



ENGINE & GENSET OEMs

APPLICATION GUIDE



A COMPREHENSIVE RANGE OF GENSET CONTROLLERS

SIMPLE, COMPACT - YET POWERFUL

DEIF offers a wide choice of genset controllers that meets every need of an OEM. With compact size and simple to set up and use features the controllers are ideal for large volume production and global use.

Gensets equipped with DEIF controllers are not only perfect for traditional applications, they are also future ready for hybrid applications including solar power and battery storage solutions.

From simple to advanced control and power management together with Digital Voltage controllers, battery chargers, Power Supplies, Measuring instruments as a package, DEIF offers one stop shop solution.

IN STOCK & READY TO SHIP

DEIF guarantees immediate and reliable delivery performance for projects of all sizes making us an ideal partner for OEMs both locally and internationally.

On top, DEIF's advanced and more basic controller systems have been designed with flexibility and versatility in view, giving genset builders and engine manufacturers a range of options that enable them to meet all types of application requests.

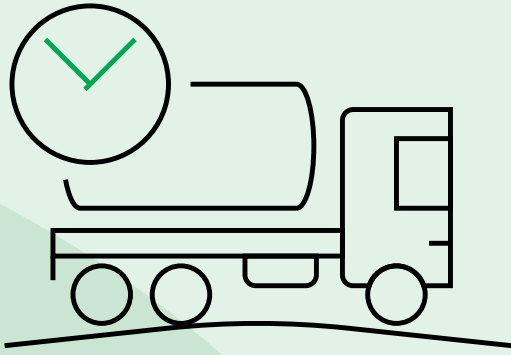
Engine manufacturers

- J-1939 compatible (Tier 4F and Stage 5 compliant)
- DEIF develops flexible platforms for integrating motor data
- Optional engine performance views

Genset builders

- Compatible with all engine and alternator brands
- Complete product portfolio
- Market-leading delivery and response time

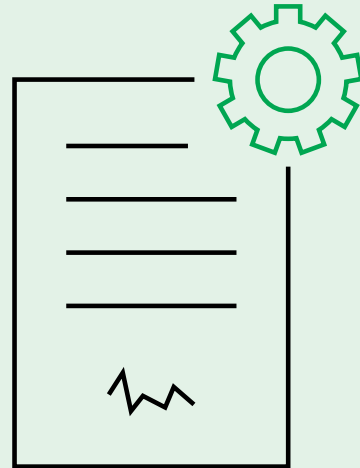




DEIF Ships standard products in less than 3 days.

Globally, 99 % of all DEIF deliveries are on time

Scalable service contracts for system solutions and advanced plant management systems.



3 year guarantee supply of spare parts for standard controllers.

10 year supply for standard switchboard equipment.

Full service & solutions provider. Strengthen your product & system compatibility working with one supplier. DEIF markets a complete scope of supply ranging from simple instruments to complex and customised power engineering solutions.

- ▶ Pre-engineering and design support
- ▶ Commissioning, support, and service contracts
- ▶ 24/7/365 global after-sales service & support



A strong working relationship

Targetting Asia & the Far East markets

»DEIF has developed and adapted its SGCs and AGC 150 platforms to suit OEM needs exactly...«



Product range, delivery guarantee & customisation

In India, DEIF has built a strong working relationship with Sterling Generators, one of the subcontinent's largest genset builders. Assembling gensets with some of the biggest engine producers in India, Sterling also has substantial exports to the Middle East and Africa.

DEIF has become Sterling's preferred supplier not just because of the quality of our product range but because of reliable delivery performance and our ability to develop and customise controller products to precise specifications.

Developed for applications requiring reliable power supplies, DEIF's AGC 100 non-sync controllers offer a powerful processor and significant memory capacity.

Vibration-tested and evaluated with HALT test, the sturdy controller unit offers reliable performance even under extreme conditions.

Read the full case story



Sterling Generators

is a leading MEP Services company in India with more than 80 years of experience in project engineering and execution.

No power – no festival

Godik Power uses remote monitoring and EasyConnect



»We can monitor [the gensets] and see how they are running. You can even sit on the beach and see how the systems are running – wherever they are located.«

Hans Mikkelsen
Fleet Manager
Godik Power

Godik Power provides temporary power, backup, and emergency power for e.g. festivals, events, and TV production. The company benefits from EasyConnect, Power Management, and Insight remote monitoring from DEIF.

