Operating instructions

iDAT pickup floor systems

guidance, position

Order-Number	Position Ver.	Bit/s	Parity	CAN Node	Distance Position Marks (mm)
93212-340-3301841	iDAT pickup S01	57600	none	7	105
93212-340-3301842	iDAT pickup S02	57600	none	7	90
93212-340-3301843	iDAT pickup S03	57600	none	8	90
93212-340-3301844	iDAT pickup S04	57600	none	8	705
93212-340-3301845	iDAT pickup S05	19200	none	7	90
93212-340-3301846	iDAT pickup S06	9600	none	7	90
93212-340-3301847	iDAT pickup S07	9600	none	7	90
93212-340-3301848	iDAT pickup S08	57600	odd	7	90
93212-340-3301849	iDAT pickup S09	38400	odd	7	90
93212-340-3301850	iDAT pickup S10	19200	odd	7	90
93212-340-3301851	iDAT pickup S11	9600	odd	7	90
93212-340-3301853	iDAT pickup S13	19200	even	7	90
93212-340-3301854	iDAT pickup S14	57600	odd	7	90

Operating instructions

iDAT pickup floor systems
guidance, position

Index

Seite

1 Symbols and hints 4

2 Advisory information for the user 5

3 Technical data 6

4 Description of the guidance function 8

5 Feedback : Operation description 11

6 Description of the position function 12

6.1 Position mark distance 105 mm 13

6.2 Position mark distance 90 mm 14

7 Transport and storage 15

8 Installation 16

8.1 Who is authorized to carry out the installation 16

8.2 General advice for the installation 16

8.3 Current regulations 16

8.4 Electrical connection 16

9 Warnings 17

10 Comissioning 17

11 Operation 18

12 Maintenance 18

13 Actions in case of emergency 19

13.1 Failing diagnostic 19

14 Deinstallation and re-use 20

14.1 Safety advice for disassembly and disposal 20

14.2 Recycling 20

15 Spares 21

16 Dimensions 21

17 Connections 22

18 CAN-Protocol Guidance / Position 23

19 Serial-Protocol Guidance / Position 23

Important:
Company names mentioned in this manual that are registered and protected trade names by copyright do remain the property of the companies themselves.
We reserve the right to carry out technical modifications of illustrations and statements in these operating instructions, in order to improve the iDAT pickup system and its functions.
Reprint and duplication (as well as extracts) are only allowed with permission from Conductix-Wampfler GmbH.

1 Symbols and hints

Warning of voltage

This symbol can be found in several places in the operating instructions where special care has to be taken due to a voltage presence which is hazardous to people. Please observe these instructions and be careful in those cases. Please apply all health and safety regulations to other users as well. Always disconnect the system from the main supply prior to carrying out any work on the energy supply system.

Attention - some hints

This sign draws the attention to parts of the operating instructions where the regulations, advice and correct operational sequence must be observed to avoid any damage or destruction to the energy supply system and its components.

Temperature

This sign draws the attention to parts of the operating instructions, where special care must be taken because of hot surfaces or where inductive heating of ferromagnetic material may occur and where special measures have to be taken.

Please pass on the advice to other users as well.

2 Advisory information for the user

When the iDAT pickup is open it can contain live voltage, depending on its protection class and function - hot surfaces are possible.

Non-permissible removal of required covers, improper operation, faulty installation or operation involve risk of severe injuries to persons and damage to components.

All electric installation and commissioning works as well as repair works and disassembly have to be carried out by qualified staff (IEC 364 respectively CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and national safety rules).

Qualified staff according to the safety regulations are persons that are familiar with the installation, assembly, commissioning and operation of the guidance system of vehicles and that have the appropriate qualifications.

Conductix-Wampfler GmbH cannot be responsible for damage or breakdowns that have been caused by not observing the instruction manual.

This instruction manual contains exclusively details of the iDAT pickup.

