

Structab taximeter MegTax MT410

Issued to

Structab AB

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Structab taximeter MegTax MT410 is fulfilling module B (Annex II) of directive 2014/32/EU on measuring instruments (MID), implemented in Swedish law by SWEDAC (The Swedish Board for Accreditation and Conformity Assessment) through STAFS 2016:1 The Measuring Instruments Regulations and STAFS 2016:8 The 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

Further applied documents

WELMEC 7.2, Software Guide (Issue 5)

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: 500-100000 pulses/km	Climatic environment:	-25 to +70 °C Condensing Closed (installed in a car)

Originally issued: 27 June 2019

Expiry date: 27 June 2029

This certificate replaces earlier issues.

Issued by Notified body 0402.

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Certificate No. SC0130-19 | issue 2 | 2019-11-18

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9P07850



The instruments / measuring systems must correspond with the following specifications:

1. Design of the instrument

1.1 Construction

Product names

MegTax MT410 consists of:

MTME410 (central processor unit with display)

MTKB300 (Connection 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.

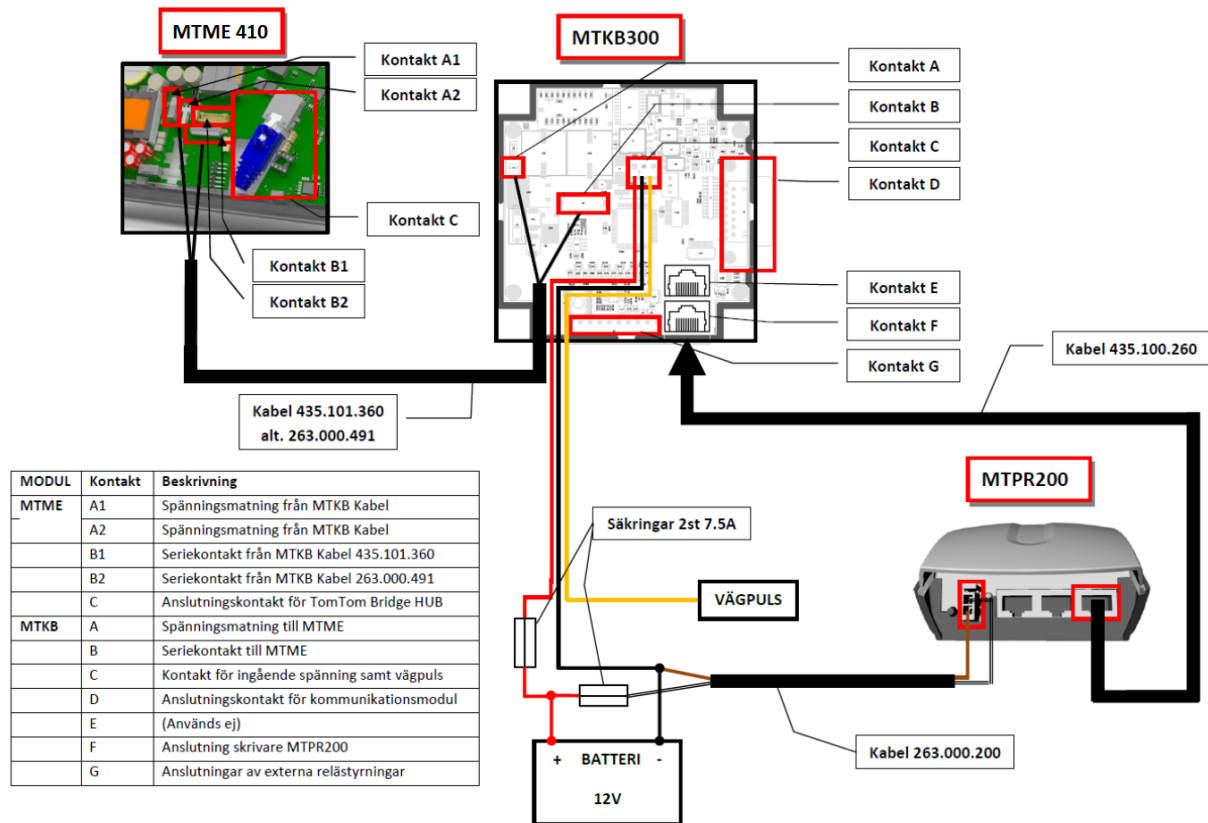


Figure 1: Taximeter connections

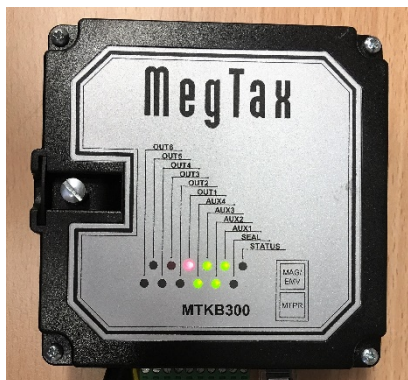


Figure 2: CPU MTKB300



Figure 3: Display MTME410



Figure 4: 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
7	Open-collector (10kΩ pull-up)	Up to 18 000
8	Open-collector (10kΩ pull-up)	Between 18 000 and 100 000

