First start

At start up the multi gauge runs through several welcome screens. Afterwards the normal use screen is shown permanently, displaying the current values:

At standstill the electronics is not able to determine the engaged gear as no speedo signal is available. This state is indicated by a horizontal bar.

The readout of water temperatures below 40°C is suppressed. A horizontal bar is displayed instead.

Normal use

As soon as the bike starts moving, the electronics is able to determine the current gear and displays it.

The following example shows: 2nd gear engaged, 11 liter of fuel remaining, water temperature at 74°C and ambient temperature at 24°C.

Operation

Operation and settings are performed by the existing cockpit buttons **SELECT** und **RESET**. The following actions will be recognized:

- **long** press on **SELECT** (or permanently pressed) (**S**)
- **short** press on **RESET** (**R**)

The naming of the buttons is not associated with their function inside the multi gauge, it's given by the cockpit. Interactions with the speedometer counters are minimized by utilizing the press duration.

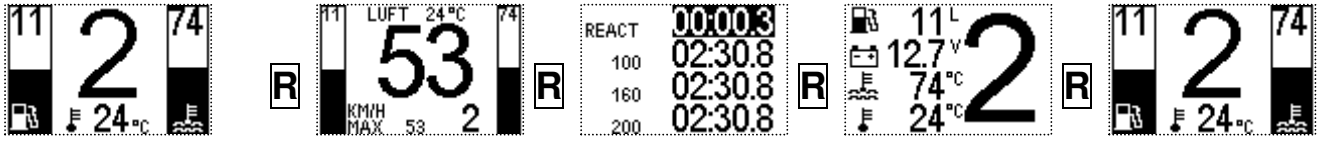
The software of the multi gauge is in constant development. Therefore it might happen that this documentation is in some aspects behind the present software and not completely fitting. Typically those deviation are of minor nature. In case of major and general changes this guide will be updated.

cvieth@arcor.de

Viewmode fast-change

The multi gauge holds a list of more than 30 alternative display layouts (called VIEWMODES). Out of this list the user can select **four** and declare as preferred **favorites**. Toggling between these favorites is quickly done with **R**.

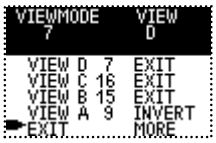
The next example makes use of Viewmodes 9, 15, 16 and 7. Each press on **R** brings the next favorite to display in a consecutive, endless loop. At the end it jumps back to the first entry (see first and last picture):



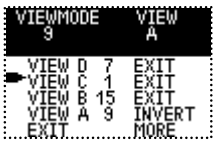
At power-up the display is always set to the first favorite (VIEW A). The mapping of viewmodes to favorites is not restricted, also multiple usage is possible. A very easy and comfortable way for switching is the installation of a „third button“ (**3**), e.g. by converting the flash light button.

Changing favorites

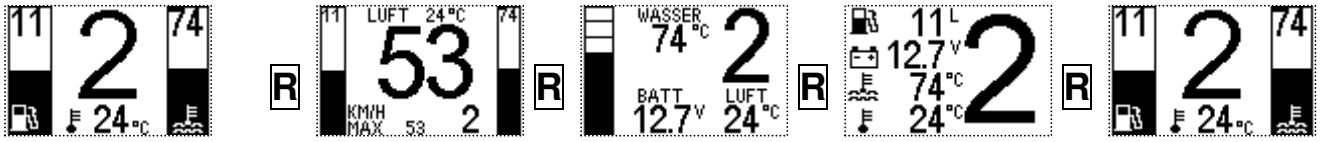
The mapping of the 4 favorites can be chosen freely. For to change press **S** to enter the menu. You will find the 4 favorites named „**VIEW A**“ to „**VIEW D**“:



The small indicator arrow can be moved by pressing **S**. The headline displays the last active state before entering the menu (example: favorite D assigned to viewmode 7). The next example moves the indicator to VIEW C and alters the value from 16 to 1 by pressing **R**:



