

Issued by Notified Body No. 0402 according to Directive 2014/32/EU MID annex II Module B, regarding:

Structab taximeter MegTax 350 and MegTax 310

Issued to

Structab AB

Slottsmöllan 14B, 302 31 HALMSTAD, Sweden.

Certificate

Structab taximeter models MegTax 350 and MegTax 310 are fulfilling module B (Annex II) of directive 2014/32/EU on measuring instruments (MID), implemented in Swedish law by SWEDAC Regulation STAFS 2016:1 The Measuring Instruments Regulations and STAFS 2016:8 Regulations and Guidelines concerning Taximeters. RISE Certification Rule SPCR 302 has been applied.

Applicable essential requirements of directive 2014/32/EU

- Annex I, Essential requirements
- Annex IX (MI-007), Taximeters

Harmonised standards and normative documents used

OIML R21, edition 2007, Taximeters

Further applied documents

-WELMEC 7.2, Software Guide 2019

Rated operating conditions

Measurand:	Time and or distance	Mechanic environment class:	M3
Measurement range:	Maximum 6 digits on the display (corresponding to the fare to be paid)	Electromagnetic environment class:	E3
Accuracy:	- Time elapsed: $\pm 0,1 \%$ - Distance travelled: $\pm 0,2 \%$ - Calculation of the fare: $\pm 0,1 \%$ - Measuring range: 1000-100 000 pulses/km	Climatic environment:	-25 to +55 °C Condensing Closed (installed in a car)

Originally issued: 2009-06-03

Expiry date: 2029-12-10

This certificate replaces earlier issues.

Martin Tillander

Certificate 0402-MID-516502 | issue 7 | 2020-12-10

RISE Research Institutes of Sweden AB | Certification

Box 857, SE-50115 Borås, Sweden

+46 10 516 50 00 | certifiering@ri.se | www.ri.se

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Specification of the instruments / measuring system:

1. Design of the instrument

1.1 Construction

Product names

MegTax 350 (MT 350) consists of
 MTME350 (Central processor unit with display)
 MTKB300 (Connecting box)
 MTPR200 (Printer) can be connected to the system, but is not a requirement according to directive 2014/32/EU.

MegTax 310 (MT 310) consists of
 MTME300 (Central processor unit with display)
 MTKB300 (Connecting box)
 MTPR200 (Printer) can be connected to the system, but is not a requirement according to directive 2014/32/EU.

Measuring system description

The taximeter is designed to measure time and receive information to calculate distance. Time is measured by its internal real time clock and distance is calculated by the number of pulses received from the pulse generator of the car (Vägpuls) in relation to the given pulse constant. The supply voltage is taken from the battery of the vehicle. For connections see the schematic picture below.

