DA-7 Motorsport Display Manual V1.4
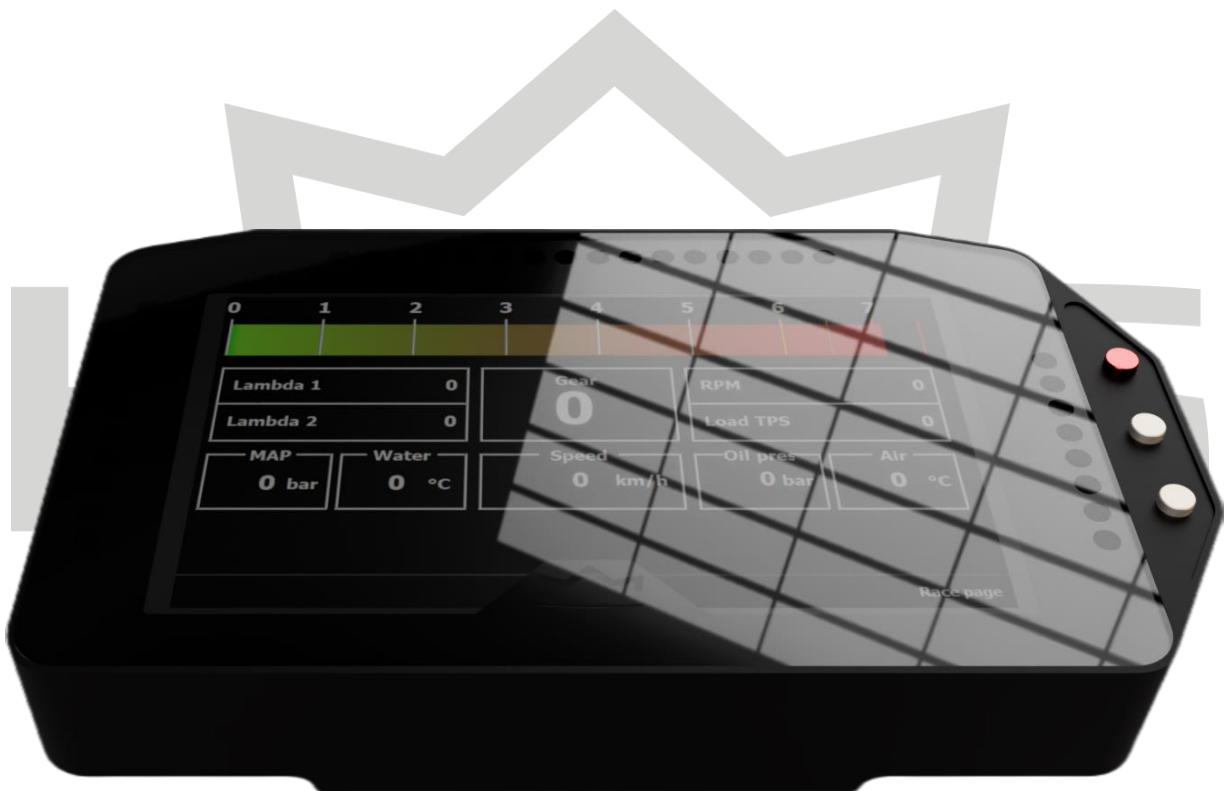
Contents

1 KMS (Kronenburg Management Systems)

Introducing the KMS DA-7 Motorsport Display: Redefining Racing Technology

Prepare to revolutionize your racing experience with the KMS DA-7 Motorsport Display. Encased in a sleek aluminium housing, this 7-inch display unit combines precision engineering with advanced functionality, making it the ultimate companion for motorsport enthusiasts and professional racers alike.

Built to thrive in the demanding environment of the track, the KMS DA-7 boasts an array of features designed to provide real-time insights into your vehicle's performance. With integrated GPS functionality, you can track speed and lap times with unparalleled accuracy, allowing you to push your limits and shave seconds off your lap times.

