



GRIDFIX

Modular
Power Factor
Compensation
Solutions



GRIDFIX Series: What Does It Offer?

Modular Compensation Modules

The GRIDFIX Series, developed by Forte Energy, consists of reactor-based, thyristor-switched modular compensation drawers designed for the high-speed, reliable and scalable compensation needs of modern industrial facilities.

These systems maintain a stable power factor even during sudden load changes, increasing energy efficiency and extending system life.

Key advantages of the GRIDFIX series:

- Ultra-fast thyristor switching with a ≤ 10 ms response time
- Harmonic filtering with detuned reactors
- Easy maintenance and expansion thanks to modular drawer design
- Plug&Play modules allow replacement without production downtime
- Long-life capacitors ($>250,000$ hours)
- DSP-based intelligent control ensuring continuous $\cos\phi \geq 0.99$

GRIDFIX drawer-type compensation panels comply with the IEC 61439-2 Form 4B standard. This structure completely separates busbars, modules and terminals, ensuring maximum safety, service convenience and operational continuity.

The GRIDFIX series is the ideal solution for facilities with dynamic loads.

It offers short return-on-investment time, eliminates the risk of reactive penalties, protects equipment and provides energy savings.

Drawer-Type Design: **Modularity and Operational Convenience**

The modular design simplifies the internal layout of the panel, making components easier to access and significantly reducing fault-finding and intervention times.

At the same time, it reduces the total cost of ownership for industrial plants in the long term, offering a sustainable return on investment.

The GRIDFIX drawer-type design turns each stage of the system into an independent module, enabling fast maintenance and easy expansion. This allows the faulty module to be replaced without shutting down the entire system.

Advantages:

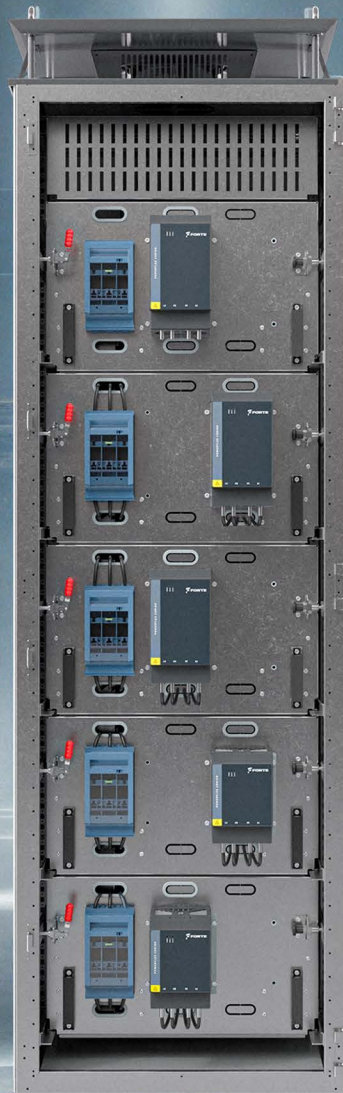
- Hot-swap capability reduces production downtime by 95%
- Electrical and mechanical interlocking systems ensure operator safety
- Standard rail and connection system provide easy installation and access

This modular structure delivers less downtime, lower maintenance costs and high operational continuity for industrial facilities.



Modular power, dynamic performance, uninterrupted energy.

The modular design of GRIDFIX offers safe live-step switching, easily scalable architecture, fast redundancy, and simplified maintenance—providing a modern alternative to traditional compensation panels. With its dynamic compensation capability, it ensures stable energy management even during sudden load changes.



