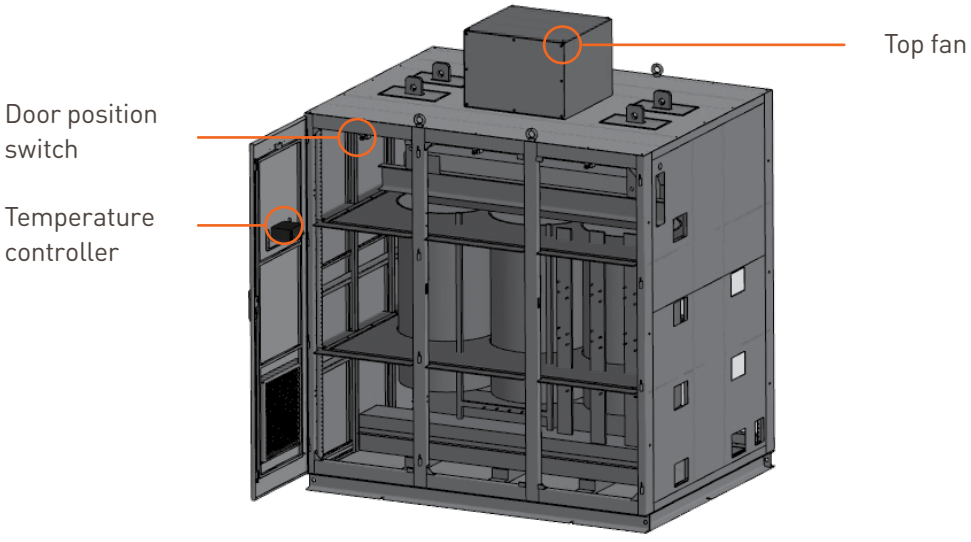
CONTROL / POWER CELLS CABINET

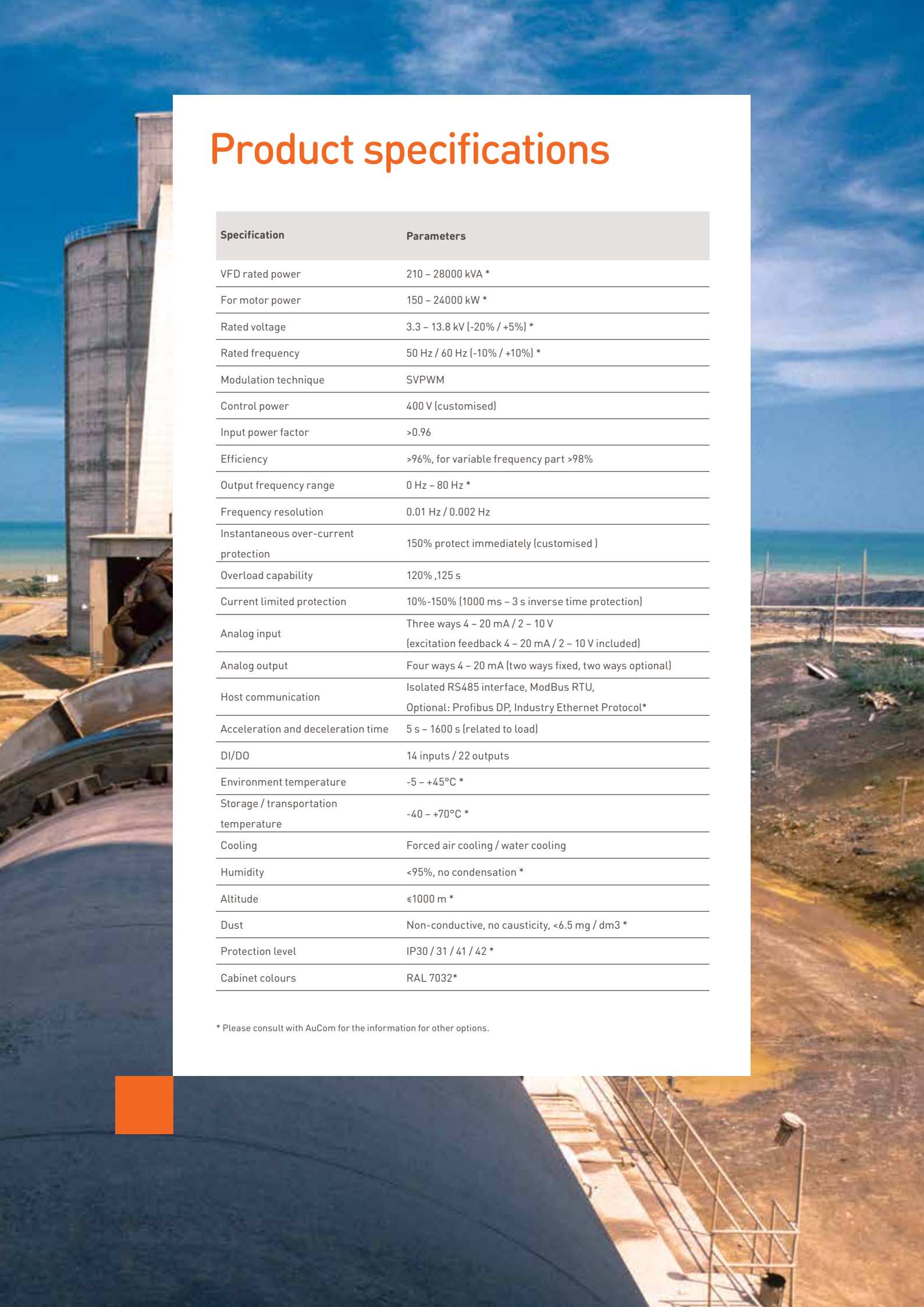
The control system, customer terminals and terminators are installed in the control cabinet. Power cells and their associated electronics are installed in the power cell cabinet.