"When we're at a large festival like this one, it wasn't unusual previously that we walked 12, 15, or 20 kilometres a day in our rounds to check on the gensets. We can save a lot of time now, because we can sit with our computers, tablets, or smartphones and see what's happening. I've worked in this business for 25 years, and this is just super. It's the best generator setup I've seen," says Hans Mikkelsen, Fleet Manager of Godik Power.

Benefits:

- Genset units can be added and removed quickly and easily
- Optimum power management
- Instant access to data from all units

Godik

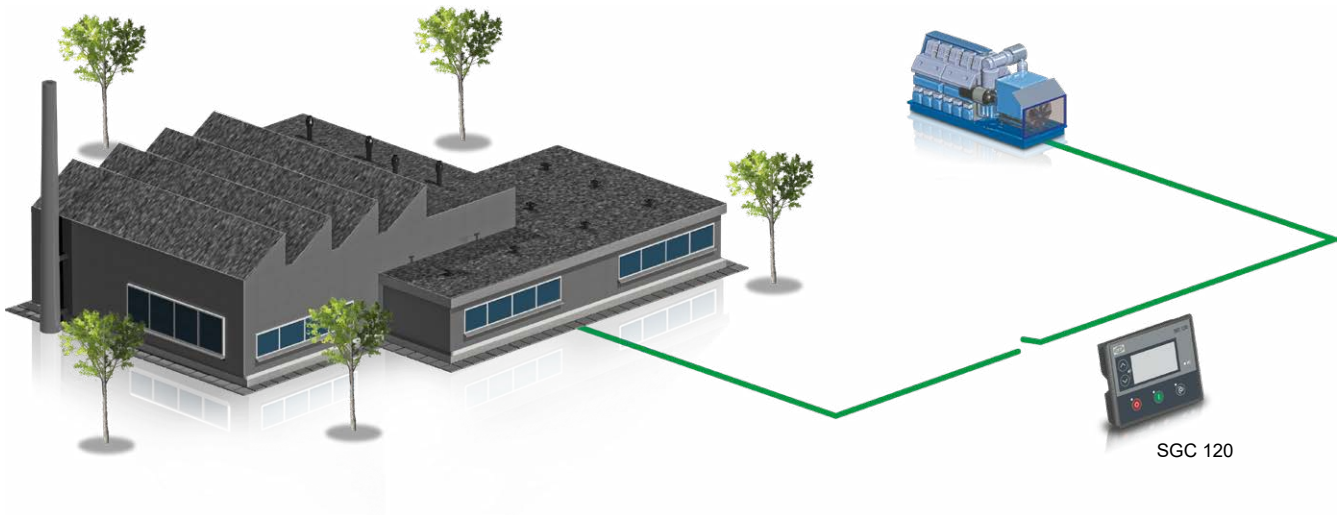
is a nationwide major supplier of equipment for events and festivals, crafts and industry, agriculture and retail.

Read the full case story



Island operation

No grid connection



Single generator applications

Island mode operation relates to power plants that operate in isolation from the national or local electricity distribution network.

There are two key types of island mode operation:

- ▶ Stand-alone generators not connected to the electricity grid
- ▶ Multiple generators synchronised in an island

Supply to consumers: with an option to choose between 50 and 60 Hz drive, these types of plants are typical of basic installations and mobile generator sets.

Fire pump drive meets VDS Germany regulations: this application is often used for emergency power plants, because all units are able to handle fire pump mode and wire break monitored inputs.

Relevant controllers



SGC 410



SGC 110



SGC 120

Also consider these products



DBC-1



MIB



ASR



Omron series

Oslo hospital revives emergency power

From decentralised, fragmented system to full control

»What you have now is a lot more control of each building. You can control the system much better. We have higher redundancy and safety in the backup power.«

Dag Olsbakk

Consulting Electro Engineer
COWI

Venterom
MR/CT S9 - S12
MR S9 - S10 - BCT

Setel
Kardiologisk avdeling, HJK

Ullevål Sykehus

The emergency power system at Oslo's Ullevål Hospital needed an upgrade – badly. Ullevål's century-old buildings and decentralised power infrastructure were inefficient. Medium-sized generators were located in or near the many buildings and there was little control over the load situation.

