

# Pumpjacks

Application support for DG1



*Powering Business Worldwide*



## Drive pumpjacks everywhere

DG1 variable frequency drives have a knack for languages. In fact, their multi-language capabilities mean that users worldwide can operate the system in their own local language, minimizing the potential for mistakes due to misunderstandings.



Robust	Fast	Simple	Service & support
<ul style="list-style-type: none"> <li>• Conformal coated boards protect against aggressive ambient</li> <li>• IP54 designs provide increased environmental protections</li> <li>• Best-in-class ambient temperature range from -30 °C up to +60 °C</li> </ul>	<ul style="list-style-type: none"> <li>• 18 basic parameters, quick start wizard and PC tools for simpler commissioning</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-configured applications to simplify complex parameter sets, from standard to multi-pump configurations</li> <li>• Shows the most important parameters in a compact menu for fast access. All entries are user-configurable. That saves time finding the desired information</li> </ul>	<ul style="list-style-type: none"> <li>• Standard two-year warranty with extensions available through certified commissioning</li> <li>• Dedicated team of application engineers and technical resources available to provide pre-sales and after-sales support</li> <li>• Aftermarket program providing spare parts, service and training classes</li> </ul>

## Application control

- **Supervision values** – DG1 devices actually have 28 available programmable monitoring values that can be used to monitor your specific application. Individual responses can be defined for each of these values, eliminating the need for the external sensors that would otherwise be required in order to acquire the corresponding signals.

## Application protection

- **Application specific faults** – DG1 variable frequency drives can be used to assign an individual message to three external faults, e.g., „Rod breakage“. This makes it possible to quickly and efficiently determine the cause behind a shutdown.
- **Automatic restart** – Brings pumpjacks back online after a power failure in order to minimize downtimes and potential system faults.

## Plant control & service

- **Cold weather mode** – Makes it possible to run machines even at extremely low temperatures inside the switch gear room without the need for external heating.

## Motor control

- **DC link capacity** – Specific with an eccentric load there is a strong oscillation between power consumption and power generation. Overdimensioning, active front ends or external DC link capacitors are not required using DG1. As a result it is a very competitive and cost efficient solution.

## Motor control

- **Electronic motor protection** – In order to efficiently prevent any motor damage, a perfect working motor protection is required. Accordingly, the protection function in DG1 variable frequency drives can be programmed flexibly.

## Energy efficiency

- **Energy savings calculator** – The PC tool calculates the actual energy cost and savings compared to a conventional starter (DOL) already before buying the drive.
- **Energy savings function** – Provides 2-10% energy savings over competitors “out of box” mode without motor tuning.

## Management and communication

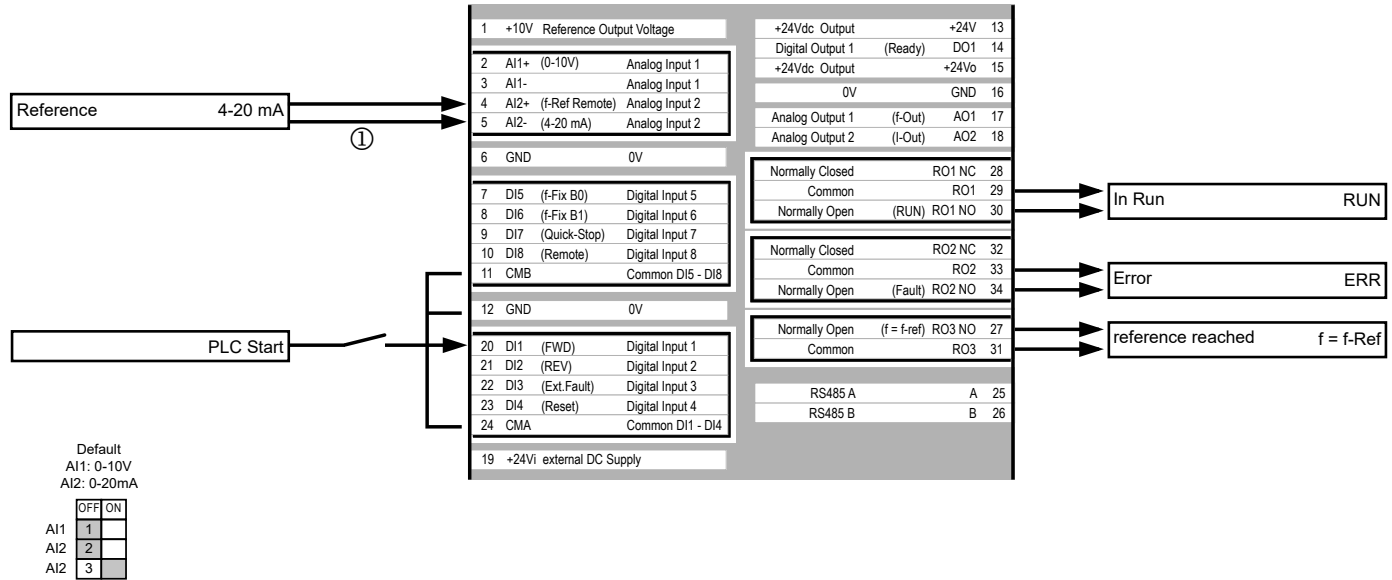
- **Communication** – Best-in-class on-board communications includes Modbus RTU, Modbus TCP, Ethernet/IP, BACnet MS/TP with additional option boards for Profibus, CANopen, DeviceNet and SmareWire-DT to integrate into any desired network within a facility.
- **Local languages** – With English as standard language two additional languages can be downloaded to DG1 to show applications in local language. Actually 13 languages are available. This overcomes language barriers and speeds up diagnosis.





# Wiring diagram open loop speed control

Following a sample wiring diagram is shown for a simple speed control. Labels of the Inputs/Outputs are shown for default, eventually the need to be adapted to the desired function.



## Further documents

### Common hints

- Electromagnetic compatibility (EMC) [AP040043EN](#)
- Dual rating – What exactly does that mean? [AP040114EN](#)
- Connecting drives to generator supplies [AP040169EN](#)

### DG1 specific hints

- Application manual DG1 [MN040004EN](#)
- Communication manual DG1 [MN040010EN](#)
- Installation manual DG1 FR 0-6 [MN040002EN](#)
- Operating at low temperatures [AP040058EN](#)
- DG1 in pump- and fan applications [AP040128EN](#)
- Real time clock and use of the timers [AP040172EN](#)
- Analog I/Os [AP040129EN](#)
- Digital I/Os [AP040132EN](#)
- Load balancing in multi motor applications [AP040168EN](#)
- Motordata and V/f curves [AP040177EN](#)
- PID controller [AP040164EN](#)
- Smoke mode and fire mode [AP040065EN](#)
- Starting, stopping and operation [AP040176EN](#)

Following link will show you the Application notes for DG1: [Eaton.com/ap/overview/drives](https://Eaton.com/ap/overview/drives)  
 DG1-Manuals you can find at: [Eaton.com/dg1](https://Eaton.com/dg1)

### Services

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