

EUROBIKE 2017

## CAN is set, but no higher-layer protocol is standardized

One of the technical trends on the Eurobike 2017 tradeshow was the introduction of CAN-based devices for pedelecs and e-bikes.



At the tradeshow in Friedrichshafen, pedelecs and e-bikes gained increasingly attraction – even the next generation of cyclist were interested (Photo: Eurobike)

The Eurobike 2017 has closed its doors. More than 45 000 visitors came to Friedrichshafen (Germany) to see the innovations of about 1400 exhibitors from 50 countries. The number of guests travelling to the tradeshow from abroad remained consistently high at 62 percent this year. Next year, the event will be earlier: It will take place from Sunday, July 8 to Tuesday, July 10, 2018. Due to its early date it will only be open to industry visitors.

The exhibitors presented a lot of innovations including a first cargo folding bicycle with electric drive or an e-racing bike with 400-W drive. One of the trends was the increasing support of CAN interfaces. But, there are no standardized higher-layer protocols. Of course, the Energybus association and CiA promote since several years the CiA 554 application profile, which is partly submitted to IEC for international standardization. But the number of products complying with this specification is still very limited. The market-leading suppliers still use their own proprietary CAN-based protocols.

Several European companies including [Go Swissdrive](#) have introduced CAN-connectable motors. Also the Chinese company Bafang presented a mid-motor with CAN interface. The M-series provides up to 500 W with torques up to 120 Nm (model M600). Currently, the Chinese company uses battery cells from Panasonic and Samsung. In the near future, CAN interfaces will be provided announced the company in Friedrichshafen. Reported earlier in this year, Bafang is progressing on an own automated battery production facility in Suzhou for the assembly of the battery core packs. The strategy includes that customers in the future can also chose to develop their own final battery pack size, shape, and material or cosmetic design options. The CAN batteries will be available with a 2-A and 3-A charging current.

Bosch launched an [ABS for pedelecs](#) with CAN connectivity. And Rohloff announced that its E-14 shifting system, the Speedhub 500/14, can be connected via CAN to Bosch's eBike products. The company said that the synchronized shift process via CAN needs just 180 ms. Cobi also has connected its [hub connecting smartphones](#) to Bosch's CAN-based in-pedelec network.

Bosch is one of the market-leading supplier of drives and electronics for pedelecs and e-bikes. The increasing complexity of the control electronics requires communication networks similar to those used in cars. This high-volume application makes appetite to the Tier1 automotive suppliers. Besides Bosch, also Continental and ZF have entered this market. As in the passenger car industry, the in-vehicle CAN communication is not standardized on the higher-layers of the OSI model. There is an exception on the CAN communication for diagnostic purposes, which is standardized in ISO 15765 (network layer protocol) and ISO 14299 (unified diagnostic services).



The E-14 shifting system comes with CAN interface (Photo: Rohloff)

In opposite to e-cars, pedelecs and e-bikes are not equipped with the chargers. This requires a standardized interface, optionally based on CAN, to charge the batteries by means of a public infrastructure. However, this is not in the interest of the market-leading suppliers. They want to keep any CAN communication proprietary only giving selected partners access to it. Safety and security reasons are used to excuse that the communication is not open. The truth is that this is politics and can only be solved only by governmental regulations, if the consumers does not like to depend on single suppliers.

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