COWI and DEIF worked together with Ullevål to build the new system while keeping the hospital on-line and functioning normally – like a bypass operation of a patient.

Operations manager Michal Kjerstad's team no longer needs to go from building to building and look up at the windows for light during a power outage. *"Today we just look at a PC monitor and check up on those that have lost power and go straight to them."*

He says it also simplified Ullevål's generator testing. *"We no longer have to drive around with connecting cables. Now we stand in a heated room and touch a PC screen, testing the generators the exact way we need to. Whether it's phasing onto the grid in each building or testing to a load point. We have every option available, so that is very, very good."*

Ullevål Hospital

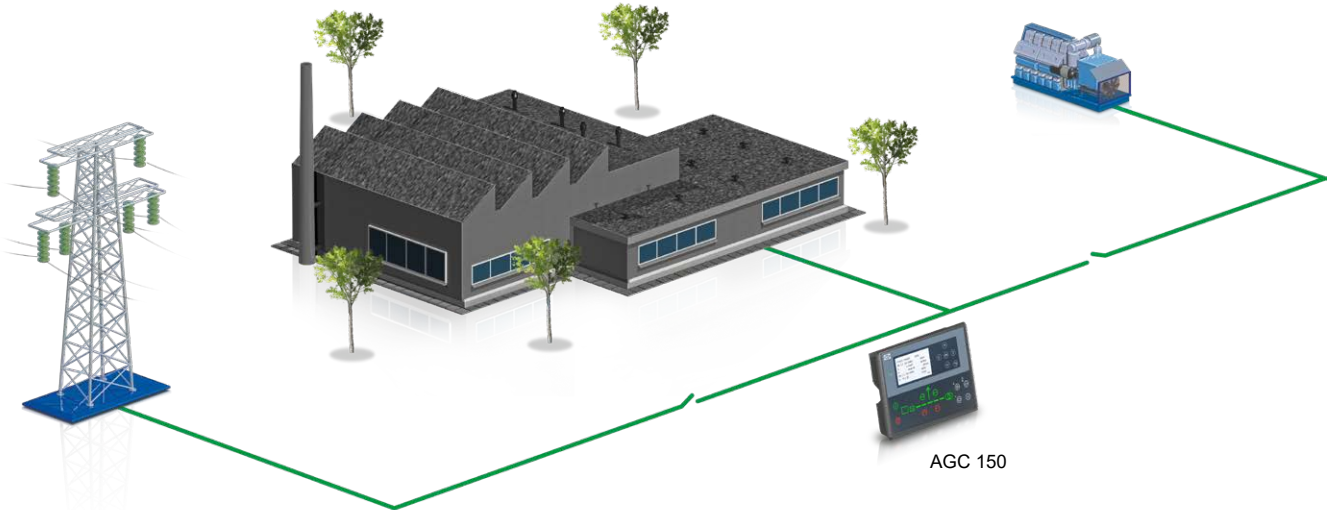
Established in 1887 in the St. Hanshaugen area of Oslo, Norway, Ullevål is one of the largest hospitals in Northern Europe. Today it is a part of the University Hospital of Oslo.

Read the full
case story



Grid connection

With or without synchronisation



Automatic Mains Failure (AMF) applications

In the event of a significant loss of mains power or total blackout, Automatic Mains Failure (AMF) performs an automated power switch to emergency standby generators, preventing possible data loss and potential damage to electrical equipment.

AMF with synchronisation

With synchronisation preventing at least one blackout when switching from generator to mains grid supply, this is the most common AMF variant.

Select immediate opening of breaker, or with load across before opening.

You can also select overlap to make short-time parallel of generator to grid possible for, for instance, 0.1 second.

Controllers: AGC 150 / AGC-4

AMF without synchronisation

This application is mainly used for simple systems intended only for AMF control. In both cases, switching from mains to generator supply and back is performed with a short-term blackout.