Uninterrupted Operation

Maintenance without stopping production



Safe Intervention

Controlled and secure servicing under live power



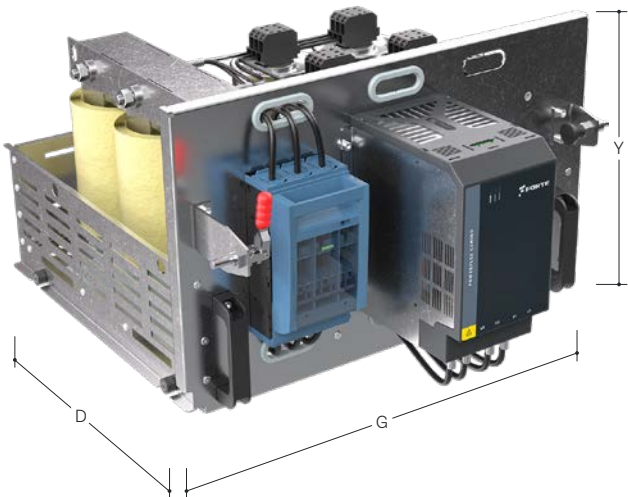
Fast Maintenance

Quick module replacement within minutes thanks to cassette-based design

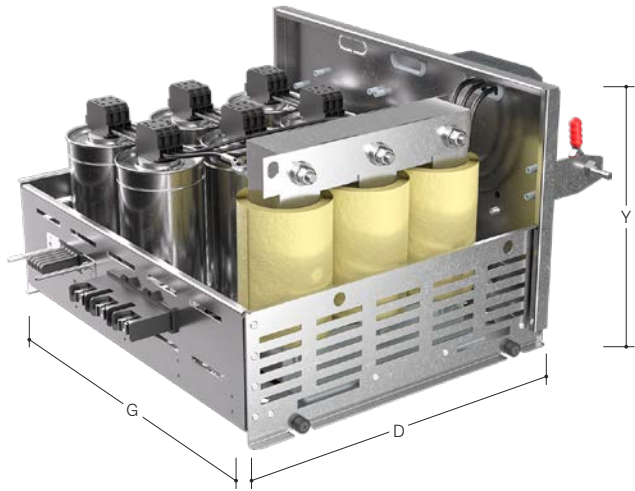
GRIDFIX Series Technical Specifications and Performance

The GRIDFIX Series, developed by Forte Energy, is a modular, high-speed and reliable solution engineered to meet the dynamic reactive power requirements of industrial facilities.

Switching Type	Thyristor module-based semiconductor
Voltage	400 / 525 / 600 / 690 / 750V Busbar voltage (±5%)
Frequency	50Hz
Connection Type	3P4W
Step Power Ratings	12.5 / 25 / 50 / 75 / 100 kVAr
Reactor Detune Ratio	%7 (189Hz) or %14 (134Hz)
Capacitor Rated Voltage	525V - 900V
Operating Temperature	-10°C - 45°C
Response Time	≤10ms
Cooling	Forced-air cooling system 220 VAC / 1250 m³/h
Power Factor Correction	cosφ ≥ 0,99
Protection	Over-voltage, over-current, high temperature
Module Dimensions (w × h × d)	50 kVAr 595 x 345 x 480mm / 100 kVAr 595 x 370 x 480mm
Module Material	Galvanized steel
Application	Indoor / Panel-mounted installation
Overcurrent Withstand	%110 × I _n
IP Protection Class	IP41
Standards	IEC 61439-1, IEC 62208, IEC 60529, IEC 62262
Capacitor	Dry-type, self-healing, manufactured according to IEC 60831-1
Reactor	Dry-type resin-encapsulated, compliant with EN 61558-1 and EN 61558-2-20 standards, TSE-certified and CE-marked



12.5 kVAr to 50 kVAr GRIDFIX
Dimensions (w × h × d): 595 × 345 × 480 mm



75 kVAr to 100 kVAr GRIDFIX
Dimensions (W × H × D): 595 × 370 × 480 mm

GRIDFIX Compensation Panel

Our GRIDFIX compensation cassette solution offers superior reliability and efficiency with its modular structure, easy installation, smooth operation and convenient serviceability.



- 1 Roof Ventilation Unit
1CVV001
- 2 Top/Bottom Kit
1CS0708
- 3 Rail Kit
1CRL001
- 4 Front Door
1CH0722-L
- 5 Side Cover
1CX0822
- 6 Rear Cover
1CX0722
- 7 Panel Frame
1CC2200
- 8 Busbar Protection Kit
1CBB001
- 9 GRIDFIX Compensation Cassettes (100 kVAr)
1RC7001
- 10 Reactive Power Controller
1RRC001