As as result we get the following sequence, the 3rd picture has changed:

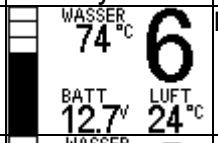
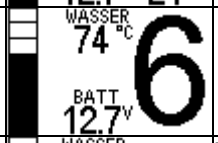
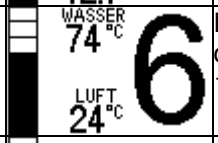
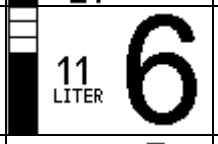
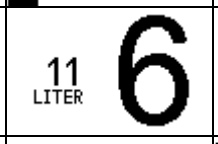
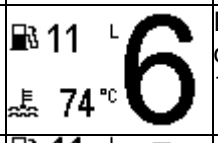
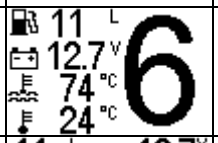
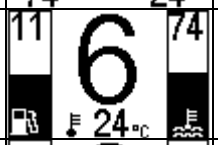
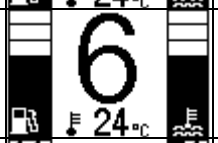
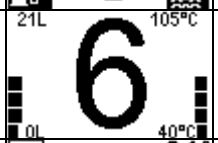
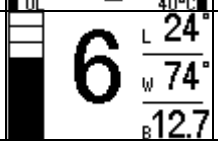


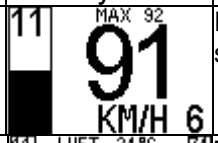
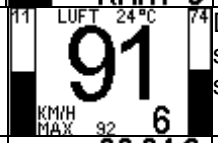
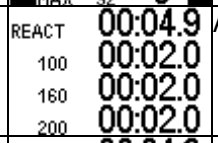
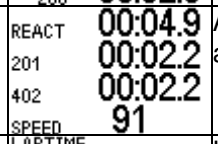
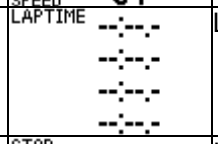
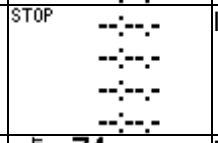
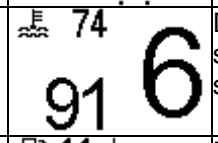
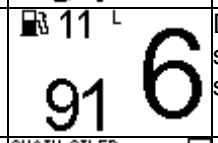
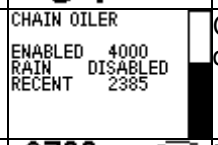
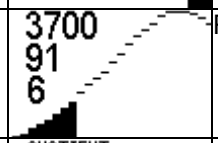
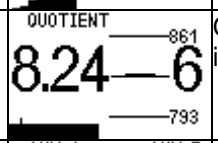
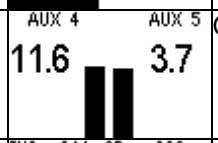
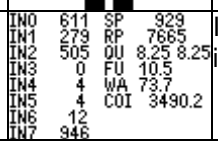
Other positions can be changed in the same way. It is even possible to assign the same viewmode to all positions. Any change is saved immediately.

