

Data Recorder

In-Dummy Data Recording Module

Type DTI304.04,
DTI304.08,
DTI304.12

The in-dummy data recorder of the Type series DTI304... records digitized measuring values which are provided decentralized and sensor close 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 with which all systems, cameras included, work with chronological synchronism during the crash test, synchronizes by default a 48 V (36 ... 70 V) supply voltage, a 100 Base-T Ethernet connection and an RS485 bus for the trigger impuls (T-zero) and the 1 kHz signal.

- Available with 4, 8 or 12 ports for connecting 48, 96 or 144 measuring channels (Types DTI304.04, DTI304.08 and DTI304.12)
- Each port is armed with a RS485 bus connection for feeding the connected sensors and recording the measuring signals
- Central memory with capacity of more than 60 s measuring data recording at 20 kHz sampling rate
- Buffering of memory contents for data saving with internal Lithium accumulator for more than 48 hours
- External data transmission and communication via 100 Mbit/s Ethernet connection

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 design, the data recorder can be used for recording measuring values of 48, 96 or 144 DiMod-channels. For this purpose the first two variants are supplied with 19 pin plug connectors with 4 DTI pins at the data recorder each. Variant three is used with 30 pin plug connectors with 6 DTI pins each. 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 5,7 V and supplies maximal 500 mA. On the DTI bus cable remain 0,6 V voltage reserve with the voltage set to 5,7 V which is sufficient at full load for a length of 5 m – standard wire diameter assumed. In addition, each DTI port has its own RS485 driver and receiver for data transmission on the bus.



Technical Data

Data Recorder

Type DTI304...		.04	.08	.12
DTI pins		4	8	12
Measuring channels		48	96	144
Recording time	s	60	60	65
Trigger		T-zero	T-zero	T-zero
Synchronization	Hz	1 000	1 000	1 000
Communication				
RS485	Mbit/s	6	6	6
Ethernet	Mbit/s	100	100	100
Memory	MByte	128	256	384
Supply voltage	V	5,7	5,7	5,7
Weight, ca.	grams	100	145	140
Dimensions (LxWxH)	mm	56x43x36	56x63x36	78x50x25
Buffer battery memory				
Type		Lithium-Polymer	Lithium-Polymer	Lithium-Polymer
Buffer time	h	>48	>48	>48

UPS Power Supply

Type DTI304...		.01	.02	V.02
Accumulator		Lithium-Polymer	Lithium-Polymer	Lithium-Polymer
Supply voltage	V	36 ... 70	36 ... 70	36 ... 70
Buffer time	min.	>10	>10	>10
Accumulator				
Voltage	V	7	7	7
Capacity	mAh	360	740	740
Power	W	15	25	25

Description (Continuation)

In order to ensure uninterruptible measuring recording even when the main current supply fails, each data recorder can only be run with a UPS current supply. The UPS power supplies are buffered with Lithium-Polymer accumulators and the accumulator hardware is monitored concerning overvoltage and low voltage. Charging of the accumulators is done voltage limited and all components are monitored and controlled by the I2C bus of the data recorder's processor. Both charge balance and accumulator capacity can be retrieved.

Accumulator mode is only activated during the measuring by switching on a linear controller which supplies 5,7 V, activated by a FET controller, as soon as the input voltage of the UPS power supply input is below 36 V. Switching back in normal operation with nominal 48 V supply can only be activated by the data recorder under control of the processor. This prevents disturbances because of filthy inputs during measuring.

Application

The data recorders of the Type series DTI304... 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. They record measuring data during the crash test and store the peripheral processed and digitized data in a RAM memory provided for that purpose. The sensor close digitization modules are connected at that via bus wires with the central built-in crash 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 RS485 format. Reading of the data is done after the crash test on an appropriate Ethernet connection.

It must be ensured that by the installation of the data recorder and the UPS power supply in the dummy in a suitable place 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 power supply and data processing electronics have been designed accordingly, so that they have approximately the same large 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.

Especially for the data recorders Type DTI304.04 and Type DTI304.08 and their UPS power supplies, an I-shaped design was chosen in order to realize a very compact setup together with the plug connectors and cable outlets. The housings have been primarily adapted to the plug connectors because of their large construction volume.

The structure of the data recorder Type DTI304.12 and its UPS power supply was adjusted to suit the available space in the WorldSID dummy and offers a very compact design. Internal, the boards are built with so-called flexible connectors to which the connectors and cables can be connected directly without further wiring. This increases the operational safety.

The combination of connectors and cable outlets on the outside of the devices is designed in a way that assembling and exchanging can be done very easily. The assignment of the cables and connectors are functionally compatible with all recorder designs. The different designs of the data recorder devices can be installed in almost any dummy version.

Possible Variants

Type DTI304...		.04	.08	.12
Measuring channels		48	96	144
Memory	MByte	128	256	384
Volume, ca.	cm ³	48	85	97
Weight, ca.	grams	100	145	140

Included Accessories

- System cable for data recorder and UPS power supply

Type No.

on request

Optional Accessories

- Power supply for Type DTI304.04
- Power supply for Type DTI304.08
- Power supply for Type DTI304.12

Type No.

DTI304.01
DTI304.02
DTI304V.02

Ordering Key

Type DTI304.04	.04
Type DTI304.08	.08
Type DTI304.12	.12

Type DTI304 