But the KMS DA-7 offers more than just basic telemetry. Thanks to its ability to read real-time data from the ECU, you can access a wealth of information about your vehicle's performance at your fingertips. From engine temperature to throttle position, the DA-7 gives you the tools you need to fine-tune your setup and optimize your performance on the track.

Customization is key with the KMS DA-7. With customizable LED indicators lining its sides, you can monitor critical vehicle parameters such as oil pressure with ease, ensuring that you stay informed and in control throughout every lap. And with an intuitive interface that allows for seamless customization, you can tailor your display to your specific needs and preferences with ease.

But perhaps the most exciting feature of the KMS DA-7 is its integrated shift light. Designed to optimize your gear shifts and maximize performance on the track, the shift light ensures that you hit every gear change with precision, giving you the competitive edge you need to dominate the competition.

Whether you're a seasoned pro or a weekend warrior, the KMS DA-7 Motorsport Display is the ultimate tool for taking your racing game to new heights. Engineered for performance, precision, and unparalleled functionality, it's time to experience the future of motorsport technology with the KMS DA-7.

WARNING:

Disconnect the battery cables when you're doing electrical work.

Disconnect the wiring harness when welding on the vehicle.

Make sure there are no fluid leaks and all connections are secured and/or tightened.

Wiring and fuel system components must be mounted away from heat sources or shielded if necessary.

Do not use a battery booster or a 24V charger. Do not reverse the polarity of the battery or the charging unit. Do not change the battery with the engine running. The peak power supply could severely damage the KMS Components and other electrical devices.

Avoid open sparks and flames near flammable substances.

Do not use unsuppressed spark plugs and leads. They can cause electromagnetic interference.

2 Installing the Motorsport Display

2.1 Pinout main connector
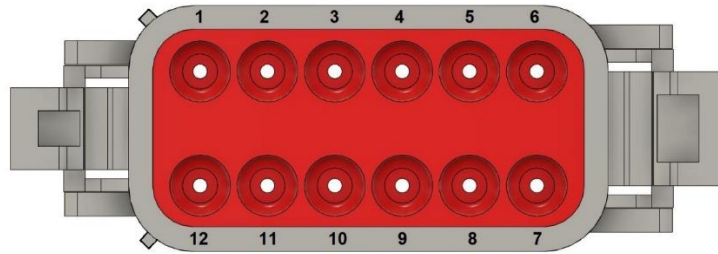
Pin nr. DA-7	Colour	Diameter	Function
1	Black	0.75 mm²	Ground
2	Yellow/Red	0.5 mm²	Button 1
3	Yellow/Black	0.5 mm²	Button 2
4	Yellow/Green	0.5 mm²	Button 3
5	White	0.5 mm²	CAN High
6	Green	0.5 mm²	CAN Low
7	Black	0.5 mm²	Ground
8	Blue	0.25 mm²	USB D+
9	White	0.25 mm²	USB D-
10	Black	0.25 mm²	USB Ground
11	Red	0.75 mm²	12V Battery power
12	Red/green	0.5 mm²	12V Switched power
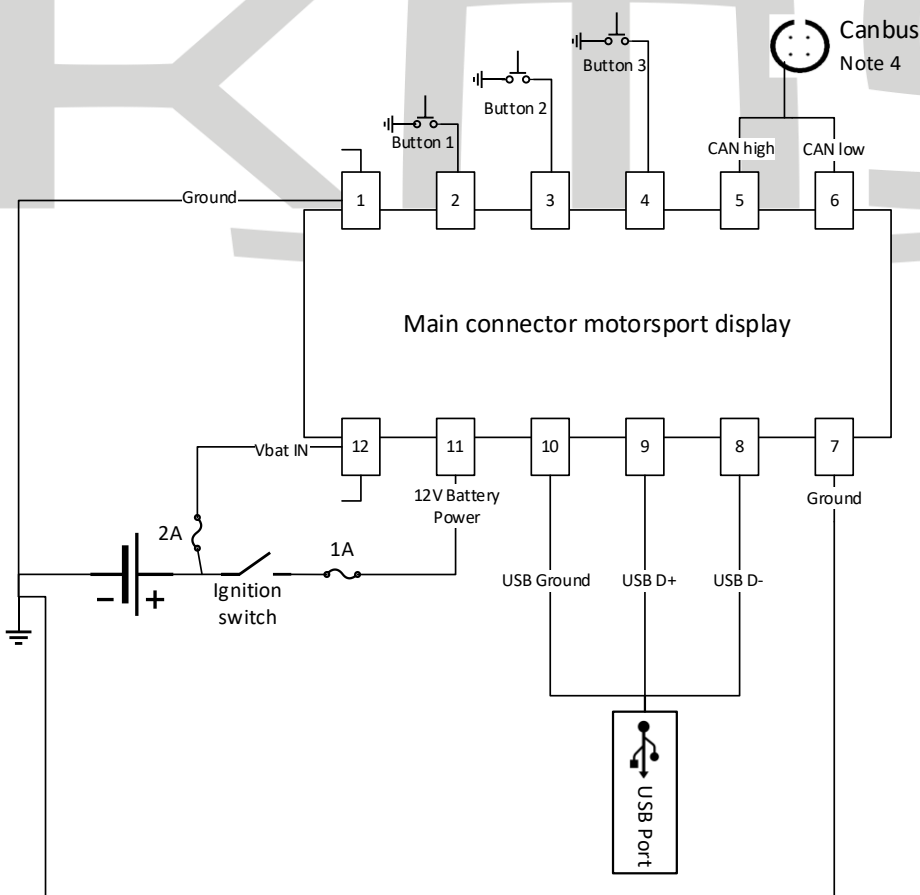
2.2 Connecting the DA-7 Motorsport Display

