DSEControl®

DSEM835

PROGRAMMABLE DISPLAY FOR USE IN VEHICLES AND OFF-HIGHWAY MACHINERY

KEY FEATURES / SUMMARY

- Robust HMI/programmable display specifically designed for mobile applications
- Optically bonded 3.5” colour screen for harsh environments
- Auto on / off heated display for use in low temperatures
- Powerful processor with Cortex M7 400 MHz clock speed
- 512 KB of SDRAM and 8 MB of flash storage
- 4 configurable inputs, digital and analogue capability
- 3 configurable digital outputs
- 1 VREF output (to power sensors)
- CAN interfaces, J1939 and Raw CAN
- PCAN interface for programming
- Flexible user programming via CODESYS 3.5
- IP67 protection / NEMA 6

ADDITIONAL HARDWARE	DSE PART
Deutsch connector A, 18 way complete with pins	007-850
E050 connector harness	016-177
E050 configuration harness	016-176
PCAN USB PC configuration interface	016-179

OVERVIEW

DC SUPPLY
8 V DC to 32 V DC

CURRENT CONSUMPTION
OPERATING CURRENT
< 1000 mA at 12 V and 24 V without external loads

DISPLAY
320 px x 240 px
24 bit colour
Optically bonded

INPUTS (4)
CONFIGURABLE INPUTS 1 to 4
Configurable as: digital, current, voltage, resistance
0 V to 10 V
0 mA to 20 mA
0-3 kΩ

OUTPUTS (3)
DC OUTPUTS 1 to 3
1 A continuous at supply voltage

VREF OUT
100 mA at 10 V / 5 V

INTERFACES
CAN 1
CAN Interface 2.0 A/B, ISO11898
50 kbits/s... 1 Mbit/s
SAE J1939 or Raw CAN
Configurable internal software 120 Ω resistor

DIMENSIONS
OVERALL (W x H x D)
112.5 mm x 115 mm x 49 mm
4.43” x 4.53” x 1.93”
PANEL CUT-OUT
80 mm / 3.15” Diameter
TORQUE SETTING
8 Nm / 5.9 ft-lb

WEIGHT
< 1 kg

STORAGE TEMPERATURE RANGE
-40 ° C to +85 ° C
-40 ° F to +185 ° F

HEATED DISPLAY OPERATING RANGE
Turns on at -25 ° C / -13 ° F
Turns off at -5° C / 23 ° F

OPERATING TEMPERATURE RANGE
-40 ° C to +85 ° C
-40 ° F to +185 ° F

PROTECTION RATING
IP67 / NEMA 6 (with mating connectors)

RELATED MATERIALS

TITLE	PART NO.
M835 Operators Manual	057-313
M835 Installation Instructions	053-250

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Technical Data

DSEM835

Supply		Connector A
Operating voltage	8 V DC to 32 V DC	Pin 7
Unit power supply maximum current consumption, full backlight (no external loads)	< 1000 mA at 12 V and 24 V	
Fusing		**Connector A**
Unit power supply external protection fuse rating	3 A	Pin 7
Housing		
PC PBT alloy plastic resin		
Dimensions		
Overall (W x H x D) 112.5 mm x 115 mm x 49 mm (4.43” x 4.53” x 1.93”)		
Weight		
< 1 kg		
Temperature		
Operating temperature	-40 ˚ C to +85 ˚C / -40 ˚ F to +185 ˚ F	
Storage temperature	-40 ˚ C to +85 ˚C / -40 ˚ F to +185 ˚ F	
Protection Rating		
	IP67 / NEMA 6 (mating connectors)	
Display		
Resolution, pixel	320 px x 240 px	
Colour	24 bit	
Format	3.5” diagonal	
Mounting	Optically bonded	
Illumination	LED (lifetime > 30,000 hrs)	
Connectors		
Connector A	18 pin TE connectivity DT16-18SA-K004	
Digital Inputs		**Connector A**
Digital inputs configured high or low		Pin 5, 6, 12, 18
High level voltage threshold	Configurable	
Low level voltage threshold	Configurable	
Frequency		
Applicable PIN		Pin 6
Minimum frequency measurement	1 Hz	
Maximum frequency measurement (M835-003-xx onwards)	150 Hz	
Maximum frequency measurement (M835-001-01 and M835-002-01)	50 Hz	
Minimum voltage for frequency measurement	8 V	
Maximum measurable voltage of input (Voltages above maximum measurable voltage are read as approx 12 V)	Typical 12 V	
Maximum voltage of frequency signal	As ECU supply voltage (Max 32 V)	Pin 7
Duty cycle range for frequency measurement	25% - 75% typical. Refer to manual for more info	
Minimum rise / fall time for frequency measurement	1.25 ms @ 12 V / 0.5 ms @ 24 V	
Analogue Voltage Inputs		**Connector A**
0 V to 10 V programmable voltage range	0 V to 10 V	Pin 5, 6, 12, 18
Voltage measurement resolution	12 bits	
Voltage measurement accuracy	± 1% FSD	
Voltage measurement input resistance	≥ 7.5 kΩ	
Voltage measurement sampling rate	500 Hz	
FSD = Full Scale Deflection		

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Analogue Current Inputs		Connector A
Current measurement direction	Current sink only	Pin 5, 6, 12, 18
Current measurement ranges	0 mA to 20 mA	
	4 mA to 20 mA	
Current measurement resolution	12 bits	
Current measurement accuracy	± 1% FSD	
Current measurement input sink resistance	150 Ω ± 1%	
Current measurement sampling rate	500 Hz	
FSD = Full Scale Deflection		

