



Function Line

Technical data at a glance

Features	PCL1		PCM1-G		PCM1-M	
	L	H	L	H	L	H
Two-line display for measured value and text message display	•	•	•	•	•	•
Automatic precision synchronisation	•	•	•	•	•	•
Controller for rotational speed/frequency and voltage	•	•	•	•	•	•
Controller for active/reactive power generation			•	•	•	•
Active/reactive power balancing of parallel gen-sets			•	•	•	•
Load-dependent Start/Stop			•	•	•	•
Temperature-dependent Start/Stop			•	•	•	•
Pre-set control inputs	6	6	6	6	6	6
Freely programmable fault inputs	14	14	16	16	16	16
Pre-set control outputs	3	3	3	3	3	3
Configurable output relays	4	4	9	9	9	9
Current measuring input 0/4-20 mA	1	1	1	2	1	2
Temperature measuring input PT100	3	3	3	5	3	5
Speed measurement input for pick-up or speedometer	•	•	•	•	•	•
Analogue output 0/4-20 mA with output manager	2	2	2	2	2	2
Metering for kWh, operating hours, maintenance call, number of starts	•	•	•	•	•	•
Generator protection over/under voltage	•	•	•	•	•	•
Generator protection over/under frequency	•	•	•	•	•	•
Generator protection reverse power			•	•	•	•
Generator protection underload			•	•	•	•
Generator protection load unbalance			•	•	•	•
Generator protection overload	•	•	•	•	•	•
Generator protection – independent overcurrent time (IDMT)	•	•	•	•	•	•
Battery voltage supervision	•	•	•	•	•	•
Mains over/under voltage, over/under frequency, vector surge			•	•	•	•
Event memory with real-time clock (FIFO)			•	•	•	•
Direct PC parameter setting	•	•	•	•	•	•
Coupling of up to 14 PCM (via CAN-No.1 interface)			•	•	•	•
Bi-directional coupling to external systems (CAN-No.1 interface)*		•	•	•	•	•
Connection of extensions***			•	•	•	•
Analogue controller output 0/4-20 mA for rotational speed adjustment**	•	•	•	•	•	•
Analogue controller output 0/4-20 mA for voltage adjustment**	•	•	•	•	•	•

* For remote parameter setting, supervision and visualisation by means of SEG Standard Protocol or by the use of our gateway PCK4 and by MODBUS RTU or PROFIBUS DP.
 ** As option instead of contact outputs
 *** 2 extension cards EM1 max. with 8 digital inputs and outputs each for signal inputs and outputs



Visit us at [woodward-seg.com](http://www.woodward-seg.com)

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Function Line PCL / PCM

The all-round gen-set controller

Gen-set controllers, synchronising and load management systems for the automation of power generation plant



Control, supervision and protection made simple with our compact multi-functional solution

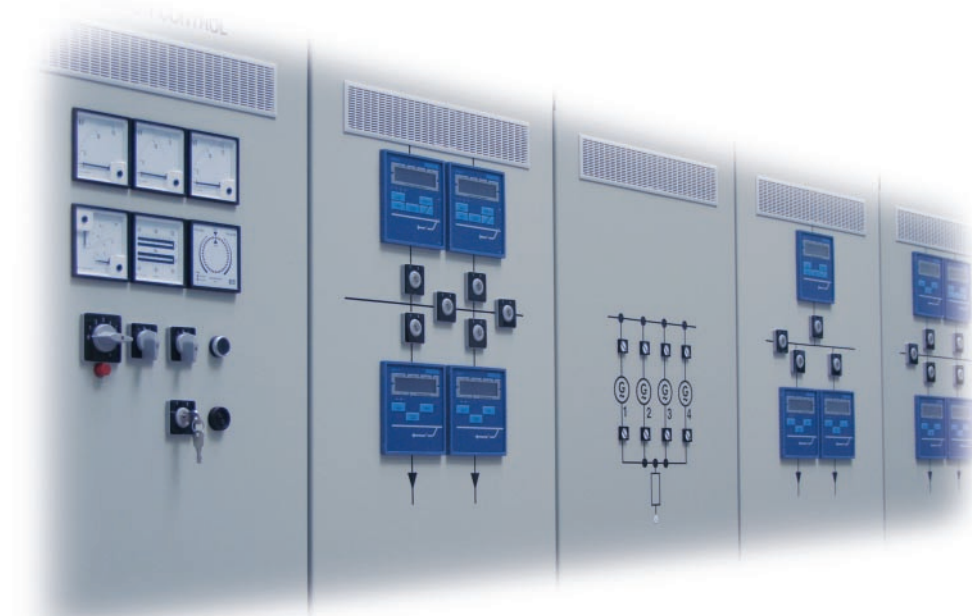


Function Line

The SEG Function Line devices include control, protection and supervision systems for the automation of power generating plant. This ensures power supply for a great number of applications: e.g. in hospitals, in the automotive industry, on oil platforms in the Arctic, on oil fields in the desert and in large public buildings.

Application range

Automation of power generation plant: There is more to automating gas and diesel generators than a simple start/stop program. A number of additional tasks have to be performed simultaneously for safe reliable operation. For example, the supervision of gen-sets, the control and protection of the generators, prime movers and operating equipment and the control of mains and generator switches.