- Determine position of the DA-7 Motorsport display in your car
- Determine the length of the cable by guiding them to their final position. Leave a margin of 10 cm for safety purpose.

- Connect the cables:
  - o 1+7: Connect the ground cables to a ground point in the car closest to the Display. Please ensure that you have a good ground installation.
  - o 2/3/4: [OPTIONAL] External button cables (for install on the steering wheel e.g.)
  - o 5+6: Connect the CAN cable to the Can HUB connected to the ECU
  - o 11: Attach the "Vbat IN" cable to a switched power
  - o 12: Connect the 12v supply using a relay to the battery of the vehicle

- Turn ignition and test if all cables are well connected and the motorsport display starts
- Fixate the Motorsport Display in place with 4 bolts see below image for the position of the holes.
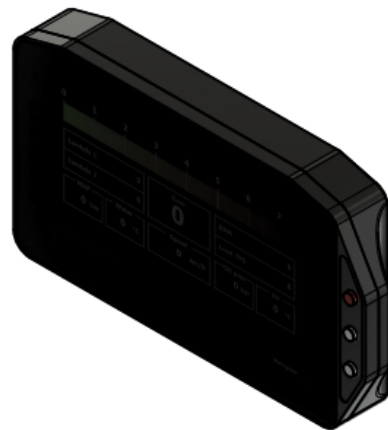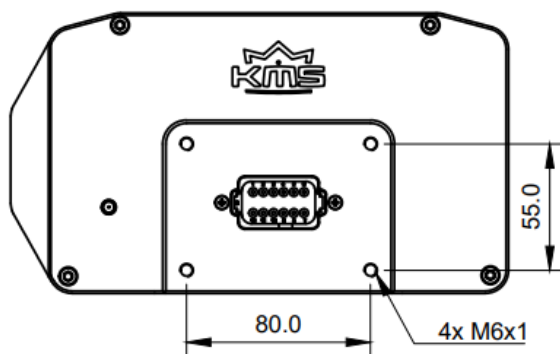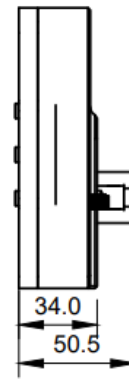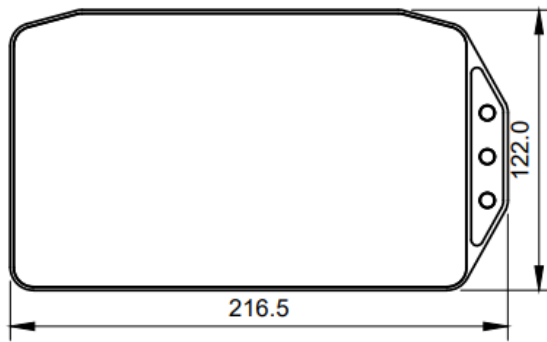
2.3 Install the GPS antenna

