Biogas Plant

Application support for DM1 Pro

Powering Business Worldwide

Ideal for cases in which it all comes down to sheer power – screw conveyors

Extruders and screw conveyors require larger torques than most other applications. And when a machine is cold or the material being conveyed becomes compacted, extreme overloads are to be expected. The sensorless vector control (SVC) function in DM1 variable frequency drives makes it possible to provide a torque of up to 200% briefly, making these devices perfect for applications with extreme overload requirements.

Robust	Fast	Simple	Service & support
• Conformal coated boards protect against aggressive ambient • Best-in-Class ambient temperature range from -30°C to 50°C	• Group motor rated with fuses and breakers for reduction in labor and material costs • 14 basic parameters, Quick Start Wizard and PC Tools for simpler commissioning • Programming samples to include DM1 Pro into common used PLC's (Codesys, STEP) • EtherNet/IP Assist Tool for easy tag integration into RSLogix 5000 software	• Shows the most important Parameters in a compact menu for fast access. All entries are user-configurable. That saves time finding the desired information • Pre-configured applications to simplify complex parameter sets, from standard to multi-pump configurations • 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

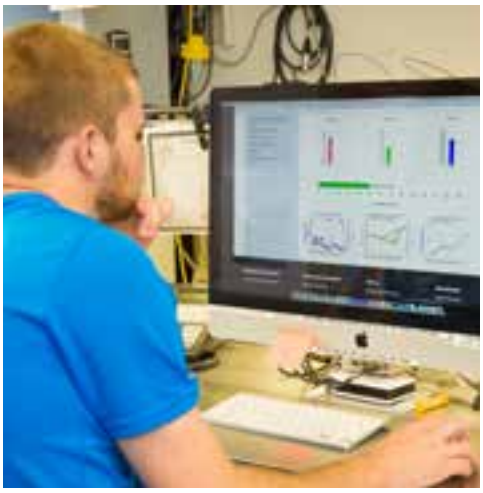
Application control

- **200% Torque –** Independently of the fact that a DM1 Pro can work with a 150% overload for 60 seconds every 10 minutes, it also offers a peak torque of 200% 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 DM1 unit will detect this and shut down with a fault message before it or the motor is damaged.

Application protection

- **STO –** Always safe, the STO input (SIL2, PLd, Cat 2) color-coded yellow as per typical safety standards, simplifies integration into safety systems in accordance with the machinery directive
  Biogas plants are subject to stringent safety requirements. For example, emergency shutdowns are required in the following situations:
  - When a minimum gas pressure is fallen below
  - When the maximum permissible gas pressure is exceeded
  - When an emergency-stop button is pressed
  - When the control power drops out
  - When a gas detection or fire alarm system is triggered
  - When temperature monitoring systems are triggered (ambient air, coolant, etc.)
  - When the ventilation system fails
  - When the speed is exceeded

  The Safe Torque Off function (STO input) makes this all possible without additional external equipment.
- **Automatic restart -** Brings biogas plant back online after a power failure in order to minimize downtimes and potential system faults.



Motor control

- **Stall protection –** Quicker response than overcurrent protection for instances of overweight and jammed conveyors or material handling systems to maintain a healthy system.
- **Motor-ID Run –** Automatically determines the motor parameters required in order to maximize performance and efficiency as appropriate for the current pump configuration.

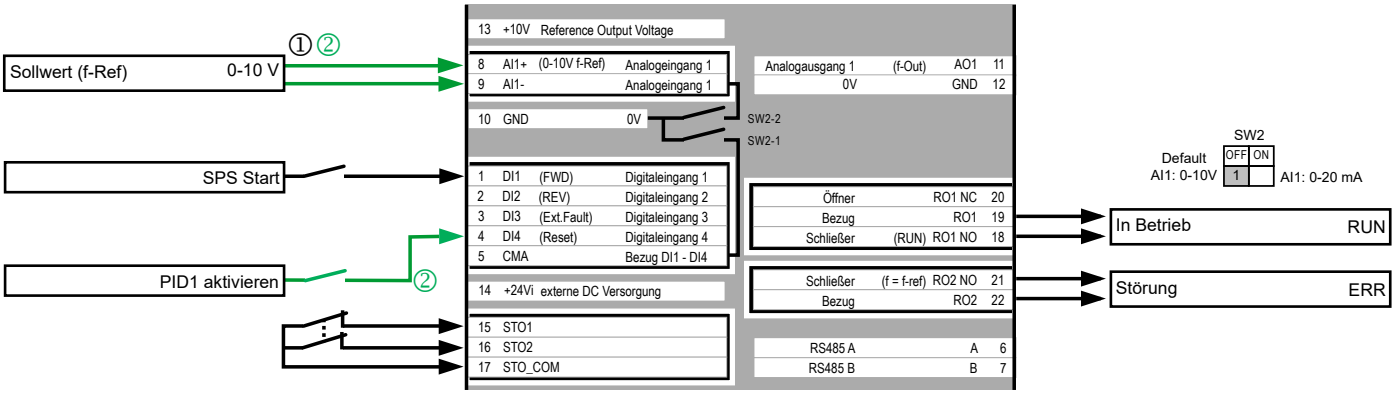
Motor protection

- **Electronic motor protection –** In order to efficiently prevent any motor damage, a perfect working motor protection is required. Accordingly, the protection function in DM1 Pro variable frequency drives can be programmed flexibly.

Wiring diagram biogas with volume-control

① Reference is done with the analog input, the machine runs open loop.

② Reference is given by the internal potentiometer or one of the communication links. The Feedback signal come via analog input, alternatively the feedback can also be send via the communication links.



Further application notes

Common hints	
Electromagnetic compatibility (EMC)	AP040043EN
Dual Rating – What exactly does that mean?	AP040114EN
Connecting drives to generator supplies	AP040169EN
DM1 specific hints	
Application manual DM1	MN040049EN
Communication Manual DM1	MN040051EN
Webserver Manual	MN040055EN

Following link will show you the Application notes for DM1 Pro:
Eaton.com/ap/overview/drives

DM1 Pro-Manuals you can find at: Eaton.com/dm1

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