TRANSFORMER CABINET

The isolated phase shifting transformer and auxiliary components are installed in the transformer cabinet.



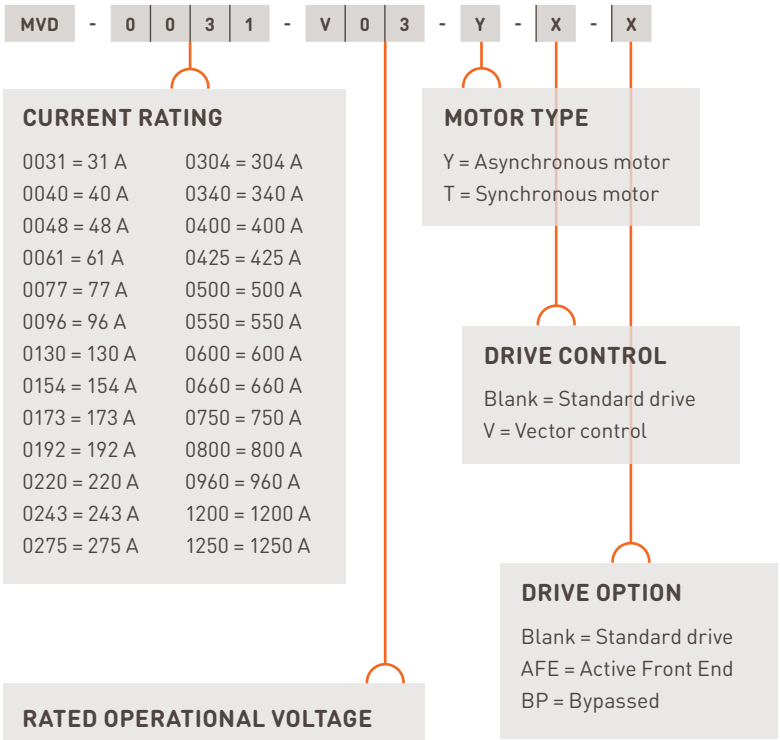


Product specifications

Specification	Parameters
VFD rated power	210 – 28000 kVA *
For motor power	150 – 24000 kW *
Rated voltage	3.3 – 13.8 kV (-20% / +5%) *
Rated frequency	50 Hz / 60 Hz (-10% / +10%) *
Modulation technique	SVPWM
Control power	400 V (customised)
Input power factor	>0.96
Efficiency	>96%, for variable frequency part >98%
Output frequency range	0 Hz – 80 Hz *
Frequency resolution	0.01 Hz / 0.002 Hz
Instantaneous over-current protection	150% protect immediately (customised)
Overload capability	120% ,125 s
Current limited protection	10%-150% (1000 ms – 3 s inverse time protection)
Analog input	Three ways 4 – 20 mA / 2 – 10 V (excitation feedback 4 – 20 mA / 2 – 10 V included)
Analog output	Four ways 4 – 20 mA (two ways fixed, two ways optional)
Host communication	Isolated RS485 interface, ModBus RTU, Optional: Profibus DP, Industry Ethernet Protocol*
Acceleration and deceleration time	5 s – 1600 s (related to load)
DI/DO	14 inputs / 22 outputs
Environment temperature	-5 – +45°C *
Storage / transportation temperature	-40 – +70°C *
Cooling	Forced air cooling / water cooling
Humidity	<95%, no condensation *
Altitude	≤1000 m *
Dust	Non-conductive, no causticity, <6.5 mg / dm3 *
Protection level	IP30 / 31 / 41 / 42 *
Cabinet colours	RAL 7032*

* Please consult with AuCom for the information for other options.

Model code



Other solutions

AuCom offers a complete range of soft starters. Whether you need a simple product for starting only, or a comprehensive motor control package, you can trust AuCom to offer a product to match.

	Soft Start	Motor Protection	Current Range	Voltage Range
CSXi	•	•	≤ 200 A	≤ 575 VAC
EMX3	•	•	≤ 2400 A	≤ 690 VAC
EMX4	•	•	≤ 2430 A	≤ 1200 VAC
MVE	•	•	≤ 1700 A	≤ 13.8 kV

A world of experience