Controllers: SGC 420 / SGC 120 / AGC 150 (standalone)

Relevant controllers



AGC 150



AGC-4



SGC 120



SGC 420

Also consider these products



DBC-1



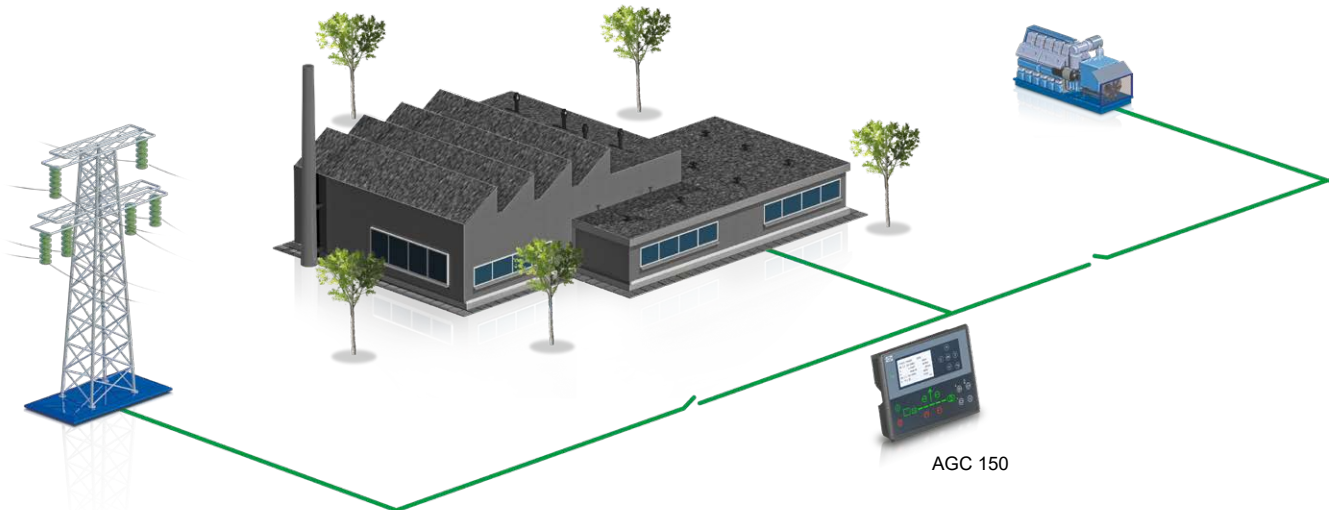
ASK



EQ

Single generator grid connection

Synchronisation to grid



Automatic Mains Failure (AMF) applications

Combining Automatic Mains Failure with a generator running long-time parallel enables the generator to provide power to the consumer as well as to the main grid simultaneously. In case of main grid failure, the mains breaker will open automatically while the consumer continues to run on generator power. When the grid returns, the mains breaker performs synchronisation and the system returns to its default operation mode. Soft transfer of load from generator to mains means the return to grid will pass unnoticed by the consumers, whether it is return to parallel with grid operation or pure grid supply. This happens when generator is started and put in parallel to grid: the generator will take load using a pre-defined ramping function in order not to disturb other parts of the system.

For AMF generator stand-by applications, an automated test run can be selected: the generator can be started automatically with pre-defined time intervals. The test run can be with or without paralleling to grid. Naturally, no matter what running mode is selected, the grid, generator and drive engine are protected at all times against failures by the DEIF controller. DEIF's controllers are compliant with European ENTSO-E rules and approved according to DIN VDE AR-N 105 and BDEW.

Relevant controllers



AGC 150



AGC-4

Also consider these products



DCP2



MIC-2 MKII



ASK



Omron series

Single Genset Controller, SGC 110 / 120 / 121

Basic quality unit for OEMs & standby applications



The Single Genset Controller (SGC) is a cost-competitive but high-quality controller range for standby applications.

The microprocessor-based control units have been created to meet the requirements of the OEM industry and feature manual or auto start, protection and control of engines and gensets.

The SGC modules monitor engine speed, frequency, voltage, and engine running hours, as well as warning and shutdown status of the engine or genset.

The controller is a highly versatile product with both fixed and flexible user-configurable inputs and outputs, enabling users to adapt the unit for a wide range of applications.

With generator + main voltage and frequency monitoring, the unit can be used for AMF applications.

