

Data Sheet

# 2-Motor-Transmission System with automotive control PC-AC 2MT

The 2-motor-transmission system is an propel system solution which combines both proven hardware like PLUS+1® safety controller and H1 hydraulic pumps and motors with reliable software developed according to current safety standards.

The H1 NFPE pump (load dependent) and the two H1B motors are controlled by a Danfoss safety controller. The gearbox control comes along with error handling and shift monitoring functionality.

With the pre-installed application software and easily changeable control parameters, it is possible to tailor the vehicle's driving behavior to the individual requirements of the customer.

**Target applications**

Wheel loader, Telehandler, Dumper

- 90 – 150 kW
- Zero to final vehicle speed without interruption

**Features**

**Basic functions**

- Four system modes, selectable by the driver for different drive behaviour
- Independent pump/motor profiling and ramping for each system mode
- Independent motor profiles in one motor and two motor operation
- Electric drive pedal
- Electric inching
- Load dependent pump displacement control (automotive)
- Proportional hydraulic motor displacement control by flow (FCMD)

**Protection and safety functions**

- Safety controlled vehicle start protection
- Operator presence detection
- Hydraulic system overheat and low temperature protection
- Hydraulic motor overspeed protection
- Safety functions according EN1459, ISO20474, ISO 25119 and ISO 13849 up to performance level d

**Engine control and protection**

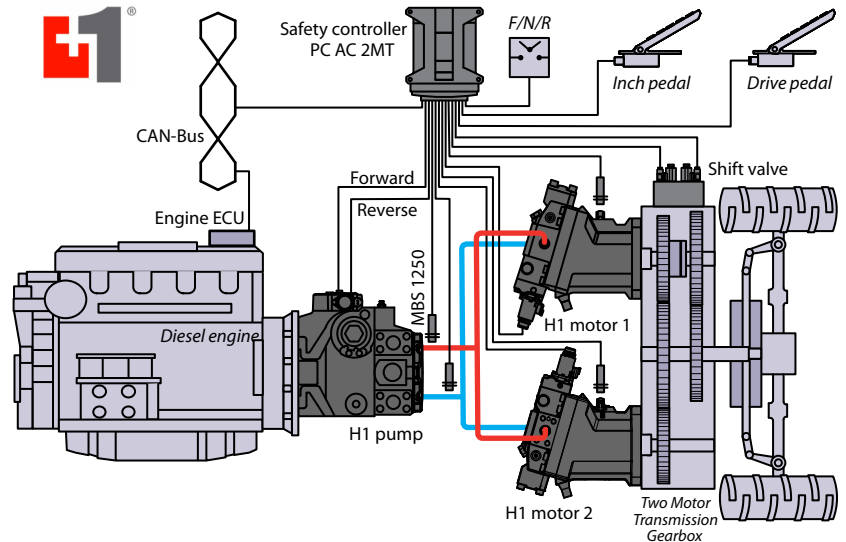
- CAN J1939 engine interface
- Engine speed control via drive pedal with safety controlled monitoring function
- Engine over speed and cold start protection

**Performance functions**

- ECO fuel saving mode
- Vehicle speed limitation
- Digital outputs for:
  - dynamic brake light
  - automatic park brake
  - reverse buzzer
  - vehicle speed controlled output functions
- Advanced CAN J1939 interface

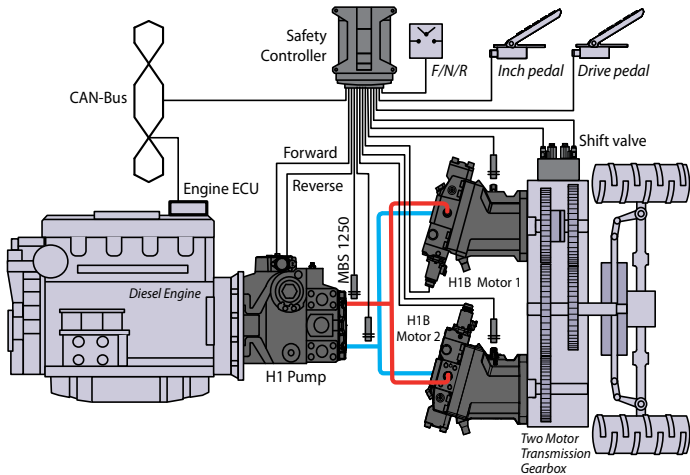
**Gearbox control and protection**

- Approved by gearbox manufacturer
- Clutch control
- Slip detection
- Fault manager





**System Overview of Danfoss Components**



**Controller Specifications**

Dual Processor	Primary	Flash: 1 MB; RAM: 128 kB
	Secondary	Flash: 512 kB; RAM: 64 kB
Rated supply voltage 12 V system		9-16 V
Rated supply voltage 24 V system		18-36 V
Digital and PWM outputs		3000 mA
Sensor supply (internal)		5 V / 500 mA
Ambient temperature		-40 to 85°C
IP rating with attached connectors		IP69k
EMC immunity		150 V/m
Vibration and shock tested		IEC60068

*Input (24 user defined inputs)*

Input	Function
7 x digital	FNR (direction selection), temperature switch gearbox, park brake switch, park brake feedback, clutch pressure feedback, pin not used
10 x analog	Inch pedal, drive pedal, hydrostatic oil temperature, operator presence, engine speed setpoint, pressure sensors, system mode switches
4 x frequency	Hydro-motor rpm
3 x frequency	For customized function (option dependent)

*Output (14 user defined outputs)*

Output	Function
4 x PWM	Pump and hydro-motor displacement control
2 x PWM	For customized function (option dependent)
8 x digital	Dynamic brake light, park brake, reverse buzzer, retarder control (optional), status LED, clutch valve, low side switches pump and motor



**H1P Pump with load dependent NFPE control** Electronic pressure limitation by software (without hydraulic pressure limiter valve) Optional: Control Cut Off (CCO), Swash angle sensor  
Technical Information **BC0000057**.



**H1 Bent Axis Motor 1** (always engaged) Electric proportional control (L1/L2 control) De-energized max. displacement Electronic pressure limitation by software (without hydraulic PCOR)  
Technical Information **BC0000043**.



**H1 Bent Axis Motor 2** (can be disconnected) Electric proportional control (M1/M2 control) De-energized min. displacement Electronic pressure limitation by software (without hydraulic PCOR)  
Technical Information **BC0000043**.



**Safety Controller PC AC 2MT**  
Technical Information **BC0000025**



**Pressure sensors MBS 1250**  
Data sheet **AI0000053**

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