Make sure the GPS antenna has a clear view of the sky on a desired position. Failing sky-view may result in no GPS connection, weird GPS readings or other unwanted results.

3 Technical data

The KMS Motorsport Display integrates a color dashboard display with a data logging system for motorsport applications. Through CAN bus all the engine data is immediately synced from the ECU and chassis data.

Application
16 multicolor (RGB) gearshift lights
16 multicolor (RGB) user configurable warning lights
8 kHz AD converters with digital low pass filter
CAN-bus communication
GPS speed
Selectable layouts

Mechanical Data
Size: 216.5x122x50.5
Weight: 1.2 Kg
Dust and water proof aluminum housing
Operating temperature -20 - 70 degrees Celsius
GPS antenna weight 75g
GPS antenna cable length 3m
800 x 480 high resolution 7" full color display

Connector
Type: DT06-12SB
Amount of pins: 12

Software
DA-7 update tool by KMS

* Please note that when your using voltage options in the DA-7, that they are ECU voltages, not display voltages.

4 Functions

4.1 ECU data

To connect your KMS ECU to your DA-7 display, navigate to the "Setup" tab and change your "Ecu type" to the ECU you are using. Next change the "CAN bitrate" to correspond to the bitrate your ECU is sending. You can find this in the settings of your ECU.

Make sure to restart your display for the changes to take effect.

Now you should be able to read ECU data from the data page.

*Note that the reading of "Battery voltage", is the voltage that the ecu is receiving, not the display.

4.2 Navigating pages

To make page changes easy while racing, each button on the display allows the driver to change to the next page.

However combining the top and lower button in one long press opens the configuration screen. This allows the user to make changes to the display.

In the configuration screen:
- The top button for going up
- The bottom for going down
- Middle button confirms your currently selected option

To go back to the previous menu or exit the configuration screen. Scroll down and select the "Back" option.

Currently the display has 3 pages, we refer to them as:

Race page	This is the main screen
Data page	This page displays all CAN data
Configuration page/settings	This page is for configuring the display

Currently the Race page has an interchangeable layout. Allowing the change to a layout that confirms personal preference.

4.3 Changing layout

Change the standard lay-out of the Race page by going into the Configuration page.
1. Hold top and bottom button to open Configuration page
2. Select the Setup tab
3. Move down to Layout of race page in the Setup tab
4. Press middle button and bottom button to scroll through options
5. Press middle button to confirm

You can also change the color scheme of the Data page.
1. Hold top and bottom button to open Configuration page
2. Select the Setup tab
3. Move down to Border color of Data in the Setup tab (Multi/KMS Red/White)
4. Press middle button and bottom button to scroll through options
5. Press middle button to confirm

Your opinion and input is valuable to us, and we are planning on dropping more predefined la-outs over time based on customer input. Feel free to provide us your input on how we could further improve or diversify.

4.4 Lap timer, recognizing circuits and finding nearest circuit

On the main page, called the "Race Page", is a lap timer on the right hand side. If there is no lap timer displayed, change the layout to one that has.

