Booster Pumps

Application support for DM1 Pro

Powering Business Worldwide

Reduce cost on Booster Pumps

For an optimized adaption to the requirements of a booster pumps we offer a Dual Rating on DM1 Pro, 150% for machinery applications, 110% for pumps and fans. Using the 110% rating, DM1 Pro can drive the next bigger motor power.

Robust

- IP20/IP21 designs provide increased environmental protections
- Best-in-Class ambient temperature range from -30°C to 50°C
- Conformal coated boards protect against aggressive ambient
- Multiple cooling fan operation modes designed to extend fan life and reduce maintenance

Fast

- 14 basic parameters, Quick Start Wizard and PC Tools for simpler commissioning

Simple

- 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

Service & support

- 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

- **Process variable representation in PID controller –** Makes things easier for operators by making it possible to directly show pressure 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.

Application protection

- **Automatic restart –** Brings booster pumps back online after a power failure in order to minimize downtimes and potential system faults.
- **Flying start –** Smoothly start spinning booster pumps in either direction to reduce stress on the impellers.
- **Reduce water-hammer –** Prevent unwanted water hammer and cavitation through smooth acceleration and deceleration ramps controlled by a pressure sensor.
- **Skip frequencies –** Reduce vibration and noise of the impellers by preventing operation in resonance causing speeds.

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.
- **Improved fault troubleshooting –** Complete fault history utilizing real time clock to time stamp and record system parameters upon fault conditions for the last 10 faults. Improves fault diagnosis and reduces service and down time.

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.

Energy Efficiency

- **Energysavings to DOL –** Eaton drives provide up to 50% energy savings over direct on line (DOL) starters.
- **Energy savings function –** Provides (2-10%) energy savings over competitors “out of box” mode without motor tuning.
- **Sleep Mode –** Prevents the pump from continuing to rotate when the pressure falls below an adjustable value and no fluid is being pumped any more. By automatically stopping the pump, this mode lowers energy consumption, wear and costs.
- **Energy savings calculator –** The PC tool calculates the actual energy cost and savings compared to a conventional starter (DOL) already before buying the drive.

Management and communication

- **Extension slots –** Beside substantial On-Board I/O, various extension boards are available (1 slot) to directly connect all signals and sensors to DM1 Pro for booster pumps control, monitoring and status control.
- **Communication –** Best-in-class on-board communications includes Modbus RTU, Modubs TCP, Bacnet MSTP, Ethernet/IP to integrate into any desired network within a facility.
- **Password protection –** Lock access to parameter editing to prevent undesired user interaction in the field. For safety related applications like this mandatory.
- **Webserver –** With the internal Webserver the drive can be parameterized without further software, only requirement is an Ethernet based connection and a web-browser.
  For the application this is a simple way without the need for additoinal software installations to access the drive. This can be a service or a commissioning. Simplifying processes this shortens time-/cost for the owner.
- **Single phase supply –** All the advantages of DM1 Pro variable frequency drives can still be used even if there is only single-phase power available.

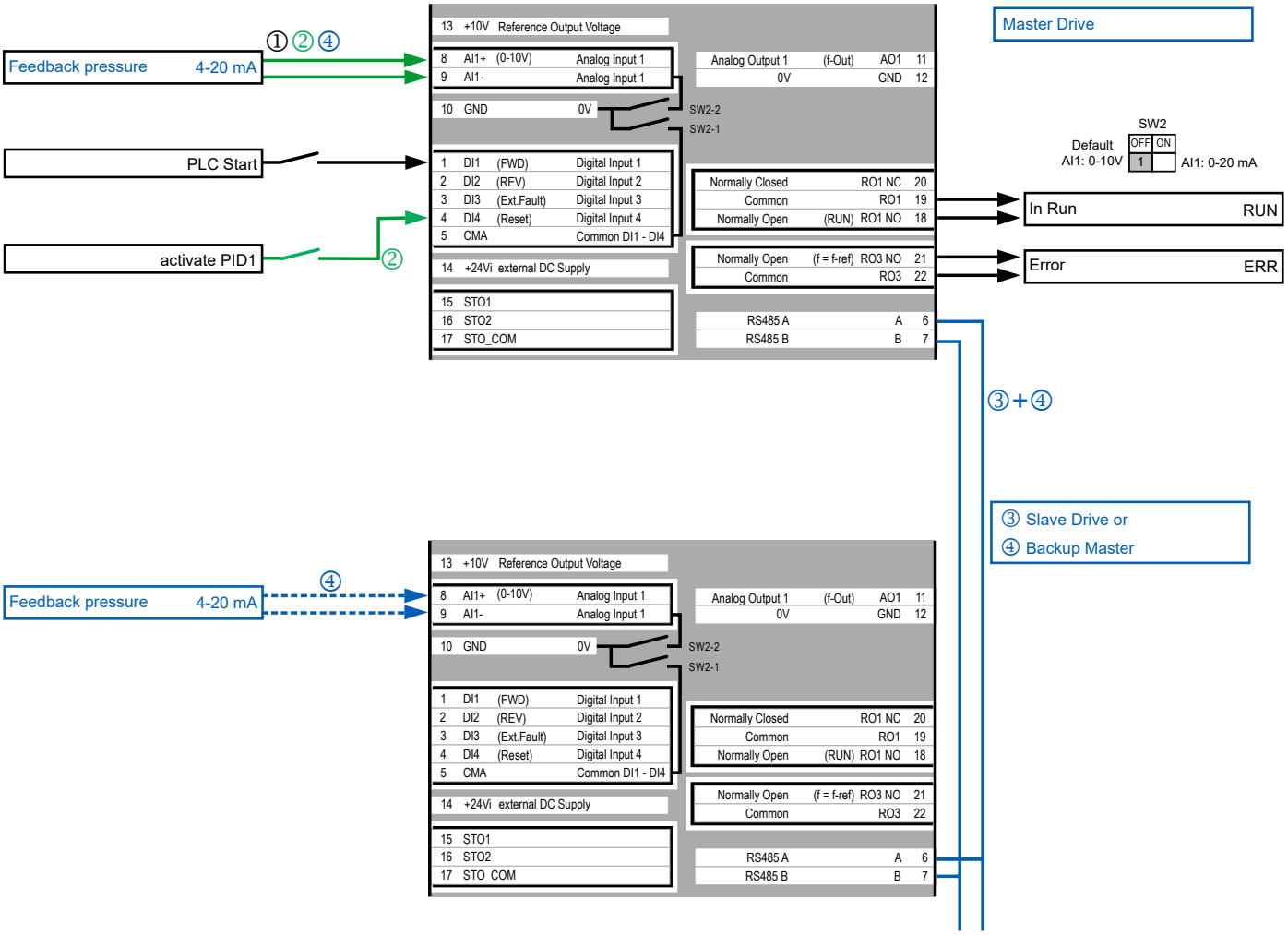
Wiring diagram booster pumps

① Reference is given by the analog input, the drive runs open loop.

② Via analog input the feedback is given, reference is done via the internal potentiometer or the communication links.

③ In Multi-Pump mode the slaves get their commands via Modbus-RTU and will be activated or run closed loop (depending on the selected mode).

④ Multi-Master Mode can be activated, in this case all slaves get the same feedback signal, to control the closed loop mode in case the primary master shuts down.



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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