SGC 1xx features

- ▶ Auto start and breaker control
- ▶ Engine parameter monitoring
- ▶ Warning or shutdown protections
- ▶ 5 Digital Inputs and 6 Outputs
- ▶ 3 Analogue Input (resistive), 1 magnetic pickup
- ▶ Configurable for other applications
- ▶ Configurable with DEIF Utility Software, USW-3
- ▶ Readings: engine speed, frequency, voltage, engine running hours
- ▶ Inbuilt Gov
- ▶ J1939 CAN engine communication
- ▶ Generator + Main Voltage/frequency measurements (SGC 120)
- ▶ Load Current measurements on 3 phases
- ▶ External speed bias with Analogue V/I
- ▶ D+ charge alternator input / output
- ▶ RS 485 serial port

Single Genset Controller, SGC 420 / 421

The cost-competitive solution with full flexibility



The Single Genset Controller (SGC 420) is a cost-competitive but high-quality controller range for standby applications.

The microprocessor-based control units have been created to meet the requirements of the OEM industry and feature manual or auto start, protection and control of electronic and non-electronic gensets, as well as Automatic Mains Failure (AMF).

The SGC modules monitor engine speed, frequency, voltage, and engine running hours, as well as warning and shutdown status of the engine or genset.

The controller is a highly versatile product with both fixed and flexible user-configurable inputs and outputs, enabling users to adapt the unit for a wide range of applications.

SGC 4xx features

- ▶ Auto start or Automatic Mains Failure applications
- ▶ Monitoring of electronic (J1939) or non-electronic engines
- ▶ Genset and busbar control and protection
- ▶ Up to 9 Digital Inputs, 5 analogue inputs, 1 MPU and 7 Digital Outputs
- ▶ Modbus communication RS-485
- ▶ Configurable for other applications
- ▶ Configurable with Utility Software
- ▶ Graphical display
- ▶ 4 CT inputs for Generator current + Earth current measurement
- ▶ Inbuilt Gov.
- ▶ Generator + Mains voltage / Frequency measurements
- ▶ External speed bias with Analogue I/V
- ▶ 48v battery voltage monitoring input for telecom applications
- ▶ Switchable for variable speed applications

Automatic Genset Controller, AGC-4

The world's most comprehensive & robust genset controller



DEIF's Automatic Genset Controller (AGC-4) is the most comprehensive and flexible power management and protection unit on the market today. A further development of DEIF's AGC-3, the new generation controller is fully compatible with its predecessor and has been designed to allow for easy, intuitive, and smooth switch-overs for those looking to upgrade.

Suitable for a wide range of applications, the AGC-4's standard sequences include back-up power, start/stop, synchronisation, and load sharing.

The AGC-4 is simple to incorporate into both new and existing designs, customising the application to fit your needs, for instance dedicating specific functions or logic conditions to different inputs and outputs.

Technologically sophisticated, the AGC-4 is also the world's most robust power management controller, successfully tested to maintain reliability and durability in extreme weather and hazardous conditions. Approvals include TÜV and UL.

Patent-pending Emulation

A standard in the Automatic Genset Controller, AGC-4, using DEIF's Emulation Solution, all you need to do to perform a complete test of your Power Management Systems is turn on your controller and connect communications.

The Emulations Solution's focus on exact reproduction of behaviour improves your planning, commissioning and training. It is all done in a safe environment without the costly and excessive need of gensets and switchgear and without the risk of equipment damage and human injury. The innovative solution gives you a critical market advantage and guarantees your customers a cutting-edge, finished result.

AGC-4 features

- ▶ Multiple operating modes in one software
- ▶ Synchronisation of up to 56 breakers in one plant
- ▶ Multi-master power management
- ▶ Load-dependent start and stop
- ▶ Load management
- ▶ Emulation for fast training and I/O test
- ▶ Hot Standby – change to backup genset controller on the fly
- ▶ Close Before Excitation – synchronisation in less than 10 seconds

AGC-4 type approvals



Relevant controllers



TDU 107

AGC-4

Remote communication and control

The AGC-4 supports serial communication protocols including Modbus (RS-485, USB, and TCP/IP) and Profibus. This feature allows you to supervise and control your genset/plant from a remote location and minimise downtime or take immediate action on genset alarms or warnings.

Advanced Genset Controller, AGC 150

Cost-effective & scalable controller platform

Core, Extended and Premium



DEIF Advanced Genset Controller, AGC 150, meets and surpasses OEM needs for synchronisation. A cost-effective, compact, scalable and all-in-one product, the AGC 150 comes in several variants.