Analogue Resistive Inputs		Connector A
Resistance measurement range	0 Ω to 3200 Ω	Pin 5, 6, 12, 18
Resistance measurement source voltage	12 V maximum	
Resistance measurement current	3 mA	
Resistance measurement resolution	12 bits	
Resistance measurement accuracy	± 1% FSD	
Resistance measurement sampling rate	500 Hz	
FSD = Full Scale Deflection		

Digital Outputs High Side		Connector A
Switching current	1 A	Pin 14, 15, 16
Digital output active high ‘ON’ state internal voltage drop at rated current	< 100 mV	
Digital output active high ‘OFF’ state leakage current	< 120 µA at 24 V	

Reference Voltage		Connector A
Reference voltage output	Programmable 5 V or 10 V, 100 mA accuracy ±5%	17
		VRef GND Pin 13

CAN Interfaces		Connector A
Number of CAN ports	1	Pin 2, 3, 4 / 8, 9, 10
Supported protocols	J1939	
	Raw CAN	
Supported programmable baud rates	50 kbit/s, 125 kbit/s, 250 kbit/s, 500 kbit/s, 800 Mbit/s, 1 Mbit/s	Programmable using PCAN Interface

Processor		
STM 32h743	Cortex ARM M7	
	400 MHz	

Memory		
Flash	8 MB	
RAM	288 KB	
Non Volatile	16 KB	

DSE**M835**

Environmental and Testing		
Electro Magnetic Compatibility	Noise immunity Emission standard Road vehicles Road vehicles - electrical disturbances from conduction and coupling. Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines	BS EN 6100-6-2 BS EN 6100-6-4 ISO 11452 ISO 7637-3: 2016
Electrical Safety	Safety requirements for electrical equipment for measurement, control & laboratory use Part 1: General requirements Part 2-030: Particular requirements for testing measuring circuits	BS EN 61010 BS EN 61010:2010 BS EN 61010-2-30: 2010
Electrical tests	Road vehicles - environmental conditions and testing for electrical & electronic equipment Part 2: Electrical loads 4.6.3 Starting profile 4.6.4 Load dump	ISO 16750-2: 2012
Climatic tests	Damp heat, cyclic upper temperature 55˚C, number Damp heat, steady state test temperature 40 ˚C / 93% RH	EN 60068-2-30 EN 60068-2-78
Mechanical tests	Part 2-6: Tests - Test Fc: Vibration (sinusoidal) Part 2-27: Tests - Test Ea: Shock	EN 60068-2-6 EN 60068-2-27
Temperature	Ab / Ae cold test -40 ˚ C (-40 ˚ F) Bb / Be dry heat +85 ˚ C (185 ˚ F)	
Chemical	Chemical testing for electrical and electronic equipment - road vehicles	ISO 16750-5
Degrees of protection provided by enclosures	IP67 / NEMA 6	BS EN 60529

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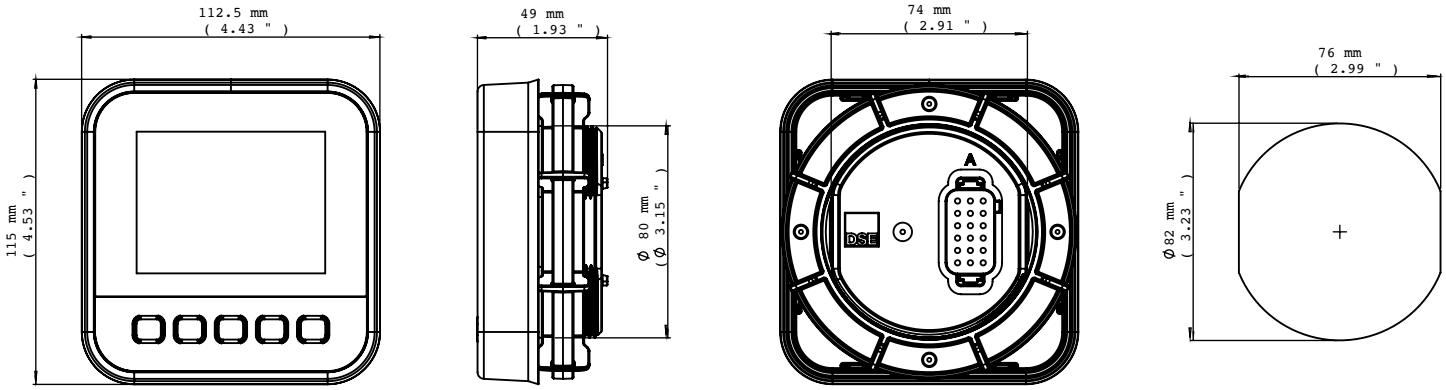

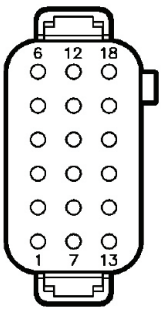

Connector A

PIN	DESCRIPTION
1	Batt GND
2	CAN Screen
3	CAN L In
4	CAN H In
5	Input 4
6	Input 1
7	VDC Batt +
8	CAN Screen
9	CAN L Out
10	CAN H Out
11	GND
12	Input 2
13	VREF GND
14	Output 1
15	Output 2
16	Output 3
17	VREF Out
18	Input 3

Abbreviations

OUT H, L	Output can be configured as digital high-side or digital low-side
AIN	Input can be configured to accept signals from positive digital, negative digital, 0 V to 10 V, 4mA to 20 mA, ratiometric, resistive or frequency
A GND	Ground connection for the analogue input channels

CE

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