	Water / Wastewater	Power generation	Pulp / Paper	Chemical / Petrochemical	Mining	Cement / Stone	Wood processing	Building technology	Marine / Off shore	Industry / Production
Pump	■	■	■	■				■	■	■
Fan/Blower/Aerator	■	■		■	■	■		■		■
Compressor		■		■				■	■	■
Chiller				■				■	■	■
Refiner			■				■			
Extruder				■						
Centrifuge				■						■
Mill crusher		■			■	■				
Hacker			■				■			
Conveyor		■			■	■				■
Roller		■								■
Rotating converter		■						■	■	■
Bow thruster									■	
Main propulsion									■	

The motor control specialists

At AuCom our focus is exclusively on motor control. We provide a range of industry leading products utilising the latest technology.

A dedicated medium voltage laboratory with full manufacturing and on-site testing facility provides selectable voltage sources from 2.3 kV to 13.8 kV, pump load, electronically controlled test load and synchronous motor testing capabilities.

TESTING AND VERIFICATION

Our comprehensive MV testing routine is designed to guarantee that our products are safe and reliable. This process involves:

- Motor speed test
- Motor light load test
- Protection function test
- Acoustic noise test
- Speed tracking restart test
- Output dv / dt test
- Output common mode voltage test
- Output voltage range and imbalance test
- Output current range and imbalance test

We also offer factory acceptance testing (FAT) and third party test audits on request.

THE PROOF IS IN THE POWER UP

All AuCom MV drives run a motor at rated voltage before they leave the factory so we're sure that you're getting the performance we promised.

FULL TRACEABILITY

Automated testing routines verify operational performance and record results so that all necessary information is readily available in the rare event that things don't go as planned.

THIRD PARTY CALIBRATION

Third party calibration professionals carry out regular calibration of all our equipment including test and measurement fixtures.