The advanced controller series integrates all necessary functions for genset protection and control, stands out for its reliability and operator-friendliness, and features patent-pending DEIF Emulation to speed up design, testing and commissioning, saving man hours and costs.

Applying asymmetric load sharing to ensure optimal load on the genset, the AGC 150 also cuts operating costs and reduces harmful emissions. With temperature-dependent cooling, the AGC 150 arrests cooling at pre-programmed cool-down temperatures and features automatic priority selection, setting the optimum combination of gensets for optimised fuel consumption.

AGC 150 with its unique adaptable mimic gives an intuitive user interface for the operator. AGC 150 will be available in 3 variants: *Core*, *Extended* and *Premium* to meet the diverse user requirements.

AGC 150 features

- ▶ Multiple operating modes in one software
- ▶ Synchronisation of up to 56 breakers in one plant
- ▶ Multi-master power management
- ▶ Load-dependent start and stop
- ▶ Load management
- ▶ Priority selection (manual, relative running hours, absolute running hours, fuel optimisation)
- ▶ Compatible with your existing AGC-200 and AGC-4 gensets
- ▶ User-programmable logic (M-Logic)
- ▶ Configurable inputs/outputs
- ▶ Engine, generator and load protection
- ▶ Voltage measuring range: 50 to 690 V AC (UL/cUL Listed 50 to 600 V AC)
- ▶ J1939 engine communication, supporting 11 different engine brands with the ability to easily handle other engine brands
- ▶ Readout of engine diagnostics in clear text
- ▶ Remote control via high speed TCP/IP, RS-485 Modbus or GSM modem
- ▶ High speed USB connection
- ▶ Multi-language interface
- ▶ -40°C operation temperature
- ▶ IP66 protection

AGC 150 type approvals



Insight

Remote monitoring

Insight is a responsive remote monitoring service using advanced and secure cloud data management. Get instant access to data from all units, no matter where they are - or where you are.

Advanced Genset Controller, AGC 150

Cost-effective & scalable controller platform

Standalone



DEIF Advanced Genset Controller, AGC 150 standalone package, meets and surpasses OEM needs for non-sync application in harsh environments.

The advanced controller series integrates all necessary functions for genset protection and control, stands out for its reliability and operator-friendliness, and features patent-pending DEIF Emulation to speed up design, testing and commissioning, saving man hours and costs. Furthermore it offers support for external I/O (CIO modules).

The application of AGC 150 standalone is:

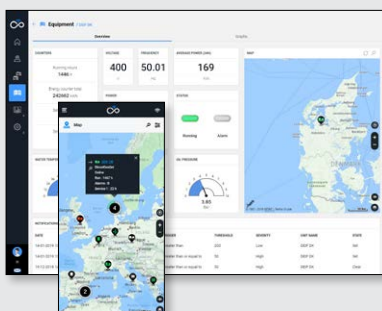
- ▶ Island control
- ▶ Island control with generator breaker
- ▶ Automatic mains failure (AMF)

AGC 150 with its unique adaptable mimic gives an intuitive user interface for the operator.

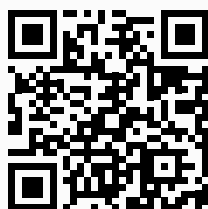
AGC 150 features

- ▶ Multiple operating modes in one software
- ▶ User-programmable logic (M-Logic)
- ▶ Configurable inputs/outputs
- ▶ Engine, generator and load protection
- ▶ Voltage measuring range: 50 to 690 V AC (UL/cUL Listed 50 to 600 V AC)
- ▶ J1939 engine communication, supporting 11 different engine brands with the ability to easily handle other engine brands
- ▶ Readout of engine diagnostics in clear text
- ▶ Remote control via high speed TCP/IP, RS-485 Modbus or GSM modem
- ▶ High speed USB connection
- ▶ Multi-language interface
- ▶ -40°C operation temperature
- ▶ IP66 protection

AGC 150 type approvals



More about Insight



deif.com/products/insight



Digital Voltage Controller, DVC 550

Improve your genset performance



The DVC 550 is a digital automatic voltage regulator, which monitors and regulates the alternator output with rated field current up to 7 A and up to 277V AC. The controller includes several protections and functions to keep the alternator running in full safe operation. The DVC 550 controller can improve genset performance, delivering up to a 10% increase of normal load impact capability and is suitable for any application in the critical power, IPP and rental segments.