Designed for Heavy Industry

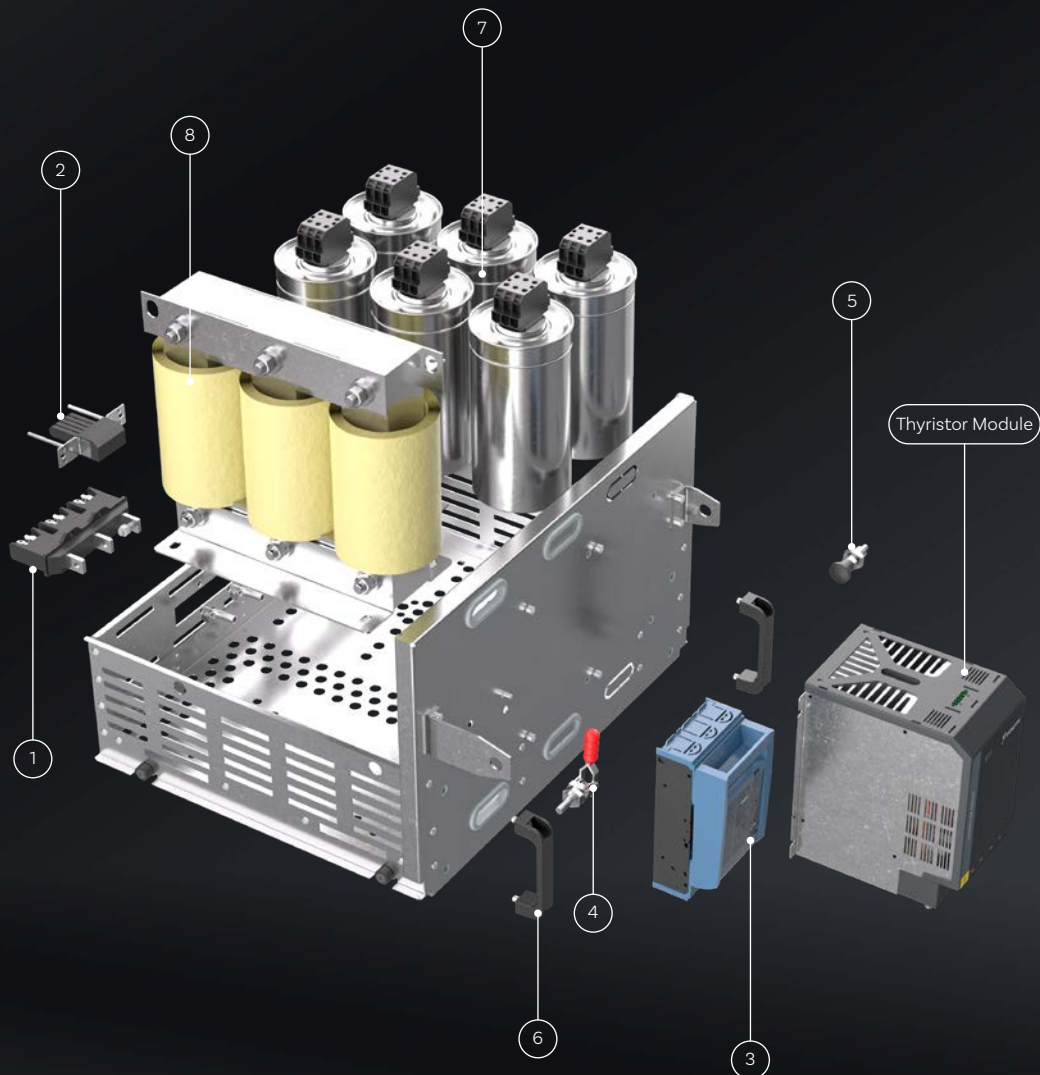
Iron & Steel · Paper · Cement
Mining · Petrochemical

GRIDFIX delivers the speed, safety and stability demanded by heavy industry — all within a single modular structure.

Intensive and rapidly changing loads are common in heavy industrial plants. For these demanding environments, the GRIDFIX dynamic compensation solution ensures a stable power factor, reduced fault rates and high operational continuity. Its modular design minimizes maintenance time and is engineered to withstand harsh process conditions.

More practical, more compact

GRIDFIX Compensation Cassettes deliver superior modularity, fast maintenance capability, easy expandability and enhanced operator safety compared to traditional fixed-step compensation panels.



1 - Busbar Socket 1RBP001

Provides a safe, fast and low-loss power connection between the main busbar and the drawer in modular systems. Its high current-carrying capacity and silver-plated contact surfaces ensure maximum efficiency in energy transmission.

5 - Pin-Guided Alignment Bracket 1RAX003

Provides millimetric alignment during module insertion, preventing damage to the contacts. Its guiding capability minimizes operator errors and simplifies installation.

2 - Signal Socket 1RSG001

Ensures flawless transmission of control and command signals, providing automatic connection when the module is inserted. Its plug-and-play structure shortens installation and maintenance time.

6 - Handle 1RAX001

Designed for ergonomic and balanced handling of drawer modules during transport or sliding operations. Its durable construction enables easy maneuvering of even heavy modules during maintenance.

3 - Fused Switch Disconnect 1RNH001

Protects the circuit against short circuit while enabling safe load switching under energized conditions. Its compact design and arc-quenching capability elevate operational safety to the highest level.