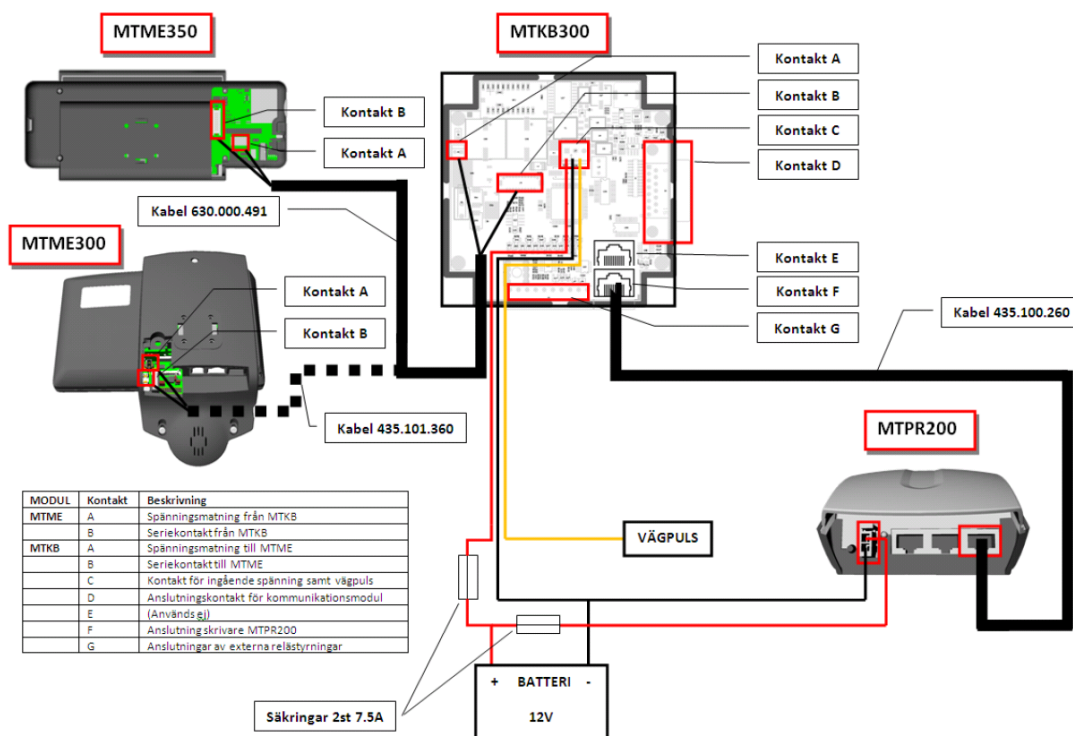


Figure 1: Taximeter connections (instead of MTME350, MTME300 can be used)



Figure 2: Central Processor Unit with display MTME350



Figure 3: CPU with display MTME300



Figure 4: Connection box MTKB300



Figure 5: Printer MTPR200

Supply voltage

Taximeter and printer: 10-18 V

Connection to pulse generator of the vehicle

The pulse from the pulse generator of the car must fulfil the following requirements according to the manufacturer:

The pulse input can be of the following types: Open-collector, Push-pull or Sinus.

The pulse interval is 1000100 000 pulses/km.

State	Sensor type	Recommended value for pulses/km
0	Manual adjustment	Manual adjustment
1	Sinus	Up to 18 000
2	Sinus	Between 18 000 and 100 000
3	Push-pull	Up to 18 000
4	Push-pull	Between 18 000 and 100 000
5	Open-collector (1kΩ pull-up)	Up to 18 000
6	Open-collector (1kΩ pull-up)	Between 18 000 and 100 000

State	Sensor type	Recommended value for pulses/km
7	Open-collector (10kΩ pull-up)	Up to 18 000
8	Open-collector (10kΩ pull-up)	Between 18 000 and 100 000
9	Open-collector (100kΩ pull-up)	Up to 18 000
10	Open-collector (100kΩ pull-up)	Between 18 000 and 100 000

Table 1: Connection to pulse generator of the vehicle

State number 0 is only to be used if recommended directly from the manufacturer.

The signal is never to exceed the supply voltage of the taximeter or be below -6V.

At Sinus type AC-pulses with an amplitude down to and including 200mV will be detected.

At Push-pull and Open-collector the low level must be lower than 1V and the high level must be higher than 2V.

1.2 Software

The validation of software was based on the essential requirements given in MID and WELMEC Guide 7.2.

Software version

The following program versions are approved:

Type of program	Program version with checksum in brackets
Taximeter program MegTax 350	01.02B(21f2) 02.01C(76c9) 03.01B(4251) 04.01A (dd1f)
Taximeter program MegTax 310	01.02B(1cf3) 02.01C(7e7c) 03.01B(2cd8) 04.01A (88bf)

Table 2: Program version where the value (hexadecimal) in brackets are the checksum

The software version number is interpreted in the following way:

Example:

01.02B(21f2)

01 is the main version and is changed at bigger changes)

02 is the part version and is changed at smaller changes

B is the bug fix version

(21f2) is the checksum

The software identification number and the checksum can be seen in the following way: choose MENY, RAPPORTER, VERSIONER, and TAXAMETERVERSION.

Alternatively if a printer is connected the number and the checksum can be read by making a "Taxameterkontroll"* choose MENY, RAPPORTER and TAXAMETERKONTROLL or press the PK button and choose TAXAMETERKONTROLL.

* The mode "Taxameterkontroll" is a print-out intended for the police or other authority in order to check e.g. the totalisers, the date of securing and the tariff values.

1.3 Components included for electronic function

The following documentation is stating the components

Product	Documentation	Revision	Note
Megtax 350	UB 2008:27	F	
MT310	UB 2010:46	D	
MT310	UB 2010:83	B	Change of hardware
Megtax 350	UR 2011:51	A	Change of hardware
MT310 / MT350	UA 2019:188	A	Change of hardware

Table 3: Documentation that stating the components.

1.4 Optional equipment and functions subject to MID requirements

None identified

1.5 Technical documentation

For market surveillance the construction, software and included components are described in 1.1, 1.2 and 1.3.