To activate this lap timer, make sure you have your GPS antenna connected and are close to a race track.

On the bottom right side there is a satellite icon, in order for the GPS speed and lap timer to work. This icon needs to be at least yellow; green is even better. But this is dependent on the satellite's connectivity.

Open the configuration screen and head over to "Lap timer". Select "Search tracks nearby" and press confirm.

A list with nearby tracks will be displayed. Select the desired track to race on and the lap timer will start.

Once the lap timer is running you can come back to this screen to stop the lap timer or reset the fastest track time.

If the display cannot find any tracks nearby make sure the GPS antenna is connected, if you just connected the antenna give it some time to search for satellites.

If the icon is yellow or green and still no tracks are found. Make sure that in the Setup tab the option "Track detect distance" is sufficient. Also make sure you are on a supported track. You can find the list at the end of this manual.

4.4.1 GPS Speed

The displays GPS module has the ability to display your speed. To activate this option, connect the GPS antenna to the display. Head over to the configuration screen, select the "Setup" tab. Scroll down to "Show GNSS speed" and turn this option on.

If you want to combine the speed of the GPS and of your CAN signal. You can enable the "Show avg. GNSS & CAN speed" in the Setup section in the settings. In case you have enabled the OBD 2 ECU mode to show the vehicle speed from the ECU turn the GNSS speed and GNSS & CAN speed off.

4.4.2 Adjustable shift light

On the top of the display is a shift light bar. It builds up from left to right and when it is near max RPM it starts blinking.

There are multiple settings available that change the behavior of the shift light. Refer to **3.2 Settings** for more detailed information.

4.5 Settings

4.5.1 The white dot selector

The white dot is where the selector currently is, confirming a tab will enter that section.

When the dot is red, the current parameter is selected and ready to be changed using the top and bottom button on the display.

Upon pressing the middle button, the current option is selected and the dot will become white again. This indicates that you can scroll through the menu again.

4.5.2 Settings explanation

The configuration/settings page is opened by pressing the top and bottom button at the same time

Tab	Setting	Explanation
Setup		
	Ecu Type	Needs to match to the ECU being used
	CAN bitrate	Needs to match the ECU's CAN speed
	Maximum RPM Value	Set this to the max RPM of your engine, this will adjust the shift light/bar
	Show GNSS speed	Enable this if you want to display your speed using the GPS signal
	Show avg. GNSS & CAN speed	Enable this if you want to use both you GPS and CAN speed
	Unit system	Change this if you want to switch to the Imperial system
	Automatic Screen Brightness	Enable this if you want the display to automatically change the brightness according to how bright the environment is.
	Screen Brightness Modifier	If "Automatic Screen Brightness" Is disabled, use this option to change the display to the preferred brightness.
	Track detect distance	The distance to which the GPS is allowed to search for tracks
	Oil Pressure sensor fitted	Enable this if you have an oil pressure sensor fitted in your vehicle
	Injection group 2 fitted	Enable this if you use a secondary injection group
	Gearbox sensor fitted	Enable this if you have a gearbox sensor fitted in the vehicle.
	Border color of Data page	Allows the user to select one of three colors available
	Layout of race page	Allows the user to change between race page layouts

		Demo mode	Allows the user to enable a mode that simulates a working ECU for showcase purposes
Lap timer			
		Search tracks nearby	Searched for nearby tracks
		Stop lap timer*	Stops the current lap timer. *This option is only available if a lap timer is running
		Reset fastest lap*	Resets the fastest lap driven on the current track. *This option is only available if a lap timer is running
LEDs			
		Number of revolutions per led	Number of revolutions that each shift light LED shows
		Automatic LED Brightness	Enable this if you want the display to automatically change the brightness of the LEDs on the side of the screen according to how bright the environment is.
		LED Brightness modifier	If "Automatic LED Brightness" is disabled, the brightness of the LEDs can manually be adjusted using this value.
		Enable LED blinking	Enable the LEDs on the sides to start blinking if the value goes over the limit you have set by the percentage in the setting "LED blink thresh."
		LED Blink speed	How fast the LEDs blink
		Enable RPM LED blinking	Enable this if you want the shift light to start blinking when near the set max rpm
		RPM LED blink speed	The speed at which the shift light will blink when near max rpm