Below a list of all available viewmodes:

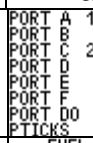
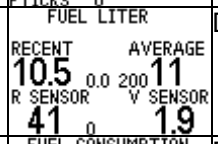
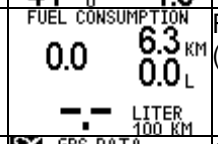
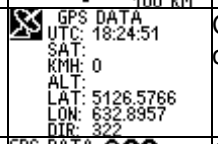
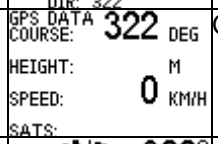
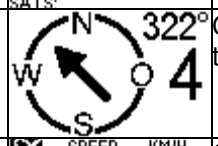
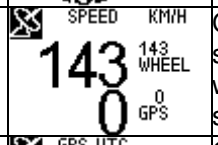
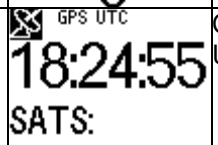
cvieth@arcor.de

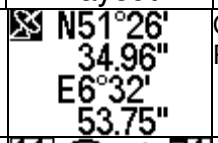
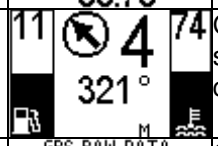
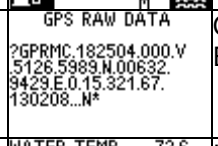
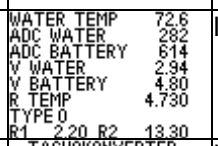
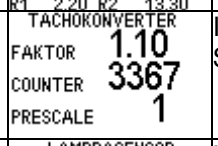
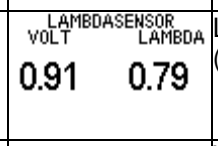
List of viewmodes

#	Layout	Remark
1		Bar shows fuel content
2		
3		Battery voltage only displayed when below 11V or above 14V
4		
5		
6		Battery voltage only displayed when below 11V or above 14V
7		
8		
9		
10		
11		
12		
13		

#	Layout	Remark
14		Display switches to max speed at stand still
15		Display switches to max speed and RPM at stand still
16		Acceleration 1, speed
17		Acceleration 2, distance and final speed
18		Lap time
19		Interval
20		Display switches to max speed and RPM at stand still
21		Display switches to max speed and RPM at stand still
22		Chain oiler status, elapsed distance
23		Power curve
24		Gear recognition status, internal values
25		Optional inputs
26		Internal values, ADC-inputs and variables

cvieth@arcor.de

#	Layout	Remark
27		Internal values, port status
28		Details fuel measurement
29		Fuel consumption (preliminary)
30		GPS overview
31		GPS
32		GPS true course and gear
33		GPS speeds from GPS and wheel, max values at stand still
34		GPS UTC time

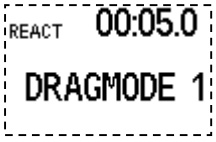
#	Layout	Remark
35		GPS Position
36		GPS similar to #9 course and height
37		GPS EMEA data realtime
38		Internal diagnosis data
39		Internal diagnosis data Speed converter
40		Lambda probe (preliminary)
0		Viewmode demo All viewmodes cycle in a loop

cvieth@arcor.de

Specials

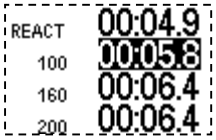
Dragmode:
In „DRAGMODE“ (acceleration measurement, viewmode 16 and 17) the display layout changes with state. At standstill and engaged gear the start-view is displayed. The measurement starts automatically as soon as a moving wheel is detected.

Standstill



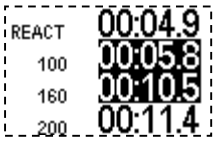
The react counter in the top line starts running at –5s. Try to start at zero. The counter showes the response time from zero until the first wheel movement is detected. The result does not affect the following measurements.

Split time 1:



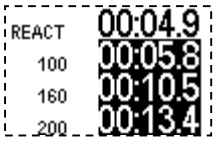
The first counter stoped when passing 100Km/h, in the example at a time of 5.8s. This value is frozen and displayed invers. Current total elapsed time is 6.4s.

Split time 2:



The second counter stops when passing 160Km/h. This happened at an example time of 10.5s.

Finished:



A speed of 200Km/h is reached after 13.4s. All results are displayed invers, except response time if below zero (jump start).