1.6 Integrated equipment and functions not subject to MID

Software to fulfil national requirements or to communicate with booking central etc. must not influence the accuracy of measurements such that the maximum permissible error is exceeded or the required functions are changed.

2. Technical data

2.1 Rated operating conditions

Measurand

Time and or distance.

Measurement range

Total distance:	1,0x 10 ⁹ Km
Total distance when hired (hired and stopped):	1,0x 10 ⁹ Km
Total distance when hired (hired):	1,0x 10 ⁹ Km
Total number of hirings:	1,0x 10 ⁹ number
Total amount charged as fare:	1,0x 10 ⁹ currency unit
Total amount supplements:	1,0x 10 ⁹ currency unit

The limitation is the maximum fare that can be displayed. The amount is limited to five digits e.g. SEK 99 999.

Accuracy

- Time elapsed: ± 0,1 %
- Distance travelled: ± 0,2 %
- Calculation of the fare: ± 0,1 %
- Pulse range: 1000-100 000 pulses/km

Environments classes / influence quantities

Mechanic:	class M3
Electromagnetic:	class E3
Ambient temperature limits:	-25°C to +55°C
Humidity:	condensing
Location:	closed (inside a car)

2.2 Other operating conditions

Not applicable

3. Interfaces and compatibility conditions

See clause 1.1

4. Requirements on production, putting into use and utilisation

The requirements of the installation manual are to be followed when installed in a car and put into use.

4.1 Requirements on production

No special requirements identified.

4.2 Requirements on putting into use

The taximeter must be adapted to the vehicle.

4.3 Requirements for consistent utilisations

No special requirements identified.

5. Control of the measuring tasks of the instrument in use

5.1 Documentation of the procedure

The procedure to control the accuracy after installation in a car is described in the user's manual.

5.2 Special equipment or software, if applicable

A stopwatch or other time measure equipment is needed.

5.3 Calibration-/adjustment procedure

The taximeter can be controlled after installation in a car in the following way.

Accuracy of distance measurement

To check the accuracy of distance measurement the following procedure is to be followed:

Choose "Anpassningskontroll" (MENY, RAPPORTER, ANPASSNINGSKONTROLL). Press "OK" when the verified distance starts and press "OK" again when 1000m is passed. The taximeter is showing the pulse constant, the number of pulses received when driving the distance and the deviation. If a printer is connected a print-out will be given. The speed is required to be at least 20km/h during the complete distance.

Use a verified distance of 1000m to carry out the control.

To change the taximeter constant the sealing must be broken and using "SERVICEMENY" in accordance with the installation manual.

Accuracy of time measurement

To check the accuracy of the time measurement the following procedure is to be followed:

Choose "Tidmätning" (MENY, RAPPORTER, TIDMÄTNING). Start by pressing "OK" and start a calibrated stop watch at the same time. Wait at least 60 min. Stop both stop watch and taximeter counting "OK" at the same time. Start time, stop time and measured time are shown on the display. If a printer is connected, a print-out will be given.

Use a calibrated stop watch to carry out the control.

6. Security measures

6.1 Sealing

The taximeter is sealed according to page 6 and 7.

MTKB300 (connection box) is to be fastened to the vehicle by four screws. Cables for supply voltage and pulses are connected inside the connection box. When the connection box has been fastened to the vehicle the lid of the box is sealed with a screw (electronic sealing when the lid is pressed down) and a sealing wire through the screw.

