

UNITROL® F Excitation Systems

GEN-EXC – The right solution for your generator

With the GEN-EXC series of UNITROL F excitation systems, ABB offers you a highly standardized product with a wide range of options to choose from in order to meet your plant specific requirements.

GEN-EXC is based on a well-proven technical solution and is a very attractive product for you as a client looking for a combination of high quality, competitive price and short delivery time.

As our customer, you also profit from ABB's worldwide located engineering centers and their experience in the field of generator excitation. That includes for instance the application and optimization of Power System Stabilizer (PSS), as well as the availability of competent personnel for erection/commissioning/training and after-sales service.

GEN-EXC is a single channel excitation system with a digital regulator (to be operated in AUTO or MAN mode), fully controlled thyristor bridge and de-excitation circuit with rotor overvoltage protection. The technical data of the six available size-related types are shown in Table 1 below. The features and delivery options are described on the back.

Type	G1	G2	G3	G4	G5	G6
Cabinet width [mm]	830	1230	1230	1430	1430	1430
I_{EN} [A]	45	107	187	332	536	718
U_{1max} [V _{AC}]	500	500	500	500	500	500
I_{fn} [A _{DC}]	38	89	144	302	487	653
I_{fpl} [A _{DC}]	61	142	230	483	780	1044
T_u [°C]*	40	40	40	40	40	40
Protection class*	IP 21	IP 21	IP 21	IP 21	IP 21	IP 21
f_n [Hz]	50/60	50/60	50/60	50/60	50/60	50/60

Table 1: The six types of GEN-EXC

Dimensions of cabinet (height × depth) 2000 × 600 mm

I_{EN} Nominal output current of the excitation system

U_{1max} Maximum input voltage

I_{fn} Nominal field current of the generator

I_{fpl} Ceiling current (max. 10 s)

* Higher ambient temperature and protection class on request

Features of UNITROL F GEN-EXC system

- Microprocessor-based digital voltage regulator alternatively with $\cos \varphi$ or reactive power regulator
- Various limiting regulators prevent overloading of the generator
- Integrated monitoring and protective functions protect the generator and excitation
- Simple operation of the system (including altering parameters and programs) via the Local Control Panel (LCP)
- Integrated data logger with 6 channels, each with 1000 values
- Integrated event recorder with time stamp for 99 events



Trending function display of the Commissioning and Maintenance Tool CMT 5000

Additional displays include:

- Application program
- Parameters (incl. modification) and Signals
- Event logs (last 99 events)
- Data logs (6 channels, each up to 1000 data points)
- Actual system operating conditions



Automatic voltage regulator with adjustable PID transfer function	
Limiting regulators	
• Maximum excitation current (multi-stage)	
• Maximum stator current	
• Minimum excitation	
Cos φ / reactive power control	
Digital set points for local/remote control	
Smooth switch-over between all operating modes	
Protection functions	
• Loss of excitation monitoring	
• Overcurrent protection (excitation current)	
• Overvoltage/undervoltage monitoring of supply voltages	
• P. T. monitoring	
• Rotor temperature measurement (static excitation only)	
Event recorder with time stamp	
6-channel data logger	
Input and output values	
Digital inputs	max. 16
Digital outputs	max. 16
Analog inputs	max. 2
Analog outputs	max. 4
Input voltage	max. 500 V _{AC} (3-phase)

Table 2: Functions and data of GEN-EXC

Other electrical options:

- Excitation transformer (up to 600 V primary voltage built into cabinet)
- Transformer temperature monitoring
- Rotating Diode Monitoring (brushless exciter)
- Field bus adapter - Profibus DP 12MB or Modbus
- Optical interface SDGS-COM-5 (needed for CMT)
- Power System Stabilizer (PSS) acc. to type 2B of IEEE Std. 421.5 (1992)
- Rotor earth fault monitoring (static excitation only)
- 1 to 3 output signal transducers 4 to 20 mA

Other cabinet options:

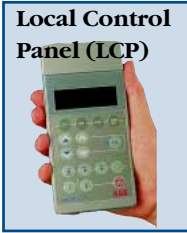
- Cable marking
- Protection against accidental contact with live parts when door is open
- Gland plate for IP31 / IP42

Indicates standard features

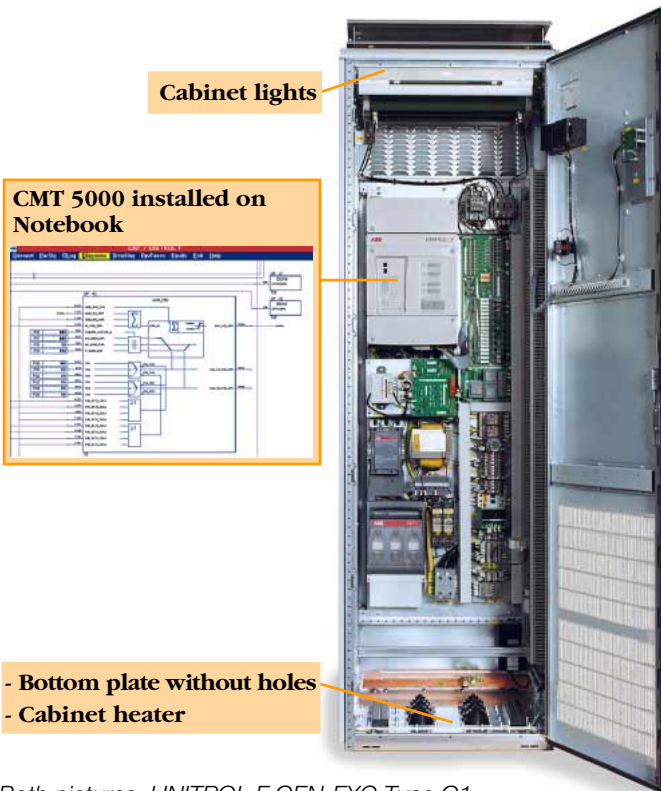
Indicates available options



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- Cabinet color: RAL 7035 – light grey
- Protection class: IP 21



- Bottom plate without holes
- Cabinet heater

Both pictures: UNITROL F GEN-EXC Type G1

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