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High-Performance CAN-Bus Cable for advanced engine control systems

Hradil, the German specialist cable engineering firm, introduce a shielded High-Performance CAN-Bus Cable for engine and exhaust control systems of heavy-duty 12-cylinder diesel engines. Hradil's CAN-Bus cable fulfils the demanding requirements set out in the Society of Automotive Engineers' SAE 1939-11, SAE J1939-14 und SAE J1128 standards. In other words, it belongs to an elite few capable of meeting the exacting criteria. The cable is perfect for dynamic applications such as drag chains and it's frequently the cable of choice for cranes, excavators, construction machinery and agricultural vehicles. It really comes into its own in environments such as mining, tunnel construction, oil drilling rigs or in the chemical industry. Owing to its special design the cable, can be relied on to resist high mechanical stresses and extreme temperatures ranging from -40°C up to +125°C.

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Fig. 1a: High-Performance CAN-Bus Cable for advanced engine control systems (Click on image to enlarge / photomontage: Shutterstock.com and Hradil)



Fig. 1b: High-Performance CAN-Bus Cable for advanced engine control systems (Click on image to enlarge / photomontage: AI-Generated Image by Shutterstock and Hradil)

Hradil's engineers have specifically developed the new High-Performance CAN-Bus cable for the purpose of managing heavy-duty diesel engines where fast data transmission and high transfer rates are of the essence. At 120 Oms its specific impedance characteristics, the Hradil CAN-Bus ensures optimal transmission rates with minimal signal reflection and losses.

The HRADIL CAN-Bus cable supports the transmission of sensor and diagnostic data as well as control data, such as engine rpm and temperature data as required by the parameter list defined in SAE J1939.

The Hradil CAN-Bus cable is compliant with the following SAE standards:

- The SAE J1939-11 standard defines the physical layer for High-Speed CAN.
- The SAE J1939-14 standard defines the physical layer for 500 kbps applications.
- The SAE J1128 defines the requirements of low voltage primary cables of 60 VDC (25 VAC) or lower in surface vehicle electrical systems.



Fig 2: High-Performance CAN-Bus cable (Click on image to enlarge)

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Fig 3: High-Performance CAN-Bus cable (Click on image to enlarge)

Its superior electrical characteristics aside, the cable achieves top scores thanks to its very high resistance against oil, petrol, most alkaline and acidic media as well as coolants and lubricants. Furthermore, as the cable was designed for outdoor use it is resistant against ozone and UV radiation. In addition, it is compliant with the fire protection standards IEC 60332-1-2 and UL94-VO thanks to its self-extinguishing and flame-retardant properties. The cable jacket was produced from a special compound resulting in above-average robustness and durability.

Table: High-performance CAN bus cable - SAE testing parameters

TESTING	PARAMETER	STANDARD	METHOD
Dimensional	Conductor	SAE J1939-11	IEC 60228
	Insulation diameter	SAE J1939-11	EN 60811-201
	Insulation centricity	SAE J1128	SAE J1128
	Lay Length	SAE J1939-11	EN 60811
	Wall thickness	SAE J1128	EN 60811-202
	Cable outer diameter	SAE J1939-11	EN 60811-203
Thermal	Cold bend test	SAE J1128	EN 60811-504
	Wrapping after thermal ageing	SAE J1939-11	ISO 6722
Mechanical	Cable bend test	SAE J1939-11	SAE J1939-11

	Pinch resistance	SAE J1128	SAE J1128
	Sandpaper abrasion	SAE J1128	SAE J1128
	Strip force	SAE J1128	SAE J1128
Electrical	Dielectric	SAE J1128	EN50289-1-3
	Conductor resistance	SAE J1939-11	EN50289-1-2
	Insulation resistivity	SAE J1128	EN50305
	Capacitance	SAE J1939-11	EN50289-1-5
Transmission	Velocity of propagation	SAE J1939-14	EN50289-1-7
	Impedance	SAE J1939-14	EN50289-1-11
EMC	Conversion loss	customer req.	EN 50289-1-9
	Transfer impedance	SAE J1939-13	EN 62153-4-3
Conductor	Strand coating	SAE J1128	n.a.
	Solderability	SAE J1128	EN 50396
Material	Mechanical properties	SAE J1128	EN 60811-401
	Crosslinking	SAE J1127	n.a.
Fire	Flame Propagation	SAE J1128	EN 60332-1-2
Environmental	Fluid Compability	SAE J1128	EN 50306-3
	Ozone Resistance	SAE J1128	EN 60811-403
	Hot Water Restance	SAE J1128	SAE J1128
	Climatic Cycling	SAE J1128	SAE J1128
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