3 Technical data

General:

Supply voltage:	24 VDC, 10%
Current:	200mA
Design of the interface:	electrical isolated to the supply voltage
Air gap housing - floor:	10 mm (nominal) (tolerance +/- 5 mm)
Primary track specification:	100 mm dist. 125 A 20 kHz system
Installation:	connections are left ref. to the direction of movement
Protection class:	IP54
Ambient temperature:	0°C ... + 40°C

Guidance-Signal:

Channels:	3 (left, middle, right)
Resolution:	1 mm
Useful range left channel:	appr. –60 mm up to +145 mm
Useful range middle channel:	appr. –145 mm up to +145 mm
Useful range right channel:	appr. –145 mm up to +60 mm
Measurement intervall:	50 ms
CAN bitrate:	250kBit/s

Order-Number	Position Ver.	Bit/s	Parity	CAN Node	Distance Position Marks (mm)
93212-340-3301841	iDAT pickup S01	57600	none	7	105
93212-340-3301842	iDAT pickup S02	57600	none	7	90
93212-340-3301843	iDAT pickup S03	57600	none	8	90
93212-340-3301844	iDAT pickup S04	57600	none	8	705
93212-340-3301845	iDAT pickup S05	19200	none	7	90
93212-340-3301846	iDAT pickup S06	9600	none	7	90
93212-340-3301847	iDAT pickup S07	9600	none	7	90
93212-340-3301848	iDAT pickup S08	57600	odd	7	90
93212-340-3301849	iDAT pickup S09	38400	odd	7	90
93212-340-3301850	iDAT pickup S10	19200	odd	7	90
93212-340-3301851	iDAT pickup S11	9600	odd	7	90
93212-340-3301853	iDAT pickup S13	19200	even	7	90
93212-340-3301854	iDAT pickup S14	57600	odd	7	90

Position-Signal:

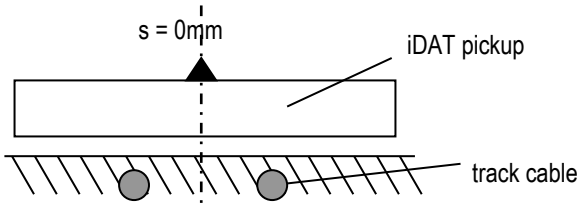
Position mark:	left in drive direction
Range of receipt:	see chapter 5
Max. speed of the vehicle:	4 m/s
Max. quantity of position values:	65535
Interfaces:	uses the guidance-interfaces

4 Description of the guidance function

The iDAT pickup provides a data signal according to the positioning of the system over the imaginary middle of the track. The hand out follows in 3 channels: the positioning based on the left track cable and the positioning based on the right track cable. This is especially necessary for the drive through the switches. The output of an additional value based on the both track cables also exists. This value is for movement in straight direction.

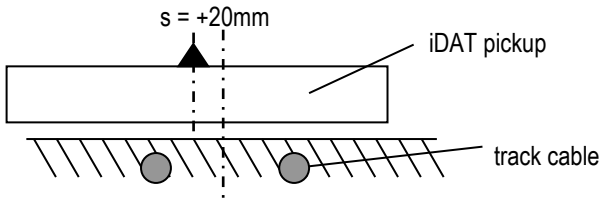
The following views are shown „in track direction“.

Case 1: Positioning 0 mm



Output: left: 0 [mm]
middle: 0 [mm] (average left/right)
right: 0 [mm]

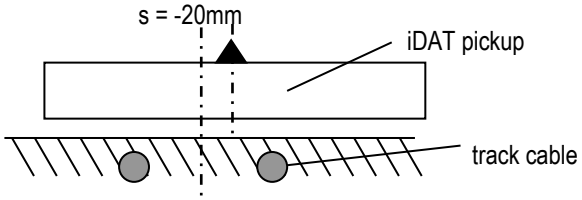
Case 2: Positioning +20 mm



Output: left: +20 [mm]
middle: +20 [mm] (average left/right)
right: +20 [mm]

Annotation: A positive depositioning means a shift of the track centre to the right side refering to the centre of the iDAT pickup.