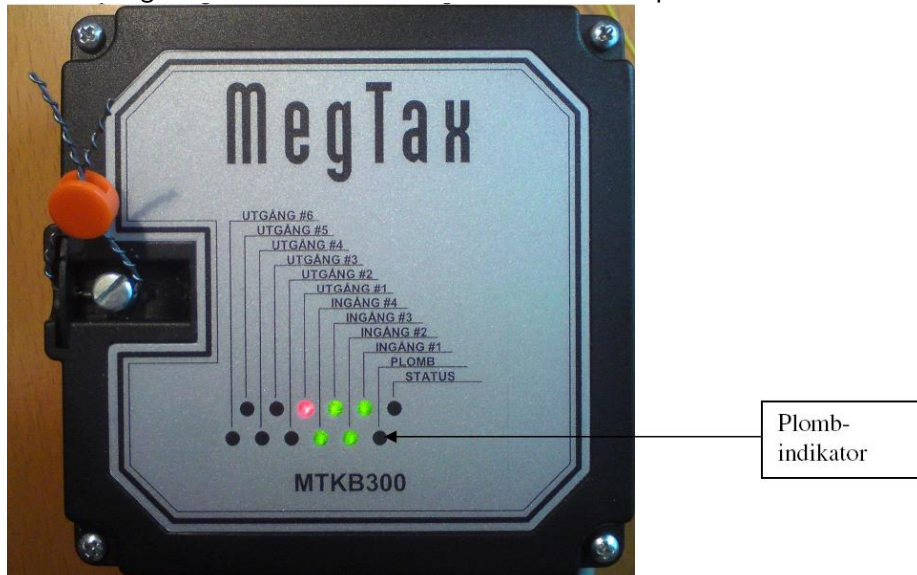
The display and CPU MTME350 or MTME300 is electronically sealed to MTKB300 in the way that if the lid of the display and CPU part is opened the sealing is shown as broken on the display as well as on the connection box. If the lid of the connection box is opened the sealing will also be shown to be broken.

The status of the electronic sealing is shown by the diodes of MTKB by a period of 5s in the following way:

Number of twinkles (during 5s)	Meaning
1	The system is sealed
2	The electronic sealing has not been reset after being broken
3	The sealing of MTME300/350 is broken
4	The sealing of MTKB300 is broken
5	The sealing of both MTME300/350 and MTKB300 are broken

Table 4: Status of the electronic sealing.

If the sealing has been broken the lid of MTKB must be opened and then sealed again.



Picture 6: Mechanical sealing (indicator regarding electronic sealing marked)

6.2 Data logger

The totalisers are stored in memory of FRAM type.

Change of program version will be stored in "Versionshistorik" (MENY, RAPPORTER, VERSIONER, VERSIONSHISTORIK).

Change of taximeter constant "Txm.konst historic" can be seen by choosing MENY, RAPPORTER, TXM.KONST. HISTORIK.

Dates of sealing "Plomberingshistorik" can be seen by choosing MENY, RAPPORTER, PLOMBERINGSHISTORIK.

Alternatively the date and time of the last electronic sealing can be read by "Taxi-identitet" (MENY, RAPPORTER, TAXI-IDENTITET).

7. Labelling and inscriptions

7.1 Information to be borne by the instrument

The marking on the instrument shall contain the following information:

- the name of the manufacturer
- the serial number
- the designation or type name (according to "Product names" Appendix page 1)
- the EC-type examination certificate number, 0402-MID-51 65 02
- the accuracy class
- markings regarding other approvals
- marking regarding additional devices not being covered by MID



Figure 7: Placement of marking on MTME350



Figure 8: Marking plate to MTME350



Figure 9: Placement of marking on MTME300



Figure 10: Marking plate to MTME300



Figure 11: Placement of marking on MTKB300

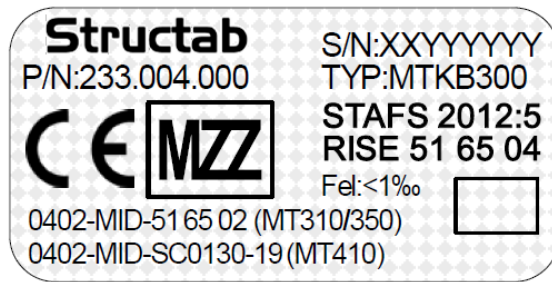


Figure 12: Marking plate to MTKB300.

7.2 Conformity marking in accordance with MID article 21

The instrument shall be marked in accordance with MID article 21 which e.g. describes the CE-marking together with M, year of marking and the notified body number.

7.3 Further inscriptions, if necessary

Further inscriptions e.g. e- or E-marking and national markings are necessary, but are not connected to this directive.

8. Manuals

The following manuals are to accompany the different systems in the official language of the country of use (the manufacturer is responsible for the translation of approved documents).

Program version (check sum)	Title of manual	Product	Version number	Date	Language of examined version
01.02B(21f2)	Manual MegTax MTME350 Taxameter	MegTax 350	1.0	090320	Swedish
01.02B(1cf3)	Manual MegTax 310	MegTax 310	1.1	101011	Swedish
02.01C(7e7c)	Manual MegTax 310	MegTax 310	-	110414	Swedish
02.01C(76c9)	Manual MegTax 350	MegTax 350	PA16	111116	Swedish
03.01B(4251)	Manual MegTax 350	MegTax 350	PA18	111223	Swedish
03.01B(2cd8)	Manual MegTax 310	MegTax 310	PA9	120209	Swedish
04.01A (88bf)	Användarmanual Avser Megtax 310 taxameter	MegTax 310	3.4	190626	Swedish
04.01A (dd1f)	Användarmanual Avser Megtax 350 taxameter	MegTax 350	3.4	190626	Swedish

Table 5: List of manuals.