7 - Capacitor 1CAP001

Self-healing technology and over-pressure safety features ensure superior reliability in reactive power compensation. Designed for harsh operating conditions, it delivers long-life performance.

4 - Pull-off Safety Lever 1RAX002

The Pull-off Safety Lever locks the drawer module into the panel and ensures secure, full engagement. Its safety focused design prevents accidental pulloff and maximizes technician protection during maintenance.

8 - Detuned Reactor 1DR001

Plays a critical role in meeting total harmonic distortion limits. By filtering harmonics, it improves voltage and current waveforms toward an ideal sine wave, ensuring efficient equipment performance.

Compact design. Smarter diagnostics. Longer product life.

The CSM100 Thyristor Module is more than just a switch — it represents an advanced vision for sustainable performance, reliable operation and smarter power quality management.



Forté CSM Series Thyristor-Controlled Capacitor Switching Modules: The Perfect Combination of Power and Performance

The Forté CSM100 series is a high-performance, electronically controlled thyristor switching module specially designed for dynamic power factor correction systems. Operating across a wide voltage range from 400V to 750V, it provides real-time compensation with instant response to load variations — unlike mechanical contactors. Its self-monitoring (self-controlling) architecture and temperature-regulated intelligent cooling system ensure safe and uninterrupted operation even under heavy-duty conditions. The advanced on-module LED diagnostic display instantly reports critical information such as phase errors, over-temperature and operating status, simplifying maintenance processes.

CSM100 Features and Advantages

- 10 ms response time
- Dynamic power factor correction
- Electronically controlled thyristor switching
- 10% overvoltage tolerance
- Overheating protection
- Potential-free trigger input for external control
- Self-monitoring control technology
- Temperature-controlled intelligent fan cooling
- LED diagnostic display for real-time fault detection
- Alarm relay output in fault conditions
- Up to 145A high current capacity
- Direct and secure busbar connection

GRIDFIX Compensation Cassettes

Our GRIDFIX compensation cassette solution offers superior reliability and efficiency with its modular structure, easy installation, smooth operation and convenient serviceability.

Busbar Voltage	Reactor Ratio	Net Power	Product Code
400V	P %7	12,5 kVAr	1FX400V012P0701
		25 kVAr	1FX400V025P0701
		50 kVAr	1FX400V050P0701
		75 kVAr	1FX400V075P0701
		100 kVAr	1FX400V100P0701
	P %14	12,5 kVAr	1FX400V012P1401
		25 kVAr	1FX400V025P1401
		50 kVAr	1FX400V050P1401
		75 kVAr	1FX400V075P1401
		100 kVAr	1FX400V100P1401

Busbar Voltage	Reactor Ratio	Net Power	Product Code
690V	P %7	12,5 kVAr	1FX690V012P0701
		25 kVAr	1FX690V025P0701
		50 kVAr	1FX690V050P0701
		75 kVAr	1FX690V075P0701
		100 kVAr	1FX690V100P0701
	P %14	12,5 kVAr	1FX690V012P1401
		25 kVAr	1FX690V025P1401
		50 kVAr	1FX690V050P1401
		75 kVAr	1FX690V075P1401
		100 kVAr	1FX690V100P1401

* For different power ratings, voltage levels or resonance frequencies (P%), please contact our sales team.

GRIDFIX Compensation Cassettes – Material Selection

Panel Product Selection

Description	Code	Height	Width	Depth
Top / Bottom Kit (Compensation Panel)	1CS0708	700		800
Top / Bottom Kit (Control Panel)	1CS0408	400		800
Sheet Metal Columns	1CC2200		2200	
Front Door with Ventilation	1CH0722-L	700	2200	
Front Door (Flat)	1CH0422	400	2200	
Front Door (Flat)	1CH0722	700	2200	
Rear Cover	1CX0722	700	2200	
Side Cover	1CX0822	800	2200	
Rear Cover (Control Panel)	1CX0422	400	2200	
Rail Kit	1CRL001			800
Socket Mounting Plate	1CPA001			
Busbar Protection Kit	1CBB001			
Connecting Element	1CJN001			
Roof Ventilation Unit	1CVU001			
Roof Ventilation Fan	1CVF001			
Drawer Frame 50 kVAr	1RC4501	595	345	480
Drawer Frame 100 kVAr	1RC7001	595	370	480
Reactive Power Controller	1RRC001			