State	Sensor type	Recommended value for pulses/km
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 410	01.01D (6403)

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

The software version number is interpreted in the following way:

Example:

01.01A (D299)

01 is the main version and is changed at bigger changes

01 is the part version and is changed at smaller changes

A is the bug fix version

(D299) 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
MTME410	UA 2018:50	F	

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.

Certificate No. SC0130-19 | issue 2 | 2019-11-18

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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) and the measuring starts. Press "AVSLUTA MÄTNING" when 1000m is passed. The taximeter is showing 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 stopwatch 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 stopwatch 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 MTME410 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 electrical sealing between the MTKB300 and MTME410 is the primary sealing and must always be in use. The mechanical seal of the MTME410 is an optional sealing, intended for markets that dose not permit electronic sealing. The communication cable between the MTME410 and MTKB300 is mechanical sealed in the MTKB300.

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 MTME410 is broken
4	The sealing of MTKB300 is broken

Certificate No. SC0130-19 | issue 2 | 2019-11-18

RISE Research Institutes of Sweden AB | Certification

Number of twinkles (during 5s)	Meaning
5	The sealing of both MTME410 and MTKB300 are broken.

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

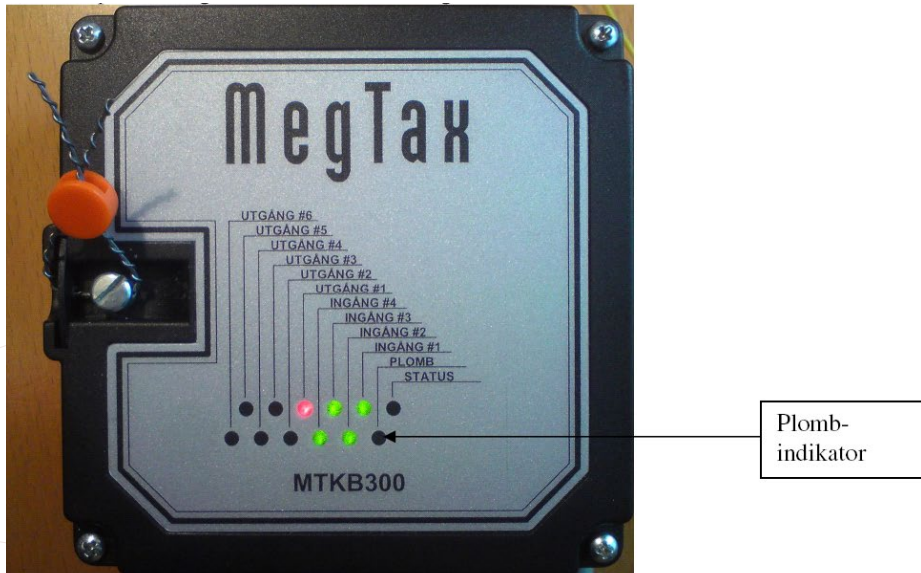


Figure 5: Mechanical sealing (indicators regarding electronic sealing marked)

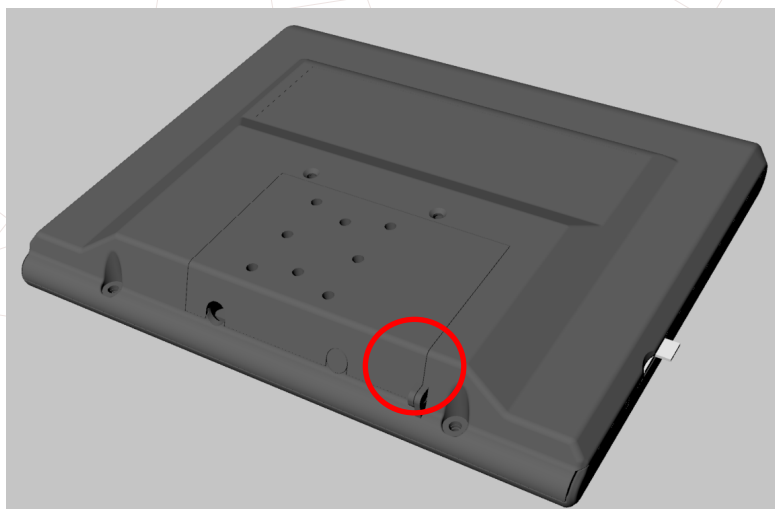


Figure 6: Optional mechanical sealing of MTME410. The sealing thread is inserted through the loops of the backside on the MTME410.