For installation purposes the manual “MegTax Servicemanual 310/350” revision 2.2 dated 2010/10/12 (examined in Swedish version) is to be followed for program version 01.02B, revision 2.4 dated 2011/04/14 is to be followed for program version 02.01C and “MegTax Servicehandbok För MT310 och MT350 Revision 4.4 dated 2018-09-27 is to be followed for program version 04.01A.

9. Testing and examination

Testing and examination has been carried out in accordance with report 9P09441. The principal characteristics, approval conditions are set out in this certificate. All the plans, schematic diagrams and documentations are recorded under reference files ELe P804595, PX03215, PX11908, PX17328, PX20944, 5P05553 and 9P09441.

Vibration

IEC 68-2-64 revision 1, test Fh

(this is a higher severity than Class M3 in accordance with OIML R21 A.5.4.4):

10-20 Hz: 0,05 g²/Hz

20-500Hz: -3 dB/octave

Testing was carried out in three mutually perpendicular axes for 0,5 hours in each direction and the instrument was connected to power during testing.

Dry Heat

OIML R21 A.5.4.1 (IEC 60068-2-2 edition 5 test Bd), but with a duration of 16h and at the highest temperature +70 °C

The test object was connected to power during the test.

Cyclic damp heat

OIML R21 A.5.4.1 (IEC 60068-2-3 edition 3 test Db temperature +55 °C)

The taximeter was not connected to power during testing. After 5 cycles the taximeter was connected to power and a function control was carried out.

Cold

OIML R21 A.5.4.1 (IEC 60068-2-1 edition 6 test Ab) with a duration of 16h and at the lowest temperature -40 °C

Emission

EN 55022 class A

Immunity

OIML R21, Annex A, A.5.4.5.1, Radiated immunity (IEC 61000-4-3) 24V/m

OIML R21, Annex A, A.5.4.5.2, Injected RF immunity (IEC 61000-4-6) 24V

OIML R21, Annex A, A.5.4.6 Electrostatic discharge (IEC 61000-4-2) 6kV CD / 8kV AD

OIML R21, Annex A, A.5.4.7.1 with provisions in Welmec CT-007:2019

Automotive transient immunity (ISO 7637-2) Pulse 2a, 3a, 3b, level 4

OIML R21, Annex A, A.5.4.7.2 with provisions in Welmec CT-007:2019

Automotive transient immunity on signal lines (ISO 7637-3) Pulse 3a, 3b, level 4

Starting profile, Level III according to ISO 16750-2:2012(E) that replaces A.5.4.7, Test pulse 4

Load dump, Test B according to ISO 16750-2:2012(E) (replaces pulse 5b)

10. Miscellaneous

EU type examination reports

<i>Report</i>	<i>Title</i>	<i>Date</i>
P804595	EC Type examination of taximeter (module B)	2009-06-03
P804595-02	Evaluation of MegTax 300 Series Software	2009-04-15
P804595-03	EMC measurements of MegTax taximeter system against the EMC requirements of OIML D11:2004	2009-04-08

Supplementary EU type examination reports

<i>Report</i>	<i>Title</i>	<i>Date</i>
PX03215:MID	EC Type examination of taximeter (module B) MT310	2010-10-15
PX03215-02	EMC measurements of MegTax display unit MT310	2010-06-28
PX11908	Supplementary EC type examination of taximeter (module B)	2011-07-04
PX11908-03A	EMC tests on MegTax display unit MTME300	2011-05-06
PX11908-04	Evaluation of MegTax 300 series software	2011-07-04
PX17328-MID	Supplementary EC Type examination of taximeter (module B)	2011-12-01
PX17328-01	EMC test on MegTax display unit MTME350	2011-11-16
PX20944	Supplementary EC Type examination of taximeter (module B)	2012-02-10
5P05553	Supplementary EC Type examination of taximeter (module B)	2015-10-30
9P09441	Supplementary EU Type examination of taximeter (module B)	2020-11-19