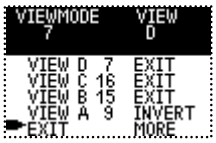
The display is erased and reset to „standstill“ state as soon as the wheels stop and a gear is engaged, ready for the next round. To preserve the results temporarily switch to neutral **before** the bike comes to a complete halt.

GPS:
GPS-data will only be displayed if a GPS receiver is connected to the multi gauge. See related document “Multi Gauge Extensions” for details.

cvieth@arcor.de

Configuration menu

In the configurations menu certain settings and configurations can be modified. Enter the menu by long pressing **S**. The first view is already know from „changing favorites“:



Use **S** to move the indicator to point to **MORE**, press **R** to select and enter the next menu levels. To step out use **EXIT**.

The configuration menu comprises 2 sections.

- Section **1** contains settings to be altered individually by the user. Those are the welcome messages, units for distances, fuel, temperature and the like. You get into this section with MORE.
- Section **2** contains adjustment values and fixed settings e.g. type of bike and the like. Those settings are typically never modified, and should never, not even unintended. Therefore a simple security is implemented. Access is only possible if the **viewmode of the current favorite is set to 0** before going to **MORE**. (In the upper example you would have to set the indicator to VIEW D and change it to 0)

General remarks:

Changed parameters can be saved permanently by selecting **SAVE**. A few items differ, some are saved instantaniously.

NEXT takes you to the following menu screen.

You have to run through the complete menu to come back to the entry screen to **EXIT**. (Fast forward: keep **S** pressed).

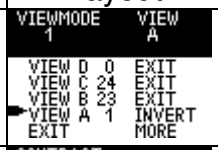
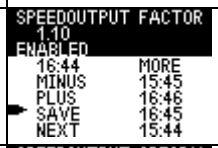
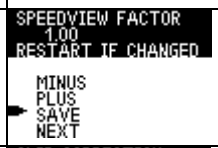
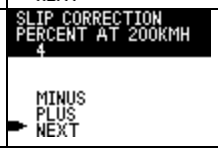
Power off during menu is without consequences.

Some menu entries are only for service and viewing and have no parameters to alter.

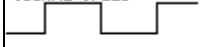
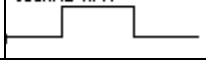
Some menu entries are only usefull if the corresponding hardware is present (e.g. GPS, chain oiler, ..)

Below a list of all menu entries and comments:

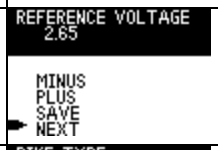
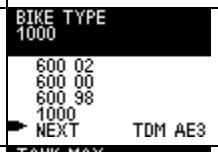
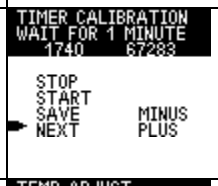
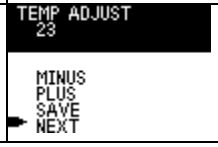
cvieth@arcor.de