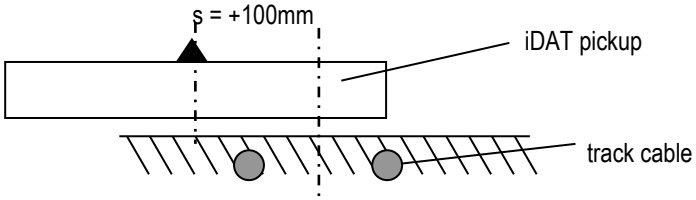
Case 3: Positioning –20 mm



Output: left: -20 [mm]
middle: -20 [mm] (average left/right)
right: -20 [mm]

Annotation: Negative depositioning means a shift of the track centre to the left side refering to the centre of the iDAT pickup.

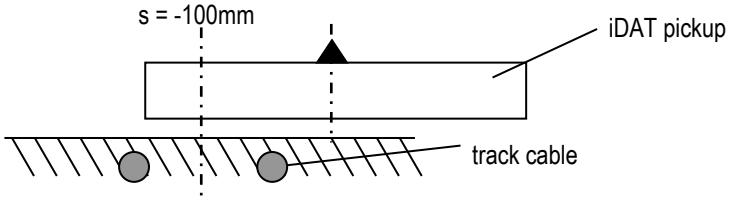
Case 4: Positioning +100 mm



Output: left: +100 [mm]
middle: +100 [mm]
right: -32767 [mm]

Annotation: Here the iDAT pickup is not able to „see“ the right track cable. Therefore it is not possible to evaluate a value. If the value is invalid the output is „-32767“.

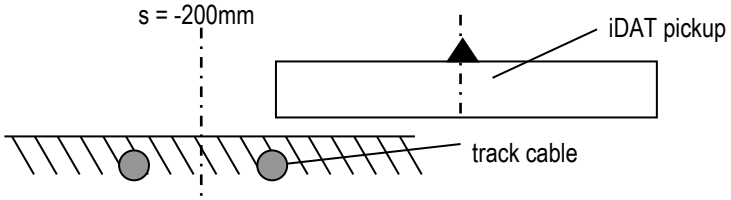
Case 5: Positioning –100 mm



Output: left: -32767 [mm]
middle: -100 [mm]
right: -100 [mm]

Annotation: It is not possible to calculate a value because the iDAT pickup is not able to „see“ the left track cable. If the value is invalid the output is „-32767“.

Case 6: Positioning –200 mm



Output: left: -32767 [mm]
middle: -32767 [mm]
right: -32767 [mm]

Annotation: It is not possible to calculate a value because the iDAT pickup is not able to „see“ any track cable. In this case the values are invalid, the output is „-32767“.

5 Feedback : Operation description

In the vehicle control system, one of the output channels (left, middle or right) will be connected to the steering input. The selection of the appropriate output channel is to be done by the vehicle control system.
If the vehicle shall make a left turn within the switch, the left channel shall be selected. If it shall make a right turn, the right channel must be chosen.
In the area of an outgoing track cable (i.e. a capacitor box outlet) on the left track cable, the output channel right shall be chosen. The output channel left shall be selected through a section of track cable going out to the right. The output channel middle generates best accuracy on a track section without switches, outlets (or similar); but the output left or right can be selected as well.
If the information which output channel is being used is fed back to the iDAT-pickup, the internal determination of the guidance signal will be improved.
The crossing of switches, outlets (or similar) will be significatly improved by this feedback. It is recommended to use it generally, but it must to be applied at least within installations with switches.

Feedback of the output channel selection through connection of both digital entries.