4.6 Supported ECUs

We support the following ECUs:
- KMS MP25
- KMS MD35
- KMS MA-5
- KMS MA-9

Aswell as the OBD2 protocol. The usual bitrate for this is 500Mbit/s and is used by vehicles of 2008 and newer.

In the future more ecu's will be supported. Check our update page of the DA-7 for more information

4.7 LED Assign

When LED Assign is selected, a layout of the display will appear. The squares on the left and right are LEDs that are assignable to values with a maximum limit, as well as a color as of choice.

When a square is selected. "LED Disabled, --, Red, Return", will appear in the top of the screen. The white dot is where the selector currently is, when the dot is red, the current parameter is selected and ready to be changed using the top and bottom button on the display.

"LED Disabled, --, Red, Return"

LED Disabled: is changeable to the parameter that needs to be monitored.

--: This will change to the unit of measurement of the selected value

Red: This is corresponding to the color of the LED and is changeable to preference.

Available parameters for monitoring

"High water temp."	"High Inj. Corr. Grp1"
"High int. air temp."	"High Inj. Corr. Grp2"
"Low oil pressure"	"Aux 1 on or off"
"High oil pressure"	"Aux 2 on or off"
"High voltage"	"Aux 3 on or off"
"Low voltage"	"Fuel pump on or off"
"High EGT 1"	"Boost limit on or off"
"High EGT 2"	"Lambda 1 error on or off"
"High EGT 3"	"Lambda 1 control on or off"
"High EGT 4"	"Powershift on or off"
"High EGT 5"	"Soft RPM limit on or off"
"High EGT 6"	"Traction control on or off"
"High EGT 7"	"Pit limiter on or off"
"High EGT 8"	
"Low Inj. Corr. Grp1"	
"Low Inj. Corr. Grp2"	

"LED Disabled" --- This will turn the led off.

Available colors

Red	Green	Blue
Yellow	Purple	Orange

4.8 Warnings

If a more noticeable warning besides a LED is desired, a warning flag is an option.

Opening this table will show all the warnings that are currently available.

The value behind the warning is the maximum or minimum value the warning can be before a yellow flag will start blinking on your screen, covering the entire display.

To enable a warning change the last setting of that warning to "On"

On = Enabled
Off = Disabled

The following warnings are currently available:

"High water temp."	"High EGT 4"
"High int. air temp."	"High EGT 5"
"Low oil pressure"	"High EGT 6"
"High oil pressure"	"High EGT 7"
"High voltage"	"High EGT 8"
"Low voltage"	"Low Inj. Corr. Grp1"
"High EGT 1"	"Low Inj. Corr. Grp2"
"High EGT 2"	"High Inj. Corr. Grp1"
"High EGT 3"	"High Inj. Corr. Grp2"

4.8.1 Satellite Icon

On the bottom right there is a satellite icon that represents the connectivity of your GPS signal

Red = No connection at all

Yellow = A good connection

Green = Best connection possible

Yellow and Green states both allow the usage of the lap timer and GPS speed

4.8.2 Saving configuration settings

Upon exiting of the configuration screen, the current settings will be saved to the KMS DA-7 display, however some changes will only take effect after a restart

5 Software updates

The KMS Motorsport Display is sold with the latest version of the software. When a new version of software is available you can find this in the download section on the website: https://kms.vankronenburg.nl/downloads.

Make sure to have our display connected to your laptop when installing the software, this will configure the driver correctly.

