

Taximeter Digitax F1+

Issued to

Digitax Sverige AB

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Digitax F1+ 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-07), Taximeters

Harmonised standards and normative documents used

OIML R21 Taximeters Metrological and technical requirements, test procedures and test report format (applied partly)

Further applied documents

WELMEC 7.2, Software Guide (Issue 5)

Information regarding applied environmental testing is evident from clause 9 of the certificate.

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: 500-65535 pulses/km	Climatic environment:	-25 to +70 °C Condensing Closed (installed in a car)

Originally issued: 7 October 2015

Expiry date: 7 October 2025

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Certificate No. 0402-MID-SC0260-13 | issue 3 | 8 August 2017

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Internal No.: 7P09145



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

1. Design of the instrument

1.1 Construction

Product names

Digitax F1+ (Central processor unit with display)



Figure 1: Digitax F1+ (Central Processor Unit (CPU) with display)

A 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 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.

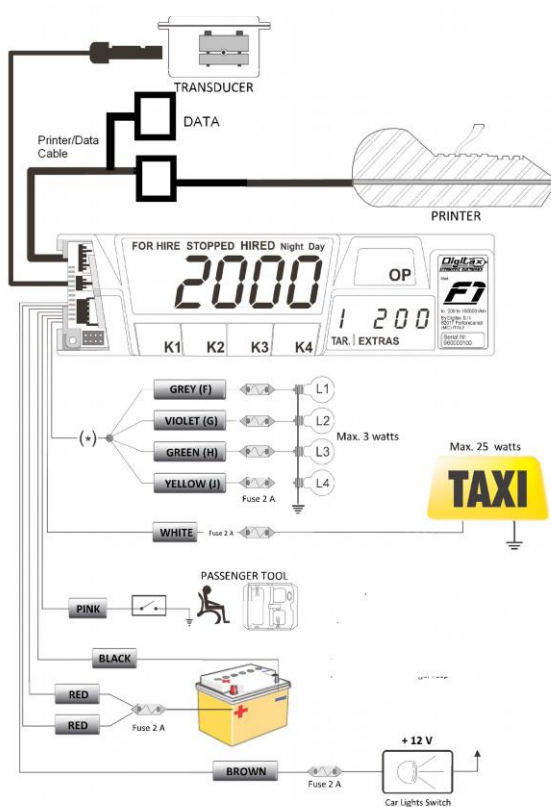


Figure 2: Taximeter connections

Connection to pulse generator of the vehicle

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

Odometer Transducer Input
 Input range: 0 to 16V
 Level for LOW voltage: 0-0.3V
 Level for HIGH input: 12-VCC
 Maximum frequency: 1 kHz
 High voltage trigger: high - low transition

Supply voltage

11-16 V

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	Checksum
Taximeter program F1+	SVM04	47966
Taximeter program F1+	SVM05	45116

Table 1: Approved software versions

The program versions shall be interpreted in the following way

Example SVM05 (45116)

- SVM is the country specific version
- 05 is the part version
- (45116) is the checksum

The program version and checksum can be seen by the following way, press down “K2”, “K3” and “K4” keys at the same time. The program version will be shown in the small display and the checksum in the large display.

Alternatively if a printer is connected the program version and checksum can be read by making a “Taxameterkontroll”* by pressing “K1” and “K3” at the same time.

*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.

No function of discount has been verified to fulfil the requirements.

1.3 Components included for electronic function

According to documentation “Annex to application for conformity assessment of Taximeters in according to MID”, dated 140509.

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

Maximum levels for the taximeter:

Total distance: 4 294 967 295 km

Total distance in taxi traffic (driver logged in): 4 294 967 295 km

Total number of hirings: 4 294 967 295 pcs.

Total amount: 4 294 967 295 monetary units

Total amount supplements: 4 294 967 295 monetary units

Accuracy

- Time elapsed: $\pm 0,1 \%$
- Distance travelled: $\pm 0,2 \%$
- Calculation of the fare: $\pm 0,1 \%$
- Pulse range: 500-65535 pulses/km

Environments classes / influence quantities

Mechanic:	class M3
Electromagnetic:	class E3
Ambient temperature limits:	-25°C to +70°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 calibrated stop watch 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:

Press the keys "K2" and "K3" at the same time, the large display will show "AnPctI" (Adaptation control). Press "K2" when the verified distance starts and press "K2" again when 1000m is passed. The taximeter is showing the number of pulses received when driving the distance in the small display. If a printer is connected a print-out will be given.

The adaptation control can only be performed in the operation position "Ledig" (For hired) and "Avstängd" (Off).

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

Accuracy of time measurement

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

Start by pressing "K1" and start a calibrated stop watch at the same time. Wait at least 10 min. Stop both stop watch and taximeter counting "K2" at the same time. During the measurement the counted time is shown in the small display.