DIG IN 1	DIG IN 2	Aim
0V	0V	Normal (Middle)
24V	0V	Right
0	24V	Left
24V	24V	Reset

If both digital entries are set on 24 V, the iDAT-pickup behaves as after switching-on. Through this, the internal storage of guidance will be reset.
This function should be used, for example, in case of:

- unguided travelling over uncommon sections, i.e. crossings
- switching between two iDAT-pickup's in case of vehicles with multiple iDAT-pickup's

6 Description of the position function

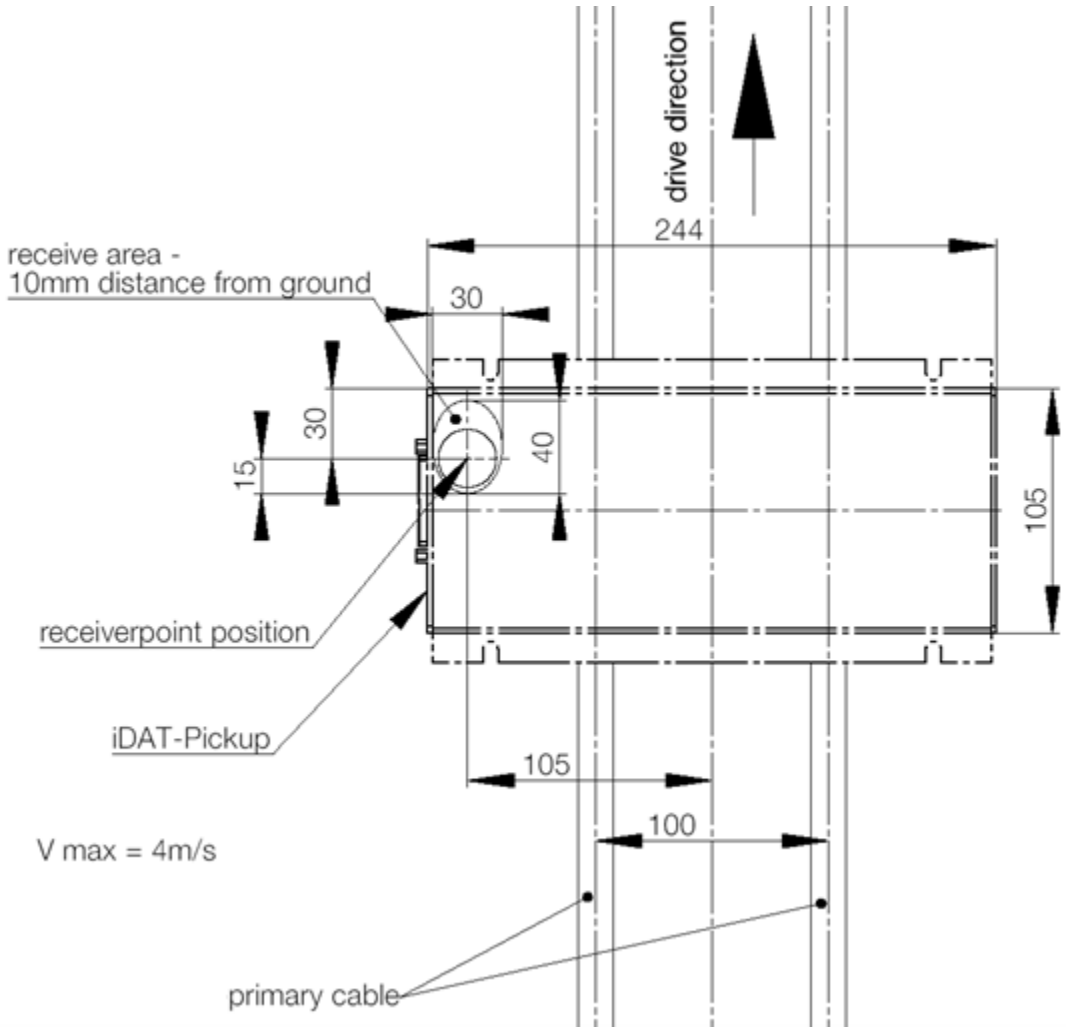
If the iDAT pickup identifies a position mark, it is sending out the value, otherwise it is sending the value „0“ (see chapter 18 and 19).
Pay attention to the field characteristic, if the iDAT pickup is in operation within an essential smaller distance than the nominal value to the floor. Here it is possible that the position signal shows for a short time „0“ and afterwards it sends the correct value again - also during the iDAT pickup is located over the position mark. This possibility must be observed in the control program of the vehicle!