If you don't have a display during installation yet and you want to configure the driver again manually. Select "(Re)Install driver" on the top right corner of the software, make sure your display is plugged in.
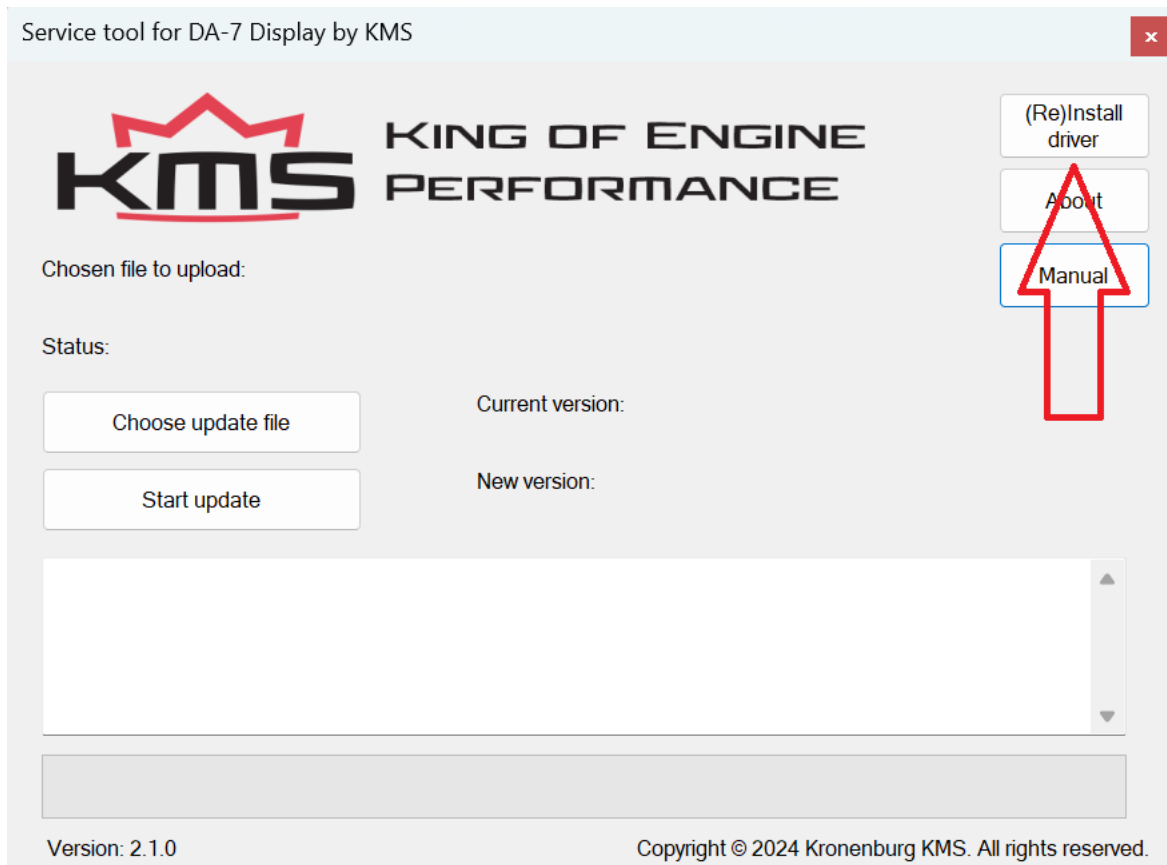
5.1 Updating the display

Make sure the KMS Display update software is installed and the latest version of the software has been downloaded from the KMS website.

1. Plug in the display
2. Open the KMS Display update software
3. Press Choose update file and navigate to the file that has been downloaded
4. Press Start update
5. Wait and follow instructions

The display should now be successfully updated. If any issues are encountered during the update that cannot be solved by troubleshooting, please do contact our support department.

