FBS
DRIVE / BRAKE
CONTROLLER

Construction:
The **FBS Drive/Brake Controller** provides a rugged control solution for operator to rail equipment interface. Your specific control requirements can be accommodated by a variety of standard and custom engineered configurations.

The versatile design of the **FBS Drive/Brake Controller** accommodates a variety of mounting and handle options including mechanical interlock and T-handles, custom mounting plates and enclosures. The **FBS** accommodates proportional and discrete outputs including micro-switches, snap action contacts, encoders, PROFIBUS, CANbus, potentiometers, and PWM for stepped and proportional outputs.

Application:
The **FBS** controllers are widely used in applications for propulsion and brake control on locomotives, light rapid transit, high-speed rail trains, passenger rail, trams, trolleys, people movers.

Features:
- Versatile compact design
- Heavy duty construction with smooth precise control feel
- 20 million cycle mechanical operating life
- Safe and ultra reliable forced open contacts
- Highly customizable

Options:
- Custom mounting options such as slotted covers with and without brushes and customized mounting plates
- Custom screening and engraving
- Friction held handle
- Custom stepped detents
- Large selection of output choices
- Step or stepless construction with friction held or maintained handle action or a combination of both
- Custom handle configurations including mechanical interlock, twist, and push-button / deadman handle functions.
FBS ORDERING INFORMATION

Drive Arrangement: Single axis – direct drive
Basic Assembly: 5” shaft length supplied standard
Handle: Round ball standard, T, tapered and custom handles on request
Handle Action: Friction held or maintained
Output: Proportional, discrete, stepped
Output Devices: S870 micro-switches, S800 and S826 snap action contacts, 16A VNSO contact blocks, encoders, PROFIBUS, CANbus, potentiometers, and PWM amplifiers.

FBS TECHNICAL DATA

Mechanical:
- Mechanical Life: 20 million cycles
- Gear Ratio: 2.8:1
- Detented Positions: Per customer request
- Handle Travel: ± 45°
- Standard Potentiometer Rotation: ±126°

Environmental:
- Operating Temperature: -20 to +60°C
- Storage temperature: -40 to +70°C
- Protection above the panel: IP54
- Regulatory Testing:
  - Tested acc. to EN50155 10.2.3 (EN60068-2-1, Ad -35°C) cold
  - Tested acc. to EN50155 10.2.4 (EN60068-2-2, Ad +70°C) dry heat
  - Tested acc. to EN50155 10.2.5 (EN60068-2-30) humid heat
  - Tested acc. to critical frequency, vibration, shock
  - Encoder acc. to EN50121-3
  - EN50155

Electrical:
- Potentiometers: Conductive Plastic, 0.5 watt 5K 3-wire or 10K 4-wire center tap, 5 million revolutions
  - Connections: 20 AWG Hi-Temp, XLPVC, UL1430 wire with Molex connector (03-06-2042)
- Electronics: Potentiometers, voltage and current amplifiers, optoelectronic encoders, CANbus, PROFIBUS and PWM Amplifiers
  - Connections: Varies with product

VNSO double contact blocks:
- Rating:
  - 16 Amps continuous @ 240VAC
  - Resistive 8 Amps
  - 1 H.P. 120 VAC Single Phase
  - 2 H.P. 240 VAC Single Phase
- DC Rating:
  - 24VDC Resistive: 1.7 Amps
  - 24VDC Inductive: 1.1 Amps
- Max. switching capacity:
  - Making 100 Amps 240VAC
  - Breaking (0.7 PF) 80 Amps 240VAC
- Electro-mechanical life:
  - Resistive: 8 Amps @ 240VAC 1 million operations
    - 2 Amps @ 240VAC 10 million operations
  - Inductive: 6 Amps @ 240VAC 1 Million operations
    - 2 Amps @ 240VAC 10 million operations
- Dead front protection (DIN 60529): IP40...IP54
- Connections: Saddle clamp terminals
- Contact drive mechanical life: 20 million cycles
- Approvals: UL Recognized File # E106738M
  - CSA File # 15040
- Regulatory testing:
  - IEC60947-1, DIN EN 60947-1, VDE 0660 part 100
  - IEC60947-5-1, DIN EN 60947-5-1, VDE 0660 part 200
- Snap action contact:
  - S800
    - Inductive: 3 Amps 230VAC
    - Inductive: 1 Amp 110VDC
  - S826
    - Inductive: 1 Amp 230VAC
    - Inductive: 0.5 Amps 110VAC
- Contact element degree of protection: IP40
- Contact type: DPDT wiping contacts
- Mechanical life: 10 million cycles
- Insulation: Impulse withstand voltage 4 KV
- Pollution degree: PD3
- Connection: Screw terminal
FBS TECHNICAL DATA

Electrical (cont’d):
Micro-switch:
S870
Ratings:
• 10 Amps continuous @ 110 VAC
• Inductive: 1.5 Amps @ 230 VAC
• Inductive: 2 Amps @ 24 VDC
Contact element degree of protection: IP40
Mechanical life: 10 million cycles
Contact type: SPDT wiping contacts
Insulation: Impulse withstand voltage 2.5 KV/3
Operating Temperature: -40 to +85° C
Storage Temperature: -50 to +85° C
Connections: Screw terminal

Options:
• Handle: See handle section for a selection of handle options. Custom handles available upon request
• Shaft Length: 5” or per customer request
• Handle Action life: Maintained and friction brake
• Mounting: Custom mounting plates and consoles available upon request
• Special Potentiometer: Please consult factory with special potentiometer requirements

Please consult factory for other available options not listed.

FBS OVERALL DIMENSIONS

[Diagram of FBS technical data and overall dimensions]