#	Layout	Remark
1.1		4 favorites exist (A, B, C, D). Each has its individual viewmode. Changes are saved instantaniously. INVERT for invers layout. MORE takes to the next entry.
1.2		Contrast setting for the LCD. Min 1, Max 127
1.3		Correction factor for the build-in speedo converter. Select ratio (e.g 15:44) or arbitrary factor with PLUS and MINUS. Select SAVE to save. This factor scales the speedo signal going to the analog cockpit's speedometer and odometer.
1.4		Select MORE from 1.3 to reach. Special commands for testing the speedo converter. Set to DISABLE if function is not needed.
1.5		Correction factor for **viewmodes with speedo readout (e.g. #15)**, NOT for speedo converter. This value scales ONLY the digital speedo readout inside the multi gauge. The analog speedo and speedometer are not affected.
1.6		The **digital speedo readout** is corrected by this internal SLIP-factor. It follows are square function. The default is 4% at 200Km/h. The slip occures if the speedo signal is takes from the real wheel only. Example: measured: 208Km/h -> corrected by –4% -> Readout 200Km/h
1.7		Acceleration measurement 1: Speed limits for counter. POSITION selects the value to be changed, use + or – to modify. Three values present, default 100, 160, 200Km/h.
1.8		Acceleration measurement 2: Distances. POSITION selects the value to be changed, use + or – to modify. Two values present, default 201 and 402 Meter.
1.9		Limit for shift light. The fuel-LED **flashes** if the RPM is above a certain limit. Those limits can be set individually for each gear.
1.10		Limit for shift light. The fuel-LED **is on permanently** if the RPM is above a certain limit. Those limits can be set individually for each gear.
1.11		Minimal number of identical consecutive measurements until a new gear is accepted as valid.
1.12		Fuel level, number of most recent measurements taken for averaging. Preset values for NORMAL, FAST and SLOW.
1.13		Lower limit for fuel warning light to come up.

cvieth@arcor.de

1.14	STARTMESSAGE DISABLED DISABLE ENABLE ► NEXT	Suppress start-up messages.
1.15	MESSAGE 1 YAMAHA POSITION LETTER CLEAR SAVE HALLO ► NEXT FAZER	Self definable start-up message, line 1. Change POSITION to the desired position in the word, change the character with LETTER. The font is limited.
1.16	MESSAGE 2 YAMAHA POSITION LETTER CLEAR SAVE HALLO ► NEXT FAZER	Same as before for line 2.
1.17	UNIT SPEED KM/H RESTART IF CHANGED MPH KM/H ► NEXT	Units speed
1.18	UNIT FUEL LITER RESTART IF CHANGED GALL IMP GALL US LITER ► NEXT	Units fuel
1.19	UNIT TEMP CELSIUS RESTART IF CHANGED FAHRENH CELSIUS ► NEXT	Units temperature
1.20	LOGO TYPE FAZER EXUP FAZER JPN FAZER FZ1 FAZER EXUP ► NEXT TDM	Type of logo during start-up
1.21	LANGUAGE GERMAN RESTART IF CHANGED FRENCH ITALIAN ENGLISH GERMAN ► NEXT	Language for viewmodes, menu always remains in english.
1.22	CHAIN OILER PUMP PULS DISTANCE METER 4000 ENABLED PING DISABLE MINUS PLUS ► NEXT HINT OFF	Settings for chain oiler (McCoi type). A short pulse is generated each time the distance has elapsed (default 4000 meter). Test with PING. Keep DISABLEd if not used. HINT OFF to suppress hints during normal display.
1.23	CHAIN OILER PUMP RAIN DISTANCE METER DISABLED ENABLE MINUS PLUS ► NEXT	Alternative distance for rain-mode. Rain-mode has to be set manually in 1.1
1.24	VCCWATER UNPLUG SENSOR 4.80 3.39 ► SAVE ► NEXT	Fine tuning for water temperature. Unplug sensor and select SAVE. Nominal value 4.8V (+/-0.1V)
1.25	SIGNAL SPEED  SIGNAL RPM 	Signals over time.

cvieth@arcor.de

#	Layout	Remark
2.1		Calibration value, do not modify! Can only be measured on the pcb.
2.2		Calibration value, do not modify! Can only be measured on the pcb
2.3		Bike type. Alters some settings accordingly (e.g fuel capacity, gear recognition)
2.4		Maximum fuel capacity, if default does not fit.
2.6		Fuel sensor tolerance and offset compensation.
2.7		Fuel sensor tolerance and offset compensation.
2.8		Timeout for missing speed signal recognition.
2.9		Gear recognition parameters(quotients). Modify in case default values do not fit. Individual setting for each gear. Select gear with NEXT GEAR. Don't forget to SAVE.
2.10		Switch gear recognition from RPM/speed to voltage measurement. Can be used for TDM models.
2.11		Same as 2.9 but for voltages.
2.12		Calibrate internal clock. Improves accuracy of stopp watch and speedo readout. Press START, wait for exactly(!) 1 minute, press STOP, SAVE.
2.13		Fine tuning for ambient temperature sensor. Modify until readout matches to a reference.