6 Supported tracks

0	Mettet - Circuit Jules Tacheny	Belgium
1	Spa-Francorchamps	Belgium
2	Circuit Zolder	Belgium
3	Circuit de Chimay	Belgium
4	Racepark Meppen	Germany
5	Hockenheimring	Germany
6	Nürburgring	Germany
7	Lausitzring	Germany
8	Oschersleben	Germany
9	Sachsenring	Germany
10	Bilster Berg	Germany
11	Nordschleife	Germany
12	Ahvenisto	Finland
13	Alastaro	Finland
14	Botniaring	Finland
15	Motorpark raceway	Finland
16	Le Mans	France
17	Anneau du Rhin	France
18	Circuit Dijon-Prenois	France
19	Circuit du Bourbonnais	France
20	Circuit du Val de Vienne	France
21	Circuit du Var	France
22	Circuit Paul Ricard	France
23	Circuit Paul Armagnac	France
24	Circuit d'Albi	France
25	Pôle Mécanique Alès Cévennes	France
26	Linas-Montlhéry Autodrome	France
27	Circuit de Nevers Magny-Cours	France
28	Circuit de Pau	France
29	Circuit du Bresse	France
30	La Ferte Gaucher	France
31	Circuit du Mas du Clos	France
32	Circuit de Mornay	France
33	Circuit de Fontenay	France
34	Hungaroring	Hungary
35	Mondello Park	Ireland
36	Autodrome di Monza	Italy
37	Autodrome Vallelunga	Italy
38	Circuito del Mugello	Italy
39	Circuito di Magione	Italy
40	Castelletto	Italy
41	Automotodrom Grobnik	Kroatië
42	Circuit Goodyear	Luxemburg
43	Circuit Zandvoort	Netherlands
44	TT Circuit Assen	Netherlands
45	Lelystad - RDW	Netherlands
46	Raceway Venray	Netherlands
47	Arctic Circle Raceway	Norway
48	Rudskogen	Norway
49	Valerbanen	Norway
50	Red Bull Ring	Austria
51	Salzburgring	Austria
52	Silesia Ring	Poland
53	Algarve	Portugal
54	Estoril	Portugal
55	Slovakia Ring	Slovakia
56	Circuit de Barcelona-Catalunya	Spain

57	Alcarras	Spain
58	Andalucia	Spain
59	Ascari	Spain
60	Aragon	Spain
61	Calafat	Spain
62	Circuit de la Comunitant Valencia	Spain
63	Albacete	Spain
64	Brno Circuit	Czech Republic
65	Autodrom Most	Czech Republic
66	Istanbul Park	Turkey
67	Silverstone	UK
68	Brands Hatch	UK
69	Cadwell Park	UK
70	Donington Park	UK
71	Knockhill Racing	UK
72	Oulton Park	UK
73	Snetterton	UK
74	Goodwood	UK
75	Castle Combe	UK
76	Thruxton	UK
77	Anglesey	UK
78	Bedford	UK
79	Blyton Park	UK
80	Croft Circuit	UK
81	Anderstop way	Sweden
82	Gotland Ring	Sweden
83	Karlskoga Motorstadion	Sweden
84	Linkopings Motorstadion	Sweden

7 Troubleshooting

Issue	Solution
The display is not connecting to the ECU.	Make sure the ECU type and bitrate have been set correctly. Then restart the DA-7. If it still fails check the CAN wiring
The antenna is plugged in and the display has no GPS signal	Make sure the antenna has a clear view of the sky. Try to wait 5 minutes, if there is still no signal, restart the display by fully removing the connector, waiting 30 secs and then reconnect it to the display.
During updating, the same version as currently installed was selected, now the screen is stuck on updating	Press one of the buttons on the display. If the issue then is not resolved, try restarting the display.

If the issue persists, contact us at: techkms@vankronenburg.nl or send us a
WhatsApp at: +31 (0)620700270. If necessary, our support department will ask you to send the KMS
DA-7 Display to our technicians to resolve the issue.