

COMBox

Type DTI312.10

Port Connector Box

The COMBox Type DTI312.10 is the central port connector for DTI measurement technology in the vehicle or on sleds both for in-dummy and on-board data recording. In addition, appropriate control signals between the vehicle and the test facility can be transferred. The vehicle is connected by a trailing cable with an appropriate connector to the executive control center of the test field.

- 7 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)
- Real-time link for control and status bits in the MIL bus 1553
- 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 8 ports Ethernet switch
- Connection of up to two UPS accumulators for buffering of the complete plant

Description

The supply of the COMBox Type DTI312.10 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: 2 x Ethernet 10/100 Mhz, T-zero in/out, MIL bus in/out and 1 kHz system clock for possible external synchronisation. Apart from the Ethernet, all remaining signals are conducted differentially and fail-safe in the RS485 format. Two accumulator connectors with appropriate switch are available for vehicle crast tests and specific crash tests without trailing cable. They have to be connected to one or two UPS power supplies, depending on the power requirement.

For Ethernet communication an on-board switch (10/100 MHz) provides altogether 7 ports that are conducted to the correspondent connectors. Port eight 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. Transmission of the T-zero signal to this particular participant which reports the T-zero at first, is certainly prevented.



COMBox (top) and UPS power supply (bottom)

Technical Data

COMBox

Type DTI312.10

Recorder interface		7
Trigger		
RS485		T-zero
Contact		T-zero
Synchronisation	Hz	1 000
MIL bus		
Sampling rate	kHz	50
Control/status bit	5V CMOS	10/10
Communication		
RS485	Mbit/s	6
Ethernet	Mbit/s	10/100
Supply voltage	V	36 ... 60
Weight	grams	1 450
Dimensions (LxDxH)	mm	165x55x125

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

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This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

Description (Continuation)

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 COMBox 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 a synchronization process is started between the internal and the central externally prescribed clock. Run-time errors on the trailing cable are compensated and in the matched case the internal created clock only shows a very small phase error to the stationary clock.

Inside the trailing cable, two wire pairs can be reserved to the COMBox for transmission of real-time bits in 1553 MIL bus format (10 control bits from stationary side to vehicle and 10 status bits in the reverse direction). The counterpart of the COMBox is here a MIL bus interface (Type DTI312.20) which is installed at a suitable place in the test field or on the control station. Inputs and outputs are available at appropriate clamps.

Application

The COMBox Type DTI312.10 is the central on-board element for the crash test together with other DTI devices (e.g. data recorder, airbag timer, ...) in the vehicle. 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 COMBox 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 COMBox must be buffered by one or two appropriate UPS power supplies (accumulators). In this case the system runs non-regeneratively or is connected via a radio interface for communication with the control station. For this, the radio interface (Type DTI270.2) is used at a separate connector of the COMBox, in order to change data with the stationary part.

The main functions of the COMBox are realized by means of a FPGA (Field Programmable Gate Array), 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.

Included Accessories

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

Type No.

DTI335U.42

Optional Accessories

- None

Ordering Code

- COMBox

Type DTI312.10