Please note, that the iDAT-Position-mark can be installed in 2 different distances to the track: 105 mm (see 6.1) and 90 mm (see 6.2).

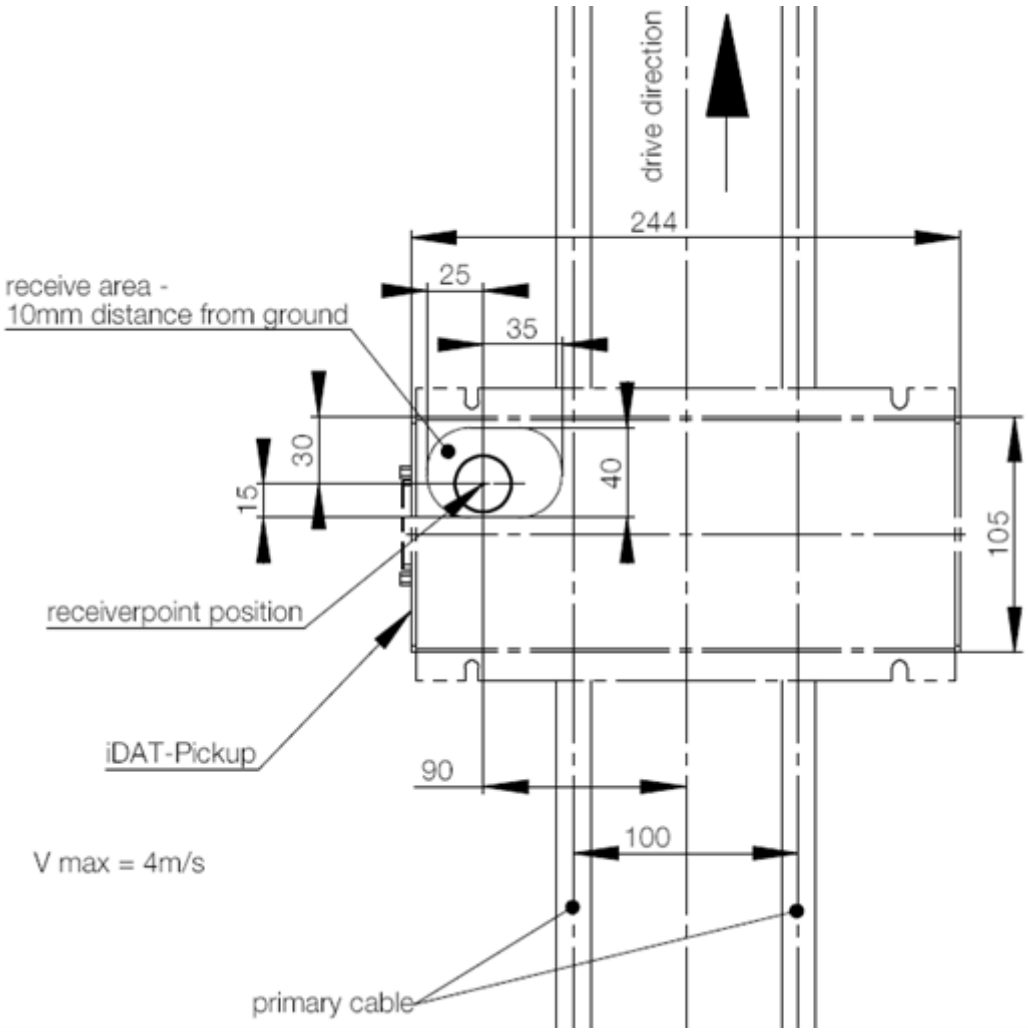
At installations with iDAT-Pickups delivered before 06/2006 were placed at a distance of 105 mm to the track centre.
With the default version of the iDAT-Pickups delivered after 06/2006, the position marks has to be installed at a distance of 90 mm! There the receiving area of the position mark signal is extended to 60 mm (see 6.2).
If not marked on the iDAT-Pickup that it is suitable for 90 mm distance please refer always to 6.1 for installation details and the corresponding receiving area.
When ordering iDAT-Pickups as spares please state given distance of the iDAT-Position Mark to the track realized in the installation.