Use a calibrated stop watch to carry out the control.

The calculation of fare is done by the software and hence will be done in the same way if the same software is used as for the type examined taximeter.

To change the taximeter constant the sealing must be broken and a black key as well as a service program from the manufacturer are to be used. Press "K2" and "K3" buttons at the same time, the large display will show "AnpctI". After some second the large display will show the taximeter constant. The vehicle must have a minimum speed of 20km/h, start the measurement by pressing "K3" button, drive one kilometre and stop the measurement by pressing "K4" button. The new taximeter constant is shown in the large display. Press the "OP" button to close the menu and reseal the taximeter according to the installation manual.

6. Security measures

6.1 Sealing

There are two options to seal the taximeter into the vehicle:

First option: F1+ (CPU and display) is to be fastened to the vehicle by a sealing wire and a sealing screw, the sealing screw must be screwed through the taximeter.

Second option: A fixation plate is screwed in to the dashboard with 5 screws, the F1+ (CPU and display) is fixed to the fixation plate with one sealing screw and a sealing wire, the sealing screw must be screwed through the taximeter.

The Cables for supply voltage, pulses and communication are connected inside the F1+ (CPU and display). The lid for the cables is sealed together with the sealing screw for fastening the F1+ (CPU and display) and a sealing wire through the screw.



Figure 3: Figurer of the taximeter F1+ (CPU and display) with the lid (removed from the taximeter) for sealing the power supply, printer and communication cable, and also the connection for the black key.



Figure 4: Figurer of the taximeter F1+ (CPU and display) with the lid and the physical sealing.

6.2 Data logger

The totalisers are stored in FRAM (non-volatile) memory.

Change of program version will be stored in "E-seal" (Press "K2" until the text "Enh-Sh" is shown in the large display, press "K2" and the text "E-SEAL" is shown in the large display. Press "K4" to enter the E-seal menu). There are two different lists in the E-seal menu, one list for the event (with information regarding date, time and what has been changed. The other list is a list with the number of times the changes have occurred.

Name	Meaning
ATTEST	K-constant has been change
SEAL D	Taximeter is defaulted
TARIFF	Tariff setup is changed
CLOCK	Clock time is changed
MES	Ticket Header is changed
RESMEN	Memory block cleared
GDEFLT	Data Flash is changed
BIOS	Firmware is changed
LIGHTS	External lights are damaged
AVAILA	Not in use

Table 2: The registers in E-seal

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-SC0260-13
- the accuracy class
- Information regarding additional devices
- markings regarding other approvals
- marking regarding additional devices not being covered by MID



Figure 5: Placement of marking on F1+ and marking label.

7.2 Conformity marking in accordance to MID article 20

The instrument shall be marked in accordance to MID article 20 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	Date	Language of examined version
SVM04 (47966)	Användarmanual SWE F1+MS V1.1	1.1	2015-10-07	Swedish
SVM05 (45116)	Användarmanual SWE F1+MS V1.4	1.4	2017-05-23	Swedish

For installation purposes the manual "Monteringsmanual SWE F1+MS V1.4" revision 1.4 dated 2017-05-23 (examined in Swedish version) is to be followed.

9. Testing and examination

Testing and examination has been carried out in accordance with reports 3P01594 and 5P09145. The principal characteristics, approval conditions are set out in this certificate. All the plans, schematic diagrams and documentations are recorded under reference files 3P01594 and 5P09145.

Vibration

IEC 60068-2-64 Ed.2.0:
 10-20 Hz: ASD $1 \text{ m}^2/\text{s}^3$
 20-150Hz: -3 dB/octave
 Total RMS: 7 m/s^2

Testing was carried out in three mutually perpendicular axes for 0.5 hours in each direction and the taximeter was connected to power during testing.

Dry Heat and Cold

Temperature change test IEC 60068-2-14:2009 -30 °C to +65 °C

Cyclic damp heat

Damp heat cyclic test IEC 60068-2-30:2006, +55°C, 2 cycles.

Emission

EN 55022:2006, /A1:2007 class B

Immunity

OIML D11 12.2 Electrostatic discharged according to IEC61000-4-2, level 3

OIML R21 A.5.4.5.1 Radiated RF immunity according to IEC61000-4-3, 24 V/m

OIML R21 A.5.4.5.2 Injected RF immunity according to IEC61000-4-6, 24V

OIML D11 14.2.2 Automotive voltage transient immunity according to ISO 7637-2, level 4, pulses 1, 2a, 2b, 3a, 3b, 4 and 5

OIML D11 14.2.3 Automotive voltage transient immunity ISO 7637-3, level 4, pulses 3a and 3b