6.2 Data logger

The totalisers are stored in memory of MRAM type.

Change of program version will be stored in “Versionshistorik” (MENY, RAPPORTER, VERSIONER, TAXAMETERVERSION).

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” on page 2)
 the EC-type examination certificate number, 0402-MID-SC0130-19
 the accuracy class
 markings regarding other approvals
 marking regarding additional devices not being covered by MID



Figure 7: Placement of marking.

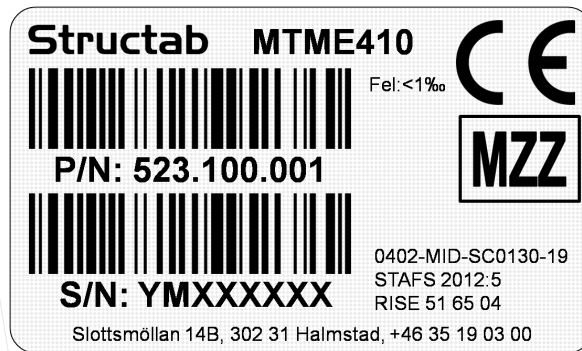


Figure 8: Marking plate to MTME410



Figure 9: Placement of marking.

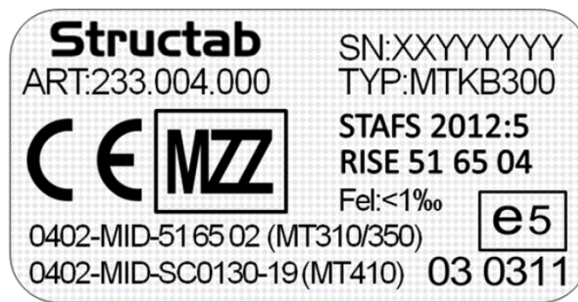


Figure 10: Marking plate to MTKB300.

7.2 Conformity marking in accordance to MID article 21

The instrument shall be marked in accordance to 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	Title of manual	Document version	Dated	Language of examined version
01.01D	Användarmanual Avser Megtax 410 taxameter	1.5	2019-06-24	Swedish

For installation purposes the manual “MegTax Installationsmanual för MT410” revision P1.2.3 dated 2019-06-27 (examined in Swedish version) is to be followed.

Certificate No. SC0130-19 | issue 2 | 2019-11-18

RISE Research Institutes of Sweden AB | Certification

9. Testing and examination

Testing and examination has been carried out in accordance with report 8P07215_MID. The principal characteristics, approval conditions are set out in this certificate. All the plans, schematic diagrams and documentations are recorded under reference files 8P07215 and 9P07850.

Vibration

OIML R21 A.5.4.4 (IEC 60068-2-64 edition 2, test Fh):

Total frequency range	10-150 Hz
Total RMS level	7 m/s ²
ASD level 10-20 Hz	1 m ² /s ³
ASD level 20-150 Hz	-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) with a duration of 16h and at the highest temperature +55 °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)

The taximeter was not connected to power during testing. After the 2 cycles the taximeter was connected to power and a function control was carried out. The values of the totalisers were recorded before the environmental test. At testing the totalisers were first recorded and compared with the ones before testing. After a number of trips were simulated and it was controlled that the values increase in accordance with the trip. Thereafter the totalisers were recorded once more and they were compared with the values before the trip added to the simulated trip

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 -25 °C

Emission

EN 55022 class B

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 Automotive transient immunity (ISO 7637-2) Pulse 1, 2a, 2b, 3a, 3b, 4, level 4

OIML R21, Annex A, A.5.4.7.2 Automotive transient immunity on signal lines (ISO 7637-3) Pulse 3a, 3b, level 4

Automotive voltage transient immunity (ISO 7637-2) Pulse 5, level 4

10. Miscellaneous

EU type examination reports

<i>Report</i>	<i>Title</i>	<i>Date</i>
8P07215_MID	EU type examination of taximeter (module B)	2019-06-27
8P07215-05MID	Software evaluation of Structab taximeter MegTax 410 according to Welmec 7.2	2019-05-02
8P07215-03	Evaluation of Risk analysis, taximeter MegTax 410	2019-04-04