validity	**distance position mark**	**receiving area**
before 06/2006 resp. spare parts	105 mm	30 x 45 mm
after 06/2006	90 mm	60 x 45 mm

6.1 Position mark distance 105 mm



6.2 Position mark distance 90 mm



7 Transport and storage

The transport company must be informed about any damage that has been detected after delivery immediately after notice. Prior to installation or start of operation of damaged components please consult the supplier.
The iDAT pickup is for horizontal mounting on the vehicle, so that the positioning is over the middle of the primary from the system.
The ambient temperature should be only in the range between 0° C and 40° C (see Conductix-Wampfler specification). The relative humidity should be less than 90 % and has to be non-condensing. Electrically conductive, dry or humid dust (e.g. carbon fibres, salt, etc.) or spray water must not be present in the ambient air.

Climatic conditions for storage and operating you find in the technical data.

8 Installation

8.1 Who is authorized to carry out the installation

All installation and commissioning works as well as maintenance works and disassembly have to be carried out by qualified staff (IEC 364 respectively CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and national safety rules).

Qualified staff according to the safety regulations are persons that are familiar with the assembly and installation of the energy supply system and that have the appropriate qualifications.

8.2 General advice for the installation

- After receipt of the components and prior to starting the installation works, unpack the components and check carefully for eventual damage that may have occurred during transport or storage (damage to housings and insulation, mission parts etc.)
- Check data on the identification plate to make sure, that the components meet the requirements with regard to nominal power and voltage.
- Check completeness of the documents and conformity with the delivered components.

Please give your attention to the correct installation of the iDAT pickup because the function, efficiency and lifetime are very depending on this.
Therefore it is important to observe the specification for the choice of the place of installation. The guarantee will expire if this is not observed!

8.3 Current regulations

The general electrical operating conditions according to VDE0100 (installation and operation of electrical equipment up to 1000 V) have to be observed. If necessary observe the local regulations when they go beyond these requirements.

8.4 Electrical connection

All electrical connections have to be chosen according to the specific values.

9 Warnings

There are no special safety regulations for the comissioning and operating of the iDAT pickup. Pay attention to the safety hints for the control and its software given by your supplier.

10 Comissioning

All electric works have to be carried out by qualified staff (IEC 364 respectively ENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and national safety rules).

Qualified staff according to the safety regulations are persons that are familiar with the installation, commissioning and operation of the energy supply systems and that have the appropriate qualifications.

11 Operation

No further details are to note after successful comissioning of the iDAT pickup (refering to the iDAT Pickup itself).

12 Maintenance

WARNING:

Before maintenance the supply voltage system has to be disconnected from the mains and the vehicle must be outside the track. During the maintenance and service the unit or at least the vehicle has to be protected against unexpected and unintentional switch-on. Pay attention to the according hints of the vehicle supplier.

13 Actions in case of emergency

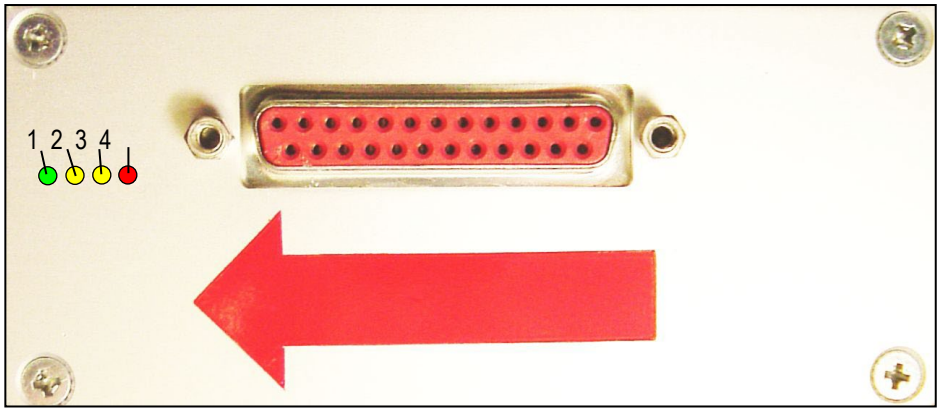
In case of an abnormal state of operation – for example if there is smoke in the unit – disconnect the feeding converter immediately from the voltage supply!

