General Features

The D135EML is a multi-purpose Ethernet / MVB hybrid interface with embedded processing power. The PC/104 board encapsulates all Ethernet and MVB relevant functions.

The MVB interface with configuration MDFULL is preferably used for Process Data, while the 10/100Mbit Ethernet interface is preferably used for Message Data communication and for easy configuration, diagnostics and file downloads. The Ethernet interface is available with different communication stacks.

The software architecture is based on a Client – Server model. This approach minimizes the CPU requirements of the host system, because the major part of the communication software is running on the duagon interface.

The Ethernet interface complies to IEEE802.3 and its internal logic is prepared for the future "Ethernet on traction vehicles" standard IEC61375-3-4. The MVB interface fully complies to the TCN standard IEC61375.

The D135EML is designed for harsh rolling stock environment and fully compliant to EN50121, EN50155, and IEC61373, e.g. by:

- -40 to +85°C operating temperature
- coating against humidity
- enhanced EMI and vibration robustness

Key Benefits

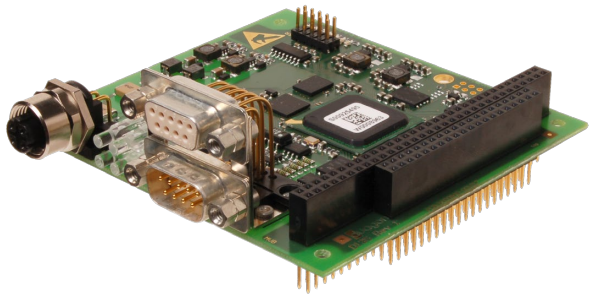
- Easy to integrate UART emulation Host Interface
- Space saving MVB/ETH hybrid solution
- No obsolescence risk due to the use of duagon® own soft-IP in an FPGA
- Full featured duagon MVB controller
- Supports all real time protocols like IPTcom, TRDP, CIP and Profinet on the Ethernet interface
- Fully compliant to EN50155, EN50121 and EN61373

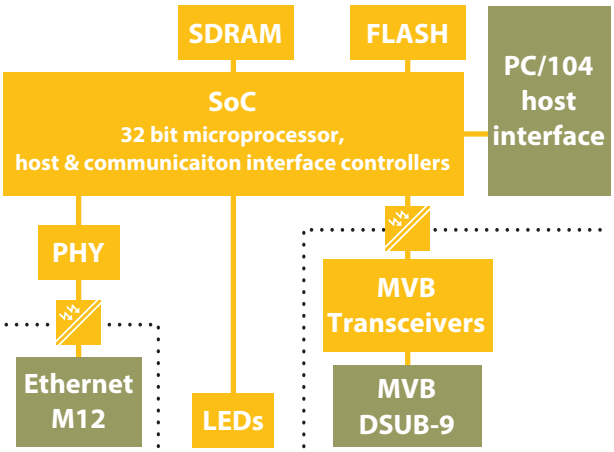
Application Examples

MVB interface for process data with well-proven real time behaviour that is complemented with a high bandwith Ethernet interface for:

- message data
- firmware/file downloads
- web based service/configuartion interface

D135EML Hardware Architecture





Life Cycle Cost

The use of an FPGA with included duagon own soft-IP minimizes the risk and costs in case of component obsolescence.

The D135EML has been strictly designed without electrolytic capacitors to avoid service costs for changing capacitors.

Technical Data

MVB	– 4096 Process data ports – Physical layer: EMD or ESD+ – Integrated 120 Ω termination resistance – one or two 9 pole DSUB female or male/female – Free selectable UNC or M3 Bolt
Ethernet	– One galvanically isolated ethernet channel with reliable M12 connector – Fully compliant with IEEE 802.3 and IEC61375 – 10/100 Mbit/s
Ethernet Protocols	– IPTcom – TRDP* – CIP – Profinet RT* – TCP/IP, UDP
Diagnostic/Service	– LEDs for visual status information (power on, running, communicating, failure, …) – Diagnostic information available on HTTP webserver and host interface – No service needed

Power Consumption	– $P_{max} < 2$ W
Operating Conditions	– Ambient temperature: –40 to +85 °C (EN 50155, Class TX) – Relative humidity: 75%, max 95% for 30 days per year (conformal coating) EN 60068 – Shock and vibration: According to IEC 61373 category 1, class B – EMI: According to EN 50121 and EN 50155
Environment	– Fully compliant to RoHS and REACH
Physical Characteristics	– PCB dimensions 95.9mm x 90.2mm x 1.6mm – Maximum component height: 16.5mm for single SUB-D, 30mm for double SUB-D (Note: the height does not comply to the PC/104-standard) – Weight: 95g (may vary according to the selected connector options)

d-008085-015093

Order Code and HW Options

Product Type: **D135EML** - [ ] - [ ] - [ ] - [ ] [ ] [ ]

EXAMPLE: D135EML-I-T-P4-MB2X

Ethernet Type		MVB Type		Form Factor		Ethernet Connector		MVB Connector		Connector Options	
TCP / UDP Sockets	**I**	EMD	**T**	PC/104	**P4**	RJ45	**R**	Header	**A**	With 64-pin AND 40-pin PC/104 connectors	**2**
IPTCom	**B**	ESD+	**D**			M12	**M**	single SUB-D (fem)	**B**	PC/104 no stackthrough pins	**X**
Profinet RT	**R**							dounle SUB-D	**BB**	SUB-D with UNC4/40 screw locks	**U**
Ethernet/IP - CIP	**C**									No screw locks, UNC4/40 threads	**N**

*Contact duagon® for further information about this possibilities

Related Documents

Data Sheet D135EML d-001817-nnnnnn.pdf

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