

## Data recorder

Type DTI375.TH-5%

### In-dummy data recording module

The data recorder Type DTI375.TH-5% records digitized measuring values during a crash test in the Thor 5% (TH-5%) dummy which is provided decentralized and sensor close by the so-called DiMod (digitalizing module) via bus line during crash tests and stores them in central memory. Communication with the data recorder is handled by a single system cable. This system cable provides a default 48 V (36 ... 60 V) supply voltage, a 100 Base-TX Ethernet connection and an RS-485 bus each for the trigger impulse (T-zero and Start Recording) as well as the 1 kHz synchronization signal.

- Available with 8x3 ports for connecting up to 288 measuring channels
- Each port is armed with an RS-485 bus connection for feeding the connected sensors and recording the measuring signals
- Central memory with capacity for more than 200 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

On the part of 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 Thor 5% (TH-5%) dummy, the data recorder can be used for recording measuring values of up to 288 DiMod channels. In addition, a signal interface module with 24 DTI ports is used with the DTI375.TH-5% version of the data recorder. Each port can be connected via DTI bus with up to 12 DiMod channels. For current supply on the connected DTI bus, each DTI port has its own short-circuit proof control unit which sets the output voltage to 5.6 V and supplies a maximum of 500 mA, overall current is restrained by the UPS power supply. The total current is limited by the UPS power supply. In total, the data recorder can supply approx. 9 A, ports 1 ... 12 and 13 ... 24 cannot supply more than 4.5 A in total. With the set nominal voltage of 5.6 V, sufficient voltage reserves remain for the cabling. Please note that under full load the output voltage may drop further (see technical data). The operating conditions for the interaction between recorder and DiMod must always be evaluated for the overall system. Furthermore, each DTI port has its own RS-485 driver and receiver for data transmission on the bus.



#### Technical data

##### Data recorder

DTI ports		24
Measuring channels		288
Recording time	s	>200
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	4
Supply voltage	V	36 ... 60
DTI-Port power supply		
Output voltage	V	5.4 ... 5.9
Max. current (per port)	mA	500
Weight	grams	406
Dimensions (LxWxH)	mm	66x58x40
Cable diameter		
UPS cable	mm	5.7
System cable	mm	6
Operating temperature range	°C	5 ... 40
Operating temperature range for charging batteries	°C	5 ... 35

**Technical data (continuation)**

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**

- System cable for data recorder and UPS power supply

**Type No.**

on request

**Optional accessories**

- None

**Ordering code****DTI375.TH-5%****Description (continuation)**

In order to ensure uninterruptible measuring and recording even when the main current supply fails, the data recorder is operated with an emergency power supply (Type DTI375.01). The recorder controls the connected UPS via the I2C bus and continuously collects all relevant operating data such as charge balance and battery capacity. These data can be retrieved at any time by a corresponding application software. For further details on Type DTI375.01 see data sheet no. 003-385d.

**Application**

The data recorder Type DTI375.TH-5% is designed for direct assembling in the Thor 5% (TH-5%) dummy and is centrally as well as symmetrically installed into the dummy together with the associated UPS power supply. It records measuring data during the crash test and stores the peripheral processed and digitized data in a flash memory provided for that purpose. The sensor close digitization modules are connected via bus wires with the central built-in data recorder. The Thor 5% (TH-5%) specific 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 on an appropriate 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 that they are optimally adapted to the conditions in the Thor 5% (TH-5%) dummy.

The combination of plug-in connectors and cable outlets on the devices is designed to ensure easy assembly and interchangeability.

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