cvieth@arcor.de

2.14	WATER / OIL SENSOR TYPE WATER ORIGINAL NTC1K NTC2K DET100 ORIG: VDO 36 NEXT VDO 51	Select alternative oil temperature sensor. Used at older FZS600 models w/o water sensor.
2.15	WATER / OIL SENSOR CAPTION WATER OIL WATER NEXT	Caption for viewmodes.
2.16	TEMPERATURE LIMIT 105 MINUS PLUS SAVE NEXT	Temperature limit for fuel LED to start flashing.
2.17	EXTERNAL SWITCH USED FOR VIEWMODE LAPTIMER OFF NEXT	Configuration for an optional „third“ button.
2.18	EXTERNAL SWITCH THRESHOLD 600 RECENT LEVEL 414 MINUS PLUS SAVE NEXT	Threshold for optional third button detection. Needed as third button shares the same voltage input as ambient temperature.
2.19	TRANSMIT INFO DISABLED ENABLE MINUS PLUS SAVE NEXT	All internal measurement values can be streamed out in a special modulated audio format (processor Pin 3, TxD). For storage on camcorder audio, MP3 or any audio recorder. After back-converting the data can be subtitled to a video.
2.20	GPS RECEIVE ENABLED BAUD 9600 RMC DISABLE MINUS PLUS SAVE NEXT	Configuration for external GPS receiver (processor Pin2, RxD). Set baudrate until message header (e.g. RMC) indicates successful decoding. Uses same port as 2.19, possible collision!! Do not activate both at the same time!!
2.21	FUEL PUMP TICKS PER LITER 667 DISABLE MINUS PLUS SAVE NEXT	Fuel measurement by counting fuel pump pulses. Preliminary.
2.22	NEUTRAL 1020	Important signals over time. Next signal with SELECT.
2.23	SWV803 HW 6 OR 7 FAZER1000 NO CONVERTER LCD 3	Overview hardware and software.
2.24	FACTORY RESET REALLY SURE?? RESET ALL NEXT	Reset to factory. VCCMAIN und REFERENCE VOLTAGE will be preserved.

cvieth@arcor.de

FAQ

- Dark lines or similar artefacts remain on the display after switch off:

No defect or reason for concern. As the multi gauge does not make use of a permanent connection to the power supply it is not possible to shut down the display in a controlled way. As a consequence there might be remants of data in the RAM. Due to the low power consumption of the display it can take several minutes until all is vanished.

- Rarely the picture shows a very short “flash”:

No defect or reason for concern. The LCD is resetted regularly about every 2 minutes. This takes a few milliseconds and normally this event is not perceptible. But not under certain, rare conditions it can become visible.

- The water temperature readout only shows '-':

No defect. This is intended and happens as long as the temperature is below 40°C. The sensor’s accuracy is not sufficient for lower temperatures.

- The value for ambient temperature is too high/inaccurate:

The sensor might be placed above the main lights and influenced by their thermal radiation. Also the sensor has to be kept dry as he is quite sensitive to moisture. Mold into epoxy resin or similar.

- The gear readout is not constant/jumping:

There might be driving situations where the RPM/speedo signals are not interpreted correctly, maybe in combination with bad signal qualities. This can be compensated by modifying GEAR DELAYTIME (1.11), unfortunately on the cost of response time.

- GPS is activated but no data will be shown:

A few functions demand additional, external hardware. So the GPS does. Keep the respective menu entry disabled if not used. Consult the “Multigauge Extensions” document for more details.

cvieth@arcor.de