Accessory Product Selection

Description	Code
Signal Socket	1CS0708
Handle	1CS0408
Pull-off Safety Lever	1CC2200
Pin-Guided Alignment Bracket	1CH0722-L

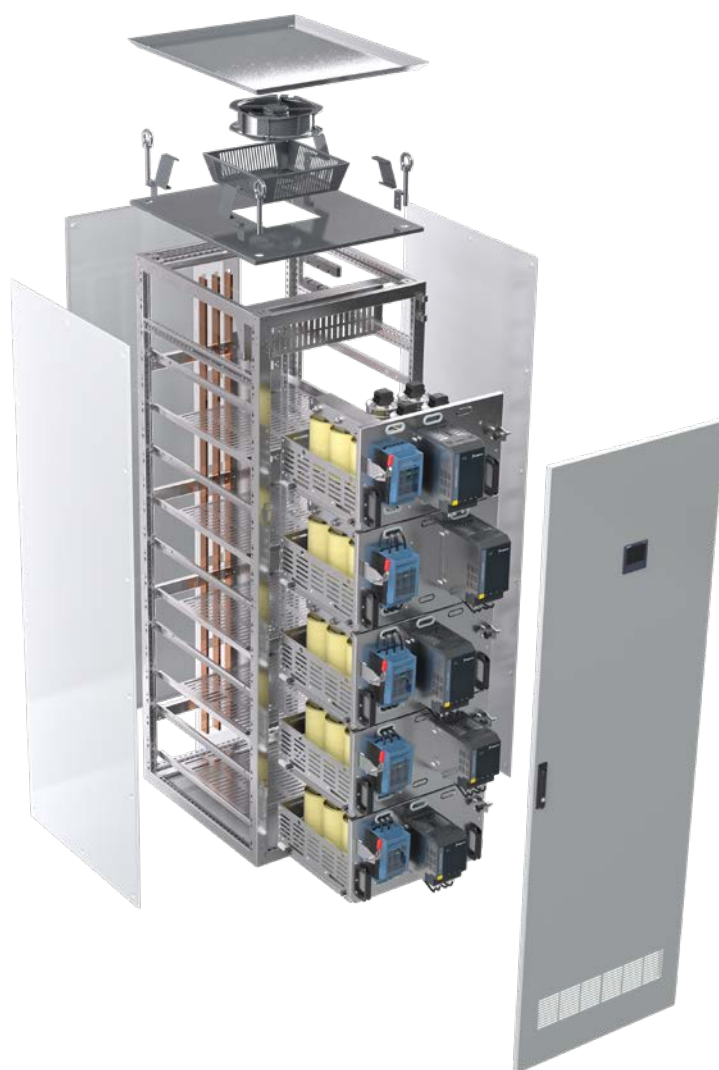
Technical Product Selection

Description	Code
Thyristor Module	1CSM001
Capacitor	1CAP001
Detuned Reactor	1DR001
Fused Load Break Switch	1RNH001
Busbar Socket 125A	1RBP001
Busbar Socket 250A	1RBP002

Installation Conditions

- A maximum of 5 GRIDFIX modules can be installed in a single panel.
- A maximum of 500 kVAr (5 × 100 kVAr) can be installed in a single panel.
- Bottom cable entry.
- Horizontal busbar installation available for multi-section panels.

Example 400V – P%7 – 500 kVAr GRIDFIX Compensation Panel



Product Code	Description	Qty / Set
1CVU001	Roof Ventilation Unit	1
1CVF001	Roof Ventilation Fan	1
1CS0708	Top / Bottom Kit	1
1CRL001	Rail Kit	5
1CH0722-L	Front Door with Ventilation	1
1CX0822	Side Cover	2
1CX0722	Rear Cover	1
1CC2200	Sheet Metal Columns	1
1CBB001	Busbar Protection Kit	1
1FX400V100P0701	GRIDFIX Compensation Cassette 400V – 100 kVAr – P%7	5
1RRC001	Reactive Power Controller	1



Contact Our Expert Team for GRIDFIX Solutions

You can contact the expert team of Forte Teknik A.Ş. to get more information about the detailed analysis and optimized GRIDFIX solutions for your facility's specific reactive power and harmonic distortion needs. Our engineers are ready to offer you specialized consultancy services on energy quality measurements and system integration.



FORTE TEKNİK MAKİNA A.Ş.

Ulukent Industrial Zone, 29 Ekim Neighborhood, 10002 Street, No:16/5 B Block
Menemen - İzmir / Turkey
info@fortetechnik.com
+90 850 840 64 24

www.fortetechnik.com