General specifications

Description	Design
IEC Standard Voltages	IEC 60038
Electrical and Magnetic Devices	IEC 60050 - 151
Power Electronics	IEC 60050 - 551
Electric Power Transformer	IEC 60076
Environmental Classifications, parts 1 - 3	IEC 60721 - 3
EMC with Industrial Plants Guideline	IEC 61000 - 2 - 4
EMC Test and Measurement Techniques	IEC 61000 - 4 - 7
Adjustable Speed Electrical Power Drive Systems	IEC 61800 - 3
Code for Designation of Colours	IEC 60757
Environmental Condition, Performance Ratings	IEC 106

The future starts with AuCom

We develop motor control products for industrial applications across the world. Our focus on research and development, as well as manufacturing, supply and support, ensures that when you choose to work with AuCom, you're working with a global leader. Almost 40 years of experience added to our expertise and ability means you can rely on us to get it right from the start.

OUR APPROACH

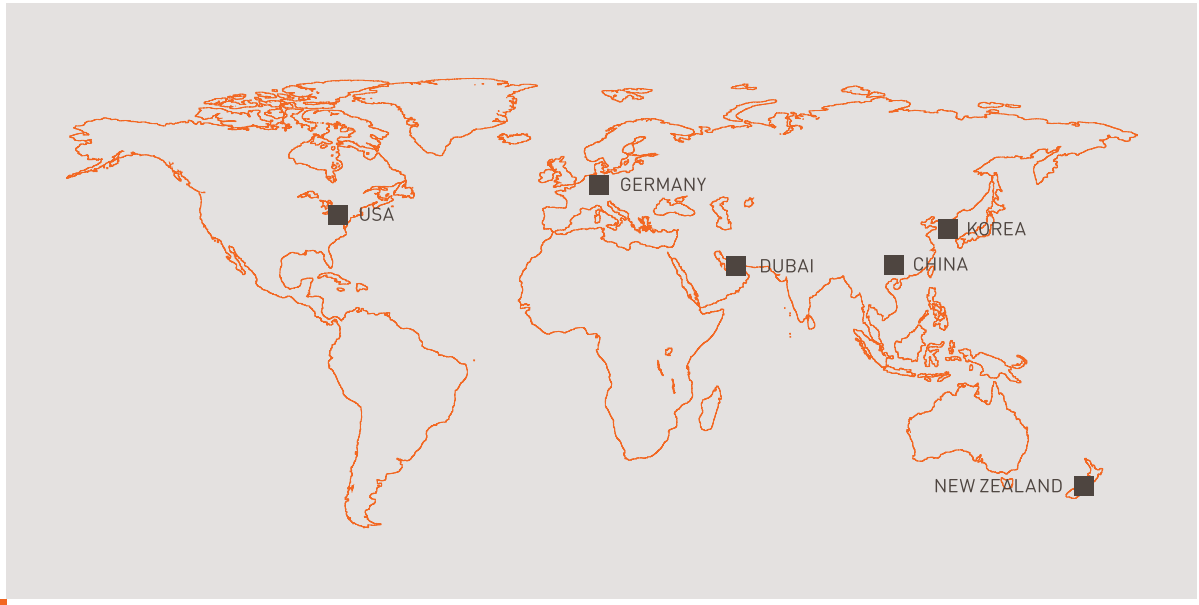
We start with a challenge or application, working with you to define and develop a solution that's not only fit for purpose today, but fully supported into tomorrow.

OUR PARTNERS

We choose partners that are experts, not only in soft start and motor control, but in understanding the needs of their industry. We work closely with our partners to ensure customers receive only the best support and advice.

OUR PEOPLE

The power behind our success doesn't rely on our innovative products alone. Our people play a pivotal role. That's why, with AuCom, it's always personal. Combining dedication and experience with ability and passion, we don't just listen more closely, we draw on the breadth of our expertise to better understand your unique requirements and offer real solutions and ongoing support.



We've got you covered

AuCom's expertise and knowledge extends well beyond the products we make. We're about helping you achieve efficient and effective control of your machines and processes no matter what the industry or application.

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AuCom
MOTOR CONTROL SPECIALISTS

RIGHT FROM THE START

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