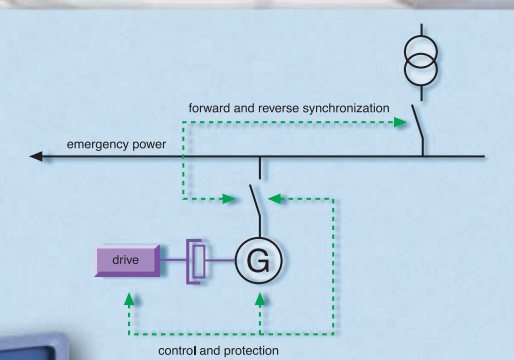


Benefits

- Compact solution:** Compact hardware with multi-functional software, which also complies with specific customer requirements.
- Cost effective:** Compared to the programmable logic controller systems commonly on the market, the SEG gen-set controllers, with their wide range of applications, offer a significantly better cost/benefit ratio.
- User-friendly:** All parameters and control functions can be adjusted via the front of the unit. In addition to this you also have the option of connecting your controller via software for settings as well as supervision and evaluation through a BMS system.
- Guaranteed quality and safety:** As a result of many years experience in this field, all our devices comply with international standards and regulations.
- Simplification:** We don't overcomplicate things. A small range of models have a wide range of applications. Therefore it is quick and easy to choose the right device to suit your needs!

FL-SOFT3

You can change all setting information and controller configuration via the RJ45 and SUB-D communication interfaces included on all PCL/PCM1 units. Simply connect a PC or notebook with our software FL-SOFT3 installed to the controller using our special cable FL-CABLE-RS232 and you are ready to go.



Gen-set control system PCL1

The automatic gen-set controller type PCL1 offers additional features over our older NB2 and NC3 systems. In addition to its numerous control applications it also provides complete generator protection and synchronisation with the mains. After mains failure the integrated synchronising function enables uninterrupted change over of loads connected to the generator back to the mains (reverse synchronisation). Alternatively consumers can be switched from the mains over to the generator without interruption for a test run under load (forward synchronisation). This system also eliminates the requirement for separate protection devices as the PCL1 provides all the most important generator protection functions.

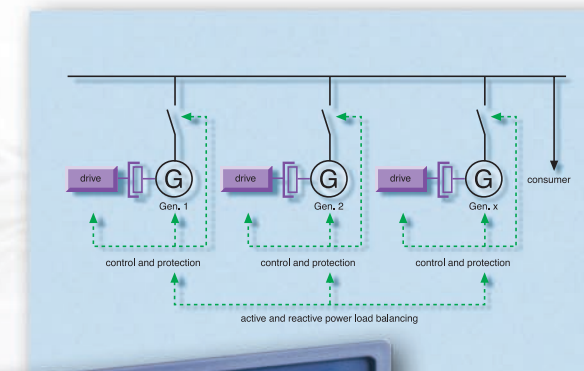
Gen-set control system PCM1

This automatic gen-set controller is similar to the PCL1 unit but has a number of additional functions making it suitable for an almost unlimited number of applications. The compact multi-functional gen-set system PCM1 is simple to commission even for extremely complex power generation systems.

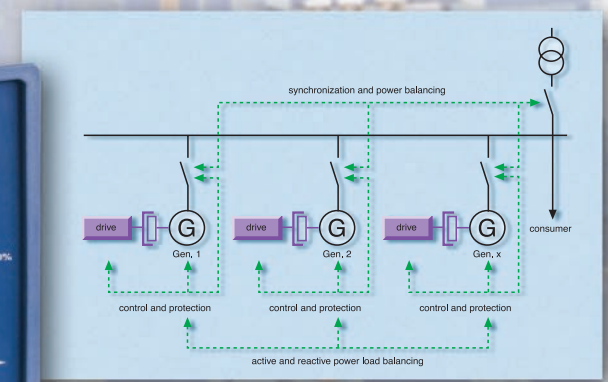
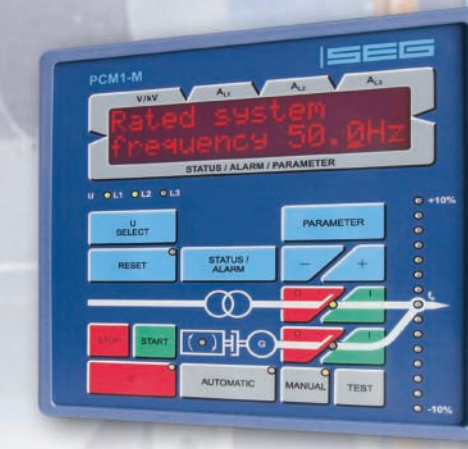
The PCM1 doesn't just offer integrated generator protection and precise synchronisation (see PCL1), it is also fully equipped with all the functions necessary for parallel operation of power generation systems. This includes both reactive/active power balancing in parallel operation to the mains and also active/reactive power balancing of up to 14 gen-sets.

Using the CAN interface up to 14 devices can communicate with each other. This enables them to independently manage load balancing and load dependant start/stop of the gen-sets by automatically selecting the gen-sets according to availability of pre selected order.

This high-end device is available in two options – PCM1-G and PCM1-M.



PCM1-G. For gen-sets in isolated operation. Either a single gen-set or multiple systems in parallel operation.



PCM1-M. For mains standby and mains parallel operation of individual gen-sets and multiple sets in parallel.



We develop, manufacture and sell high-quality protection and control devices. No matter whether you are looking for standard products or individual solutions – we and our employees rank among the best solution providers world-wide.