Unauthorized switching on by a third person has to be prevented by removing the line fuses of the main supply or by adequate measures on site.

After switching off the supply voltage wait at least 5 minutes on account of charged condensers before starting the disassembly of the energy supply system.

The dangerous zone has to be provided with warning signs and secured with a shutoff tape against entry by unauthorized persons.

13.1 Failing diagnostic



Explanation of the indication:

LED Nr.	Description	Normal operation	In case of fault
1	Power On	Green continuous	Off
2	- not used -	-	-
3	- not used -	-	-
4	System error	Off	Red continuous

14 Deinstallation and re-use

If it is necessary to exchange the iDAT pickup due to damage or to install it in another place, verify that no damage will occur during disassembly.

Pay your attention that all system components have to be tuned especially eachother. For installation in another place observe the described mounting and commissioning instructions. Improper application, wrong installation or operation involve the danger of severe injuries to persons and damage to objects.

All electric works have to be carried out by qualified staff (IEC 364 respectively. CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and national safety rules).

Qualified staff according to the safety regulations are persons that are familiar with the installation, assembly, commissioning and operation of the energy supply system and that have the appropriate qualifications.

14.1 Safety advice for disassembly and disposal

1. Disconnect unit from the supply voltage and safe it against from being switched on again
2. Dismount the iDAT pickup
3. Dispose of components in a specific way → recycling.

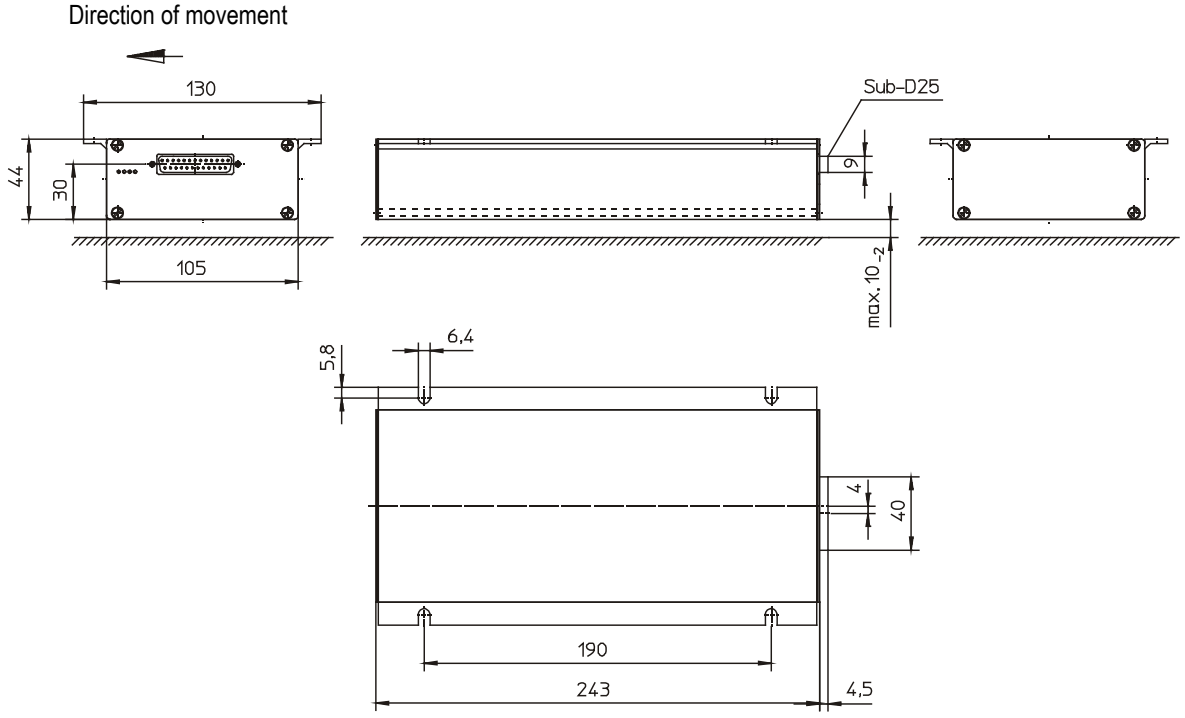
14.2 Recycling

The unit contains components that have to be disposed of in a specific way. If it is not used any longer, it will have to be recycled properly.

