

# MiniCOMBox

## Port Connector Box

Type DTI312.03

The MiniCOMBox Type DTI312.03 is the central port connector for DTI measurement technology in the vehicle or on sleds both for in-dummy and on-board data recording, e.g. for up to two dummies and an airbag timer. The vehicle is connected by a trailing cable with an appropriate connector to the executive control center of the test field.

- 3 system pins for DTI devices (e.g. data recorders of the series 304, airbag timer, additional vehicle measuring locations or Ethernet devices with similar functionality)
- Self-sustaining creation of the 1 kHz reference clock
- Central T-zero connector for receiving and immediate transmission (non-regenerative) of the trigger signal
- Integrated 4 ports Ethernet switch
- Connection of a UPS accumulator for buffering of the complete plant

### Description

The supply of the MiniCOMBox Type DTI312.03 is done with a supply voltage of 48 VDC (36 ... 60 V) via the trailing cable. All necessary signals are combined on the connector for the trailing cable: Ethernet 10/100 Mhz, T-zero and 1 kHz system clock for possible external synchronisation.

Apart from the Ethernet, all remaining signals are conducted differentially and fail-safe in the RS-485 format. An accumulator connector is available for vehicle crash tests and specific crash tests without trailing cable. It has to be connected to a UPS power supply.

For Ethernet communication an on-board switch (10/100 MHz) provides altogether 3 ports that are conducted to the correspondent connectors. Port four is connected to the trailing cable and leads to the control center. By using appropriate media converters at a suitable place, hybrid trailing cables can be used to improve noise immunity, e.g. in order to send data via fiber optics when the wires are long.

The central T-zero connector works bidirectional and can collect T-zero signals of different parts in the vehicle or test field and immediately pass them non-regeneratively to all participants. Non-regeneratively means here that the T-zero system does not block itself.



### Technical Data

#### MiniCOMBox Type DTI312.03

Recorder interface		3
Trigger		
RS-485		T-zero
Contact		T-zero
Synchronisation	Hz	1 000
Communication		
RS-485	Mbit/s	6
Ethernet	Mbit/s	10/100
Supply voltage	V	36 ... 60
Weight	grams	350
Dimensions (LxDxH)	mm	165x25x70

#### UPS Power Supply

##### Type DTI335U.42

Accumulator		nickel metal hydride
Supply voltage	V	36 ... 60
Accumulator		
Voltage	V	42
Charge	mAh	2 000
Dimensions (LxDxH)	mm	165x115x46
Weight	grams	1 400

DTI312\_003-083e-12.17

### Description (Continuation)

Transmission of the T-zero signal to this particular participant which reports the T-zero at first, is certainly prevented. Later reported T-zero signals of other participants are refused. This guarantees that one of the connected devices can release the T-zero state for the complete system crash plant.

The MiniCOMBox self-sustainingly creates a 1 kHz reference clock for synchronization for the connected devices. Alternatively, a central 1 kHz reference clock from the test stand can be defined via the trailing cable. In this case the internal clock is refused. It is important that the external clock is completely free of jitters. The lock-in range of the PLLs in the data recorders is at  $3 \times 10^4$  and therefore the demands to the external clock are high if the synchronization has to be ensured with it.

### Application

The MiniCOMBox Type DTI312.03 is the central on-board element for the crash test together with other DTI devices (e.g. data recorder, airbag timer, ...) when there is not sufficient space in the vehicle or on the sled or when the number of channels of the measurement is reduced.

It is mounted like all DTI on-board devices by means of a trapeze rack e.g. in the trunk and linked with the other components via the appropriate connectors. For preparing a test and in normal crash mode, the MiniCOMBox is connected via a trailing cable with the control station.

This means, communication and supply of the connected components is done via the trailing cable by the control station. However, if the test is done without trailing cable, the MiniCOMBox must be buffered by an appropriate UPS power supply (accumulator). In this case the system runs non-regeneratively.

The main functions in the MiniCOMBox are carried out by means of a CPLD that can be updated. Thus the design size is only determined by the used connectors. A Housing with a small depth in design has been chosen in order to keep volume and weight small. Therefore, a flexible integration at central position in the crash vehicle is possible.

### Optional Accessories

- UPS power supply (for crash test without trailing cable or for the purpose of system security)

### Type No.

DTI335U.42

### Ordering Code

- MiniCOMBox

Type DTI312.03