Optimise generator size

Due to high inrush currents during start-up, generators for electric motor starting and transformer magnetisation are often oversized by up to 200%. Featuring inductive motor starting and magnetisation boosting, DEIF's DVC 550 reduces oversizing requirements to a minimum and thereby save capital cost.

Increased step load performance

Compared to analogue AVR's, DEIF's digital AVR handles larger load-steps within the same frequency/voltage boundaries. Typically, the gensets will accept 10% additional nominal load. The embedded help features increase performance. The DVC 550 has no mechanical moving parts that regularly need replacement meaning less downtime, less service cost and more effective regulation.

Fast backup for critical power applications

If connected to an AGC-4 controller, the DVC 550 can (depending on how fast the engine starts) synchronise multiple gensets within six seconds thanks to DEIF's unique close before excitation-feature (run-up synchronisation). Critical power applications, in particular, will benefit from the improved control, increasing safety and allowing faster start-up.

Dehumidify and dry your genset with integrated ventilation functions

Condensation build-up during idle time is a common problem in tropical climates. Use the genset ventilation mode to prevent condensation forming on the windings by removing built-up humid air using the alternator fan.

DVC 550 features

- ▶ Unique CANbus integration between DVC 550 and AGC genset controller
- ▶ Start management capability with start on threshold, soft start and close before excitation (run-up sync)
- ▶ Intelligent drying and ventilation mode for generators
- ▶ Short circuit limitation
- ▶ Loss of voltage sensing alarm
- ▶ Over/under excitation limitation
- ▶ Optimises genset performance and size using engine help functions
 - Load acceptance module assists generator during heavy loads
 - Negative forcing to avoid voltage peak during load shedding
 - U/F ramp
 - Soft voltage recovery
 - Stator current limitation
- ▶ Settings from AGC genset controller shared with the DVC 550 via CANbus
- ▶ Grid code compliant VDE410 and VDE4105

Power generation is postponed until the humidity levels are safe. Condensation on the windings can be removed using the genset drying mode. During drying mode heat generated from a controlled internal circulating in the alternator winding is used to evaporate condensation on the windings. The genset will be connected to the busbar when it is safe to do so.

Maximum control with an integrated genset controller solution

The DVC 550's built-in J1939 based communication offers an exclusive communication channel to DEIF's advanced controllers. Providing a high number of alternator data for display, broadcast or predictive maintenance, the J1939 built-in communication is unique on the market. You can quickly swap between nominal voltage and or frequency setting for a generator. Using CAN bus-based communication for voltage regulation reduces the potential number of failure sources.

Use the DVC 550 together with the AGC-4 controller to maximise your benefits.

Perfect solution for grid code compliance

The DVC 550 fast reaction speed complies with European grid codes, including German VDE 4110/4105 standards. By combining the quick reaction speed with the AGC controller, it is easy to comply with advanced grid codes (for example, low voltage ride through).

Omron Power Supply, S8VK

Compact switch mode power supplies



The S8VK series of switch mode power supplies are compact, reliable and easy to install. These power supplies are coated and designed for use in environment with bad conditions like high humidity and high operating temperature.

Marine approvals make the power supplies suitable for applications at sea. For critical applications that require absolute zero downtime DEIF also offer redundancy units at 10 and 20 A.

Features

- ▶ Power Boost function
- ▶ Low voltage detection output
- ▶ Side-by-side mounting
- ▶ Parallel operation
- ▶ Coated for protection against harsh environment

4.5 A

- ▶ Input: 100 to 240 V AC, 50/60 HZ, 90 to 350 V DC
- ▶ Output: 12 V DC, 4.5 A, 60 W

5 A

- ▶ Input: 85 to 264 V AC, 50/60 Hz, 90 to 350 V DC
- ▶ Output: 24 V DC, 5 A, 120 W

10 A

- ▶ Input: 85 to 264 V AC, 50/60 Hz, 90 to 350 V DC
- ▶ Output: 24 V DC, 10 A, 240 W

20 A

- ▶ Input: 85 to 264 V AC, 50/60 Hz, 90 to 350 V DC
- ▶ Output: 24 V DC, 20 A, 480 W

20 A (3ph)

- ▶ Input: 380 to 480 V AC, 50/60 Hz, 450 to 600 V DC
- ▶ Output: 24 V DC, 20 A, 480 W

40 A (3ph)

- ▶ Input: 380 to 480 V AC, 50/60 Hz
- ▶ Output: 24 V DC, 40 A, 960 W

Multi-instrument, MIB

Measure & monitor your energy distribution network



DEIF's multi-instruments for measurements and monitoring of single-phase or 3-phase electric energy distribution networks cover readings of more than 50 parameters.