15 Spares

The build-in of spares or on-site repairs are not planned. Therefore spares are not available. Maintenance and repair must be done by qualified Conductix-Wampfler personnel.

16 Dimensions



17 Connections

Connection (housing side): 25poles SUB-D female

Covered function:

Pin	Covered function	Modul	Interface
1	+24V in	Supply	-
14	+24V in	Supply	-
2	GND	Supply	-
15	GND	Supply	-
3	PE	Shielding / PE	-
16	PE	Shielding / PE	-
4	CAN-H	Guidance	CAN
17	CAN-L	Guidance	CAN
5	CAN-GND	Guidance	CAN
6	Data -	Guidance	RS485 [1)]
19	Data +	Guidance	RS485 [1)]
7	GND	Guidance	RS485/RS232
20	RX	Guidance	RS232
8	TX	Guidance	RS232
24	DIG IN 1	Digital input 1	-
12	DIG IN 2	Digital input 2	-
25	DIG OUT 1	Digital output 1	Open Collector
13	DIG OUT 2	Digital output 2	Open Collector

[1)] Termination of the RS485 bus is included inside the housing
RS485 Data+: often named „B“, red cable
RS485 Data-: often named „A“, green cable

18 CAN-Protocol Guidance / Position

The CAN-protocol is oriented on the CANopen standard. The Node address and bitrate from the system is pre-set.

Transmit PDO:

ID: 0x180 + Node Number

Data bytes: 8

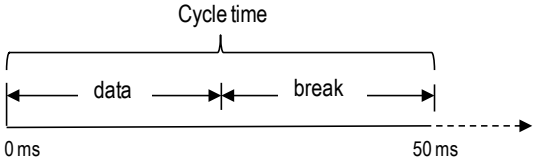
Byte Nr.	Name	Type
0	Position right (Low Byte)	16Bit signed
1	Position right (High Byte)	
2	Position middle (Low Byte)	16Bit signed
3	Position middle (High Byte)	
4	Position left (Low Byte)	16Bit signed
5	Position left (High Byte)	
6	Position mark (Low Byte)	16Bit unsigned
7	Position mark (High Byte)	

19 Serial-Protocol Guidance / Position

A dataframe is sent cyclic with 8 databytes over the guidance RS232 / RS485 interface:

Byte Nr.	Name	Type
0	Position right (Low Byte)	16Bit signed
1	Position right (High Byte)	
2	Position middle (Low Byte)	16Bit signed
3	Position middle (High Byte)	
4	Position left (Low Byte)	16Bit signed
5	Position left (High Byte)	
6	Positionsmark (Low Byte)	16Bit unsigned
7	Positionsmark (High Byte)	

The cycle time is 50 ms.



Interval of the cyclic transmission

- **calculation break length without parity:**
  break (ms) = 50 – ((8 x 10) / (baud rate / 1000))
- **calculation break length with parity:**
  break (ms) = 50 – ((8 x 11) / (baud rate / 1000))

Conductix-Wampfler GmbH
Rheinstraße 27 + 33
79576 Weil am Rhein - Märkt
Germany

Phone: +49 (0) 7621 662-0
Fax: +49 (0) 7621 662-144
info.de@conductix.com
www.conductix.com

Importer for the United Kingdom:
Conductix-Wampfler Ltd.
1, Michigan Avenue
Salford
M50 2GY
United Kingdom

Phone: +44 161 8480161
Fax: +44 161 8737017
info.uk@conductix.com
www.conductix.com