Stirrers

Application support for DG1

Powering Business Worldwide

Mix it right

In the production of dispersion paints and plasters, the stirring process, which takes up to 1.5 h depending on the receipe, is the crucial process step.

A wide speed range with high accuracy at the agitator, high robustness and reliability are crucial for the production.

Robust	Fast	Simple	Service & support
• Conformal coated boards protect against aggressive ambient • IP54 designs provide increased environmental protections • Best-in-Class ambient temperature range from -30 °C up to +60 °C	• Group motor rated with fuses and breakers for reduction in labor and material costs • 18 basic parameters, Quick Start Wizard and PC Tools for simpler commissioning • Programming samples to include DG1 into common used PLC's (Codesys, STEP)	• Pre-configured applications to simplify complex parameter sets, from standard to multi-pump configurations • Only a few inputs are required to get DG1 operational. Usually DG1 can be used without further settings, saving time an commissioning cost • Full text LCD keypad featuring copy/ paste functionality and soft keys for faster navigation • Extensive on-board communications reduces cost and improves control capabilities	• Standard two-year warranty with extensions available through certified commissioning • Dedicated team of application engineers and technical resources available to provide pre-sales and after-sales support • Aftermarket program providing spare parts, service and training classes

Application control

- **150% Overload -** Overload requirement for machinery applications.
- **200% Torque –** Independently of the fact that a DG1 can work with a 150% overload for 60 seconds every 10 minutes, it also offers a peak torque of 200% (for 2 seconds every 20 seconds) for critical situations.
  This makes it possible to reliably overcome even the toughest overload requirements. And when even this is not enough to keep driving the application, the DG1 unit will detect this and shut down with a fault message before it or the motor is damaged.
- **Precision –** Compensation of load variations via slip- and droop-compensation functions, if V/f mode or even better and with higher dynamic in vector mode.
- **PID Regler –** The internal PID controller makes it possible to maintain a constant pressure in the system by continuously controlling the speed based on the process value delivered by the system.
- **Process variable representation in PID controller –** Makes things easier for operators by making it possible to directly show speed and monitor them in the motor menu.
- **Track changes -** The internal log helps during servicing to detect the root cause of a fault, minimizing down-time and diagnosis of accidental done changes.
- **Reduced speed operation –** Makes it possible to adjust the speed according to the requirements when there is little demand, lowering energy costs and improving system efficiency.

Application protection

- **STO -** Designed in safety typical yellow, simplifies integration in the required safety system according to the machine directive.
- **Automatic ramp prolongation -** Extend the deceleration ramp time on big masses of inertia to avoid an overvoltage fault. Improves the availibility of the stirrers.
- **Automatic restart -** Brings stirrers back online after a power failure in order to minimize downtimes and potential system faults.

Plant control & service

- **Improved fault troubleshooting -** Complete fault history utilizing real time clock to time stamp and record system parameters upon fault conditions for the last 8 faults. Improves fault diagnosis and reduces service and down time.

Motor control

- **Motorpotentiometer -** Per push-button the speed can be adjusted.
- **Bypass Control -** To keep the system running, a redundant operation is supported by DG1 (DOL). Alternative the multi pump Option can be used to include a backup master automatically in the system.
- **Stall protection -** Quicker response than overcurrent protection for instances of overweight and jammed conveyors or material handling systems to maintain a healthy system.
- **S-Ramp -** Controlled acceleration and deceleration, reduces mechanical stress, especially with the S-shaped ramp. Reducing mechanical wear extends service intervals.

Motor protection

- **Adjustable Overload Class -** Protection in the DG1 is flexible programmable.
- **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

- **Active Energy saving function -** On-board algorithm to dynamically adjust the volts per hertz curve to find the lowest possible power output to maintain the required pump output. Classical static procedures are less good as load peaks will influence the speed accuracy.
- **Energy cost calculator -** The integrated energy cost savings calculator provides a direct comparison to conventional control systems (DOL). It can be used to immediately see how many Euros have been saved by using a DG1 instead of a DOL solution, as well as the total costs accumulated while running the drive.
- **Energy savings function -** Provides 2-10% energy savings over competitors “out of box” mode without motor tuning.

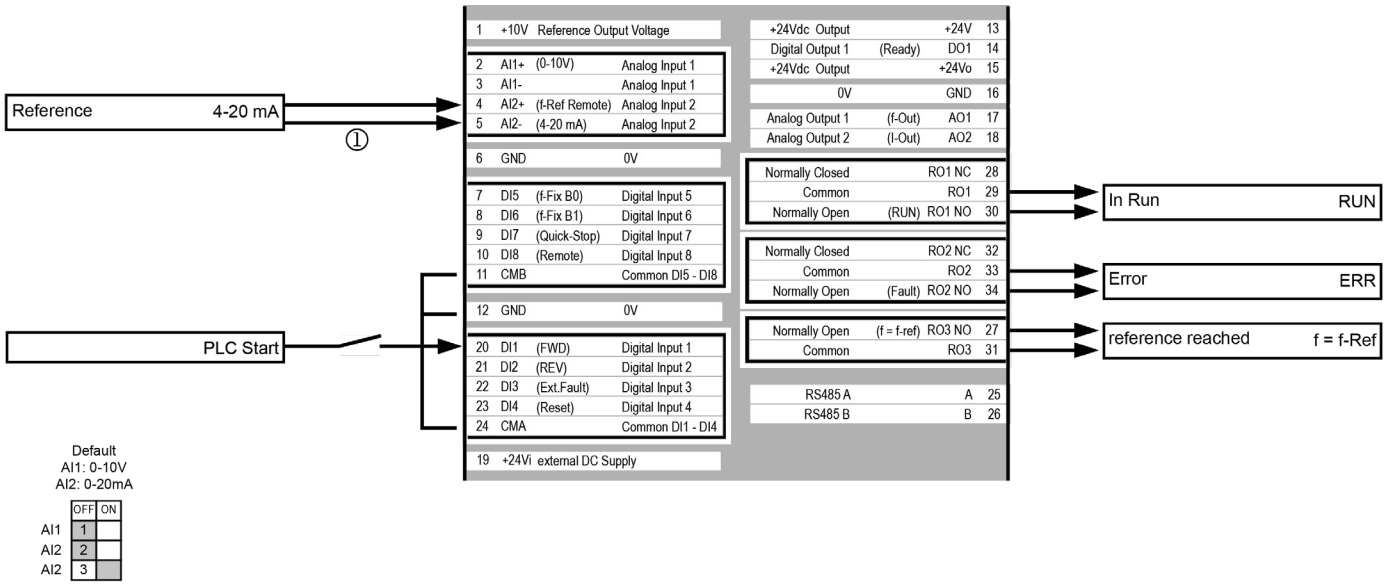
Management and communication

- **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.
- **Extension slots -** Beside substantial On-Board I/O, various extension boards are available (2 slots) to directly connect all signals and sensors to DG1 for stirrers control, monitoring and status control.

Wiring diagram stirrer

Following a sample wiring diagram is shown for a simple speed control.

① Labels of the inputs/outputs are shown for default, eventually the need to be adapted to the desired function.



Further application notes

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
Smoke mode and fire mode	AP040065EN

Following link will show you the Application notes for DG1:: Eaton.com/ap/overview/drives

DG1-Manuals you can find at: Eaton.com/dg1

Eaton Addresses:Eaton.com/contacts

Powering Business Worldwide

Eaton Industries GmbH
Hein Moeller Strasse 7-11
D- 53115 Bonn / Germany

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