The instruments have four-quad energy measurement and built-in energy counting and come with free utility software for programming and data viewing.

MIB features

- ▶ 1- or 3-phase TRMS measurements
- ▶ Voltage inputs 690 L-L AC
- ▶ Accuracy: 0.5 or 1.0
- ▶ RS-485 Modbus communication (optional)
- ▶ Digital outputs for alarm and energy (optional)
- ▶ Supply voltage:
 - ▶ 100 to 300 V DC
 - ▶ 100 to 415 V AC 50/60 Hz

Type	Digital outputs	RS-485 Modbus
MIB 7000	–	–
MIB 7000C	–	×
MIB 7020	2	–

MIB type approval



Multi-instrument, MIC-2 MKII

Access monitoring data remotely via the internet



Versatile and intuitive, DEIF's multi-instrument MIC-2 MKII is perfectly suited for monitoring and analysis of all types of power systems.

The MIC-2 MKII helps you optimise your energy system. Capable of logging all applications from single low voltage to multiple high voltage applications, the sturdy unit offers a complete overview of your SCADA system.

A microprocessor-based measuring unit for most electrical quantities on 2-phase or 3-phase electric energy distribution networks, readings are displayed on a large built-in LCD screen.

Fitted with the Ethernet TCP/IP module, the unit offers direct access to Modbus data and is easy to access remotely via standard browsers.

KWh counter reset and change of settings can be password-protected, and using DEIF's free utility software it is a simple and fast job to configure and adapt the unit to fit most applications.

MIC-2 MKII features

- ▶ Measures voltage, current/active/reactive and apparent power, frequency, energy kWh/kvarh, PF, THD, demand
- ▶ For all 2- and 3-phase AC network topologies
- ▶ Suitable for Power quality analysis
- ▶ Measures Individual Harmonics from 2nd to 63rd
- ▶ Min./max. statistic with time stamp
- ▶ Customised alarm settings with 16 different parameters
- ▶ RS-485 Modbus communication
- ▶ Large LCD screen with white backlight
- ▶ Optional communication modules
 - Ethernet (Modbus TCP, HTTP, SMTP)
 - Profibus DP
- ▶ Optional I/O modules
 - Relay
 - Analogue I/O
 - Digital I/O
- ▶ Free utility software with data logging
- ▶ Type approvals from all major classification societies

MIC-2 MKII type approvals



Measuring Transformer, ASK

Measuring transformer for cables & busbar



Part of DEIF's current transformer range, the ASK measuring transformers convert high current into lower nominal current value, thus making it possible to use instruments and relays with standardised values of rated current.

DEIF offers 41 different physical sizes of the measuring transformers. The range is suitable for cables and several busbar combinations and positions.

In order to ensure short delivery time, we always keep transformers in stock.

ASK features

- ▶ Designed for cables and busbar
- ▶ Primary current: 40 to 7,500 A
- ▶ Secondary current: 5 or 1 A
- ▶ Burden: 1.0 to 30 VA
- ▶ Accuracy class:/protection class: 0.5 or 1.0

ASK type approval



Quadratic Moving Iron Instrument, EQ

Measure AC current & voltage in true RMS



The EQ is a versatile quadratic moving iron instrument for measuring AC currents and AC voltages within the range 16 to 65 Hz.

Measuring true RMS, the EQ instruments have been designed, produced and tested according to the present standards.

They are available in four different sizes – 48, 72, 96 and 144 mm – but can also be adapted to suit customisation requests.

EQ features

- ▶ Accuracy class: 1.5
- ▶ 90° pointer deflection
- ▶ IP52 (IP54 on request)
- ▶ Customised and exchangeable scale available for 90°
- ▶ Measuring range: 40 to 800 V (Q48: 40 to 300 V), 1 to 60 A (Q48: 1 to 40 A)

EQ type approval



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