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Data recorder

Type DTI375.08

DTI375.08 in-dummy data recorder module

The data recorder Type DTI375.08 records digitized measuring values during a crash test in the dummy which are provided decentralized and sensor near by the so-called DiMod (digitalizing module) via bus line during crash tests and stores them in a central memory. Data transmission from the data recorder to the outside and the communication to and from the data recorder is done via a single interface cable. This system cable provides a default 48 V (36 ... 60 V) supply voltage, a 100 Base-T Ethernet connection and an RS-485 bus each for the trigger impuls (T-zero and Start Recording) as well as the 1 kHz synchronization signal.

- Available with 8 ports for connecting up to 96 measuring channels
- Each port is equipped with an RS-485 bus connection for communication with the connected sensors and recording the measuring signals
- Central memory with a capacity of more than 300 s measuring data recording at 20 kHz sampling rate
- A non-volatile flash memory is used for the measurement data storage
- External data transmission and communication via Ethernet connection with 100 Mbit/s

Description

Within the DTI technology (Digital Transducer Interface), the data recorder is the core element for recording in-dummy measuring values. Depending on the instrumentation of the dummy, the data recorder can be used for recording measuring values of up to 96 DiMod channels through its signal interface module with 8 DTI ports. Each port can be connected via DTI bus with up to 12 DiMod channels. For power supply on the connected DTI bus, each DTI port has its own short-circuitproof control unit which sets the output voltage to 5,6 V and provides a maximum of 500 mA. The overall current is restrained by the power rating of the attached UPS power supply. The data recorder in combination with a Type DTI375.01 UPS can supply a total of approximately 5 A. On the DTI bus cable remains 0,5 V voltage reserve with the voltage set to 5,6 V which is sufficient at full load for a cable length of 5 m – standard wire diameter assumed, e.g. AWG26. In addition, each DTI port has its own RS-485 driver and receiver for data transmission on the bus.

In order to ensure uninterruptible measuring and recording even when the main supply voltage fails, each data recorder is powered by a backup power supply (Type DTI375.01). The recorder controls the attached UPS through the I2C bus and continuously collects all relevant operating data like charge balance and battery capacity. This data can be retrieved by an appropriate application SW at any time. For more details about the Type DTI375.01 UPS see data sheet no. 003-385e.

Technical data

Data recorder Type DTI375.08

DTI ports		8
Measuring channels		96
Recording time	s	>300
Trigger		T-Zero
		Start Recording (SR)
Max. trigger input voltage (with respect to GND)	V	–8 ... +13
Synchronization input frequency	Hz	1 000
Communication		
RS-485	Mbit/s	6
Ethernet	Mbit/s	100
I2C (to UPS)	Kbit/s	100
Memory (flash)	GByte	2
Supply voltage	V	36 ... 60
DTI port supply output		
Voltage	V	5.4 ... 5.9
Max. current (per port)	mA	500
Weight	grams	270
Dimensions (LxWxH)	mm	56x63x37.1
Cable diameters		
UPS cable	mm	5.7
System cable	mm	6

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Technical data (continuation)

Operating temperature range	°C	5 ... 40
Storage temperature range		
Long term	°C	–20 ... 25
Short term (<1 week)	°C	–20 ... 50
Humidity, max. (non-cond.)	%	80
Shock resistance, peak; half sine wave for 6 ms in all axes	g	100

Included accessories	Type No.
• 2x Lemo Connectors 19 pol 2F	FGN.2F.319.XLC

Optional accessories

• UPS power supply for Type DTI375.xy	DTI375.01

Ordering code	**Type DTI375.08**

Application

The data recorders of the Type series DTI375.08 are designed for direct assembling in "anthropomorphic test devices" (crash test dummies) and are installed into the dummies together with the UPS power supply as central and symmetrical as possible. It records measuring data during the crash test and stores the processed and digitized data in a flash memory provided for that purpose. The digitization modules near the sensor are connected via bus wires with the central built-in data recorder. The bus concept has the advantage that only a minimum wiring in the dummy is required. It is a four-wire bus, with two lines for the power supply of the sensors, and two lines for the data transmission with 6 Mbit/s in differential RS-485 format. Readout of the data is done after the crash test by the application SW through the Ethernet connection.

When installing the data recorder and the UPS power supply in the dummy in a suitable place, it must be ensured that neither the mechanical nor the dynamic properties of the dummy are impaired. For this, a very high level of integration and a very small and lightweight design of the devices is desirable. The UPS power supply as well as the data processing electronics were designed in such a way, so that they have approximately the same volume. It has been proved beneficial to build these two functional groups in separate cases, which can then be balanced in the dummy, e.g. at the spine.

The Type DTI375.08 data recorders and the attached UPS connector are L-shaped formed to realize the most compact design for the cable outlet with respect to the footprint of the device.